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Hymenophyllum pilosissimum C.Chr. (Hymenophyllaceae), a new record for Thailand

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ABSTRACT. *Hymenophyllum pilosissimum* C.Chr., a new record for Thailand, is described and illustrated.

KEY WORDS: *Hymenophyllum pilosissimum*, *Hymenophyllum*, *Sphaerocionium*, Hymenophyllaceae, fern, Thailand.

INTRODUCTION

The ferns for the Flora of Thailand were published by Tagawa & Iwatsuki (1979, 1985, 1988, 1989). Since the completion of the account large numbers of new fern records and species have been published for Thailand (see Lindsay et al., 2009, 2010, 2012a, 2012b, 2013a, 2013b; Suksathan et al., 2010). None of these new records or species publications included any Hymenophyllaceae, in part due to the fact that they are more often overlooked by collectors due to their small size. We report here the first new record of a species of Hymenophyllaceae since the Flora of Thailand was completed. We follow the nomenclatural system proposed for the family by Ebihara et al. (2006).

DESCRIPTION

Hymenophyllum pilosissimum C.Chr. in C.Chr. & Holttum, Gard. Bull. Straits Settlem. 7(3): 213. 1934; Copel., Philipp. J. Sci. 64: 172. 1937; Moore et al., Amer. Fern J. 100(3): 180–183, fig. 1a-1i, 2010; Liu, Zhang, Ebihara & Iwatsuki, In: Wu, Raven & Hong (eds), Flora of China vol. 2–3 (Lycopodiaceae through Polypodiaceae): 105. 2013.— *Sphaerocionium pilosissimum* (C.Chr.) Copel., Philipp. J. Sci. 67: 33. 1938; Copel., Fern flora of the Philippines 1: 54. 1958; Iwatsuki, J. Fac. Sci. Univ. Tokyo, Sect. 3, Bot. 13(2): 213. 1982; Iwatsuki & Kato, Acta. Phyotax. Geobot. 34: 58. 1983; Parris et al., Pl. Mt. Kinabalu 1: 88. 1992; Parris & Latiff, Malayan Nat. J. 50(4): 260. 1997; Knapp, Ferns & fern allies of Taiwan 263, 462, 481, figs 6.407 & 6.408. 2011. Type: Borneo (Malaysia, Sabah), Kinabalu, F.W. Burbidge s.n. (holotype **K** (Barcode: K000409013); isotype **BM** (Barcode: BM001044323; image seen)).— *Hymenophyllum obtusum* auct. non Hook. & Arn.: Baker, J. Bot. n.s. 8: 38. 1879; C.Chr., Ind. Fil. 365. 1905, p.p. (excluding Hawaii); Copel. Philipp. J. of Sci., C (Botany) 2: 144. 1907, p.p. (excluding Hawaii); Copel., Leafl. Philipp. Bot. 2: 421. 1908, p.p. (excluding Hawaii); Copel., Sarawak Mus. J. 2: 307. 1917. Fig. 1.

Small "filmy-fern", epiphytic or lithophytic. *Rhizome* brown, long-creeping, wiry, filiform, terete, 0.15–0.2 mm diam., irregularly and widely branched, densely covered with hairs or glabrescent in older portions; hairs translucent pale to reddish-brown, fine, long-stalked, most with 1 or 2 long distal branches, some with 3 distal branches (i.e. stellate). *Roots* short, wiry, only slightly thinner than rhizome, covered in long, translucent pale to reddish-brown simple hairs. *Fronds* remote (to 4.3 cm apart), alternate in 2 rows, (1.5–)2.6–7.7 cm

