

Ten new species of *Didymocarpus* (Gesneriaceae: Didymocarpoideae) from Thailand

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ABSTRACT

Ten new species of the genus *Didymocarpus* are described from Thailand: *Didymocarpus alboroseus*, *D. flaviflorus*, *D. hongsonensis*, *D. kiewbangii*, *D. kwanjaiae*, *D. mekongensis*, *D. niveus*, *D. phuwaensis*, *D. suchartii* and *D. vilaiwaniae*. Full descriptions, distributions, ecology and colour plates are provided for all taxa. These additional new species increase the total number of *Didymocarpus* in Thailand to thirty-five species, and therefore, a key to the species of *Didymocarpus* in Thailand is also provided in this paper.

KEYWORDS: Flora of Thailand, taxonomy, Didymocarpaceae, Trichosporeae.

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INTRODUCTION

The genus *Didymocarpus* Wall., which belongs to the subtribe Didymocarpaceae, tribe Trichosporeae, subfamily Didymocarpoideae of the Gesneriaceae, has about 100 species from India and the southern Himalaya, South China, continental South-East Asia, Peninsular Malaysia and Sumatra (Liu *et al.*, 2025). The delimitation of *Didymocarpus* has varied considerably over time (Burt, 1998) but was largely stabilised by Weber & Burt (1998) when large numbers of species were removed to other genera, particularly to *Henckelia* Spreng. Most of these species have since been moved to *Codonoboea* Ridl. or *Loxocarpus* R.Br. (Middleton *et al.*, 2013). There have also been other smaller changes to the delimitation of the genus (e.g., Middleton & Möller, 2012; Liu *et al.*, 2025).

The Thai species of *Didymocarpus* in the current delimitation of the genus (except for *D. venosus* Barnett which has now been placed in

Tribounia D.J.Middleton) were enumerated by Burt (2001) in which he recognised 15 species (not including *D. venosus*), four of which were newly described. The genus in Thailand has since been fully revised by Nangngam & Maxwell (2013), resulting in 18 species of which three were newly described. Nangngam & Middleton (2014) later described an additional five new species from Northern and North-Eastern Thailand. In the current paper, based on a new study of *Didymocarpus* for the Flora of Thailand project which has incorporated extensive new collections along with previously overlooked collections, we propose another ten new species. Although this appears to be a large number of species to have been discovered in a relatively short time since the genus was last revised in Thailand, it was already known that many Gesneriaceae in Thailand have rather restricted distributions (see, for example, Triboun & Middleton, 2012; Puglisi & Middleton, 2017b) and it is therefore not surprising that the many collections made in new

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locations or unexplored parts of Thailand in recent years have resulted in the discovery of new species. These new species, along with some new records that will be incorporated into the forthcoming account of Gesneriaceae in the Flora of Thailand, brings the total number of species of *Didymocarpus* in Thailand to 35.

MATERIALS AND METHODS

All new species described here are based on specimens collected in Northern, North-Eastern and Eastern Thailand, and can be distinguished on their morphological characteristics from species previously described in Nangngam & Maxwell (2013) and Nangngam & Middleton (2014), and from species described in neighbouring regions. The material for the new species was compared to specimens in BK, BKF, CMUB, E, QBG and SING, along with the material previously cited in Nangngam & Maxwell (2013) and Nangngam & Middleton (2014) and specimens available online from JStor Global Plants and major herbaria with digitised collections. The new species were also compared to publications of species from India, China, Thailand, Vietnam, Laos, Cambodia and western Malesia (e.g., Janeesha & Nampy, 2015; Puglisi & Middleton, 2017a; Xin *et al.*, 2022). Many of the new species are described from collections made by Forest Herbarium staff and Queen Sirikit Botanic Garden staff. One species is described from a specimen grown in a nursery by the third author.

The measurements in the descriptions are from dried material for vegetative characters and fruits and from either fresh or rehydrated material for characters in the flowers. The flower colour characters have either been recorded by one or more of the authors or are taken from label data. Standard herbarium equipment and microscopes were used to make the observations and measure plant features.

TAXONOMIC TREATMENT

1. *Didymocarpus alboroseus* Nangngam & van de Bult, *sp. nov.*

This species is similar to *Didymocarpus bicolor* Craib in having free calyx lobes and a salverform corolla tube but differs in having the corolla tube whitish at least in the lower half, purplish

reddish towards lobes (pale reddish except whitish only at very base in *D. bicolor*) and corolla lobes reddish brown to orange brownish inside (lower lobes pale green or whitish, upper lobes dark violet-reddish inside in *D. bicolor*). Type: Thailand, Chiang Rai Province, Mae Sai District, Doi Tung (Doi Tung development project), along Wat Noi-Wat Hui Nam Khun trail, ca. 950–1,200 m elev., 22 Aug. 2010, *M. van de Bult 1039* (holotype **CMUB!**; isotype **BKF!** [SN184574]). Fig. 1.

Terrestrial, perennial herb, to 20 cm tall. *Stem* slender, whitish green, densely covered with whitish multicellular eglandular hairs. *Dry season*: (dormant period): *Leaves* opposite, anisophyllous; petioles short; blades pale green on both sides, lanceolate-ovate, 0.8–3.5 × 0.3–1 cm, apex acute, base oblique, margin serrate, densely covered with multicellular eglandular hairs on both sides. *Rainy season*: *Leaves* opposite, anisophyllous; petioles 4–5 cm long, with multicellular eglandular hairs; blade chartaceous, green above, pale green beneath, oblong-lanceolate, 4–14 × 3–5 cm, apex acute, base oblique, margin serrate, pubescent on both sides; secondary veins 8–10 on each side. *Inflorescences* terminal, dichasial cymes (compound cymes), 20–30-flowered, 10–12 cm long, axes with dense multicellular glandular hairs; peduncles 3.5–5 cm long, maroon and green; bracts 2, paired, rounded, 1–2 × 2 mm, glabrous on both sides, green, caducous; pedicels 0.5–1 cm, maroon, with multicellular glandular hairs. *Calyx* 5-lobed, lobes free, c. 2 × 0.5–1 mm, glabrous on both sides, dark red at base; lobes pale yellowish to pale greenish. *Corolla* salverform, c. 2 cm long, tubular, asymmetrical, tube 1.5–1.7 cm long, c. 0.5 cm diameter, whitish at least in lower half when mature, purplish-reddish towards lobes; lobes 5, reddish brown to orange brownish inside; upper lip 2-lobed, lobes c. 3 × 2 mm; lower lip 3-lobed, lateral lobes c. 2.2 × 2 mm, middle lobe c. 1.4 × 3 mm, glabrous on both sides. *Stamens* inserted c. 1.5 cm from the corolla base; filaments straight, whitish, glabrous, c. 3 mm long, c. 1 mm wide; anthers coherent, glabrous, c. 2 × 1 mm, white; staminodes absent. *Disc* an annular ring, margin undulate, c. 1 mm high. *Pistil* c. 15 mm long, glabrous; ovary 9–10 mm long, dull maroon; style c. 3 mm long, greenish; stigma c. 1 mm diameter, whitish, glabrous. *Capsules* c. 2 cm long, 3 mm wide, dull maroon turning brown. *Seeds* unknown.

