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A range extension for *Haplomitrium mnioides* (Lindb.) R.M.Schust.

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Abstract. *Haplomitrium mnioides* (Lindb.) R.M.Schust. is reported as new to Hainan Island. A continuous distribution of *H. mnioides* from west (Thailand) to east (Japan) is confirmed. Habitat pictures and a distribution map are provided.

Introduction

As the Chinese name for the generic name implies, *Haplomitrium* are beautiful liverworts owing to their delicate, herb-like nature, light green color, and long, erect, cylindrical calyptrae (Fig. 1). *Haplomitrium* is traditionally regarded as an ancient and very interesting genus owing to a wide range of morphological and ontogenetic features, including the occurrence of endophytic fungi (Carafa et al. 2003). Delicate plants, erect shoots, radial leaf arrangement, copious slime on stems and leaf margins, absence of rhizoids, a system of subterranean axes, and the lack of perianths are the main characters of the genus. Both morphological and molecular evidence indicate that *Haplomitrium* is closely related to the Metzgeriales, and warrants recognition at the class level, as Haplomitriopsida (Stech & Frey 2004; Heinrichs et al. 2005).

Haplomitrium has been monographically studied by Schuster (1966) and Bartholomew-Began (1991). The latter recognized seven species: *H. blumii* (Nees) R.M.Schust., *H. gibbsiae* (Steph.) R.M.Schust., *H. hookeri* (Smith) Nees, *H. intermedium* Berrie, *H. monoicum* J.J.Engel, *H. ovalifolium* R.M.Schust., and *H. mnioides* (Lindb.) R.M.Schust. In the Flora Bryophytorum Sinicorum (Gao 2003) *Haplomitrium* was represented by only two species (*H. blumii* and *H. mnioides*). A third species, *H. hookeri,* was found only in Sichuan and Yunnan (Higuchi et al. 2000). *Haplomitrium mnioides* is an East Asian species with a distinct distributional gap between Taiwan and Thailand. It is not rare, but somewhat vulnerable and considered to be endangered in China (Zhu et al. 1994). The species, however, has not been found in Hainan Island, where the bryoflora has been investigated relatively extensively (cf. Lin et al. 1994). The present paper reports its occurrence on the island,

Fig. 1. Plants of *Haplomitrium mnioides*.

indicating its continuous distribution from west (Thailand) to east (Japan) (Fig. 2).

Taxonomy and distribution

Haplomitrium mnioides (Lindb.) R.M.Schust., J. Hattori Bot. Lab. 26: 225. 1963.

Representative specimens examined. China. Fujian, Changting Co., near Donghuashan, on soil at roadside, 19 Feb 1943, *X.Q. Zhao 198* (HSNU); Guangdong. Babaoshan Nature Reserve, on moist soil near water fall, 1200 m, Dec 1989, *R.L. Zhu s.n.* (HSNU); Guangxi. Maoershan Nature Reserve, 1200 m, on moist rock, 7 Sep 2004, *R.L. Zhu 20040907-1E* (HSNU); Hainan. Changjiang Co., Bawangling Nature Reserve, on moist rocks, 1130–1150 m, 27–28 Nov 2003, *R.L. Zhu 2003112705, 20031128-33* (HSNU); Hong Kong. Tai Mo Shan (N), on soil, 300 m, 8 Nov 1994, *M.L. So 1108* (HSNU).

Haplomitrium mnioides is well characterized and easily distinguished from all other members of *Haplomitrium* by its prostrate or obliquely ascending vegetative shoots (Fig. 3), an elongate and hollow seta, and densely tuberculate spores (Bartholomew-Began 1991). It is distributed in central and southern Japan (Inoue 1974), Taiwan (Bartholomew-Began 1991), and Thailand (Kitagawa 1978). In Mainland China, it has recently been known from the warmer southern regions (Fujian, Guangxi, Hong Kong, Hunan, Sichuan, Taiwan, and Yunnan) (Piippo 1990; So 1995; Gao 2003; Zhu & So 2003; Koponen et al. 2004). Hainan is thus its southernmost locality in China, as shown in Fig. 2. The record in Jiangxi (Zhang & Lai 1993) is unsure, because the voucher specimens (Jiangxi, Dexing Co., Sanqingshan, Jinsha-Fengmen, on moist sandy soil, 1900 m, 4 Jun 1988, *X.M. Shao 1759*, *1900* (HSNU)) are

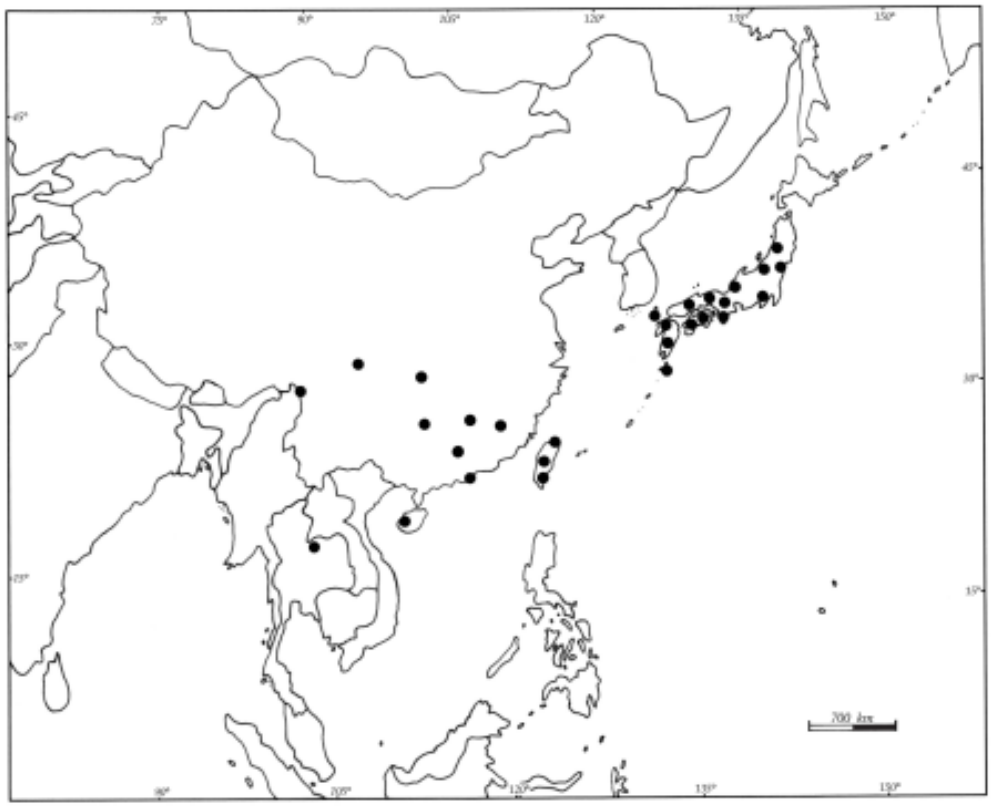

Fig. 2. Distribution map of *Haplomitrium mnioides.* Records in Japan and Thailand fide Inoue (1974) and Kitagawa (1978), respectively.

sterile, and may be *Haplomitrium blumii*. The total range of *Haplomitrium mnioides* is shown in Fig. 2. The occurrence of *Haplomitrium mnioides* in other countries of Indochina such as Laos and Vietnam is highly expected after an intensive investigation.

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Fig. 3. *Haplomitrium mnioides* on moist rocks, Bawangling Nature Reserve, Hainan, China.

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