The genus *Micropera* (Orchidaceae: Aeridinae) in Thailand

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Abstract: The genus *Micropera* Lindl. (Orchidaceae: Aeridinae) is revised for Thailand based on herbarium specimens, a literature review, and field observations. Six taxa are recognized, including two new country records. A taxonomic key to species, descriptions, notes, illustrations, and colour photographs are provided.

Key words: Flora of Thailand, new records, orchid taxonomy.

Introduction

The genus *Micropera* Lindl. belongs to subtribe Aeridinae (Orchidaceae, Vandeae) and comprises 22 species distributed from Southeast Tibet to Tropical Asia and the West Pacific with a centre of diversity in Southeast Asia (POWO, 2023). They are epiphytes in evergreen or semi-evergreen forests, and often grow on cultivated trees and large roadside trees from sea level to 1200 m elevation (Wood et al., 2014). The genus was described by Lindley (1832), who included only one species, *M. pallida* (Roxb.) Lindl. Its basionym *Aerides pallida* Roxb. was based on a painting of a plant collected either in Chittagong (Bangladesh), or West Bengal (India), by Roxburgh. The following year, Lindley (1833) proposed the genus *Camarotis* Lindl. to accommodate another species now included in *Micropera*. He later considered *Micropera* and *Camarotis* to be congeneric but favoured the younger generic name by designating *Micropera* a synonym (Lindley, 1858). The name *Camarotis* had been accepted for a long time, e.g., by King and Pantling (1898), Prain (1903), and Seidenfaden and Smitinand (1965), until Tang and Wang (1951), Garay (1972) and Seidenfaden (1988) adopted *Micropera*. Seidenfaden and Smitinand (1965) enumerated four species in Thailand under *Camarotis*.

*Micropera* is characterized by an epiphytic habit with monopodial growth, elongated, sometimes sub-scandent stems, racemose or sometimes paniculate inflorescences, usually non-resupinate flowers, a lip with a saccate hypochile with back and front wall calli and longitudinal septum, and a column with a beaked rostellum which is sometimes twisted sideways (Chen & Wood, 2009; Wood et al., 2014). Based on DNA data (Kocyan et al., 2014), *Micropera* was found to be a member of the *Cleisostoma* alliance, where it also fits in floral morphology, having a longitudinal septum and calli in the labellum spur. However, generic delimitation in this alliance is still uncertain (Wood et al., 2014).

The latest taxonomic account of *Micropera* in Thailand was published by Seidenfaden (1988), with generic notes, a key to the species, illustrations, species notes, distribution data and specimen citations, but without descriptions. While preparing the present revision, specimens of *Micropera* were collected in Southern Thailand by SWJ and identified as *M. callosa* (Blume) Garay and *M. fuscolutea* (Lindl.) Garay, which represent new records for Thailand. Here, we present an updated taxonomic enumeration of the genus *Micropera* as a contribution to the Flora of Thailand project.

Materials and Methods

The present study is based on morphological evidence. The herbarium specimens and spirit collections of *Micropera* from the Thai Forest Herbarium (BKF), Copenhagen Herbarium (C), Kew Herbarium (K), Queen Sirikit Botanic
The genus *Micropera* in Thailand

Garden Herbarium (QBG), and Prince of Songkla University (PSU) were studied, along with the materials resulting from our fieldwork. Figure 1 shows how the various flower parts were measured. We followed a traditional, morphological species concept (Van Steenis, 1957; Davis & Heywood, 1963) according to which species are distinguished by discontinuous variation in two or more independent characters. Specimen data were used to compile information on the phenology, fruiting period, habitat and distribution in Thailand. Specimens or images of types seen are indicated by an exclamation mark.

**Taxonomic Treatment**


Monopodial epiphytic herbs, climbing; stems long, terete, with many long roots and leaves. Leaves distichous, flat, conduplicate, usually many, dorsiventrally compressed, fleshy, oblong to linear, basal part forming a tubular sheath covering the stem, articulate, apex equally or unequally bilobed. Inflorescence lateral, racemose, sometimes paniculate, few- to many-flowered, often arising opposite leaves. Flowers usually non-resupinate, up to c. 1.5 cm across, (pale-)yellow or light pink. Sepals and petals free, similar. Labellum conspicuously spurred or saccate, 3-lobed; lateral lobes broad, erect; mid-lobe smaller, fleshy; spur with a longitudinal septum inside, often with callosities at its entrance. Column stout to slender, lacking a foot; rostellum projection prominent, beaked, sometimes twisted; anther rostrate, pollinia 4, in 2 sub-equal pairs on a common long stipe; viscidium elliptic, very small. Fruit a capsule; seeds numerous.