KEY TO THE SPECIES OF *DIDYMOCARPUS* IN THAILAND
(only species newly described here are numbered in the key)

1. Calyx formed into a tube at base with all calyx lobes less than half the length of the calyx
 2. Corolla salverform; tube geniculate or straight
 3. Corolla ≥ 3 cm long (Eastern, Central) **D. epithemoides**
 3. Corolla ≤ 2.5 cm (Northern)
 4. Corolla tube geniculate, dark violet, lobes whitish or pale green; filament slightly geniculate, glabrous, anthers glabrous; staminodes 3 **D. kerrii**
 4. Corolla tube straight, corolla tube and lobes purplish; filaments straight with gland-tipped hairs in the upper part, anthers white-bearded; staminodes 2 **D. purpureopictus**
 2. Corolla funnelform; tube gradually widening from the base to the throat
 5. Corolla < 4 cm long, yellow, white or purplish with dark purple streaks on lobes
 6. Calyx asymmetrical; corolla c. 3.5 cm long
 7. Calyx 3–3.5 mm long; corolla yellow **2. D. flaviflorus**
 7. Calyx 0.8–1 cm long; corolla white **7. D. niveus**
 6. Calyx symmetrical; corolla ≤ 3 cm long
 8. Corolla c. 2.5 cm long, white **6. D. mekongensis**
 8. Corolla c. 1.8 cm long, purplish with dark purple streaks on lobes **D. kasinii**
 5. Corolla ≥ 4 cm long, red, purple or a combination of colours but not predominantly white or yellow
 9. Corolla ≥ 5 cm long; ovary with an indumentum
 10. Corolla 6–7 cm long; ovary covered with multicellular glandular hairs, stigma peltate **D. wattianus**
 10. Corolla c. 6 cm long; ovary sparsely covered with vesicular indumentum, stigma capitate **D. formosus**
 9. Corolla < 5 cm long; ovary glabrous or with an indumentum
 11. Stem not distinct (acaulescent); corolla bright red; ovary glabrous **5. D. kwanjaiae**
 11. Stem distinct; corolla of other colours; ovary glabrous or with an indumentum
 12. Ovary glabrous
 13. Corolla ≥ 4 cm long
 14. Bracts and calyx not inflated, green-maroon to purple without pinkish hue; calyx asymmetrically campanulate or tubular with tube < 1.5 cm long
 15. Corolla c. 4 cm long, dark violet with white lines extending to the base of the anterior lip; staminodes 3, 1–2.5 mm long (Loei) **D. biserratus**
 15. Corolla c. 4.5 cm long, dark purple anterior lip without white lines; staminodes 2, 4–5 mm long (Bueng Kan) **8. D. phuwuaensis**
 14. Bracts and calyx appearing inflated, dull pale violet to white with a faint pinkish hue; calyx symmetrically campanulate with tube c. 1.5 cm long (Phitsanulok) **D. inflatus**
 13. Corolla < 4 cm long
 16. Corolla c. 3 cm long, violet; corolla, ovary and anthers glabrous (Northern) **D. jaesonensis**
 16. Corolla c. 3.5 cm long, crimson-red; corolla and ovary covered with multicellular glandular hairs; anthers white-bearded (Peninsular) **D. megaphyllus**
 12. Ovary pubescent, densely covered with multicellular glandular hairs
 17. Corolla purple-blackish, glabrous (North-Eastern) **D. brevicalyx**
 17. Corolla dark purple, covered with multicellular glandular hairs (Northern) **3. D. hongsonensis**
 1. Calyx with lobes free to the base (i.e., at least 2 sepals free) or with a short calyx tube and the lobes more than half the length of the calyx
 18. Corolla white or pale pinkish throughout
 19. Corolla funnelform
 20. Corolla c. 3 cm long, with violet or maroon streaks; ovary pubescent (Northern) **D. aureoglandulosus**
 20. Corolla c. 1.5 cm long, without streaks; ovary glabrous (Eastern) **D. dongrakensis**
 19. Corolla campanulate or personate
 21. Corolla personate, whitish with a yellow streak below each sinus of the lower lip (Peninsular) **D. corchorifolius**
 21. Corolla campanulate, white or pale pink with dark red streaks on lower three lobes
 22. Corolla white without streaks (South-Eastern) **D. newmanii**
 22. Corolla pale pink with dark red streaks on lower three lobes (Northern & South-Western) **D. pauciflorus**
 18. Corolla yellow, purple, violet, or distinctly reddish at least on lobes
 23. Corolla more or less funnelform
 24. Corolla yellow (Peninsular) **D. citrinus**
 24. Corolla in various colours but not yellow (not in Peninsular)
 25. Calyx irregular, upper lip composed of 2 free lobes, lower lip connate at base, 3-lobed at apex; corolla purple; leaves opposite (Ranong) **D. geesinkianus**
 25. Calyx regular, free, 5-lobed to the base; corolla more or less purple; leaves opposite or ternate (Northern, Eastern and North-Eastern)

26. Leaves ternate; corolla pale violet or purple **D. insulsus**
 26. Leaves opposite; corolla whitish purple or dark purple
 27. Corolla whitish purple, c. 3 cm long, glabrous (Eastern) **4. D. kiewbangii**
 27. Corolla dark purple, c. 3.5 cm long, with multicellular glandular hairs (Northern) **9. D. suchartii**
 23. Corolla salverform or campanulate
 28. Calyx glabrous; corolla salverform
 29. Corolla bicolorous
 30. Corolla tube pale reddish, lower lobes pale green or whitish, upper lobes dark violet-reddish (Loei) **D. bicolor**
 30. Corolla tube whitish, lobes reddish brown to orange brownish inside (Chiang Rai) **1. D. alboroseus**
 29. Corolla not bicolorous, tube and lobes more or less of the same colour
 31. Leaves opposite, anisophyllous; leaves with pigment glands present or absent; anthers bearded or glabrous
 32. Leaves with pigment glands absent; corolla reddish; anthers white-bearded (Peninsular) **D. ovatus**
 32. Leaves with pigment glands present; corolla purplish-whitish, anthers glabrous (Northern) **D. tribounii**
 31. Leaves ternate or 3-pseudoverticillate or congested at the top of stem; pigment glands present; anthers glabrous
 33. Leaves ternate or 3-pseudoverticillate, not silvery above; corolla ≥ 2 cm long, dark violet-reddish (Chanthaburi) **D. tristis**
 33. Leaves congested at the top of stem, silvery above; corolla ≤ 2 cm long, violet (Tak) **10. D. vilaiwaniae**
 28. Calyx pubescent; corolla campanulate
 34. Corolla dark purple; 2.5 mm long (Northern) **D. payapensis**
 34. Corolla white, greenish-white when young; 1.5 mm long (Peninsular) **D. cordatus**

Thailand.—NORTHERN: Chiang Rai [Mae Sai District, Doi Tung (Doi Tung development project), along Wat Noi-Wat Hui Nam Khun trail, ca. 950–1,200 m elev., 22 Aug. 2010, *van de Bult 1039* (CMUB, BKF); *ibid.*, 6 Nov. 2015, *van de Bult 1424* (BKF)].

Distribution.—Only known from the type locality.

Ecology.—On soil embankment in shady and moist area in degraded mixed evergreen and deciduous forest, granite bedrock.

Vernacular.—Krading doi tung (กระดังงอยตุง) (Proposed here).

Etymology.—The specific epithet refers to the corolla colour with the white tube and lobes reddish brown to orange brownish inside.

Provisional IUCN conservation assessment.—Critically Endangered (CR B1ab(iii), B2ab(iii)). The species is only known from the type locality with about 50 mature individuals. Although the exact Extent of Occurrence and Area of Occupancy are unknown, it is unlikely they exceed the thresholds for CR. The small population size is not included in the assessment as it may exceed the threshold for CR but is nevertheless a cause for concern. The species is not in a protected area and the known population occurs along a trail up to a temple with considerable footfall and possibilities of further development (pers. obs.).

2. *Didymocarpus flaviflorus* Nangngam, Suksathan & Rujich., **sp. nov.**

This species is similar to *Didymocarpus citrinus* Ridl. in the corolla colour but they differ in corolla size (c. 3.5 cm long in *Didymocarpus flaviflorus*, 2–2.7 cm long in *D. citrinus*), calyx shape (tubular in *Didymocarpus flaviflorus*, lobes free in *D. citrinus*), and in leaf shape and margin (elliptic-oblong and denticulate in *D. flaviflorus*, ovate to ovate-lanceolate and serrate in *D. citrinus*). Type: Cultivated plant originally from Thailand, Chiang Rai Province, Wiang Chai District, limestone mountain, 400–500 m elev., plant flowering at QSBG nursery, voucher specimen collected 4 July 2024 as *W. Rujichaipimon* 279 (holotype **QBG!**). Fig. 2.

Epilithic, perennial herb, 10–20 cm tall. *Stem* slender, green, all vegetative parts densely covered with whitish multicellular glandular hairs. *Dry season*: (dormant period) not seen. *Rainy season*: *Leaves* opposite, anisophyllous; petioles 2.5–4 cm long; blade dark green above, pale green beneath, elliptic-oblong, 2–4.5 $\times$ 1.5–2 cm, apex acute, base oblique, margin denticulate; secondary veins 3–5 on each side. *Inflorescences* terminal, dichasial cymes (compound cymes), 5–15-flowered, 5–10 cm long, axes with dense multicellular glandular hairs; peduncles 2–5 cm long, pale reddish; bracts 2, paired, rounded, c. 4 $\times$ 3 mm, glabrous on both sides, pale green, caducous; pedicels 0.3–0.4 cm long, pale green-reddish, with multicellular glandular hairs.



