



Chiloschista breviseta (Orchidaceae), a new species from Thailand

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(Manuscript received 26 July 2024; Accepted 14 September 2024; Online published 2 October 2024)

ABSTRACT: A new species, *Chiloschista breviseta* (Orchidaceae: Epidendroideae: Aeridinae) from Northern Thailand is described and illustrated, and notes on ecology and conservation status are provided. *Chiloschista breviseta* is morphologically similar to *C. usneoides* but differs in having much shorter seta on each side of the anther cap. Previous records of *C. usneoides* from Thailand refer to *C. breviseta*.

KEY WORDS: Aeridinae, *Chiloschista*, *Chiloschista usneoides*, *Chiloschista viridiflava*, Flora of Thailand, new taxon.

INTRODUCTION

Chiloschista Lindl. (1832; subtribe Aeridinae, subfamily Epidendroideae) comprises 30 recognized species (POWO, 2024) distributed from the tropical Himalayan region to southern China, Taiwan, Indochina, Peninsular Malaysia, Indonesia (excl. Borneo, Sulawesi, and New Guinea), Australia, and Palau (Chen *et al.*, 2009; Pridgeon *et al.*, 2014; POWO, 2024). Thailand and Indochina represent the main centres of diversity for this genus, harbouring 11 and 10 species, respectively. The members of this genus are monopodial epiphytes with highly abbreviated stems that produce small, short-lived leaves during the rainy season. At flowering time, in the later part of the dry season, the plants are usually leafless, consisting mainly of a cluster of roots, similar to species of *Dendrophyllax* Rchb.f., *Microcoelia* Lindl., *Taeniophyllum* Blume, etc. The inflorescences are racemes or panicles, often pendulous, and may be hairy or glabrous, usually bearing many flowers. The sepals and petals are similar in appearance; the lip is trilobed, saccate at the base, with usually erect lateral lobes and a small mid-lobe bearing a central callus or calli, which may or may not be pubescent. A column-foot is present, and the anther cap often features two spreading filiform appendages, one on each side. The pollinarium consists of two deeply cleft pollinia, a stipe, and a viscidium (Pridgeon *et al.*, 2014; Pham *et al.*, 2022).

Chiloschista is a popular genus among orchid amateurs for its unusual habit and pretty flowers. However, due to the similarity of many taxa, species identification within this genus poses significant challenges, which has resulted in nomenclatural and taxonomical complexities (Seidenfaden, 1988). Because of the reduced vegetative parts, distinguishing characters are mainly found in the morphology of the lip and its ornamentation. In the past six years, taxonomists have described 11 new taxa: *C. confusa* M.J.Mathew,

J.Mathew, P.M.Salim & Szlach. (Mathew *et al.*, 2021) from South India; *C. lindstroemii* Dalström & Kolanowska (Dalström and Kolanowska, 2020) from Thailand; *C. shanica* Wotas, C.Bandara & Kumar (Wojtas *et al.*, 2023) from Myanmar; *C. pulchella* Averyanov & Nguyen (Averyanov *et al.*, 2018), *C. glabrisepala* Vuong, Averyanov & Dang (Pham *et al.*, 2022), *C. quangdangii* Vuong & Aver. (Doan *et al.*, 2023) and *C. parishii* var. *minutiflora* Aver., H.H.Tuan & V.C.Nguyen (Averyanov *et al.*, 2022) from Vietnam; and *C. gelephuensis* C.Gyeltshen & Dalström (Gyeltshen *et al.*, 2019), *C. himalaica* Tobgay, C.Gyeltshen & Dalström. (Gyeltshen *et al.*, 2020), *C. densiflora* Gyeltshen, C.Gyeltshen & Dalström (Gyeltshen *et al.*, 2020), and *C. bhutanensis* Ghalley & Dalström (Ghalley *et al.*, 2022) from Bhutan.

While preparing a revision of *Chiloschista* for the Flora of Thailand, we examined the available specimens from BKF, C, K, and QBG, supplemented with field observations. Among the Thai species of *Chiloschista* is a white-flowered taxon that is found in the northern and south-western Thai floristic regions. Its floral morphology is similar to that of *C. usneoides* (D.Don) Lindl. (1832) but it differs in details of the lip callus and the appendages of the anther cap (well illustrated in Panday *et al.*, 2022, fig. 2). We ascertained that it is distinct from *C. usneoides*, and describe it as a new species below. Seidenfaden (1988) reported *C. usneoides* from northern Thailand based only on a colour photograph of a white-flowered plant by Sagarik, collected in the Fang District, Chiang Mai Province, but called the identification ‘highly doubtful’. We could not find a specimen for this record, which may represent *C. breviseta*, and we have not yet seen any material referable to *C. usneoides* from Thailand. Thus, this species is excluded from the flora of Thailand and is only known with certainty from the Himalaya region, from North India, Nepal, and Bhutan to Myanmar.

