

Research note**New Additions to the Fern Flora of Taiwan (3)**

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【 Summary 】

Two fern species, *Asplenium crinicaule* Hance (Aspleniaceae) and *Prosaptia pectinata* T. Moore (Polypodiaceae), are newly recorded in Taiwan. Their morphological descriptions and illustrations are presented herein.

Key words: Aspleniaceae, *Asplenium crinicaule*, fern, Polypodiaceae, *Prosaptia pectinata*, Taiwan.

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研究簡報

台灣蕨類植物誌增註(3)

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摘要

本文報導兩種台灣新紀錄蕨類：毛軸鐵角蕨(*Asplenium crinicaule* Hance, 鐵角蕨科)與篋齒穴子蕨(*Prosaptia pectinata* T. Moore, 水龍骨科)，並提供形態描述及圖片。

關鍵詞：鐵角蕨科、毛軸鐵角蕨、蕨類、水龍骨科、篋齒穴子蕨、台灣。

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During our recent field investigations and specimen studies in the herbaria, 2 fern species, *Asplenium crinicaule* Hance (Aspleniaceae) and *Prosaptia pectinata* T. Moore (Polypodiaceae), were recognized as newly recorded species in Taiwan. Herein, morphological descriptions, illustrations, and taxonomic and ecological notes of these 2 species are presented. Their threatened status (IUCN 2001, 2003) was evaluated as well.

TAXONOMIC TREATMENTS

(1) *Asplenium crinicaule* Hance, Ann. Sci. Nat. Bot. sér. 5, 5:254. 1866. 毛軸鐵角蕨(Figs. 1, 2)

Type: CHINA. Guangdong: Ting-u-shan (Mt. Dinghu), *G.T. Sampson 11203* (syntypes: BM photo!, GH photo!, B photo!).

Morphology: Plant lithophytic, 30~50 cm tall. Rhizome short erect, scaly; scales on rhizome and basal stipes 3~5 mm long, narrowly triangular to lanceolate, long- caudate, blackish-brown, with sparse irregular projections on margin. Fronds tufted; stipes grayish-brown to purplish-black, 7~15 cm long, grooved adaxially, densely scaly throughout; scales gradually reduced and narrowing upwards, those on the middle and distal portions

of stipes usually linear to lanceolate, brown to blackish-brown; lamina pinnate, outline lanceolate to linear lanceolate, 15~30×4~8 cm, slightly reduced toward base, apex acuminate; rachis wingless, covered with brown to blackish-brown hair-like scales; pinnae 15~30 pairs, subcoriaceous, almost sessile to shortly stalked, elliptic-triangular to lanceolate-triangular, somewhat falcate, acroscopic base broadly cuneate, truncate, or auriculate, basiscopic base attenuate, apex acute, margin irregularly crenate or biserrate-crenate, both surfaces sparsely covered with dark-brown hairlike scales, subglabrous when old. Veins free, obvious, 2- or 3-forked or simple. Sori indusiate, linear to crescent-shaped, mostly along posterior veinlets of forked veins; indusia linear, membranous, entire, persistent, pale-brown to yellowish-brown, opening toward costae, margins often shrunken when old.

Distribution: NE India, S China, Malaysia, Myanmar, Thailand, Vietnam, Taiwan, the Philippines, and Australia.

Habitat: Semi-open rocky slope in a broadleaf forest, 600~800 m in elevation.

Conservation status: CR [B1ac(ii,iv) 2ac(ii,iv)+D]. Currently only 1 population

with fewer than 20 mature individuals is known in Taiwan. The habitat is very close to an agricultural region and thus under potential threat of human disturbance.

Voucher specimens: TAIWAN. Nantou: Guoshing Township, Mt. Meiyuan, H.C.

Hung 123 (TAIF), T.C. Hsu 7095 (TAIF), Y.H. Chang 20131007-001, 20131224-001 (TAIF).

Taxonomic note: Despite being regarded as a morphologically variable taxon (Copeland 1960, Tagawa and Iwatsuki 1985, Lin and Viane 2013), the Taiwanese