Figure 1. *Didymocarpus alboroseus* Nangngam & van de Bult: A. habit showing leaves and dichasial cyme inflorescence; B. corolla shape; C. flower in bud and immature capsule. Photographs: All by Thanakorn Wongsu.

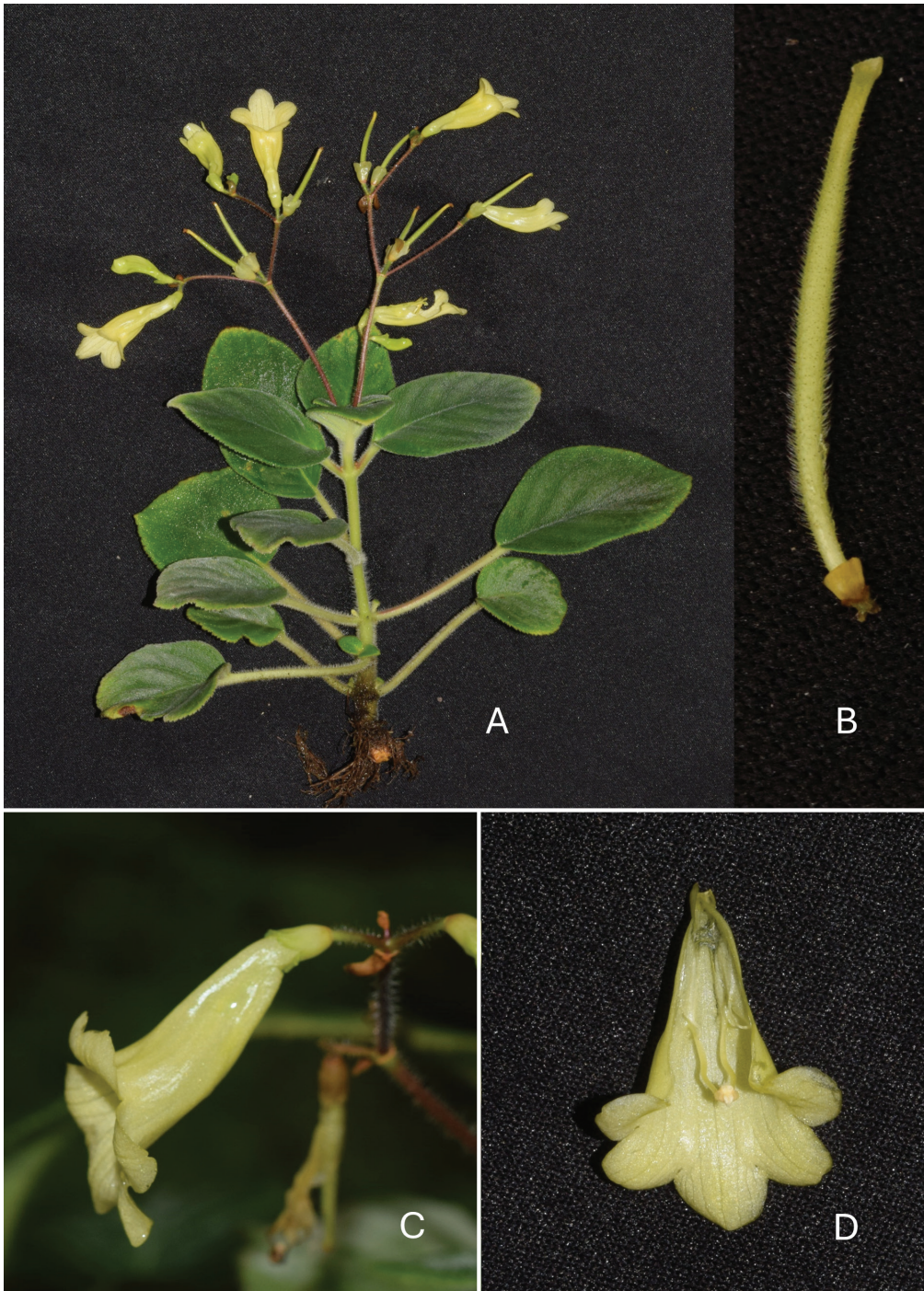


Figure 2. *Didymocarpus flaviflorus* Nangngam, Suksathan & Rujich.: A. habit showing leaves and dichasial cyme inflorescence; B. pistil; C. flower side view; D. opened flower showing stamens and staminodes. Photographs: All by Wirata Rujichaipimon.

Calyx formed into a tube at base, tube 3–3.5 mm long, slightly asymmetrical, upper lobes 3-lobed, lower lobes 2-lobed, unequal in length, 1–1.5 mm long, apex acute to rounded, glabrous on both sides, pale yellowish to pale greenish. *Corolla* funnelform, c. 3.5 cm long, bilabiate; tube narrow in the lower half, 3 mm diameter, widening in the upper half, c. 3 cm long, yellow towards lobes; lobes 5, upper lip 2-lobed, lobes c. 4 × 3 mm; lower lip 3-lobed, lateral lobes c. 2.4 × 3 mm, middle lobe c. 1.6 × 4 mm, apex rounded, glabrous on both sides. *Stamens* inserted at half-length of corolla tube (c. 1.5 cm); filaments slightly geniculate (knee-like), yellow, glabrous, c. 5 mm long, c. 0.5 mm wide; anthers coherent, locules oblong, c. 1.5 × 0.5 mm, bearded, yellow to pale pinkish; staminodes 3, reduced to filaments, c. 1–2 mm long, glabrous. *Disc* an annular ring, margin entire, c. 1 mm high. *Pistil* c. 1.5 cm long, densely covered with multicellular hairs without glands, green; stigma peltate, c. 0.5 mm diameter, pale greenish-yellowish, glabrous. *Capsules* c. 2 cm long, green. *Seeds* not seen.

Thailand.—NORTHERN: Chiang Rai [Cultivated plant originally from Wiang Chai District, Pha Ngam Subdistrict, 400–500 m elev., 4 July 2024, *Rujichaipimon 279 (QBG)*].

Distribution.— Only known from the type locality.

Ecology.— Epilithic, on an open limestone mountain.

Vernacular.— Krading lueang wiangchai (กระดังเผือกเวียงชัย) (Proposed here).

Etymology.— The specific epithet refers to the bright yellow corolla.

Provisional IUCN conservation assessment.— Vulnerable (VU D2). Although the population size, Extent of Occurrence and Area of Occupancy are not accurately known, the species is only known from the type locality which is not in a protected area and hence subject to disturbance and possible development.

3. *Didymocarpus hongsonensis* Nangngam, Punchay & Suksathan, **sp. nov.**

This species is similar to *Didymocarpus suchartii* Nangngam, Maked & Suddee in having a dark purple funnelform corolla, but differs in having

the calyx formed into a tube at base (calyx lobes free in *Didymocarpus suchartii*). Type: Thailand, Mae Hong Son Province, Mueang District, Namtok Mae Surin National Park, Doi Hua Kai, Huai Pu Ling, 19°12'59.45"N, 98°3'57.11"E, 1,645 m elev., 12 July 2025, *K. Punchay, P. Suksathan, U. Kuna & Y. Nanthaisong ANN50* (holotype **QBG!**). Fig. 3.

