

中国羽藓科植物修订

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A revision of Chinese Thuidiaceae(s.l., Musci)

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Abstract The study on Chinese Thuidiaceae was started in 19th century. However the present paper deals with the first revision of the family in China. There are 17 genera and 71 species in total including one subspecies. In this paper, several nomenclatural problems are treated, mainly involving 7 genera: *Leptocladium* Broth., *Anomodon* Hook. et Tayl., *Haplocladium* (C. Muell.) C. Muell., *Claopodium* (Lesq. et Jam.) Ren. et Card., *Bryonoguchia* Iwatsuki et Inoue, *Helodium* (Sull.) Warnst. and *Actinothuidium* (Besch.) Broth. One new species, 3 new synonyms, including one generic synonym and two specific synonyms, and one Chinese new name are reported.

Key words Thuidiaceae; Review; New addition; China

摘要 中国羽藓科植物自 19 世纪起即有报道,但迄今才进行首次全面校订,现知中国有 17 属和 71 种(包括 1 亚种)。本文主要就其中 7 个属:薄羽藓属、牛舌藓属、小羽藓属、麻羽藓属、毛羽藓属、羽羽藓属及锦丝藓属中的一些种属名称作修订和新增补。文内涉及 1 新种、3 新异名(含 1 属的新异名和 2 个种的新异名)和 1 新中文名。

关键词 羽藓科;校订;新增补;中国

Among the pleurocarpous mosses of China, the Thuidiaceae is one of the largest families. Seventeen genera, 71 species and 1 subspecies were reported from China recently(Wu 1999).

Its systematic relationships were discussed by Fleischer(1915~1922), Brotherus(1925), Watanabe(1972), Touw(1976) and Crum & Anderson(1981), but the studies were mainly on the relationships between Thuidiaceae and Leskeaceae.

According to our own studies, the Thuidiaceae is recognized as a core or key family of hypnalean pleurocarpous mosses, including Leskeaceae, Amblystegiaceae, Fabroniaceae and Trachypodaceae.

The aim of this paper is to give a rather comprehensive review and make some additions for the Chinese Thuidiaceae including *Leptocladium* Broth., *Anomodon* Hook. et Tayl., *Haplocladium* (C. Muell.) C. Muell., *Claopodium* (Lesq. et Jan.) Ren. et Card., *Bryonoguchia* Iwatsuki et Inoue, *Helodium* (Sull.) Warnst. and *Actinothuidium* (Besch.) Broth.

(1) We examined the type specimen of *Leptocladium sinense* Broth. H. Handel-Mazzetti no. 9324(H), and provide its detailed figures for the first time except the plant outline.

(2) *Anomodon perlingulatus* Broth. ex Wu et Jia, sp. nov.(see the text for Latin description)

The name is originally invalid, given by Brotherus in 1925 based on the specimen of Giraldis no. 272(holotype, H) collected from Shaanxi, China, in June of 1899. It quite differs from related species in the genus by its very long lingulate cauline leaves and each leaf cell with several small papillae.

(3) *Haplocladium incurvum* Broth.

This species was published based on H. Handel-Mazzetti 12912(H) collected from Hunan, Central South China. Its main characters are as follows: cauline leaves widely ovate at base, gradually to a lanceolate apex, branch leaves somewhat differentiated, apex rather short; leaf cells rhomboid to hexagonal, bearing a single, low papapilla at back and paraphyllia sparse, lanceolate.

(4) *Haplocladium leptopteris* C. Muell.

In this paper, *Haplocladium leptopteris* C. Muell. is treated as a synonym of *Claopodium leptopteris* (C. Muell.) Wu et M. Z. Wang, because its stem leaves and branch leaves are similar and paraphylliae are absent on stem.

(5) *Claopodium integrum* Chen

It was named by S. J. Li(1963) according to the specimen collected by the Expedition of Agriculture and Forest Ministry(no. 22) from Weixi County, Yunnan Province, but the name is invalid, and is a synonym of *Haplocladium microphyllum* (Hedw.)Broth.

