

New Records of Bryophytes to Northeast China Collected from Changbai Mountain

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Abstract: Based on identification of more than 2000 specimens collected by joint expedition of Chinese and Canadian bryologists from Changbai Mountain, the highest peak in Northeast China, 300 species belonging to 152 genera and 59 families of bryophytes are recognized. Among them, the genus *Campylostelium* (*C saxicola* (Web et Mohr) B S G) is new to mainland China; two genera are first records for Northeast China: *Macrocoma* (*M tenuis* (Hook et Grev) Vitt spp *sulhwantii* (*C Muell*) Vitt) and *Isopterygium* (*I albescens* (Hook) Jaeg). Five species of bryophytes are also new to Northeast China: *Lophozia incisa* (Schrad) Dum; *Cynodontium fallax* Limpr; *Ditrichum gracile* (Mitt) O Kuntze; *Ditrichum divarcatum* Mitt, and *Plagiothecium latebricola* (Wils) Schimp.

Key words: Bryophytes; Northeast China; Changbai Mt; New records

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1 Introduction

The Changbai Mountain located at 41° 41' 49" ~ 42° 25' 18" N, 127° 42' 55" ~ 128° 16' 48" E is the highest peak in Northeast China with altitude up to 2691 m above sea level. The rich bryophyte flora and its ecology have been studied and reported by GAO and CAO (1983), KOPONEN et al (1983), QIN and GAO (1990), VITT and CAO (1989), VITT et al (1990), CAO et al (1995a, 1995b), GUO et al. (1999) and GUO and CAO (1999). According to the literatures, 338 species belonging to 135 genera and 42 families of mosses and 98 species belonging to 42 genera and 26 families of liverworts have been reported from the mountain. For further study of biodiversity of bryophytes and its distribution pattern in the mountain, a joint field expedition by Chinese and

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Canadian bryologists was carried out in June 1997. 34 sites mainly in conifer forest zone were selected for sampling. 2076 specimens of bryophytes were collected. Based on identification of the specimens collected from the Mountain. 300 species belonging to 152 genera and 59 families of bryophytes were identified. Among them, the family Schistostegaceae with *Schistostega pennata* (Hedw) Web et Mohr and *Diphyscium satoi* Tuzibe were reported for the first time for China by CAO et al (1999) and ZHAO et al (2000) respectively. In present paper, the following records of bryophytes new to mainland China and Northeast China are reported. The genus *Campylostelium* (*C saxicola* (Web et Mohr) B S G) is new to mainland China. Two genera are first records for Northeast China: *Macrocoma* (*M tenue* (Hook et Grev) Vitt ssp *sullivantii* (C Muell) Vitt); *Isopterygium* (*I albescens* (Hook) Jaeg); and five species of bryophytes are also new to Northeast China: *Lophozia incisa* (Schrad) Dum; *Cynodontium fallax* Limpr; *Ditrichum gracile* (Mitt) O Kuntze; *Ditrichum divarcatum* Mitt; and *Plagiothecium latebricola* (Wils) Schimp. These taxa enriched the bryoflora of China and extended the distribution range of some bryophytes. The specimens are deposited at the herbarium of University of Alberta (ALTA).

(1) *Campylostelium saxicola* (Web et Mohr) B S G.

This distinct small moss is widely distributed in the northern hemisphere. Tan first reported the genus *Campylostelium* with *C saxicola* from Taiwan in 1994 and he predicted that " its presence in mainland China should be expected".

Nine specimens of *Campylostelium saxicola* (BELLAND, R J and FU XING 23905, 24163, 24439, 24470, 25001, 25252, 25627, 25658, 25876) were collected from seven sampling sites. The plants with well developed sporophytes grow well on small, moisture shaded volcanic boulders. This species is often communicated with *Bryoxiphium nerverginum* and *Tetradontium brownianum* var *reparium*, sometimes mixed with *Fissidens bryoides*, *Jungermannia pyriflora*, *J sphaerocarpum* and *Cephaloziella willisana* on the mountain. This record added a new genus to mainland China.

(2) *Macrocoma tenue* (Hook et Grev) Vitt ssp *sullivantii* (C Muell) VITT

Macrocoma tenue ssp *sullivantii* was found on trunk of a birch tree in the mountain (BELLAND R J and FU XING 24779). The rigid, creeping plants with slender, widely spreading irregular branches and small pressed leaves are easily recognized. Of 11 species recognized in the world, *M tenue* ssp *sullivantii* is one of the most widely distributed taxa. (VITT 1980a, 1980b). It has been reported from nine provinces in China, with the most northern distribution of Shaanxi (REDFEARN et al 1996). The genus *Macrocoma* is first record for northeast China.

(3) *Isopterygium albescens* (Hook) Jaeg *Isopterygium albescens* is characterized by having small, whitish-green creeping plants with complanate leaves, which are lanceolate and tapering to narrow acumens, and leaf base not decurrent and not forming distinct alar regions. The eight specimens of this species (BELLAND R J and FU XING 24518, 24690, 24709, 24890, 24961, 25884, 25885, 25594) were mostly collected from tree base or rotten wood, except one (no 25885) from boulder. *Isopterygium albescens* has been reported from southern part and Taiwan of China. The genus *Isopterygium* is new record for Northeast China.