Epilithic, perennial herb, to 0.5–1 cm tall. *Stem* slender, dark green, and all vegetative parts densely covered with whitish multicellular glandular hairs. *Dry season*: (dormant period) not seen. *Rainy season*: *Leaves* opposite, decussate, anisophyllous; petioles 0.3–0.8 cm long, pubescent as on stem; blades dark green above, pale green beneath, ovate, elliptic-oblong or obovate, 1.5–4 × 1.3–1.5 cm, apex acute, obtuse or rounded, base cuneate, margin serrate; secondary veins 3–5 on each side. *Inflorescences* arising from leaf axils, cyme 1-flowered, 2–3 cm long; peduncles c. 2 cm long, densely covered with multicellular eglandular hairs; bracts 2, paired, ovate, c. 3 × 3 mm, glabrous inside, glandular hairs outside, pale green, caducous; pedicels 2–3 cm long, pale green, with multicellular glandular hairs. *Calyx* formed into a tube at base, symmetrical, tube c. 3.5–4 mm long, 3–4 mm diameter, 5-lobed, each lobe c. 2–3 mm long, apex acute, outside covered with multicellular glandular hairs, inside glabrous, pale green. *Corolla* funnelform, c. 4.5 cm long, bilabiate, dark purple; tube 3–3.5 cm long, covered with multicellular glandular hairs, inside glabrous, corolla tube narrow in lower half, c. 2 mm diameter, widening in upper half towards corolla lobes, diameter at throat c. 10 mm; lobes 5, upper lip 2-lobed, lobes c. 8 × 6 mm, lower lip 3-lobed, lateral lobes c. 6 × 8 mm, middle lobe c. 6 × 10 mm, apex rounded, outside covered with multicellular glandular hairs, inside glabrous. *Stamens* inserted at c. 2 cm from base of corolla; filaments 2, almost straight, glabrous, c. 8 mm long; anthers coherent, locules oblong, c. 2 × 1 mm, bearded; staminodes 3, reduced to filaments, c. 1–4 mm long, glabrous. *Disc* an annular ring, margin undulate, c. 2 mm high. *Pistil* c. 2.5 cm long, all parts covered with multicellular glandular hairs, pale green; stigma peltate, glabrous. *Capsules* c. 3 cm long. *Seeds* not seen.

Thailand.—NORTHERN: Mae Hong Son [Mueang District, Namtok Mae Surin National Park, Doi Hua Kai, Huai Pu Ling, 1,645 m elev., 12 July 2025, *Punchay et al. ANN50 (QBG)*].

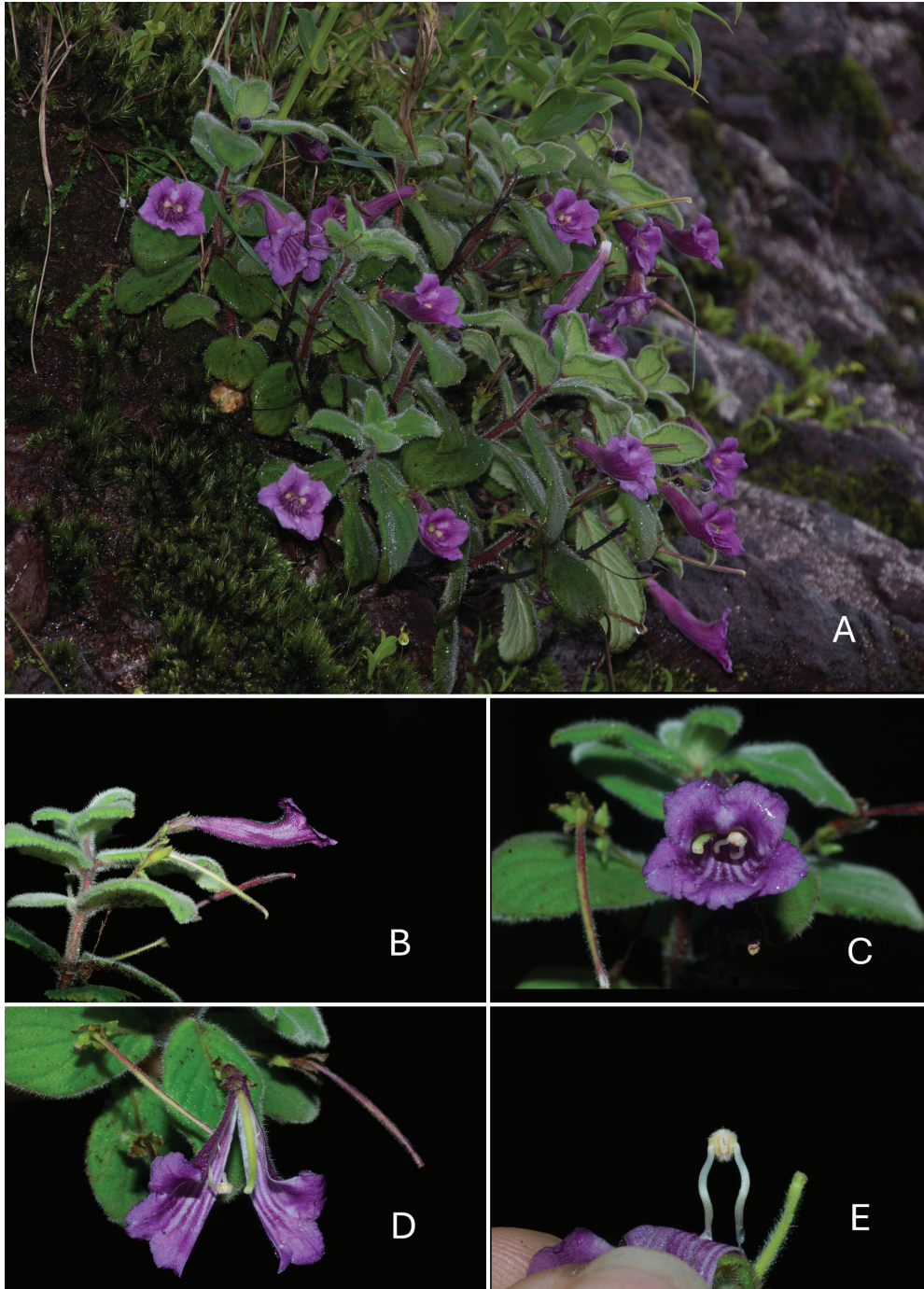


Figure 3. *Didymocarpus hongsonensis* Nangngam, Punchay & Suksathan: A. habit and habitat; B. corolla front view and young fruits; C. corolla shape side view; D. opened flower showing stamens, staminodes and pistil; E. stamens showing anthers coherent. Photographs: All by Kittiyut Punchay.

Distribution.— Only known from the type locality.

Ecology.— Epilithic, on mossy rock crevices on an open vertical cliff.

Vernacular.— Muang sam mok (ม่วงสามหมอก) (Proposed here).

Etymology.— The specific epithet refers to Mae Hong Son Province, the type locality.

Provisional IUCN conservation assessment.— Data Deficient (DD). The species is only known from the type collection and it is not possible to calculate the population size, Extent of Occurrence and Area of Occupancy. However, Namtok Mae Surin National Park is a protected area, thereby offering protection to the habitat where it is found.

4. *Didymocarpus kiewbangii* Nangngam & Suddee, **sp. nov.**

This species is similar to *Didymocarpus insulsus* Craib in general appearance and in having 5 free calyx lobes but differs in the leaf arrangement and a longer corolla (leaves opposite and corolla c. 3 cm long in *D. kiewbangii*, ternate and c. 2.5 cm long in *D. insulsus*). Type: Thailand, Ubon Ratchathani Province, Nam Yuen District, Yoddom Wildlife Sanctuary, 451 m elev., 20 July 2017, *P. Puudjaa, C. Hemrat & W. Keiwbang* 2057 (holotype **BKF!** [SN218057]; isotype **BKF!** [SN218056]). Fig. 4.

Epilithic, perennial herb, to 25 cm tall. *Stem* slender, green, all vegetative parts densely covered with whitish multicellular eglandular hairs. *Dry season*: (dormant period) not seen. *Rainy season*: *Leaves* opposite, decussate, anisophyllous; petioles 2–8 cm long, pubescent as on stem; blades dark green above, pale green beneath, orbicular-elliptic, 3–10 × 2.5–6 cm, apex acute, base oblique, margin serrulate; secondary veins 6–7 on each side. *Inflorescences* terminal, dichasial cymes (compound cymes), 12–15 cm long, 5–20-flowered, axes with dense multicellular glandular hairs; peduncles 8–10 cm long, pale green; bracts 2, paired, rounded, c. 2 × 3 mm, glabrous on both sides, pale green, caducous; pedicels 1.5–3.5 cm long, pale green, with multicellular glandular hairs. *Calyx* 5-lobed, lobes free, c. 3 × 1 mm, symmetrical, glabrous, dull reddish maroon. *Corolla* funnellform, c. 3 cm long, bilabiate; tube c. 2.5 cm long, lower half narrow,

c. 2 mm diam., widening in the upper half, c. 8 mm diam., glabrous, whitish-purplish; lobes 5, upper lip 2-lobed, lobes c. 3 × 4 mm, lower lip 3-lobed, lateral lobes c. 3 × 4 mm, middle lobe c. 4 × 5 mm, apex rounded, glabrous on both sides, dark purple. *Stamens* inserted at c. 2 cm from base of corolla; filaments straight, yellowish, glabrous, 5–7 mm long, slender; anthers coherent, locules oblong, c. 1.5 × 0.5 mm, bearded, yellow to whitish; staminodes 3, reduced to filaments, c. 2–4 mm long, glabrous. *Disc* an annular ring, margin entire, 1–2 mm high. *Pistil* c. 2.5 cm long, glabrous, pale green; stigma peltate, c. 1 mm diameter, whitish, glabrous. *Capsules* c. 5 cm long, green. *Seeds* not seen.