(6) *Bryochenea* Gao et K. C. Chang

It is apparently a synonym of *Bryonoguchia* Iwatsuki et Inoue after comparison between *Bryochenea ciliata* Gao et K. C. Chang and *Bryonoguchia molkenboeri* (Lac.)Iwatsuki et Inoue. Evidently their characters are quite similar, and probably due to the habitat of the specimen Fu Yunsheng 5023, papillae of leaf cells of *Bryochenea ciliata* Gao et K. C. Chang are rather low.

(7) *Actinothuidium hookeri* (Mitt.)Broth.

This species was known from Northeast China, West China and Southwest China previously. The specimen, C. W. Wang 1042(PE), collected in Zhong Tai, Hebei Province. is a new record to North China, but it has not been found in Hebei again. It presents the distribution of *Actinothuidium hookeri* (Mitt.)Broth. reduced in the past several decades in China. Furthermore, the fossil of *Actinothuidium hookeri* (Mitt.)Broth. had been found in Europe by Abramova and Abramov in 1963, therefore *Actinothuidium* was a real Eurasian genus, and its present distribution only in East Asia should be the result of a series reduction after Tertiary.

羽藓科系藓类植物侧蒴类型的大科之一,见于世界各大洲。在热带雨林、亚热带常绿林、温带针叶林及至草原均有其踪迹,它在地球最南端的成员 *Thuidium furfurosum* (Hook. f. et Wils.)Reichdt. 可达亚南极的麦跨里岛。羽藓科植物垂直分布从海平面至 4000 m 高山针叶林,科内大形成员锦丝藓 *Actinothuidium hookeri* (Mitt.)Broth. 和山羽藓 *Abietinella abietina* (Hedw.) Fleisch. 往往成大片被覆林地,对森林水土保持起着积极的作用。羽藓属 *Thuidium* 植物亦为五倍子蚜虫的一类重要冬寄主,对五倍子生产密切相关。

1990 年本文作者之一受中芬植物学基金资助,参加于芬兰赫尔辛基大学举行的东亚苔藓植物讨论会。会后,在该校隐花植物标本馆检视了有关 H. Handel-Mazzetti 于 1914 ~ 1918 年在中国西南地区采集的部分标本。此外,我们还核对了加拿大不列颠哥伦比亚大学 W. B. Schofield 博士提供的庄清璋等在台湾采集的羽藓科植物标本。1993 年参加在日本横浜举行的第 15 届国际植物学大会后,在东京国立自然科学博物馆观察了少量羽藓科标本。以上观察为我们研究《中国苔藓志》第 6 卷羽藓科中的疑难种提供了很大的帮助。

贵州师范大学钟本固教授参加了羽藓科的小羽藓属和麻羽藓属植物的部分研究。

羽藓科的系统关系被学者们长期所关切, Fleischer(1915 ~ 1922)、Brotherus(1925)、Watanabe(1972)、Touw(1976)、Crum 和 Anderson(1981)等就全世界羽藓科的分类及系统关系有细致的论述, 主要集中于讨论羽藓科与薄罗藓科 Leskeaceae 之间的密切关系。