**Table 1.** Comparative floral morphology of *C. breviseta*, *C. usneoides* and *C. viridiflava*.

Characters	<i>C. breviseta</i>	<i>C. usneoides</i>	<i>C. viridiflava</i>
Flower color	White	White	Pale green
Outer surface of sepals and petals	Glabrous on both sides	Glabrous on both sides	Pubescent on outer surface
Petal margin	Entire	Entire	Erose
Median callus	Y-shaped	T-shaped	Y-shaped
Operculum appendage	Very short, 0.1–0.3 mm long	Filiform, 1.8–2.2 mm long	Filiform, 2–3 mm long

MATERIALS AND METHODS

Field studies were conducted in Thailand from 2021 to 2024. Flowers were preserved in 70% ethanol and deposited at QBG. Floral morphological characteristics were assessed using fresh specimens observed under a dissecting microscope (ZEISS Stemi 305). Species delimitation follows the morphological species concept (van Steenis, 1957; Davis and Heywood, 1963), which identifies species based on distinct variations in two or more independent characters. Specimen data were utilized to compile information on phenology, fruiting periods, habitat preferences, and distribution across Thailand. Specimens seen are denoted by an exclamation mark.

TAXONOMIC TREATMENT

Chiloschista breviseta Chanokkhun, Watthana & Schuit., *sp. nov.* **Figs. 1 & 2**

Type: Thailand. Chiang Mai, Yang Moen, Mon Ang Kate, ca. 1,540 m, in *Juniperus chinensis* grove in evergreen hill forest, 12 March 2024, T. Chanokkhun 698 (holotype: QBG!, isotype QBG!)

Diagnosis: *Chiloschista breviseta* is similar to *C. usneoides* in the largely white flower and the short-saccate lip with a rudimentary mid-lobe, but differs in having a short seta (<0.3 mm long) on each side of the anther cap (vs. a long, thread-like seta, >1.7 mm long) and in the Y-shaped callus apex (vs. T-shaped). It can be distinguished from *C. viridiflava* Seidenf. in having a glabrous abaxial surface of sepals and petal (vs. pubescent), margin of petals entire (vs. erose), and white sepals and petals, sometimes with a purplish pink median line abaxially (vs. pure pale green), and in having short setae (vs. setae > 1.9 mm long).

Description: Epiphytic herb; stem very short, erect, simple. **Roots** many, silvery green, flattened, 1.5–2 mm wide, adpressed to the bark of the phorophyte. **Inflorescence** axillary, a pendulous raceme 2.5–13 cm long, arising near the stem apex; scape and rachis dull pale green, densely tomentose; peduncle 2.3–8 cm long, terete, with 3–4 distant, triangular, whitish, scarious peduncle scales 2–2.5 mm long, 1–1.5 mm wide; rachis almost straight, ca. 7 cm long, with 7–8 distant, spirally arranged flowers. **Flowers** widely opening, 0.9–1.2 cm across; sepals and petals whitish cream, without any marking or tinged with pale reddish purple abaxially along midrib; lip yellowish white or white; sidelobes