Thailand.— EASTERN: Ubon Ratchathani [Nam Yuen District, Yoddom Wildlife Sanctuary, 451 m elev., 14°24'25"N, 104°59'8.9"E, 20 July 2017, *Puudjaa et al.* 2057 (**BKF!**)].

Distribution.— Only known from the type locality.

Ecology.— Epilithic, in shade on wet rock in dipterocarp forest.

Vernacular.— Muang si kieobang (ม่วงศรีเขียวบาง) (Proposed here).

Etymology.— The specific epithet is given in honour of Mr Wittawat Kiewbang, a former BKF staff member who has accompanied botanists to various parts of the country and contributed valuable photographs and specimens.

Provisional IUCN conservation assessment.— Data Deficient (DD). The species is only known from the type collection and it is not possible to calculate the population size, Extent of Occurrence and Area of Occupancy. However, Yoddom Wildlife Sanctuary is a protected area, thereby offering protection to the habitat where it is found.

5. *Didymocarpus kwanjaiae* Nangngam & Suddee, **sp. nov.**

This species is similar to *Didymocarpus middletonii* Souvann., Soulad. & Tagane from Laos in the red corolla colour but differs in the calyx tube campanulate and glabrous (tube campanulate and glabrous in *D. kwanjaiae*, tube urceolate and with multicellular eglandular hairs in *D. middletonii*). Type: Thailand, Nakhon Phanom Province, Natom District, Huay Xai Waterfall, Phu Langka National



Figure 4. *Didymocarpus kiewbangii* Nangngam & Suddee: A. habit and habitat, shady area on wet rock in dipterocarp forest; B. dichasial cyme inflorescence; C. corolla shape, front view and side view. Photographs: All by Wittawat Kiewbang.

Park, 215 m elev., 11 Oct. 2021, *K. Khammongkol et al.* KK239 (holotype **BKF!** [SN215111]; isotypes **BKF!** [SN215112], **E, K, SING, TCD**). Fig. 5.

Epilithic, perennial herb. *Stem* acaulescent. *Dry season*: (dormant period) leaves opposite, anisophyllous; petioles short; blades pale green on both sides, lanceolate-ovate, $0.8\text{--}3.5 \times 0.3\text{--}1$ cm, apex acute, base oblique, margin serrate, densely covered with multicellular eglandular hairs on both sides. *Rainy season*: leaves simple, opposite, only 1–2 pairs; petioles 3.5–8 cm long, pale green, sparsely pubescent with multicellular eglandular hairs; blades dark green above, pale green below, sparsely pubescent with multicellular, eglandular hairs on both sides, ovate-oblong, $18\text{--}20 \times 8\text{--}12$ cm, apex acute or acuminate, base oblique, obtuse to subcordate, margin denticulate towards base, dentate towards apex; secondary veins 5–7 on each side, impressed above, prominent below. *Inflorescences* arising from leaf axils, cyme 3–5-flowered, 5–10 cm long; axes with dense multicellular glandular hairs, dull reddish-greenish; peduncles 12–13 cm long, pale green to dull reddish; bracts 2, paired, oblong, c. 5×4 mm, glabrous on both sides, pale green, caducous; pedicels 2–2.5 cm long, pale green-reddish, with multicellular glandular hairs. *Calyx* formed into a campanulate tube at base, c. 5 mm long, 5-lobed, lobes 1–1.5 mm long, apex acute, slightly reflexed, glabrous on both sides, pale green. *Corolla* funnelform, c. 4 cm long, bright red; tube c. 3.5 cm, slender or narrow in lower half, 2–3 mm diameter, then widening in upper half towards corolla lobes, c. 1 cm diameter; lobes 5, upper lip 2-lobed, lobes c. 4×5 mm, lower lip 3-lobed, lobes c. 4×4 mm, apex rounded, glabrous on both sides. *Stamens* inserted at c. 2 cm from base of corolla; filaments slightly geniculate (knee-like), pale green, glabrous, c. 15 mm long, c. 0.5 mm wide; anthers coherent, locules orbicular, c. 2×2 mm, bearded, cream; staminodes 3, 2 reduced to filaments, c. 8 mm long, 1 short, 1–2 mm long, glabrous. *Disc* an annular ring, margin entire, 1–2 mm high. *Pistil* c. 3 cm long, glabrous; ovary pinkish at base, otherwise pale green; stigma peltate, 1.5–2 mm diameter, cream, glabrous. *Capsules* 5.5–6 cm long, c. 2 mm diameter, dark green. *Seeds* not seen.

Thailand.—NORTH-EASTERN: Nakhon Phanom Province [Natom District, Huay Xai waterfall, Phu Langka National Park, 215 m elev., 11 Oct. 2021,

Khammongkol et al. KK239 (**BKF**); *ibid.*, 13 Oct. 2024, *Khammongkol et al.* 2851 (**BKF**).

Distribution.—Only known from the type locality.

Ecology.—Epilithic, dry evergreen forest, wet areas along stream by waterfall.

Vernacular.—Krading Daeng Phaseeda (กระดังแดงพาสีตา) (Proposed here).

Etymology.—The specific epithet is given in honour of Dr Kwanjai Khammongkol, the former chief assistant of Phu Langka National Park and the collector of the known specimens.

Provisional IUCN conservation assessment.—Data Deficient (DD). The species is only known from the type locality and it is not possible to calculate the population size, Extent of Occurrence and Area of Occupancy. However, Phu Langka National Park is a protected area, thereby offering protection to the habitat where it is found.

6. *Didymocarpus mekongensis* Nangngam & Suddee, **sp. nov.**

This species is similar to *Didymocarpus biserratus* Barnett in having a united and glabrous calyx tube and a funnelform and glabrous corolla but differs in having a symmetrical tubular white-cream and greenish-whitish calyx tube and a white corolla (asymmetrical green-maroon to purple campanulate calyx tube and dark violet corolla in *D. biserratus*). It is also similar to *D. niveus* in the white corolla but differs in the symmetrical calyx (asymmetrical in *D. niveus*) and corolla size (c. 2.5 cm long in *D. mekongensis*, c. 3.5 cm long in *D. niveus*). Type: Thailand, Bueng Kan Province, Bueng Khong Long District, Phu Langka National Park, trail to summit from Phra That Ranger substation, 511 m elev., 12 Sept. 2018, *S. Suddee, P. Puudja, C. Hemrat & W. Kiewbang* 5362 (holotype **BKF!** [SN269001], isotypes **BKF!** [SN269002, SN269003]) Fig. 6.

Epilithic, perennial herb. *Stem* to 25 cm tall. *Dry season*: (dormant period) leaves opposite, decussate, anisophyllous; petioles short; blades brownish on both sides, c. 1.5×1 cm, ovate, apex acute, base slightly oblique, margin serrate, densely covered with multicellular eglandular hairs on both sides. *Rainy season*: stem to 25 cm tall, all vegetative



Figure 5. *Didymocarpus kwanjaiae* Nangngam & Suddee: A. Habit and habitat; B. flower showing calyx and corolla shape; C. opened corolla showing stamens, staminodes and pistil; D. flower bud. Photographs: All by Kwanjai Khammongkol.