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long. *Stipes* brown, terete, wingless, of similar thickness to rhizome, 0.2–1.1 cm long, densely covered with hairs similar in colour and structure to those on rhizome except that 1- and 2-branched hairs (the majority near the base of the stipe) are gradually replaced by 3- and 4-branched stellate hairs towards the top of the stipe. *Lamina* dull dark green, delicate, 1-cell thick (excluding the rachis and veins), bipinnatifid (or, rarely, tripinnatifid at base), becoming pinnatifid towards the apex, oblong, ovate to narrowly ovate, or narrowly elliptical, (1.2–) 2.0–7.1 cm long, 0.8–1.7 cm wide, rounded to moderately acute at apex; rachis dark-brown, terete, slightly zig-zagging between pinnae, covered (on both surfaces) with translucent pale to reddish-brown stalked stellate hairs with (3–)4–6(–8) distal branches, rachis winged throughout, wings flat, continuous with and more-or-less the same thickness as the lamina of the pinnae. *Pinnae* alternate, 4–10 pairs of pinnatifid (rarely bipinnatifid) or once-forked pinnae below the pinnatifid frond apex, up to 1.5 cm long by 0.6 cm wide, each consisting of 2–6 segments (pinnules); segments linear, up to 7.0 mm long, 0.8–1.5 mm wide, 1-veined, the veins hairy (with hairs identical to those on the rachis), rounded, obtuse or retuse at apex, margin entire and hairy. *Marginal hairs* similar to those on the rachis and veins but instead of being arranged singly they are arranged in regularly-spaced tufts of 3; the stalk of the central hair projecting from the edge of the lamina in the same plane as the lamina, 2 lateral hairs arising from the same point, but their stalks more-or-less perpendicular to that of the central hair. *Sori* solitary at apex of ultimate segments, in the upper part of the frond. *Involucres* 0.5–1.0 mm long, 0.4–1.2 mm wide, bilabiate, deeply divided, the basal one-third to a half immersed in segments, forming shallow cups; lips round, entire or slightly crenate, with stalked stellate hairs like those elsewhere on frond; receptacle, short, filiform, included. *Sporangia* basipetal, sessile. *Spores* spheroidal, trilete.

Thailand.— PENINSULAR: Yala [Betong District, Hala-Bala Wildlife Sanctuary, near the summit of unnamed '1490' mountain reached from the shores of Bang Lang Reservoir, montane scrub forest, 1450 m, 24 May 2005, *D.J. Middleton, V. Chamchumroon, S. Lindsay, M. Phuphat & R. Pooma* 3679, 5.975° N; 101.44° E (**BKF**, **E**); Betong District, Hala-Bala Wildlife Sanctuary, unnamed '1490' mountain, hill evergreen forest, 1380 m, 4 Sept. 2005, *S. Saengrit 52* (**BKF**, **SING** (fragment))].

Distribution.— Malaysia (Perak, Pahang, Sabah, Sarawak), Indonesia (Kalimantan, Papua), Philippines, Taiwan, Papua New Guinea.

Ecology.— In Thailand, this species has only been found in Yala at c. 1,400 m elevation near the summit of the highest mountain in the Hala-Bala Wildlife Sanctuary. There it grows as a low epiphyte on tree trunks with soft spongy bark in montane scrub forest and hill evergreen forests. Elsewhere in its range, it is most commonly reported as a low epiphyte of "mossy", "wet" or "cloud" forests up to c. 2,745 m. A few collections from Taiwan, Peninsular Malaysia and Borneo have been reported as lithophytic on damp or mossy rocks or terrestrial amongst moss.

Proposed IUCN conservation assessment.— Least Concern (LC). *Hymenophyllum pilosissimum* is widely distributed from New Guinea to Taiwan to Peninsular Malaysia and Thailand. In Thailand it is only known from Hala Bala Wildlife Sanctuary but its isolated position inside a Wildlife Sanctuary means it is not under any obvious threat there.

Note.— (1) This species is most easily distinguished from all other species of *Hymenophyllum* in Thailand by the abundant stalked stellate hairs on the fronds. These give the whole plant a woolly appearance.

(2) The description above is based only on the two Thai collections of *Hymenophyllum pilosissimum*. Larger fronds are found elsewhere in its range, reputedly to 14 cm long in Taiwan (Moore et al., 2010).