cream, yellow at their base adaxially; column whitish, column-foot with dark purple markings at the base; anther cap pale yellow; pollinia dull yellowish. Floral bracts whitish, scarious, triangular, acute, 2–3.2 mm long, 1.8–2.5 mm. Pedicel and ovary terete, dull olive-green, straight or slightly curved, 3–4.5 mm long, densely tomentose with short hairs. **Dorsal sepal** oblanceolate, 4.6–8 mm long, 2.8–3.5 mm, glabrous, recurved, apex rounded, margins entire, not ciliate. **Lateral sepals** oblanceolate or obovate, slightly oblique, 4–7 mm long, 3–4 mm wide, glabrous, spreading, apex rounded, margins entire, not ciliate. **Petals** ovate to suborbicular or lanceolate-oblong, 4–6.2 mm long, 3–4.2 mm wide, glabrous, apex rounded, margins entire, not ciliate. **Lip** erect, 2–2.6 mm long, 2–2.5 mm wide, 4–4.8 mm high (not spread), movably attached to the column-foot apex, weakly divided into a hypochile and 3-lobed epichile; hypochile concave to saccate with rounded and grooved tip, 2–3 mm long, 2.3–2.5 mm wide, with a longitudinal median callus covered by thick and short hairs, apex of the callus Y-shaped; sidelobes oblong, 2–3 mm long, 2–3 mm wide, slightly recurved; mid-lobe very small, ca. 0.5 mm long, ca. 1 mm wide. **Column** 3–4.5 mm long including column-foot; stigma concave, transversely lunate. Anther cap simple, helmet-shaped, 1–1.5 mm long, 1–1.5 mm wide, at front with broadly triangular, obtuse, ca. 0.2 mm long beak; with a short appendage 0.1–0.3 mm long on each side; pollinia 2, globular, ca. 0.5 mm in diameter, each almost completely split into 2 unequal halves; stipe (tegula) simple, oblong-lanceolate, ca. 1 mm long; viscidium attached distally, a thin plate, quadrate, ca. 0.5 mm long and wide. **Capsule** erect, glabrous, 3.5–4 cm long, 0.35–0.5 cm diameter.

Vernacular name: Ueang Phaya Rai Bai Dok Khao (เอื้องพญาไร่ใบดอกขาว)

Distribution: Endemic to northern and south-western Thailand.

Ecology: Epiphyte on tree branches in evergreen hill forest, alt. 800–1,540 m. It often grows on *Juniperus chinensis* L., an exotic ornamental tree species in Thailand. Flowering: February–March.

Etymology: From the Latin *brevis*, short, and *seta*, a bristle-like hair, referring to the short appendages on the anther cap, unlike the long wiry appendages seen in species like *C. usneoides*.

Preliminary conservation status assessment: This species is known from eight different fragmented populations based on our field observation and those of