Figure 6. *Didymocarpus mekongensis* Nangngam & Suddee: A. habitat, shady and moist areas in dry evergreen forest, B. & C. inflorescences showing flowers and immature fruits. Photographs: All by Wittawat Kiewbang.

parts densely covered with multicellular eglandular hairs. *Leaves* simple, slightly alternate and clustered 3–4-leaved; petioles 3.5–5.5 cm long, pale green; blades green above, pale green below, sparsely pubescent with multicellular, eglandular hairs on both sides, ovate-oblong, 8–12 × 5–7 cm, apex acute, base oblique, cuneate, margin serrate in lower third of blade, dentate-biserrate in upper two-thirds of blade; secondary veins 4–5 on each side, impressed above, prominent below. *Inflorescences* 2–3 arising from leaf axils, cymes, 3–5-flowered, 3–5 cm long; peduncles c. 2 cm long, sparsely covered with multicellular eglandular hairs, pale green; bracts 2, paired, c. 4 × 4 mm, rounded-ovate, apex rounded-acute, pubescent outside, glabrous inside, pale green, persistent; pedicels 0.6–0.8 cm long, glabrous, pale green-whitish. *Calyx* formed into a tube at base, symmetrical, tube c. 5 mm long, 2–3 mm diameter, 5-lobed, lobes 1–1.5 mm long, apex acute, glabrous on both sides, white-cream and greenish-whitish. *Corolla* funnelform, c. 2.5 cm long, white; tube c. 1.5–2 cm long, lower half slender or narrow, c. 3 mm diameter, upper half widening towards corolla lobes, c. 8 mm diameter at throat; corolla lobes 5, upper lip 2-lobed, lobes c. 3 × 4 mm, lower lip 3-lobed, lateral lobes c. 4 × 6 mm, middle lobe c. 5 × 6 mm, apex rounded, glabrous on both sides. *Stamens* inserted at c. 1.5 cm from base of corolla; filaments straight, whitish, glabrous but glandular below anthers, c. 4 mm long, c. 0.5 mm wide; anthers coherent, locules orbicular, 1–1.5 mm diameter, bearded, cream; staminodes 3, 2 reduced to filaments, c. 8 mm long, 1 short, 1–2 mm long, glabrous. *Disc* an annular ring, margin entire, 1–2 mm high. *Pistil* c. 2 cm long, pubescent, with multicellular, eglandular hairs; ovary pale green; stigma peltate, c. 1 mm diameter, cream, glabrous. *Capsules* c. 2.5 cm long, c. 2 mm diameter, green. *Seeds* not seen.

Thailand.— NORTH-EASTERN: Bueng Kan Province [Bueng Khong Long District, Phu Langka National Park, trail to summit from Phra That Ranger substation, 511 m elev., 12 Sept. 2018, *Suddee et al.* 5362 (BKF)].

Distribution.— Only known from the type locality.

Ecology.— Epilithic in dry evergreen forest.

Vernacular. — Krading Khao Lam Kong (กระดังงาหลวง)(Proposed here).

Etymology.— The specific epithet refers to the Mekong Basin, the type locality.

Provisional IUCN conservation assessment.— Data Deficient (DD). The species is only known from the type collection and it is not possible to calculate the population size, Extent of Occurrence and Area of Occupancy. However, Phu Langka National Park is a protected area, thereby offering protection to the habitat where it is found.

7. *Didymocarpus niveus* Nangngam, Vidthay., Wongsasuddee, *sp. nov.*

This species is similar to *Didymocarpus mekongensis* Nangngam & Suddee in its white funnelform corolla but differs in having a longer calyx tube and corolla (calyx tube 8–10 mm long and corolla c. 3.5 cm long in *D. niveus* vs calyx tube c. 5 mm long and corolla c. 2.5 cm long in *D. mekongensis*). Type: Tak Province, Mae Ramat District, Khun Phawo National Park, trail to Khun Phawo waterfall, 761 m elev., 31 July 2024, *V. Chamchumroon VC5975* (holotype BKF! [SN215102]). Fig 7.

Terrestrial, epilithic, perennial herb, up to 25 cm tall. *Dry season*: (dormant period) leaves opposite, decussate, anisophyllous; petioles short; blades brownish on both sides, 1.5 × 1 cm, ovate, apex acute, base slightly oblique, margin serrate, densely covered with multicellular eglandular hairs on both sides. *Rainy season*: vegetative parts densely covered with multicellular eglandular hairs. *Leaves* simple, slightly alternate and clustered 3–4-leaved; petioles 3.5–5.5 cm long, pale green; blades green above, pale green below, sparsely pubescent with multicellular, eglandular hairs on both sides, ovate-oblong, 8–12 × 5–7 cm, apex acute, base oblique, cuneate, margin 1/3 of blade serrate towards base, 2/3 dentate-biserrate towards apex; secondary veins 4–5 on each side, impressed above, prominent below. *Inflorescences* 2–3 arising from leaf axils, cyme 3–5-flowered, 3–5 cm long; peduncles c. 2 cm long, sparsely covered with multicellular eglandular hairs, pale green; bracts 2, paired, 4–8 × 4–3 mm, rounded-ovate, apex rounded-acute, pubescent outside, glabrous inside, pale green, persistent; pedicels 0.6–0.8 cm long, glabrous, pale green-whitish. *Calyx* formed into a campanulate tube at base, asymmetrical, tube 8–10 mm long, 2–3 mm diameter, 5-lobed,

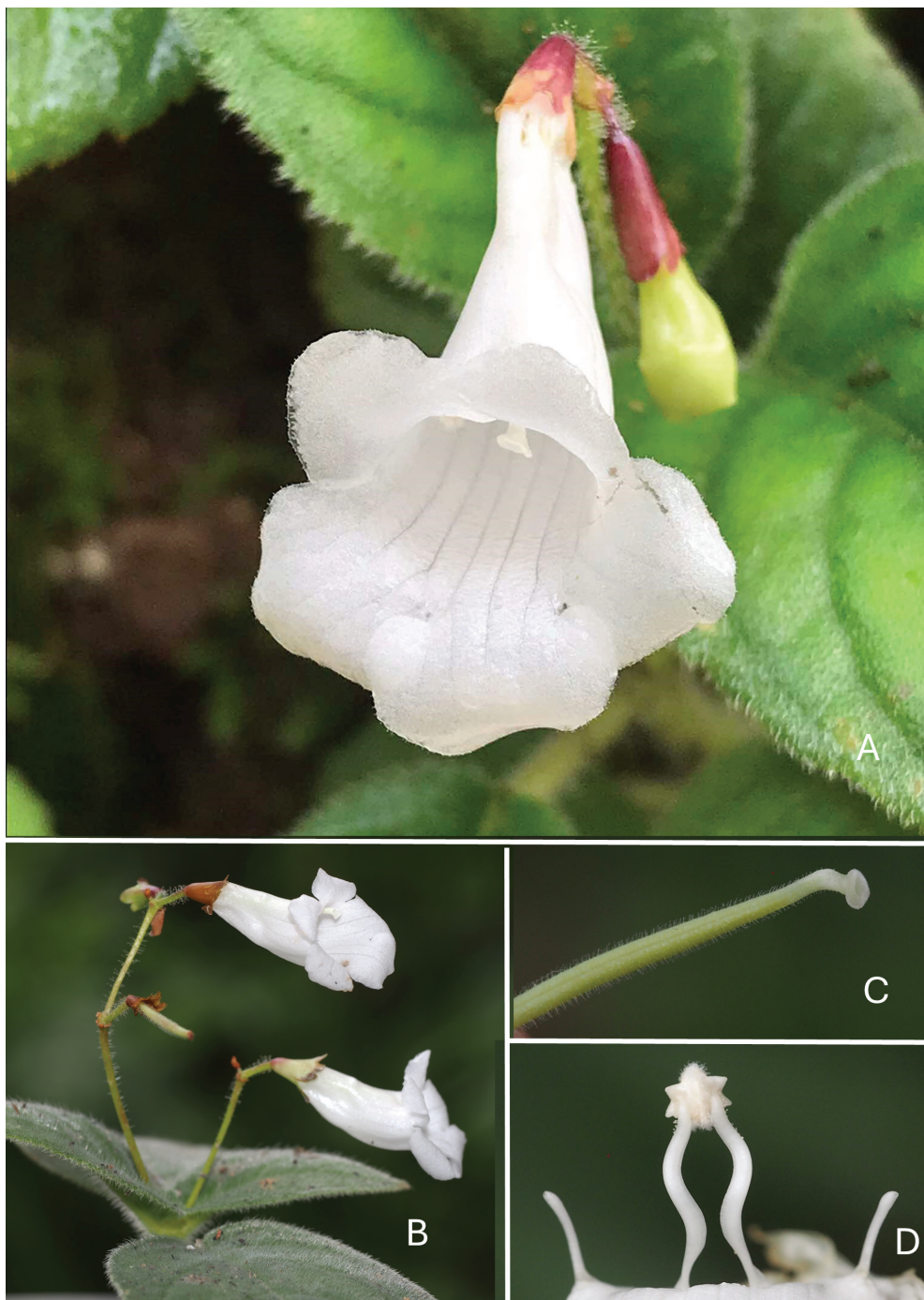


Figure 7. *Didymocarpus niveus* Nangngam, Vidthay., Wongs & Suddee: A. corolla front view; B. inflorescence, cyme 3–5-flowered; C. ovary and stigma. D. stamens showing anthers coherent and 2 longer staminodes. Photographs: A–B by Pranee Nangngam; C by Thanakorn Wongs.