**Key to the species of Micropera in Thailand**

1. Lip pinkish purple; rostellum >4 times longer than column height, sigmoid in lateral view, not strongly twisted sideways .......... *M. rostrata*

1. Lip yellow; rostellum <3.5 times as long as column height, straight or strongly twisted sideways .............................................. 2

2. Rostellum strongly twisted sideways (through about 90 degrees) ......................... *M. obtusa*

2. Rostellum straight or only slightly twisted sideways ........................................... 3

3. Side lobes of labellum conspicuous, more or less quadrangular ........................................ 4

3. Side lobes of labellum inconspicuous ............ *M. callosa*

4. Spur strongly incurved ......................... *M. pallida*

4. Spur (sub-)straight ............................ 5

5. Mid-lobe of labellum with a raised callus ............................................... *M. fuscolutea*

5. Mid-lobe of labellum without distinct callus ... ................................................................ *M. thailandica*
Fig. 2. Photographic images of Micropera spp.: a & b. *M. callosa* (Blume) Garay: a. Habit; b. Flower; c & d. *M. fuscolutea* (Lindl.) Garay: c. Habit; d. Inflorescence; e. *M. pallida* (Roxb.) Lindl. flower; f & g. *M. rostrata* (Roxb.) N.P.Balakr.: f. Inflorescence; g. Flowers; h & i. *M. thailandica* Garay ex Seidenf.: h. Habit; i. Flower (photos a-d by J. Sae Wai; e-g by S. Watthana; h-I by T. Channokhun).
Fig. 3. Line drawings of Micropera callosa (Blume) Garay: a. Plant; b. Flower–front and side views; c. Dorsal sepal; d. Petal; e. Lateral sepal; f & g. Section through labellum: f. Front view; g. Side view; h. Operculum–below view and top view; i. Pollinarium (from J. Sae War/2320; drawn by Thotsaporn Chanokkhun).

Type: INDONESIA, Java, Pantjar, Blume, C.L. s.n. (holo L [L0061626 digital image!]).

Figs. 2a-b & 3

Stem up to 40 cm long, up to 0.6 cm in diam., covered by the rugose leaf sheaths; roots up to 0.35 cm diam. Leaves 2–3 cm apart, oblong-linear, 11–13 × 1.8–2 cm, apex unequally bilobed with rounded lobes, fleshy. Inflorescences upright, 15–21 cm long, 18–30-flowered; peduncle 5.5–10 cm long, with 2–3 sheathing peduncle scales 4–8 mm long; rachis 8–10 cm long, unbranched, ridged; bracts broadly triangular, 1–1.5 × 2.5–3 mm, obtuse. Flowers non resupinate, sepals and petals yellow with brownish red margin, lip orange yellow, sidelobe pale yellow, column white or cream; pedicel and ovary 9–11 mm long. Dorsal sepal oblanceolate, 7–7.3 × 2.8–3 mm, apex broadly obtuse, concave, fleshy, abaxial surface with scattered dark brown scale-hairs, adaxial surface glabrous; lateral sepals oblanceolate, 5.7–6 × 3.4–3.5 mm, adnate to column-foot, adaxial surface with dark brown scale-hairs, abaxial surface glabrous. Petals oblong-elliptic, up to 5.7–6 × 1.6–1.9 mm, obtuse to acute, slightly falcate, glabrous. Labellum fleshy, tubular, strongly incurved at distal part, 3.4–3.6 mm long, 7–7.5 mm high, distinctly 3-lobed; lateral lobes somewhat quadrangular, 3.3–3.5 × 2.9–3 mm, upper edges erose, with a small and rounded callus on each side; mid-lobe broadly triangular, thickened, 1–1.2 × 1.8–2 mm, apex acute with narrow conical callus adaxially; spur 3.7–4 mm long, apex narrowly rounded, with longitudinal septum, 1–1.2 mm high and an oblong, upright, horn-like, triangular, bilobed callus at base of mid lobe. Column rather stout, 3–3.3 mm long; rostellum beak-like, 1–1.1 mm long, slightly twisted. Anther 1.8–2 × 1.7–1.9 mm, with short beak. Fruit not seen.

