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Re-examination of *Bryonoguchia brevifolia*, a new synonym of *Hylocomiastrum himalayanum*

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Abstract. *Bryonoguchia brevifolia* S. Y. Zeng reported from China is examined and is considered conspecific with *Hylocomiastrum himalayanum* (Mitt.) Broth., a species widespread in the Himalayas, China, Taiwan, and Japan. *Hylocomiastrum* is distinguished from *Bryonoguchia* by its sympodial growth-form and reindeer-horn paraphyllia. In contrast, *Bryonoguchia* is characterized by having filiform paraphyllia and uni-papillose leaf cells. *Byonoguchia* is now a monotypic genus of the Thuidiaceae.

Keywords: *Bryonoguchia brevifolia*; Growth-form; *Hylocomiastrum himalayanum*; Paraphyllia; Synonym.

Bryonoguchia is a genus of two species: *B. molkenboeri* (Lac.) Iwatsuki & Inoue and *B. brevifolia* Zeng. The regularly bipinnate habit, differentiated stem and branch leaves, and branching filiform paraphyllia of *B. molkenboeri* resemble those of the *Thuidium* species. A diagnostic character, i.e. paraphyllia differentiated on the leaf base and lower costa, distinguishes *Bryonoguchia* from *Thuidium* (Noguchi, 1994). However, Zeng (1991), whose Figure 1 described *Bryonoguchia brevifolia*, showed only differentiated stem and branch leaves. Since Zeng's paper (1991) failed to take into account pertinent literature included in Chiang and Hsu (1997), it is reasonable to doubt whether the author looked up important references or checked for possibly related taxa before the new species was published. The presence of hornlike paraphyllia (Noguchi, 1972) and smooth leaf cells in *B. brevifolia* indicate it is more related to the Hylocomiaceae than the Thuidiaceae. Indeed on the basis of the sympodial growth-form, reindeer-horn paraphyllia, and smooth leaf cells, we synonymize *Bryonoguchia brevifolia* with *Hylocomiastrum himalayanum* (Mitt.) Broth.

Hylocomiastrum himalayanum (Mitt.) Broth. in Engler & Prantl, Nat. Pfl. ed. 2, 11: 486. 1925. Figure 1

Basionym: *Stereodon himalayanus* Mitt., J. Linn. Soc. Bot. Suppl. 1: 113. 1859.

Bryonoguchia brevifolia S. Y. Zeng, Acta Botanica Yunnanica 13: 377. f. 1.1991. *syn. nov*. Holotype: Yunnan: Weihsi County, *Da-Cheng Zhang 743a* (KUN).

Illustrations of *Hylocomiastrum himalayanum*: Rohrer (1985) Fig. 3. d-f; Noguchi (1994) Fig. 529; Koponen (1979) f. 10.

Plants robust, growth-form sympodial, bipinnate; paraphyllia abundant on stems and branches, reindeer-horn type (cf. Noguchi, 1972); stem and branch leaves differentiated; leaf margins dentate; costa single, 4/5 leaf length; median cells linear, smooth or prorate; basal cells brown, quadrate; alar cells not different from the basal cells.

Distribution. Himalayas, China, Taiwan, Japan.

Additional specimens examined. *Hylocomiastrum himalayanum* (Mitt.) Broth.: Japan, Honshu, *Inoue 936, 487* (MO), *Schofield 51994* (MO). *Bryonoguchia molkenboeri* (Lac.) Iwatsuki & Inoue: Japan, Hokkaido, Higuchi s.n. (HAST; exsiccati: bryophytes of Asia, Fasc. 2: 28, distributed by Hiroshima University).

A derived character, "reindeer-horn" paraphyllia (Noguchi, 1972), distinguishes *Hylocomiastrum* from other genera of the Hylocomiaceae. The close relationship between *H. himalayanum* and *H. umbratum* has been suggested by their many shared similarities (Koponen, 1979; Rohrer, 1985). *Hylocomiastrum himalayanum* differs from *H. umbratum* in having leaves with a single costa instead of two. From the other single costate species, *H. pyrenaicum* (Hedw.) Fleisch., *H. himalayanum* is regularly bi-pinnate rather than irregularly branched (Rohrer, 1985). Accordingly, *H. himalayanum* illustrated on Fig. 184: 11-16 of Li *et al.* (1985) seems more likely to be *H. umbratum*. This makes the distribution of *H. himalayanum* in Tibet uncertain since no specimens have been specifically cited in earlier literature (*cf.* Redfearn et al., 1996).