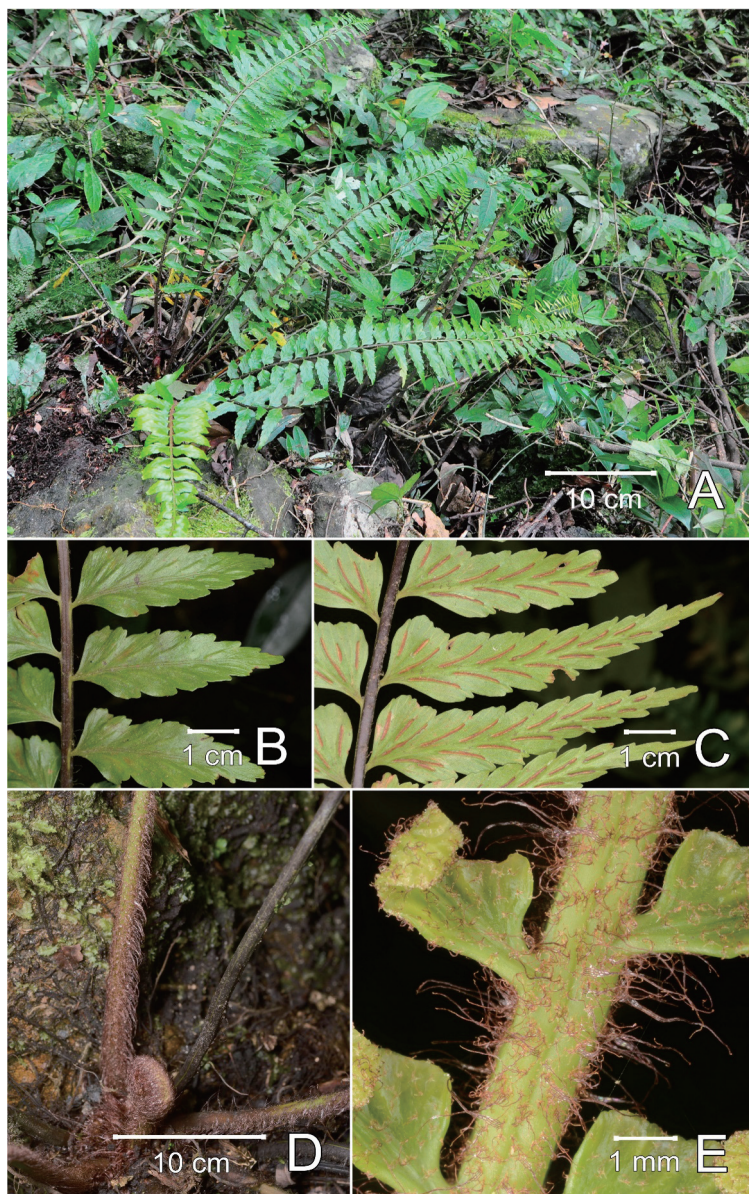


Fig. 1. *Asplenium crinicaule*. A, Habit and habitat; B, pinnae, adaxial view; C, pinnae, abaxial view; D, densely scaly stipe bases; E, scales on rachis of a juvenile frond. A, photographed by Hsin-Chieh Hung; B-E, photographed by Tian-Chuan Hsu.

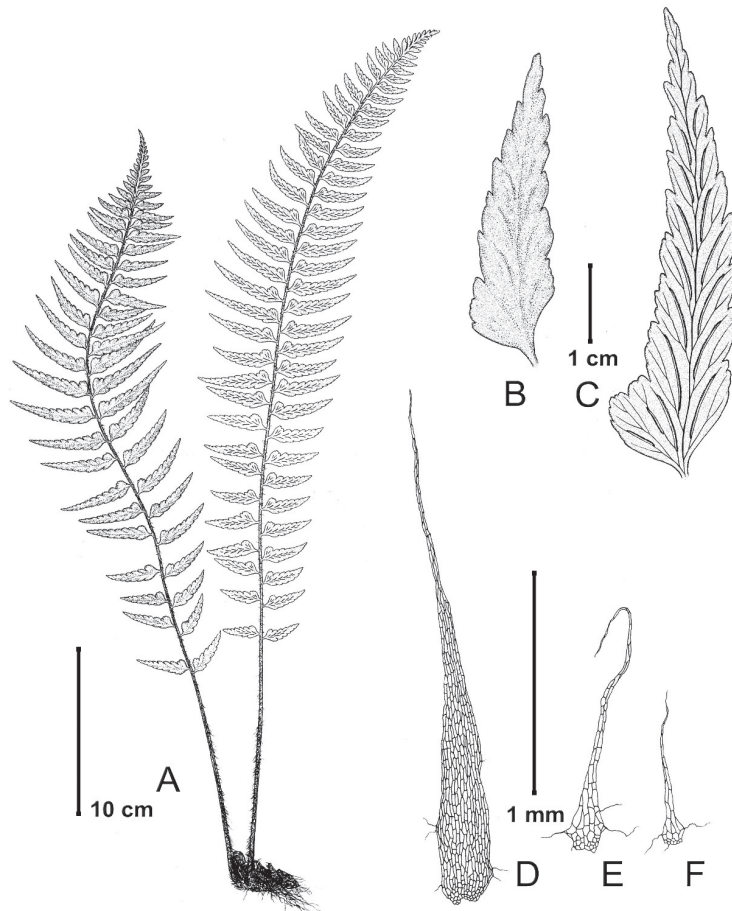


Fig. 2. *Asplenium crinicaule*. A, Habit; B, pinna, adaxial view; C, pinna, abaxial view; D, a scale on stipe base; E and F, scales on rachis. Illustrated by Che-Wei Lin.