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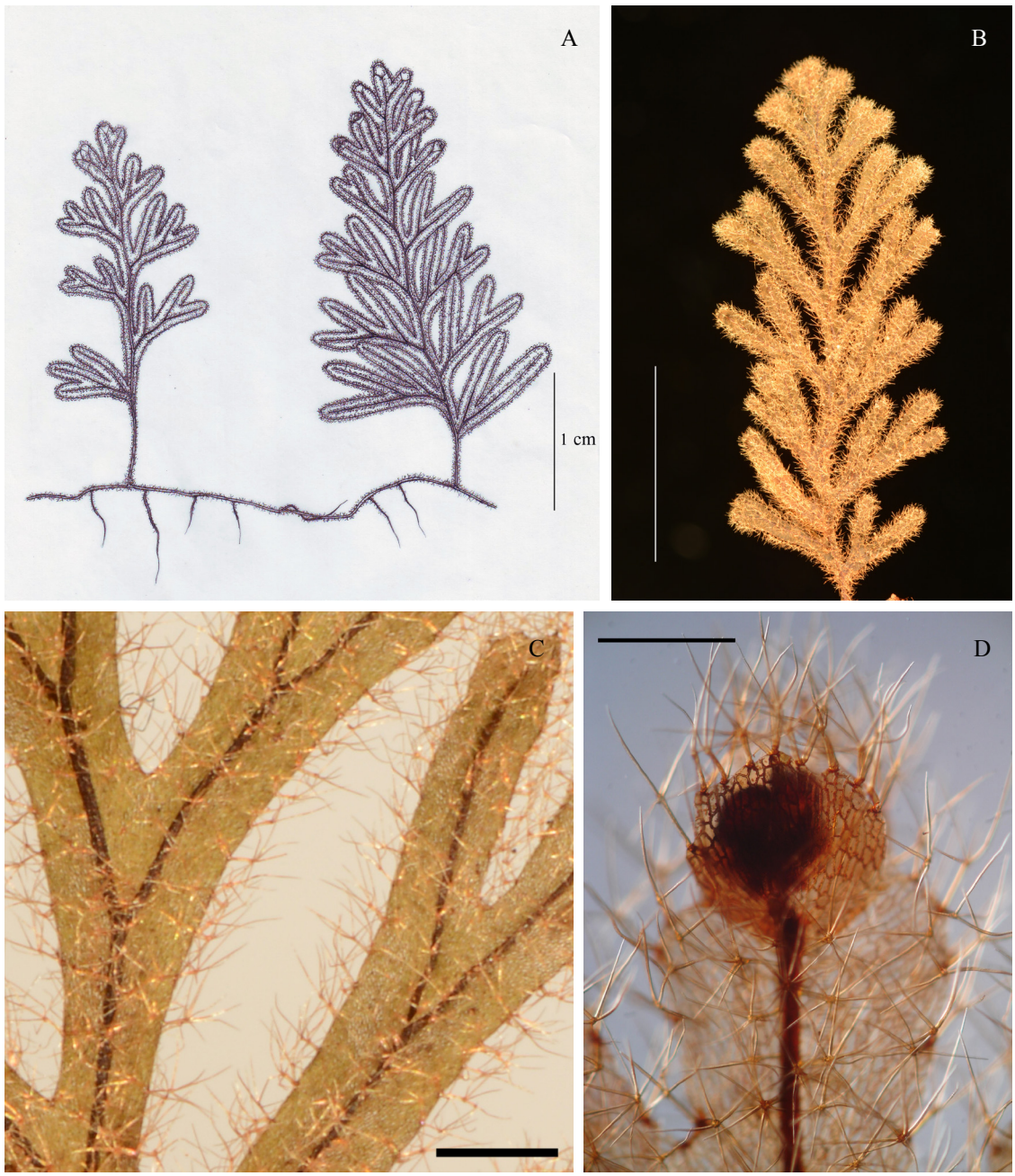

Figure 1. *Hymenophyllum pilosissimum* C.Chr. A. Habit (scale bar = 1 cm); B. Whole frond densely covered with pale to reddish-brown hairs (scale bar = 1 cm); C. Stalked stellate hairs on lamina margin and veins (scale bar = 1 mm); D. Sorus (scale bar = 0.5 mm). (A., drawn by R. Saengrit; B. & C., photos by P. Karaket; D., photo by R. Saengrit).

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