本文的作者们根据自己的研究, 认为羽藓科是侧蒴藓类中灰藓类型的中心大科之一, 分别与薄罗藓科、碎米藓科、柳叶藓科及扭叶藓科等在配子体特性方面, 包括分枝形式、鳞毛和叶细胞等以及孢子体的蒴齿方面均存在一定的渊缘关系。其中羽藓科的异枝藓亚科 Heterocladioideae 与碎米藓科 Fabroniaceae 间通过如叉羽藓属 *Leptopterigynandrum* 植物和拟附干藓属 *Schwetschkeopsis* 植物存在关系; 它们的蒴齿均平滑, 具退化齿毛和叶片中肋单一而短弱。牛舌藓亚科 Anomodontoideae 和羽藓亚科 Thuidioideae 与薄罗藓科 Leskeaceae 的细枝藓属 *Lindbergia* 和拟草藓属 *Pseudoleskeopsis* 之间存在密切关系, 但羽藓亚科植物的叶细胞具单疣或多疣, 鳞毛亦甚多。沼羽藓亚科 Helodioideae 植物的突出分枝形式及喜湿润生境与扭叶藓科 Trachypodaceae 间以毛羽藓属 *Bryonoguchia* 和异节藓属 *Diaphanodon* 相互沟通; 而沼羽藓亚科与柳叶藓科 Amblystegiaceae 间亦存在形态构造上和生态习性上的近似之处; 牛角藓属 *Cratoneuron* 可能是两者的中介属(Wu 1999)。

《中国藓类植物属志》(陈邦杰等 1978)和一系列地区苔藓志及文章(Wu 1999, 赵建成 1998, 白学良 1997, Li & Pippo 1994, Lin *et al.* 1992, 上海自然博物馆 1989, 黎兴江 1985, 中国科学院西北植物研究所 1978, 辽宁省林业土壤研究所 1977, Brotherus 1929)及即将问世的《中国苔藓志》第 6 卷报道中国羽藓科占全世界 19 属中的 17 属, 其中对中国羽藓科的研究有助于弄清该科植物在全世界的属、种及分布状况。本文主要就中国羽藓科植物的新增补、名称更正及新种予以报道。

1 薄羽藓属

Leptocladium Broth., Symb. Sin. 4: 97. 3f. 13. 1929.

自 1929 年 V. F. Brotherus 根据 H. Handel-Mazzetti 在云南西北部海拔 3800 m 以上高山地区的 9324 号(模式标本, H)命名薄羽藓属 *Leptocladium* Broth. 后, 迄今本属植物未在我国其它地区或云南西北部再次发现。其主要特征为植物体呈一回羽状分枝, 叶卵形或长卵形, 仅具 2 短弱中肋或中肋不明显, 叶细胞无疣状突起。蒴柄纤细平滑, 孢蒴的齿片呈阔披针形, 具密横条纹, 与甚近缘的叉羽藓属 *Leptopterigynandrum* C. Muell. 的主要区别在于: 薄羽藓叶为卵形至阔卵形, 且叶细胞呈等轴形。在图 1 中所示的薄羽藓属模式种薄羽藓 *L. sinense* Broth. 的特征图(图 1)为世界上有关该属的首次报道, Brotherus 在 1929 年发表此属时仅附植物体外形图而无任何组织构造图。

2 牛舌藓属

Anomodon Hook. et Tayl., Musc. Brit. 79. 3. 1818.

1818 年本属被确立。自 19 世纪后期起, 有关牛舌藓属植物的研究在中国就有了报道。虽然它是藓类中常见而易于用肉眼识别的分类群, 但新的分类群仍不断增加。1977 年东北地区发现了叶尖具齿的齿缘牛舌藓 *Anomodon dentatus* Gao; 1996 年河南又增加 1 新变种 *A. soloujovii* Lazarenko var. *henanensis* B. C. Tan, Boufford et T. S. Ying。进行本项研究时, 我们检视了 1899 年 P. Giraldi 在陕西采集的 1272 号标本, 它在 Engler 和