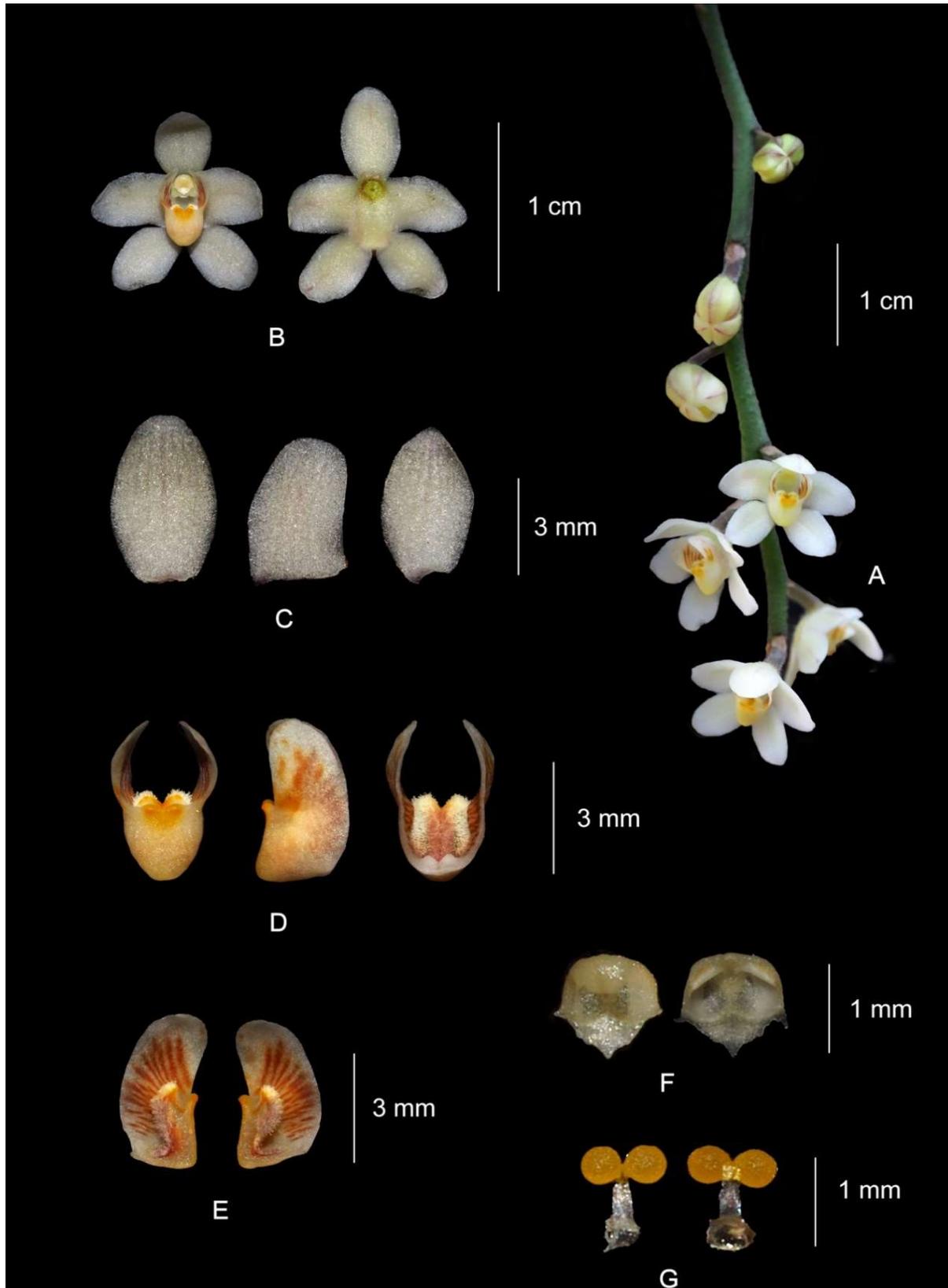


Fig. 1. *Chiloschista breviseta*. **A.** Inflorescence. **B.** Flowers. **C.** Dorsal sepal, petal and lateral sepal (from left to right). **D.** labellum, showing front, side and back views. **E.** Labellum with longitudinal half cut showing inside. **F.** Operculums. **G.** Pollinarium (Pictured by T. Chanokkhun).

