

Two Newly Found Mosses on Alpine Tundra of Taiwan

Tzen-Yuh Chiang^{1*}, Jian-Shing Luo² and Tsai-Wen Hsu³

¹ Department of Biology, Cheng-Kung University, Tainan, Taiwan

² Institute of Botany, Academia Sinica, Beijing, China

³ Taiwan Endemic Species Research Institute, Chi-Chi, Taiwan

ABSTRACT

Two mosses, *Grimmia handelii* Broth. and *Ptychomitrium linearifolium* Reim., growing on alpine tundra of Taiwan were recently discovered. *G. handelii* is characterized by the filiform branches and somewhat obtuse leaf-apex. The distribution of *G. handelii* supports the close phytogeographical relationship between Taiwan and Yunnan. *P. linearifolium* is distinguished from *P. formosicum* Broth. & Yas., the other species on this island, by the shorter seta and absence of annulus. Both species reported here grow at arid habitats of high elevations.

Key words: *Grimmia handelii* Broth., *Ptychomitrium linearifolium* Reim., new records, alpine tundra, Taiwan

Introduction

Vegetation of alpine tundra in Taiwan is dominated by bryophytes with growth form of small cushion including families Andreaeaceae, Grimmiaceae, and Marsupellaceae (Chiang, 1989). Among these families Asiatic taxa of Grimmiaceae have been revised recently (Deguchi, 1979; Cao and Vitt, 1986). Grimmiaceae, one of the acrocarpous mosses, usually are darkly pigmented and grow at arid habitats. Two grimmiaceous mosses were lately found as new records to moss flora of Taiwan when we examined the materials collected from alpine tundra of this island.

1. *Grimmia handelii* Broth., Sitzungsber. Ak. Wiss. Wien Math. Kl. 133: 567. 1924.

韓氏紫萼蘚 (Fig. 1)

Plants small in cushion, yellowish to dark-brown. Stems erect, with differentiated central strands, with filiform branches. Leaves lanceolate, keeled, apex acute or somewhat obtuse; costa single, ending below the apex, unistratose except

margins. Leaves of filiform branches imbricate, ovate, keeled. Leaf cells quadrate, thick-walled, sinuose. Dioicous. Capsules not seen.

Specimen examined: TAIWAN: Taichung Co., Mt. Chilaishan, ca. 3500 m alt., on rock, *T. Y. Chiang 16896* (HAST).

Illustration: Cao & Vitt (1986): f. 9.

Distribution: Yunnan and new to Taiwan

Notes: Major features distinguishing *G. handelii* from other *Grimmia* taxa are the plants with filiform branches, and mucous and keeled leaves. This species was previously reported from Yunnan, China. The new finding of this species in Taiwan supports the close phytogeographical relationship between Yunnan and Taiwan.

2. *Ptychomitrium linearifolium* Reim., Bot. Jahrb. 64: 539. 1931. 狹葉縮葉蘚 (Fig. 1.)

Plants dark brown. Stems erect, ca. 25 mm long. Leaves crisped when dried, tapering to a linear apex from a broad base; margins toothed;

* 通信作者 (corresponding author) : 蔣鎮宇 (Tzen-Yuh Chiang) ; FAX: 886-6-2742583 ; E-mail: tychiang@mail.ncku.edu.tw