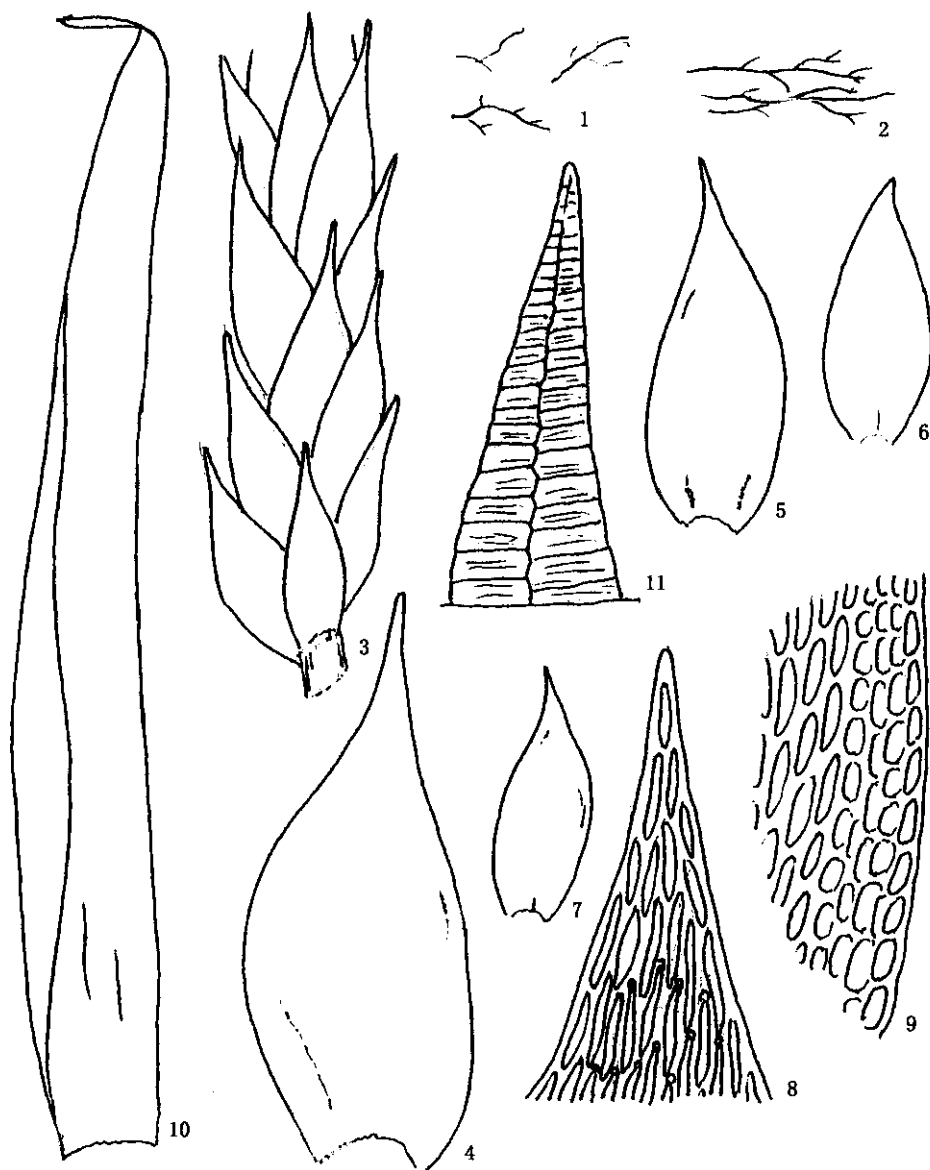


图1 薄羽藓 1. 分散的植株, $\times 0.8$; 2. 成簇的植株, $\times 0.8$; 3. 枝条的一部分, $\times 30$; 4. 茎叶, $\times 75$; 5. 枝叶, $\times 75$; 6~7. 枝基部叶, $\times 75$; 8. 叶尖部细胞, $\times 460$; 9. 叶基部细胞, $\times 460$; 10. 雌苞叶, $\times 75$; 11. 蒴齿齿片, $\times 300$ 。(从 H. Handel-Mazzetti 9324)

Fig.1 *Leptocladium sinense* Broth. 1. Separated plants, $\times 0.8$; 2. Plants in tuft, $\times 0.8$; 3. A portion of branch, $\times 30$; 4. Stem leaf, $\times 75$; 5. Branch leaf, $\times 75$; 6~7. Basal branch leaves, $\times 75$; 8. Apical leaf cells, $\times 460$; 9. Basal leaf cells, $\times 460$; 10. Female bract, $\times 75$; 11. Peristome tooth, $\times 300$. (from H. Handel-Mazzetti 9324)