Flowering & fruiting: Flowering in August; fruit not seen.

Habitat: Epiphyte on Durian trees.

Distribution: Borneo, Java, Sumatra, and Thailand.

Specimen examined: THAILAND, Yala, Betong, Ban Chantharat, N 5°47′35″, E 101°10′21″, 230 m, 24.08.2013, J. Wai 2320 (PSU).

Notes: This species is a new record for Thailand and mainland Southeast Asia.


Type: BORNEO, Cult., March 1847, F.G. Cox (leg. Lowe [= Low]) s.n. (holo K–LINDL!).


Figs. 2c-d & 4

Stem 40 cm or more long, up to 0.5 cm in diam., covered by rugose leaf sheaths; roots up to 0.35 cm in diam. Leaves 1.8–2 cm apart, oblong-linear, 7–15 × 1.5–2 cm, apex equally to unequally bilobed with rounded lobes, fleshy. Inflorescences more or less upright, 7–8.5(–20) cm long, several-flowered; peduncle 4.3–5.5(–10) cm long, with 2–3 sheathing peduncle scales 3–9 mm long, basal one much longer than others; rachis 2–2.5(–10) cm long, unbranched; bracts broadly triangular, obtuse, 1.8–2 × 1.5–2 mm. Flowers non resupinate, yellow or light orange-yellow, sepals sometimes tipped with brown, labellum yellow tinged with brown at base and white at apex of spur, column white or cream; pedicel and ovary 8–9 mm long. Dorsal sepal oblanceolate-oblong, 7.5–8.5 × 3.4–3.6 mm, apex broadly rounded, concave, fleshy; lateral sepals ovate-oblong 6.2–6.5 × 3.8–4 mm, oblique, apex rounded. Petals elliptic-oblong, 7–7.3 × 3–3.3 mm, obtuse. Labellum fleshy, deeply boat-shaped, 8.5–9 mm long, 4.7–5.2 mm high, obscurely 3-lobed; lateral lobes inconspicuous broadly triangular 5–5.3 × 0.9–1.3 mm, edges minutely serrate or entire; mid-lobe triangular, 1.8–2 × 2.3 mm, apex acute with broad cone
The genus *Micropera* in Thailand

Fig. 4. Line drawings of *Micropera fuscolutea* (Lindl.) Garay: a. Plant; b. Flower–front and side views; c. Dorsal sepal; d. Petal; e. Lateral sepal; f & g. Section through labellum: f. Front view; g. Side view; h. Operculum—below and top views; i. Pollinarium (from J. Sae Wai 2184; drawn by Thotsaporn Chanokkhun).
callus; spur 4.3–5 mm long, with longitudinal septum and triangular callus at base of mid lobe, 1–1.2 mm long, deep-bilobed, with cone callus at middle of backwall. Column slender, 4.5–5.5 mm long; rostellum beak c. 2 mm long, not twisted. Anther 1.8–2 × 2–2.4 mm, with short beak. Fruit not seen.

**Flowering & fruiting:** Flowering in June and December; fruit not seen.

**Habitat:** Epiphyte on Durian trees.

**Distribution:** Thailand, Peninsular Malaysia, and Borneo.

**Specimens examined:** THAILAND, Yala, Betong, Ban Chantharat, N 5°47’35”, E 101°10’21”, 230 m, 19.06.2011, J. Wai 2082 (PSU); Ibid., 29.12.2012, J. Wai 2184 (PSU).


**Flowering & fruiting:** Flowering in February; fruit not seen.

**Habitat:** Epiphyte on trees in open forests, at 900 m elevation.

**Distribution:** India (East Himalaya), Bangladesh, Nepal, Myanmar, and Thailand.

**Specimens examined:** THAILAND, Phang-nga, Khao Bangto, c. 900 m, 23.02.1919, A.F. Kerr s.n. (AAU, C, K); s. loc., Lecoulle 21177 (C).

**Notes:** There are a few specimens of this species from Thailand. Seidenfaden (1988) cited only a collection by Kerr. It is similar to *M. thailandica* but its rostellum is strongly twisted.