materials, as described above, well fit the type specimens of *A. crinicaule*. Among the known *Asplenium* species in Taiwan (De-Vol and Kuo 1975, Shieh et al. 1994, Knapp 2011, 2013), *A. crinicaule* is morphologically similar to *A. cuneatifforme* Christ but is easily distinguished by having densely scaly stipes and lower rachis (vs. densely scaly only near stipe base), pinnate (vs. usually bipinnate and rarely bipinnatifid or pinnate) laminae, and gradually reduced (vs. not or slightly reduced) basal pinnae.

(2) *Prosaptia pectinata* T. Moore, Index Fil. (T. Moore) 298. 1861.
 篋齒穴子蕨(Figs. 3, 4)

Replaced basionym: *Davallia pectinata* auct. non Sm. (1793): Blume, Enum. Pl. Javae 2:229. 1828.

Type: INDONESIA. Java: *Anonymous collector s.n., s.a.* (holotype: L [L-0051198], photo!)

Morphology: Plants epiphytic. Rhizome short creeping, dorsiventral, densely scaly; scales dark-brown to blackish, lanceolate, subclathrate to clathrate, 2.5~4.5 mm long, with marginal hairs. Fronds approximate; stipes in 2 rows, articulated to rhizomes, phyllopodia present, 1.5~5.0 cm long, clothed with dark-brown unicellular hairs, 0.5~1.2 mm long. Laminae pinnatisect with narrow

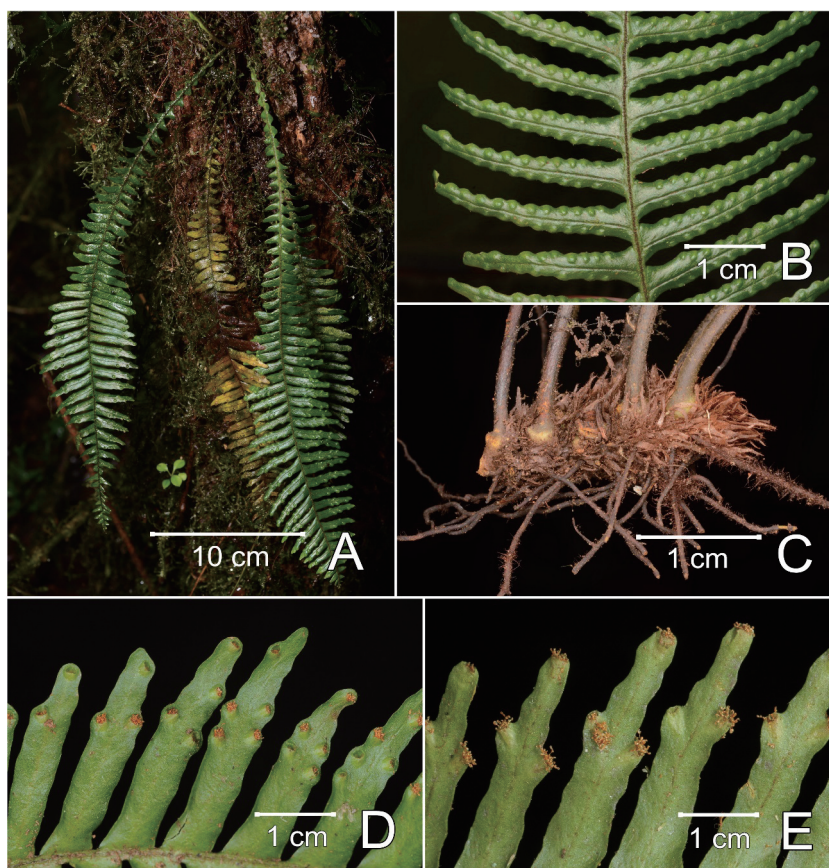


Fig. 3. *Prosaptia pectinata*. A, Habit and habitat; B, adaxial side of middle portion of a frond; C, short-creeping scaly rhizome with closely spaced stipes; D, mature sori on abaxial pinna of *P. pectinata*; E, mature sori of *P. contigua*. A~C, photographed by Tian-Chuan Hsu; D and E, photographed by Pi-Fong Lu.