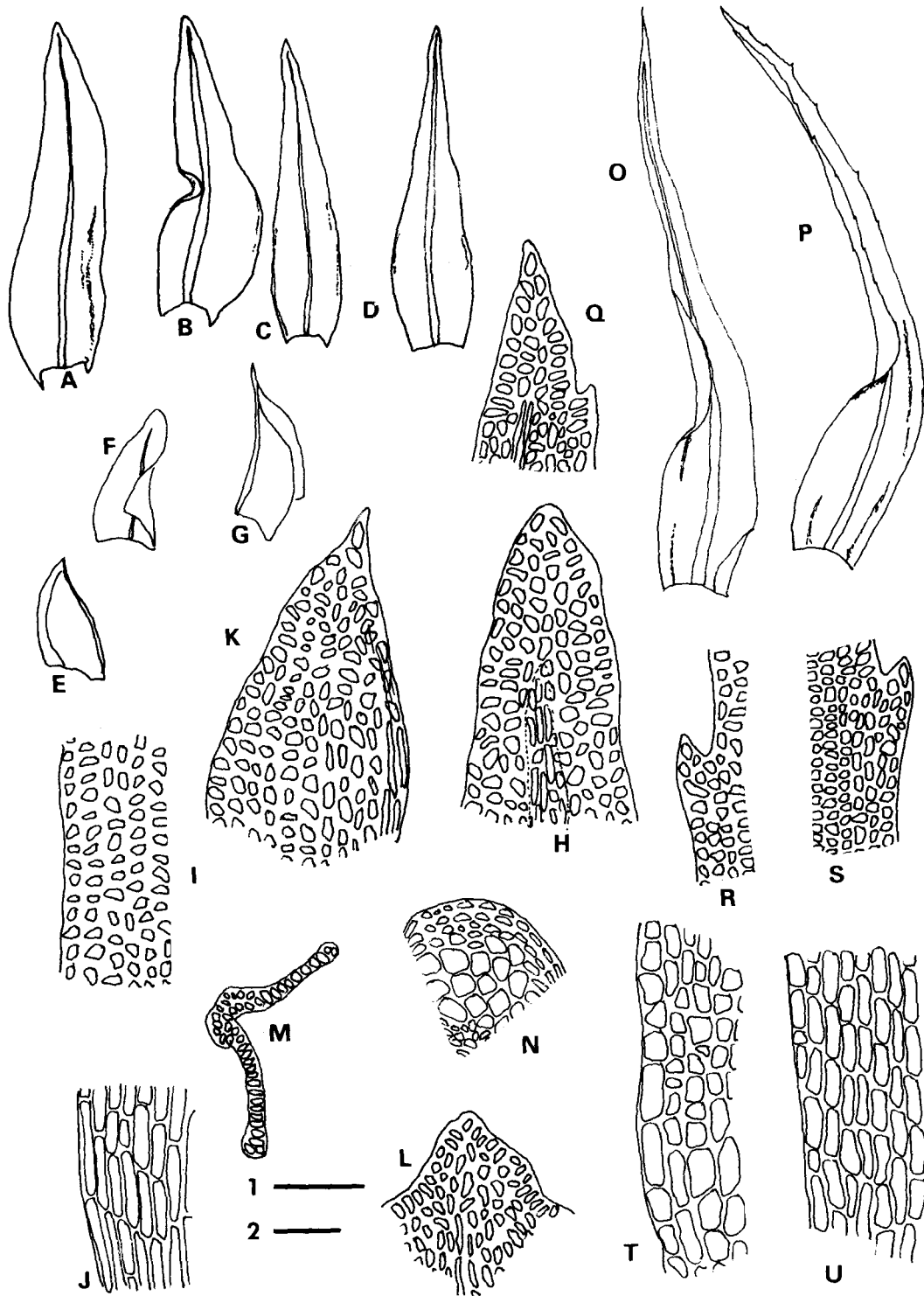


Figure 1. A-N. *Grimmia handelii* Broth. and O-U. *Ptychomitrium linearifolium* Reim. A.-D. Leaves. E-G. Leaves on filiform branches. H. Apical cells of leaves. I. Marginal laminal cells. J. Basal cells. K.L. Apical cells of leaves of filiform branches. M. Cross section of leaf. N. Cross section of stem. O.P. Leaves. Q. Apical cells of leaf. R.S. Marginal laminal cells. T. Basal marginal cells. U. Cells close to costa. Scales 1: 0.4 mm (A-G, O, P), 2: 0.029 mm (H-N, Q-U) (*G. handelii* drawn from *T. Y. Chiang* 16896; *P. linearifolium* drawn from *T. Y. Chiang* 3355).

costa single, extending to the apex. Laminal cells round or quadrate, thick-walled. Seta ca. 0.5-0.7 mm long. Capsules oblong, annulus absent.

Specimen examined: TAIWAN: Taichung Co., Mt. Hohuanshan, ca. 3200 m alt., on rock, *T. Y. Chiang* 3355 (HAST).

Illustration: Noguchi (1988): f. 160A.

Distribution: Japan, Korea and new to Taiwan

Notes: Two species of *Ptychomitrium* occur in Taiwan with *P. linearifolium* new to moss flora of this island and are diagnosable as follows:

1. Seta shorter than 10 mm, annulus absent -----
----- *P. linearifolium*

1. Seta 10-15 mm long, annulus differentiated -----
----- *P. formosicum*

P. linearifolium is closely related to *P. formosicum*, a common species at high elevations, sharing toothed leaves and oblong capsules. The shorter seta and absence of annulus characterize and distinguish it from *P. formosicum*.

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References

- Brotherus, V. F. 1928. Musci novi Japonici. *Ann. Bryol.* 28: 17-27.
- Cao, T. and D. H. Vitt, 1986. A taxonomic revision and phylogenetic analysis of *Grimmia* and *Schistidium* (Bryopsida: Grimmiaceae) in China. *J. Hattori Bot. Lab.* 61: 123-247.
- Chiang, T. Y. 1989. The study on the bryophytic life-form of Mt. Yushan. Master Thesis, Graduate Institute of Botany, National Taiwan University, Taipei.
- Deguchi, H. 1979. A revision of the genera *Grimmia*, *Schistidium* and *Coscinodon* (Musci) of Japan. *J. Sci. Hiroshima Univ. ser. b., div. 2*, 16: 121-256.
- Noguchi, A. 1954. Musci Japonici. IV. The genus *Ptychomitrium*. *J. Hattori Bot. Lab.* 12: 1-26.
- Noguchi, A. 1988. Illustrated Moss Flora of Japan, Part 2. Supplemented by Zen. Iwatsuki. Hattori Botanical Laboratory, Nichinan.

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台灣高山寒原新發現的兩種蘚類植物

蔣鎮宇¹ 羅健馨² 許再文³

¹國立成功大學生物系

²北京中國科學院植物所

³台灣省特有生物研究保育中心

摘要

韓氏紫萼蘚(*Grimmia handelii*)及狹葉縮葉蘚(*Ptychomitrium linearifolium*)為生長在台灣高山寒原新發現的蘚類植物，韓氏紫萼蘚的特徵為具有鞭狀枝以及稍鈍的葉先，本種在台灣的發現支持雲南及台灣植物地理的相關；狹葉縮葉蘚有別於台灣縮葉蘚(*P. formosicum*)具有較短的蒴柄及不具分化的環帶。

關鍵詞：韓氏紫萼蘚、狹葉縮葉蘚、新記錄、高山寒原、台灣