lobes 1.5–2 mm long, apex acute, glabrous on both sides, white-cream and greenish-whitish. *Corolla* funnelform, c. 3.5 cm long, white; tube c. 2.5 cm long, lower half slender or narrow, c. 3 mm diameter, upper half widening towards corolla lobes, diameter at throat c. 8 mm; lobes 5, upper lip 2-lobed, lobes c. 7 × 8 mm, lower lip 3-lobed, lateral lobes c. 7 × 6 mm, middle lobe c. 10 × 10 mm, apex rounded, glabrous on both sides. *Stamens* inserted at c. 1 cm from base of corolla; filaments straight, whitish, glabrous but glandular below anthers, c. 8 mm long, c. 1 mm wide; anthers coherent, locules orbicular, c. 1.5 × 2 mm, basally bearded, cream; staminodes 3, 2 reduced to filaments, c. 3 mm long, 1 short, c. 1 mm long, glabrous. *Disc* an annular ring, margin entire, 1–2 mm high. *Pistil* c. 2 cm long, pubescent, multicellular, eglandular hairs; ovary pale green; stigma peltate, c. 1 mm diameter, cream, glabrous. *Capsules* c. 2.5 cm long, c. 2 mm diameter, green. *Seeds* not seen.

Thailand.— NORTHERN: Tak Province [Mae Ramat District, Khun Phawo National Park, trail to Khun Phawor waterfall, 761 m elev., 31 July 2024, *Chamchumroon VC5975 (BKF)*. *ibid.*, 10 Aug. 2024, *Nangngam 2850 (BKF)*].

Distribution.— Only known from the type locality.

Ecology.— Dry evergreen forest. 700–800 m elev.

Vernacular.— Krading Khao Khun Phawo (กระดังขาวขุนพะวอ)(Proposed here).

Etymology.— The specific epithet refers to the snow-white colour of the corolla.

Provisional IUCN conservation assessment.— Data Deficient (DD). The species is only known from the type locality and it is not possible to calculate the population size, Extent of Occurrence and Area of Occupancy. However, Khun Phawo National Park is a protected area, thereby offering protection to the habitat where it is found.

8. *Didymocarpus phuwuaensis* Nangngam, D.J.Middleton & Suddee, **sp. nov.**

This species is similar to *Didymocarpus formosus* Nangngam & D.J.Middleton in the large paired bracts and funnelform corolla but differs in having bracts not embracing the calyx in bud, a

tubular calyx tube, and a dark purple corolla (bracts embracing calyx in bud, campanulate calyx tube, and dark red maroon corolla in *D. formosus*). Type: Thailand, Bueng Kan Province, Seka District, Phu Wua Wildlife Sanctuary, Chet Si Waterfall, 18°09'34"N, 103°57'05"E, 217 m. elev., 14 Sept. 2018. Dry evergreen forest along stream. *S. Suddee, P. Puudjaa, C. Hemrat & W. Kiewbang 5375* (holotype **BKF!** [SN258505], isotype **BKF!** [SN268991]). Fig. 8.

Terrestrial, perennial herb, up to 40 cm tall. *Dry season*: (dormant period) stem acaulescent, arising from the stem base; all parts densely covered with multicellular eglandular hairs; blades c. 1 × 1 cm, pale green. *Rainy season*: stem to 20 cm high, all vegetative parts densely covered in multicellular eglandular hairs. *Leaves* simple, opposite, decussate, anisophyllous; petioles 1.5–5 cm long, pale green; blades dull green above, dull pale green below, pubescent on both sides, ovate-oblong, 10–15 × 3–3.5 cm, apex acute-acuminate, base oblique, cuneate, margin serrulate; secondary veins 4–5 on each side, impressed above, prominent below. *Inflorescences* arising from upper leaf axils, simple cymes (monochasial cymes), 4–5-flowered, 18–20 cm long; peduncles c. 7 cm long, sparsely covered with multicellular eglandular hairs, pale green; bracts 2, paired, not embracing calyx in bud, c. 6 × 6 mm, rounded, apex rounded-acute, glabrous on both sides, pinkish purple; pedicels 0.2–0.3 cm long, glabrous, pale green. *Calyx* formed into a tube at base, slightly asymmetrical, c. tube 8–10 mm long, 2–3 mm diameter, 5-lobed, lobes c. 2 × 2 mm, apex acute, glabrous on both sides, pinkish purple. *Corolla* funnelform, c. 4.5 cm long, dark purple; tube c. 3.5 cm, lower half slender or narrow, 2–3 mm diameter, upper half widening towards corolla lobes, c. 8 mm diameter at throat; lobes 5, upper lip 2-lobed, lobes c. 5 × 5 mm, lower lip 3-lobed, lateral lobes c. 3 × 5 mm, middle lobe c. 3 × 3 mm, apex rounded, glabrous on both sides. *Stamens* inserted at c. 2 cm from base of corolla; filaments almost straight, whitish, glabrous, c. 10 mm long; anthers coherent, locules oblong, c. 3 × 0.5 mm, bearded; staminodes 2, reduced to filaments, c. 4–5 mm long, glabrous. *Disc* an annular ring, margin entire, c. 2 mm high. *Pistil* c. 3.5 cm long, glabrous; ovary pale green; stigma peltate, c. 2–3 mm diameter, cream, glabrous. *Capsules* c. 5.5 cm long, c. 2 mm diameter, greenish purple. *Seeds* not seen.



Figure 8. *Didymocarpus phuwaensis* Nangngam, D.J.Middleton & Suddee: A. habit; B. capsules; C. inflorescence and front view of corolla; D. side view of corolla. Photographs: All by Wittawat Kiewbang.

Thailand.— NORTH-EASTERN: Bueng Kan Province [Buengkan: Bung Khla: Phu Wua Wildlife Sanctuary. Trail on plateau. 320 m altitude, 18°14'1.0"N, 103°57'50.0"E, 300 m elev., 5 Aug. 2015, *Middleton et al.* 5904 (**BKF**); Bung Khla District, Phu Wua Wildlife Sanctuary, 18°14'14"N, 103°57'38"E, 300 m elev., 30 July 2008, *Pooma et al.* 7325 (**BKF**); Bung Khla District, Phu Wua Wildlife Sanctuary, 18°5'N, 103°59'E, 400 m elev., 9 Aug. 2004, *Nielsen et al.* 1583 (**BKF**); Seka District, Phu Wua Wildlife Sanctuary, Chet Si Waterfall, 18°09'34"N, 103°57'05"E, 217 m elev. 14 Sept. 2018, *Suddee et al.* 5375 (**BKF**)].

Distribution.— Only known from Phu Wua Wildlife Sanctuary.

Ecology.— Along streams in dry evergreen forest with sandstone bedrock, mixed deciduous forest on sandstone plateau, 200–600 m elev.

Vernacular.— Khao kam phu wua (ข้าวกำภูว) (Proposed here).

Etymology.— The specific epithet refers to Phu Wua Wildlife Sanctuary, the type locality.

Provisional IUCN conservation assessment.— Vulnerable (VU D1). The species is known from several localities within the protected area of Phu Wua Wildlife Sanctuary with an estimated total population size of about 500 mature individuals. Although there is no evidence of a population decline, the overall small size of the population places it as Vulnerable.