There is a species of *Isopterygiopsis*, *1 muelleriana* (Schimp) Iwats, which was transferred from genus *Isopterygium* by Iwatsuki in 1970, on the mountain. *Isopterygium albescens* can be distinguished from that species by having slender, whitish-green plants and lanceolate leaves tapering to long.

narrow acumens.

(4) Species new to Northeast China

Even though the bryoflora of northeast China has been relatively well documented by GAO (1977) and GAO et CHANG (1981) and updated by REDFEARN (1996) and PIIPPO (1992), we still found five species of bryophytes new to northeast China (including Liaoning, Jilin, Heilongjiang provinces and east part of Inner Mongolia) from the mountain. The results are also briefly reported here.

1 *Lophozia incisa* (Schrad) Dum

This unique species of *Lophozia* is easily recognized by its small plants forming opaque, bluish-green colored dense patches and crowded, crispate, wave leaves with acute to acuminate lobes. The big, cylindrical-obovoid, deeply 5~6 plicate perianth is also distinct. The species was found on rocks or rotten logs at higher elevation, (BELLAND R J and FU XING 24167, 24168, 24569, 24634, 24731, 24916, 25376). It is sometimes mixed with *Marsupella commutata* (Limpr) Bennett, *Scapania pervidens* Steph and *S. apiculata* Spruce. *Lophozia incisa* is a widespread species of holarctic distribution, extending over the entire cool to boreal region of the northern hemisphere (Schuster 1969). It has been reported from Yunnan, Sichuan, Xizang (Tibet), southwest China and Taiwan (PIIPPO 1992). More distribution of this species should be expected in China.

2 *Cynodontium fallax* Limpr

There two species of *Cynodontium*, *C. alpestre* (Wahl) Mild and *C. gracile* (Web et Mohr) Schimp, have been recorded from Changbai Mountain. *Cynodontium fallax* is differentiated from these two species by having more robust plants: long, broad-lanceolate leaves; lower papillae on leaf cells and erect, symmetric cylindrical capsules. The plants grow on thin soil over rocks (BELLAND R J and FU XING 24348, 24393, 25086). *C. fallax* has been reported from Janxi, Yunnan and Sichuan in China (CHEN et al 1963, GAO 1994). Since this species also occurs in Siberia (SAVICZ-LJUBITZKATA and SMIRNOVA 1970), it is not surprised to find it in northeast China.

3 *Ditrichum gracile* (Mitt) O Kuntze

Ditrichum gracile is readily recognized by its slender and tall plants with somewhat contorted linear-lanceolate leaves when dry. The overview of plants of *D. gracile* is similar to *D. difficile*, but the former has much shorter leaf cells. The specimen (BELLAND, R J and FU XING 23861) was collected on soil ground at 1180 m. It was commonly named as *Ditrichum crispatisimum* (C Muell) Par in China, which was synonymized to *D. gracile* by ALLEN in 1994. *D. gracile* has been recorded from seven provinces including Qinghai and Xinjiang, northwest China, (GAO and CROSBY 1999). ALLEN (1994) considered that this species is a complex of extremely variable and widespread taxon.

4 *Ditrichum divarcatum* Mitt

This species is characterized by having robust plants up to 5 cm high in dense tufts with long-setaceous leaves from an oblong semitubular base. The leaf cells at the shoulder small, irregular and thick-walled and cells of sheathing base elongate-rectangular, hyaline and thin-walled are distinct characteristics of the species. It was found on crevice on rocks at high elevation of 2340-2400 m in the mountain (BELLAND R J and FU XING 25903, 25919, 25918). *Ditrichum divarcatum* has been reported from Anhui, Sichuan, Shanghai and Zhejiang, southern China but was not included in Moss Flora of China vol 1 both Chinese and English version (GAO 1994, GAO and CROSBY 1999) since the specimens were not available to the authors. This report confirmed the distribution of *D. divarcatum* in China and is new to northeast China.

5 *Plagiothecium latebricola* (Wils) Schimp in B S G

Plagiothecium latebricola is distinguished by having minute plants, erect capsules; leaves lanceolate to oblong-lanceolate, shortly decurrent at base with indistinct costa. The small, green, narrowly cylindrical 4-5 cells long brood bodies were also observed in leaf exiles of the specimen (BELLAND R J and FU XING 25776), which was collected from bark at the base of a tree. This species was reported new to China from Sichuan by HE and REDFEARN in 1995.

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长白山采集的中国东北新记录苔藓植物

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摘要: 对中国和加拿大苔藓学者联合于中国东北最高的长白山采集的 2 千余份标本鉴定的基础上, 认定有苔藓植物 59 科, 152 属, 300 种, 报道了中国大陆新记录 1 属 - 小曲柄藓属 (*Campylostelium*), 中国东北新记录 2 属 - 直蓑衣藓属 (*Macrocoma*) 和同叶藓属 (*Isopterygium*), 中国东北新记录 5 种 - 褶叶裂叶苔 (*Lophozia incisa*), 假狗牙藓 (*Cynodontium fallax*), 细枝牛毛藓 (*Ditrichum gracile*), 散叶牛毛藓 (*Ditrichum divarcatum*) 和细叶棉藓 (*Plagiothecium latebricola*).

关键词: 苔藓植物; 中国东北; 长白山; 新记录