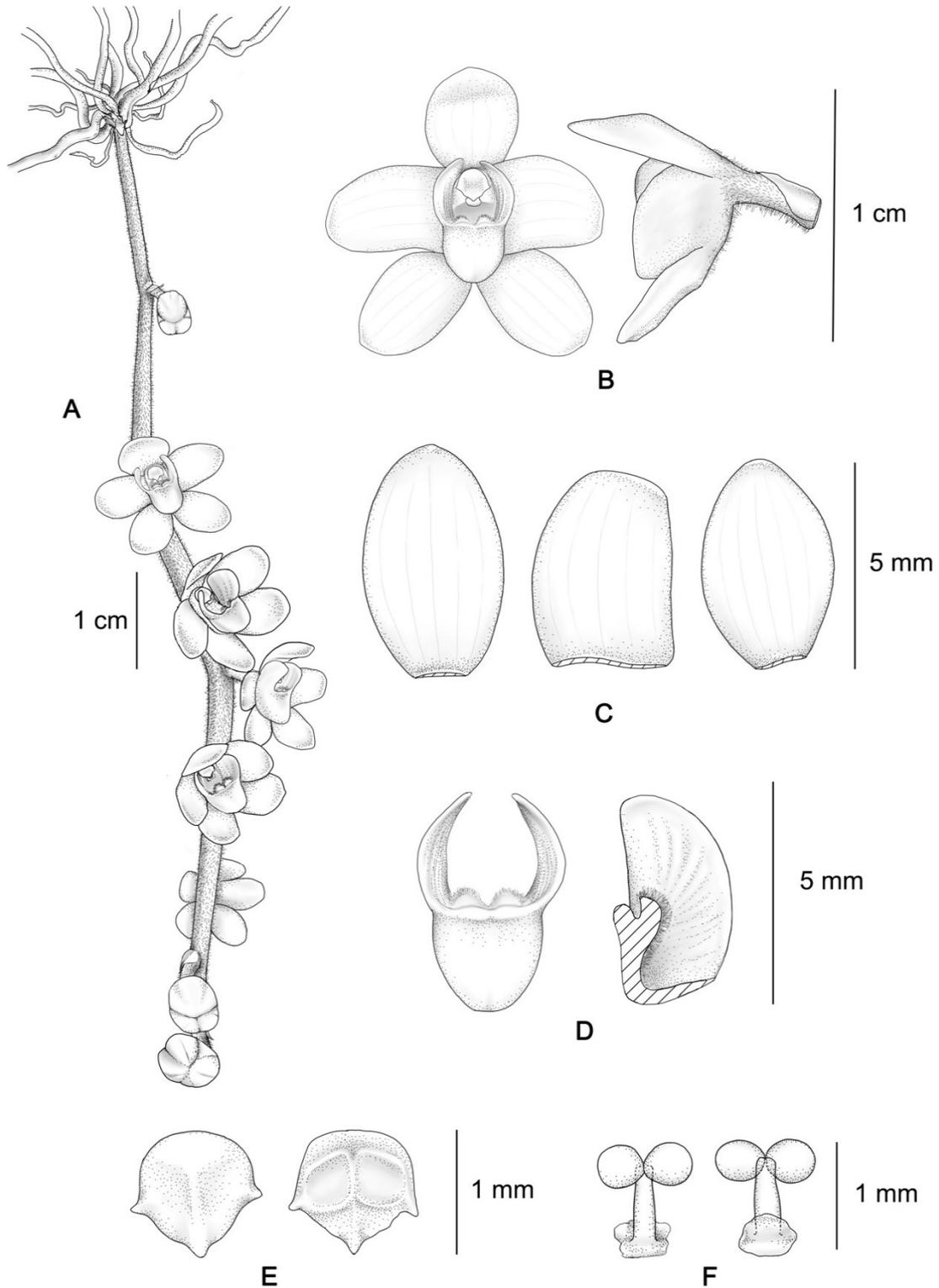


Fig. 2. *Chiloschista breviseta*. A. Habit. B. Flowers. front and side views. C. Dorsal sepal, petal and lateral sepal (from left to right). D. Labellum, front view and longitudinal half cut showing inside. E. Operculum. F. Pollinarium. (Drawn by T. Chanokkhun).

informants, giving an AOO of 28 km² and an EOO of around 54,960 km². All populations are located in nationally protected forest areas, but there are low

numbers of mature individuals (<20) in each population. Following IUCN (2022), the species is assigned as Vulnerable (VU B2ab(iv,v)c(iv)).



Notes: The type of *Epidendrum usneoides* D. Don, basionym of *Chiloschista usneoides*, being lost, Seidenfaden (1988) designated *Wallich 7330* in K-L as the neotype of *C. usneoides*. This can only refer to a sheet in the Lindley Herbarium on which are mounted two specimens (currently without barcodes), one annotated as *J.D.H.* (= J. D. Hooker) 192, the other without annotation. It is not clear if the second specimen is a duplicate of *J.D.H.* 192 or that it belongs to *Wallich 7330*. Given that the state of preservation of these specimens appears to be equal, we are inclined to think that both specimens belong to *J.D.H.* 192. Drawn directly on the sheet are a line drawing stated to have been copied from Wallich (original not located), showing a flower and three views of the lip, and a drawing of a pollinarium copied from Cathcart (original not located). There is also a copy of the label of *Wallich 7330*. Consequently, it is not certain if the drawing by Seidenfaden (1988, fig. 106b–f) labelled *Wallich 7330* was made after *Wallich 7330* or after *J.D.H.* 192. Seidenfaden's fig. 106a was copied after a coloured drawing by Hooker (Kew barcode K001951516) of *J.D.H.* 192. Details in Hooker's drawing not reproduced by Seidenfaden clearly show the long setae on the anther cap. Due to the uncertainty if the Wallich label also belongs to the un-annotated specimen or only to the drawing, a future monographer of *Chiloschista* may decide to reject the neotypification as being ambiguous and select a specimen of *Wallich 7330* in K-W (barcode K001127184) instead. The flowers on this sheet are in poor state and could not be examined without causing too much damage. There is a sketch of a flower, probably by Joseph Hooker, on this sheet.

Specimens examined: Thailand. NORTHERN: Chiang Mai province, Chom Thong, 6 February 2024, *T. Chanokkhun 745* (QBG!), Samoeng, elevation 1,500 m, 12 March 2024, *T. Chanokkhun 694, 695, 696, 697* (QBG!); Mae Hong Son Province, Pang Oung, 18 February 2021, *T. Chanokkhun 325* (QBG!). SOUTH–WESTERN: Kanchanaburi Province, Thong Pha Phum, elevation 1,000 m, 29 February 2024, *T. Chanokkhun 693* (QBG!), 5 March 2023, *T. Chanokkhun 685* (QBG!); Phetchaburi province, Kaeng Krachan National Park, Phanoen Thung, elevation 1,000 m, 29 March 2008, *S. Suddee et al. 3727* (BKF!).

ACKNOWLEDGMENTS

The Thai authors would like to thank Philip Wojtas for providing important literature and for valuable discussions. This work was supported by Suranaree University of Technology (SUT), Thailand Science Research and Innovation (TSRI) and National Science, Research and Innovation Fund (NSRF) (NRIIS number 179327) including The National Science and Technology Development Agency (NSTDA) (MOU–CO–2563–11313–TH).

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