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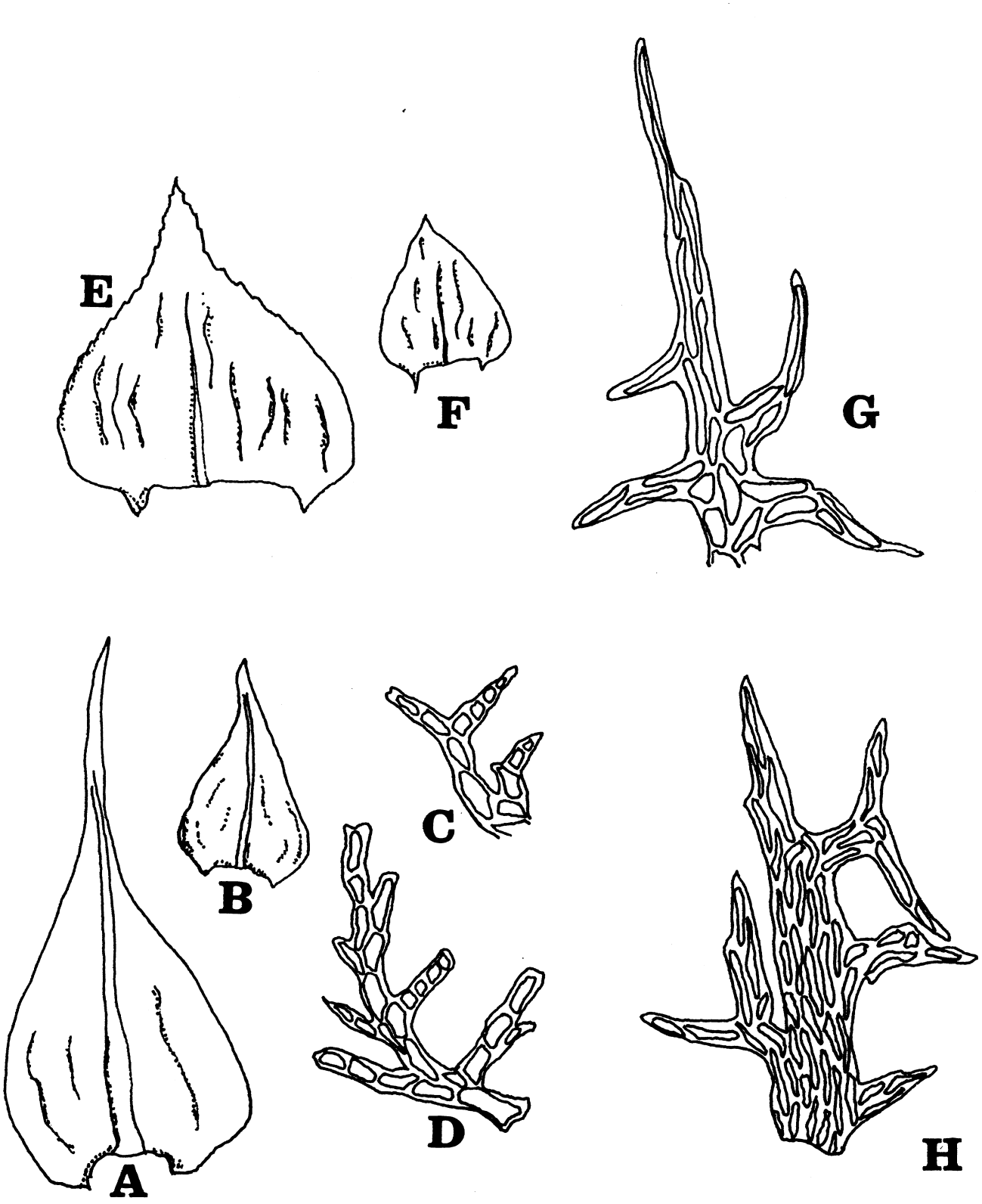

Figure 1. *Bryonoguchia molkenboeri* (Lac.) Iwatsuki & Inoue (A-D): A, Stem leaf (×51); B, Branch leaf (×51); C-D, Paraphyllia (×349). *Hylocomiastrum himalayanum* (Mitt.) Broth. (E-H): E, Stem leaf (×31); F, Stem leaf (×31); G-H, Paraphyllia (×450); A-D, drawn from Higuchi s.n. E-H, drawn from holotype of *B. brevifolia* (D. C. Zhang 743a).

The sympodium growth-form, reindeer-horn paraphyllia, and smooth leaf cells suggest that *Bryonoguchia brevifolia* is conspecific with *Hylocomiastrum himalayanum*. Following this treatment *Bryonoguchia* would remain a monotypic genus with distribution in temperate Asia.

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Literature Cited

Chiang, T.Y. and J.W. Hsu. 1997. The literature of taxonomic studies on mosses of China and the adjacent regions. Taiwan Endemic Species Research Institute, Nantou.

Koponen, T. 1979. Contributions to the east Asiatic bryoflora III. *Hylocomium himalayanum* and *H. umbratum*. Ann. Bot. Fennici **16:** 102-107.

Li, X.J. et al. (eds.) 1985. Bryoflora of Xizang. Science Press, Beijing.

Noguchi, A. 1972. On the delimitation of the genera of the Hylocomiaceae and Rhytidiaceae. J. Hattori Bot. Lab. **35:** 155-168.

Noguchi, A. 1994. Illustrated moss flora of Japan, Part 4 & 5. Supplemented by Zen. Iwatsuki and T. Yamaguchi, The Hattori Botanical Laboratory, Nichinan.

Redfearn, P.L.Jr., B.C. Tan, and S. He. 1996. A newly updated and annotated checklist of Chinese mosses. J. Hattori Bot. Lab. **79:** 163-357.

Rohrer, J.R. 1985. A generic revision of the Hylocomiaceae. J. Hattori Bot. Lab. **59:** 241-278.

Zeng, S.Y. 1991. A new species of the *Bryonoguchia* from Yunnan. Acta Bot. Yunn. **13:** 377-379.

短葉毛羽蘚的再檢視：喜馬拉雅塔蘚之同異名

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中國大陸的短葉毛羽蘚模式標本被檢視並被認定與泛分布於喜馬拉雅山區、中國、台灣及日本的喜馬拉雅塔蘚爲同一物種。塔蘚有別於毛羽蘚在其擁有多歧分枝的生活型及馴鹿狀的鱗毛，相對的，毛羽蘚則擁有絲狀的鱗毛及單疣葉細胞，毛羽蘚現爲羽蘚科的單種屬。

關鍵詞：短葉毛羽蘚；生活型；喜馬拉雅塔蘚；鱗毛；同異名。