Prantl 的《植物自然科属系统》中被 Brotherus 以 *Anomodon perlingulatus* Broth. 命名 (Brotherus 1925), 但未有拉丁文描述, 因此, 它仅是植物分类上的一个裸名保存于芬兰赫尔辛基大学隐花植物标本馆。经对照牛舌藓属的其它种类, 我们认为它是一个突出而具狭长带状叶片的新分类群。现仍采用 Brotherus 所取的种名, 补充拉丁文和中文描述如下。

2.1 带叶牛舌藓 新种 图 2

Anomodon perlingulatus Broth. ex Wu et Jia, sp. nov. Fig. 2

Planta robustiuscula, flavo-viridis, caespitosa laxa. Caulis ad 3 cm altus, irregulariter pinna-tim ramosus vel irregulariter ramosus, ramis ad 1 ~ 3 cm longis. Folia sicca laxa imbricata, humida erecto-patentia, e basi late ovata, longelanceolato-lingulata, marginibus integerrimis, leviter undu-latis; nervo infra apicem folii evanido; cellulis rhomboideis, medianae diametro 60 ~ 70 μm $\times$ 75 ~ 90 μm , trigonibus nullis, papillis multis instructis. Folia ramea minora, eis caulinis ca. 2-plo breviora. sporophyta ignota.

China. Shaanxi(陕西): 1899-06-10, P. Giral-di 1272(holotype, H).

Its very long lingulate stem-leaves and each leaf-cell with several small papillae are quite dif-ferent to those of the other species of *Anomodon* of China.

植物体黄绿色,中等,丛集生长。茎长可达 3 cm,不规则羽状分枝或不规则分枝;分枝长 1 ~ 2 cm。叶干时疏松贴生,湿时倾立;茎叶基部宽卵形,略下延,渐上呈狭长带形,叶舌部分占叶片长度的 1/2 ~ 3/5;中肋粗壮,消失于叶片近尖部;叶边全缘,略具波曲。叶细胞六角形,薄壁,中部细胞 60 ~ 70 μm $\times$ 75 ~ 90 μm ,表面被多数椭圆状细疣。茎叶基部叶片较小,叶舌部短于叶基部或近相等。枝叶较小,长约为茎叶长度的 1/2。孢子体未见。

本种叶片上部狭长舌形及每个叶细胞具多数细疣,可与我国其它牛舌藓相区分。

3 小羽藓属

Haplocladium (C. Muell.) C. Muell., Nuov. Giorn. Bot. Ital. n. ser. 3: 116. 1896.

是羽藓科中在 1896 年就被报道的一个属,该属的一些种类最初是作为灰藓属 *Hyp-num*、羽藓属 *Thuidium* 及薄罗藓属 *Leskea* 的种类发表,在中国分布较广,其中一些种被命名后仍不为人知。

3.1 小羽藓

Haplocladium incurvum Broth., Symb. Sin. 4: 99. 1929.

本种是 1929 年 Brotherus 根据 H. Handel-Mazzetti 在湖南采集的标本 12912 号命名。其叶形为茎叶基部阔卵形向上呈披针形,而枝叶为卵形具短钝尖;叶细胞六角形,中央有单个小疣;鳞毛披针形,稀少。

3.2 细叶小羽藓

Haplocladium microphyllum (Hedw.) Broth., Nat. Pfl. 1(3): 1007. 1907.