9. *Didymocarpus suchartii* Nangngam, Maked & Suddee, **sp.nov.**

This species is similar to *Didymocarpus megaphyllus* Barnett in the corolla covered with multicellular glandular hairs but differs in having calyx lobes free, ovary with multicellular glandular hairs, corolla dark purple (calyx formed into a campanulate tube at base, ovary glabrous, corolla crimson-red in *D. megaphyllus*). Also similar to *D. hongsonensis* in having a dark purple funnellform corolla but differs in having calyx lobes free (formed into a tube at base in *D. hongsonensis*). Type: Thailand, Tak Province, Umphang District, Umphang Wildlife Sanctuary, Umphang Khi village, along the Umphang stream (a tributary of Mae Klong River originating from Mae Wong National Park), 900–1,100 m elev.,

7 Sept. 2013, *P. Nangngam, S. Chanhormhual & W. Maked* 2069 (holotype **BKF**! [SN215100]). Fig. 9.

Epilithic, perennial herb on granite bedrock. *Dry season*: (dormant period) not seen. *Rainy season*: stem 15–20 cm tall, glabrous, pale green. *Leaves* simple, opposite, decussate, anisophyllous; petioles 2–8 cm long, pale green; blades green above, pale green beneath, pubescent on both sides, ovate-oblong, 5–13 × 3–5 cm, apex acute-acuminate, base oblique, cuneate, margin shallowly crenulate; secondary veins 6–7 on each side, impressed above, prominent below. *Inflorescences* 2–3 in upper leaf axils, simple cymes (monochasial cymes), 3–12-flowered, 8–10 cm long; peduncles 2–4 cm long, sparsely covered with multicellular glandular hairs, pale green-dull reddish; bracts 2, paired, c. 2 × 1 mm, rounded, apex rounded-acute, glabrous on both sides, pale green; pedicels 1.5–2 cm long, covered with multicellular glandular hairs, pale green. *Calyx* 5-lobed, lobe free, basal slightly tubular, tube c. 1 mm long, lobes c. 2 × 1 mm, apex acute, reflexed, glabrous on both sides, pale dull reddish. *Corolla* funnellform, c. 3.5 cm long, bilabiate, dark purple; tube 2.8–3 cm long, lower half slender or narrow, c. 3 mm diameter, upper half widening towards corolla lobes, diameter at throat c. 20 mm; lobes 5, upper lip 2-lobed, lobes c. 2 × 2 mm, lower lip 3-lobed, lateral lobes c. 3 × 3 mm, middle lobe c. 3 × 1 mm, apex rounded, outside covered with multicellular glandular hairs, insides glabrous. *Stamens* inserted at c. 2 cm from base of corolla; filaments almost straight, whitish, lower half with glandular hairs, upper half glabrous, c. 7 mm long; anthers coherent, locules oblong, c. 2 × 1 mm, glabrous; staminodes 2, reduced to filaments, c. 1–4 mm long, glabrous. *Disc* an annular ring, margin undulate, c. 2.8 mm high. *Pistil* c. 3 cm long; ovary glabrous at very base for 1 mm, otherwise with multicellular glandular hairs, pale green; style c. 0.8 mm long, glabrous; stigma peltate, cream, glabrous. *Capsules* 3.5–5 cm long, 1–2 mm diameter, greenish. *Seeds* not seen.

Thailand.— NORTHERN: Tak [Umphang District, Umphang Wildlife Sanctuary, Umphang Khi village and Mae Klong Khi village, Mo Kro Subdistrict, beside Umphang stream (a tributary of Mae Klong stream from Mae Wong National park), 900–1,100 m elev., 7 Sept. 2013, *Nangngam et al.* 2069 (**BKF**); *ibid.*, 11 Aug. 2013, *Chanhomhual &*



Figure 9. *Didymocarpus suchartii* Nangngam, Makerd & Suddee: A. habitat; B. corolla in front view; C. young capsules. Photographs: A by Suchart Chanhomhual, B by Pranee Nangngam and C by Watcharasak Makerd.

Nangngam 2013 (BKF); Mae Klong Khi village, Umphang District, Mo Kro Subdistrict, 16°13'54.82"N, 98°56'13.02"E, 859 m elev., 1 Sept. 2024, *Utapon et al. 2090 (BKF)*].

Distribution.— Only known from two locations in Umphang District.

Ecology.— Seasonally flooded areas along streams in evergreen forest, 800–1,100 m elev., granite bedrock.

Vernacular.— Muang chan hom huan (ม่วงจันทร์หอมหวล) (Proposed here).

Etymology.— The specific epithet is given in honour of Mr Suchart Chanhomhual, who has contributed a lot to protecting plant diversity in Umphang District, and for his photographs and the type collection.

Provisional IUCN conservation assessment.— Data Deficient (DD). Although Umphang Wildlife Sanctuary is a protected area, too little is known of the population size, the Extent of Occurrence, the Area of Occupancy of the species, and the nature of any threats to the species to assess its conservation status. A more thorough survey is needed.

10. *Didymocarpus vilaiwaniae* Nangngam, Mounngmaith. & Chamch., sp. nov.

This species is similar to *Didymocarpus glandulosus* (W.W.Smith) W.T.Wang var. *minor* (W.T.Wang) W.T.Wang from South China in general appearance and in having free calyx lobes and a salverform corolla but differs in leaf characters (leaves congested at the top of stem and silvery on upper surface in *D. vilaiwaniae*, scattered along stem and not silvery on upper surface in *D. glandulosus* var. *minor*). Type: Thailand, Tak Province, Mae Ramat District, Khun Phawo National Park, trail to Khun Phawo waterfall, 760 m elev., 21 June 2011, *V. Chamchumroon, C. Puff & D. Wongngoen 4968* (holotype **BKF!** [SN191409]). Fig. 10.

Terrestrial, perennial herb. *Dry season*: (dormant period) not seen. *Rainy season*: stem 2–5 cm tall, pubescent with eglandular hairs, pale green. *Leaves* simple, opposite, decussate, congested at the top of stem, anisophyllous; petioles 1.5–2 cm long, pubescent, pale green; blades green above, covered with silvery multicellular eglandular hairs, pale green below, densely covered with 4-celled brown

glands; blades ovate, 2–5 × 1.5–2.5 cm, apex acute, base oblique, cuneate, margin entire; secondary veins 4 on each side, impressed above, prominent below. *Inflorescences* 1–3 in upper leaf axils, simple cymes (monochasial cymes), 3–5-flowered, 10–15 cm long; peduncles 5–10 cm long, sparsely covered with multicellular glandular hairs, red to dull reddish; bracts 2, paired, c. 3 × 2 mm, rounded, apex rounded-acute, glabrous on both sides, pale green; pedicels 1.5–2 cm long, covered with multicellular, glandular hairs, pale green. *Calyx* 5-lobed, lobes free, 2.5–3 mm long, apex acuminate, glabrous on both sides, purple. *Corolla* salverform, c. 2 cm long, bilabiate, purple; tube c. 1.5 cm long, slender, c. 2 mm diameter, widest at throat, c. 5 mm diameter; lobes 5, upper lip 2-lobed, lobes c. 2 × 2 mm, lower lip 3-lobed, lateral lobes c. 3 × 3 mm, middle lobe c. 5 × 4 mm, apex rounded, glabrous on both sides. *Stamens* inserted at c. 1.5 cm from base of corolla; filaments almost straight, white, glabrous, c. 4 mm long; anthers coherent, locules oblong, c. 1 × 1 mm, glabrous; staminodes not seen. *Disc* an annular ring, margin undulate, c. 1 mm high. *Pistil* c. 1 cm long, glabrous, pale green; stigma peltate, cream, glabrous. *Capsules* 2–2.5 cm long, c. 2 mm diameter, greenish. *Seeds* not seen.

Thailand.— NORTHERN: Tak, [Mae Ramat District, Khun Phawo National Park, trail to Khun Phawo waterfall, 656 m elev., 21 June 2011, *Chamchumroon et al. 4968 (BKF, K)*; *ibid.*, 20 July 2016, *Nangngam & Vidthayanont 2700 (BKF)*; *ibid.*, 31 July 2024, *Chamchumroon et al. VC5974 (BKF)*].

Distribution.— Only known from the type locality.

Ecology.— Along streams in evergreen forest, 600–700 m elev.

Vernacular.— Muang Si Anusarn (ม่วงศรีอนุสาร) (Proposed here).

Etymology.— The specific epithet is given in honour of Associate Prof. Dr Vilaiwan Anusarnsunthorn, the founder of CMUB herbarium.

Provisional IUCN conservation assessment.— Data Deficient (DD). The species is only known from the type locality and it is not possible to calculate the population size, Extent of Occurrence and Area of Occupancy. However, Khun Phawo National Park is a protected area, thereby offering protection to the habitat where it is found.



Figure 10. *Didymocarpus vilaiwaniae* Nangngam, Mounghmaith. & Chamch.: A. habit and inflorescence; B. corolla side view; C. corolla front view. Photographs: All by Pranee Nangngam.

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