wings of 0.2~0.8 (~1.0) mm wide along rachis, elliptic-oblong, $15\sim40 \times 3.0\sim6.5$ cm, bluntly acute to acute at apex, long-attenuate downwards and reduced gradually to small lobes and eventually decurrent to narrow wings near bases, texture thinly coriaceous; pinna lanceolate-triangular to linear-oblong, 25~65 pairs, longest at middle portion of laminae, margins mostly crenulate, unicellular brown hairs plentiful on both surfaces of rachises, but occasionally sparse on both surfaces of pinnae and rims of sorus. Veins free, usually not visible or sometimes visible in transmitted light, pinnately branched. Sori

circular to elliptic in outline, sunken in sub-marginal cavities and somewhat prominent on adaxial surface of laminae when mature, 2 rows per pinna and each one on side of pinna midvein, 1~8 sori per row, exindusiate.

Distribution: Thailand, Malaysia, Indonesia, the Philippines, and Taiwan.

Habitat: On lower tree trunks in cloudy broadleaf forests, 1200~1400 m in elevation.

Conservation status: CR [D]. Only 2 populations, with totally fewer than 50 mature individuals, are currently known in Taiwan.

Voucher specimens: TAIWAN. Taitung: Chenggong Township, Mt. Chilin, T.C. Hsu

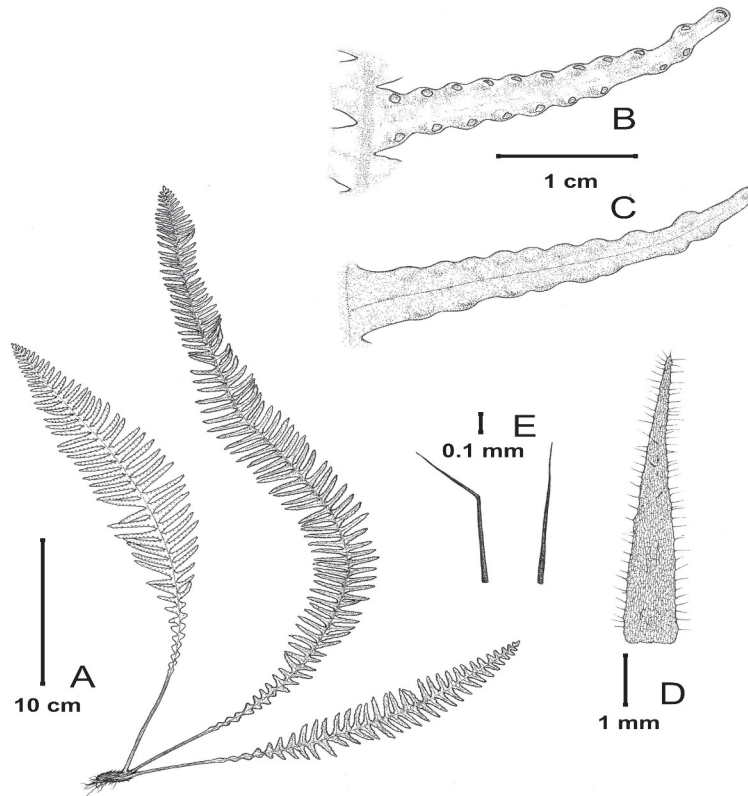


Fig. 4. *Prosaptia pectinata*. A, Habit; B, pinna, abaxial view; C, pinna, adaxial view; D, a scale on rhizome; E, hairs on rachis. Illustrated by Che-Wei Lin.

6686 (TAIF). Pingtung: Chunrih Township, Mt. Kutzulun, T.C. Hsu 6615 (TAIF).

Taxonomic note: Morphologically, *P. pectinata* is close to a common species *P. contigua* (G. Forst.) C. Presl but can be easily distinguished by having a submarginal (vs. marginal), rounded or elliptic (vs. cylindrical or conical) soral cavity opening obliquely against abaxial surface of pinnae (vs. opening toward pinna margin) (Fig. 3D, 3E). Submarginal sori of *P. pectinata* are also found in *P. urceolaris*, another species of this genus in Taiwan (DeVol 1975, Shieh et al. 1994, Knapp 2011); the former's laminae have denser hairs, narrower (0.2~0.8 vs. 1.0~2.0 mm) rachis wings, and longer (15~32 vs. 6~16 mm) pinnae with

obtuse to rounded (vs. rounded to subtruncate) apices.

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