Fig. 5. Line drawings of *Micropera obtusa* (Lindl.) Tang & F.T.Wang: a. Plant; b. Flower–front and oblique top views; c. Dorsal sepal; d. Petal; e. Lateral sepal; f. Section through labellum–side view; g. Operculum–top and below views; h. Pollinarium (from *T. Chanokkhun* 652; drawn by Thotsaporn Chanokkhun).


Figs. 2e & 6

Stem up to 30 cm long, glabrous, covered by smooth leaf sheaths; roots arising along stem. Leaves distichous, c. 2 cm apart, flat, conuplicate, oblong-linear, 8–15 × 1–1.5 cm, apex equally to unequally bilobed with rounded lobes, fleshy. Inflorescences pendent, 5–8 cm long, several-flowered; peduncle 5–10 cm long, with 2–3 sheathing peduncle scales 1.5–2 mm long; rachis 5–8 cm or more long, unbranched; bracts broadly triangular, obtuse, c. 2.5 × 2.5 mm. Flowers non resupinate, yellow, labellum yellow, sepals yellow, sometimes tipped with purple midline on back, column white or cream; pedicel and ovary terete with longitudinal grooves, 1–1.2 mm long. Dorsal sepal elliptic-ovate, 6–6.5 × 2–2.5 mm, apex broadly rounded; 5-veined; lateral sepals broadly elliptic, 6–6.3 × 2.3–2.6 mm, 5-veined. Petals elliptic-lanceolate, 5–5.5 × 2–2.5 mm, acute; 3-veined. Labellum fleshy, chin-shaped, 3–4 mm long, 8–9 mm high; lateral lobes conspicuous, quadrangular, 4–4.5 × 2–2.2 mm; mid-lobe triangular, 3–3.2 × 3.2–3.5 mm; spur 4.5–5 mm long, with longitudinal septum and triangular callus at base of mid lobe, split at end; back wall of spur with obscure callus; spur with longitudinal septum. Column 2–3 mm long; rostellum beak c. 2 mm long, not twisted. Anther c. 2.3 mm long, with long beak. Fruit terete, 5–6 × 0.5–0.7 cm long.

Flowering & fruiting: Flowering during July–October; fruiting during October.

Habitat: Epiphyte in evergreen forests.

Distribution: India, Bangladesh, Laos, Myanmar, Thailand, Laos, Cambodia, Vietnam, Malaysia, Indonesia.

Fig. 6. Line drawings of *Micropera pallida* (Roxb.) Lindl.: a. Plant; b. Flower–front view; c. Flower–side view; d. Dorsal sepal; e. Petal; f. Lateral sepal; g. Section through labellum–side view; h. Operculum–below view; i. Pollinarium (from T. Chanokkhun 596; drawn by Thotsaporn Chanokkhun).
Note: This common species can be identified by the large side lobes of the labellum and the straight spur.


Figs. 2f-g & 7

Stem 12–20 cm long, covered by glabrous leaf sheaths. Leaves about 10, distichous, c. 2 cm apart, flat, conduplicate, oblong-linear, 10–12 × 1.5–2 cm, apex unequally bilobed with rounded lobes, fleshy. Inflorescences pendent, 10–15 cm long, up to 30-flowered; peduncle 3–5 cm long, with 2–3 sheathing sterile bracts 0.3–0.4 cm long; rachis up to 30 cm long, unbranched; bracts broadly triangular, obtuse, 2–2.5 × c. 2 mm, fleshy. Flowers non resupinate, pale to bright purple-pink, lip base sometimes white with purple-pink margin, column white tinged with purple-pink; pedicel and ovary 9–12 cm long. Dorsal sepal elliptic-oblong, 8–10 × 4–4.5 mm, apex broadly rounded or obtuse and usually recurved, 5-veined; lateral sepals ovobovate-oblong, falcate, 8.3–9.5 × 3.8–4.2 mm, apex broadly rounded, 5-veined. Petals elliptic-oblong or lanceolate-oblong, to 8.2–9 × 3.4–3.5 mm, slightly oblique, broadly rounded, 5-veined. Labellum fleshy, deeply boat-shaped, 8–8.5 mm long, 5.4–6.3 mm high, obscurely 3-lobed; lateral lobes inconspicuous, broadly triangular, 7–7.5 × 1–2 mm; mid-lobe triangular, 0.5–0.6 × 1–1.3 mm; spur 4.8–5.7 mm long, with longitudinal septum and triangular tongue callus at base of mid lobe. Column stout, 1.8–2 mm long; rostellum beak 6.5–7 mm long, sigmoid in lateral view, only slightly twisted sideways. Anther c. 3 × 1 mm long with long beak. Fruit not seen.

**Flowering & fruiting:** Flowering from May to July and in December; fruit not seen.

**Habitat:** Epiphyte in evergreen hill forests, at 1,300–1,600 m elevation.
The genus Micropera in Thailand

Fig. 7. Line drawings of Micropera rostrata (Roxb.) N.P.Balakr.: a. Plant; b. Flower–front view; c. Flower–side view; d. Dorsal sepal; e. Petal; f. Lateral sepal; g. Section through labellum–side view; h. Operculum–below view; i. Pollinarium (from T. Chanokkhu 651; drawn by Thotsaporn Chanokkkhun).
Distribution: India, Bangladesh, and Thailand.

Specimens examined: BANGLADESH, Sylhet, 12.12.1997, Wallich 7329 (K-W digital image); INDIA, Assam, Jaintapur, Jaintea Hills, April 1899, Prain 111 (M digital image). THAILAND, Loei, Phu Kradinh, 1300 m, 07.1959, G. Seidenfaden & T. Smitinand 3730 (C). Mae Hong Son, Ban Rak Thai, c. 1600 m, 12.06.2020, A. Kanungton s.n. (QBG). Tak, Mae Sot, 21.05.1988, W. Songkakul 17 (BKF).

Notes: This species is easily recognised by the very long and sigmoid rostellum. With its numerous, bright pinkish-purple flowers it is one of the more attractive species in this genus, which is generally of little horticultural importance.


Stem up to 30 cm long, glabrous, covered by dark, rugose leaf-sheaths. Leaves distichous, c. 2 cm apart, flat, conduplicate, oblong-linear, 8–18 × 1–1.5 cm, apex unequally bilobed with subacute lobes, fleshy. Inflorescences more or less upright, 8–15 cm long, with up to 25 flowers; peduncle 7–10 cm long, with 2–3 sheathing peduncle scales 3–4 mm long; rachis 5–10 cm long, unbranched; bracts broadly triangular, obtuse, 1.5–2 × 2.5–3 mm. Flowers non resupinate, yellow or light orange-yellow, lip base sometimes white, sepals sometimes tipped with brown, column white or cream. Dorsal sepal elliptic-ovate, 7–7.5 × 2.5–3 mm, apex broadly rounded, concave, fleshy; lateral sepals ovate-oblong 6.5–7 × 3.5–4 mm, slightly oblique. Petals elliptic-lanceolate, 6.5–7 × 2.2–2.5 mm, obtuse. Labellum fleshy, deeply boat-shaped 6–6.5 mm long, 5.5–6 mm high, obscurely 3-lobed; lateral lobes inconspicuous, broadly triangular 5–5.5 × 1.2–1.5 mm, edges minutely serrate; mid-lobe triangular, 1.5–2 × 2–2.5 mm, with indistinct cone-shaped swelling; spur 5–6.5 mm long, with longitudinal septum and triangular tongue-shaped callus at base of mid lobe, emarginate. Column slender, 5–6 mm long, with 2 short appendages below stigma; rostellum beak 1.5–2 mm long, not twisted. Anther 1.8–2 × 1.5–1.6 mm, with short beak. Fruit not seen.

Flowering & fruiting: Flowering in April–May; fruit not seen.

Habitat: Epiphyte in evergreen forests.

Distribution: Myanmar, Thailand, Cambodia, and Vietnam.


Notes: This species is similar to *M. fuscolutea* (Lindl.) Garay but differs in lacking a distinct, raised callus on the labellum mid-lobe.

Acknowledgements

This work was supported by Suranaree University of Technology (SUT), Thailand Science Research and Innovation (TSRI) and National Science, Research and Innovation Fund (NSRF), FF-179327

Literature Cited


Fig. 8. Line drawings of *Micropera thailandica* Garay ex Seidenf.: a. Plant; b. Flower–front view; c. Flower–side view; d. Dorsal sepal; e. Petal; f. Lateral sepal; g. Section through labellum–side view; h. Operculum–below view; i. Pollinarium (from T. Chanokkhun 653; drawn by Thotsaporn Chanokkhun).