陈邦杰根据 1955 年农林部调查队在云南维西采集的 22 号标本命名了全缘麻羽藓 *Claopodium integrum* Chen,直至 1963 年在黎兴江的《川西高山林区的苔藓植物》一文名录中才首次引用此名称,而未附有拉丁文描述。因此,迄今尚是一裸名。经进一步检视,云南维西农林部 22 号实为细叶小羽藓 *Haplocladium microphyllum* (Hedw.) Broth.。

4 麻羽藓属

Claopodium (Lesq. et Jam.) Ren. et Card., Rev. Bryol. 20: 16. 1893.

为羽藓科中分布较广的一个属,属内原有不少地区种类已被归为异名。本文就属中分布中国的 2 个种作简要探讨。

4.1 卵叶麻羽藓 图 3

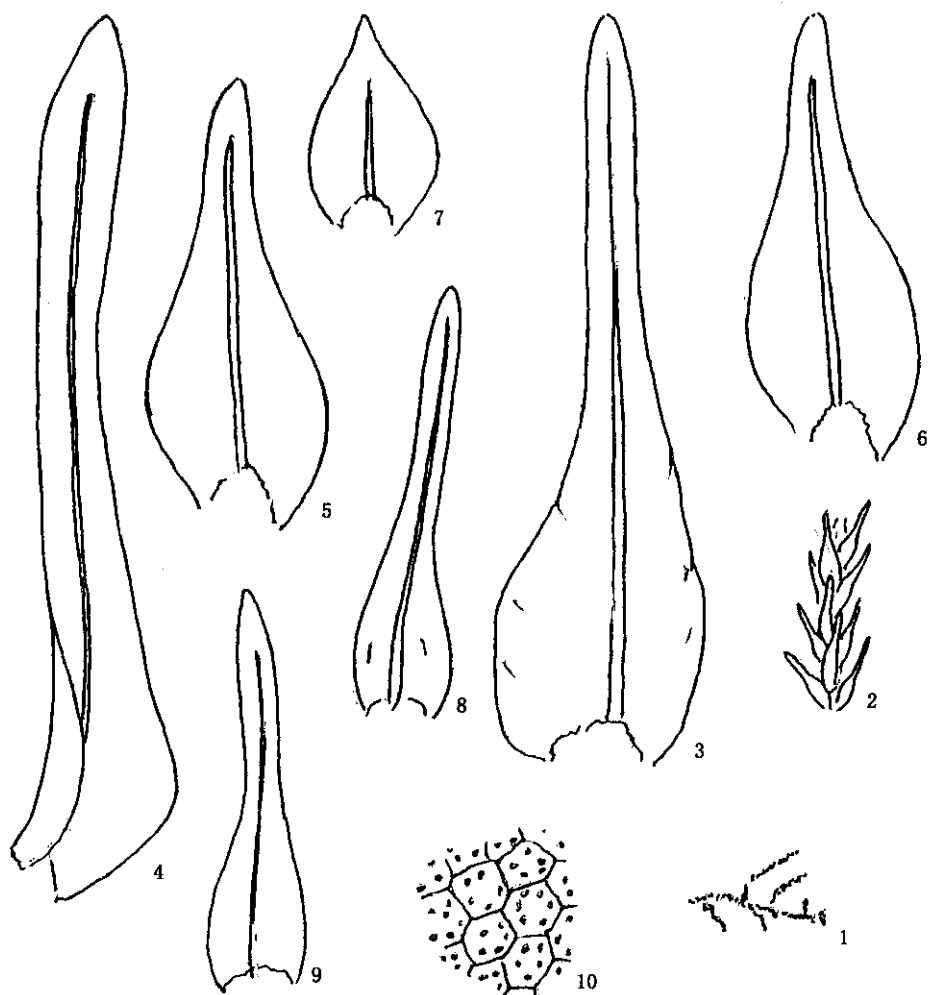


图2 带叶牛舌蘚 1. 植株, $\times 0.8$; 2. 枝条的一部分, $\times 10$; 3~4. 茎叶, $\times 30$; 5~7. 茎基部叶, $\times 30$; 8~9. 枝叶, $\times 30$; 10. 叶中部细胞, $\times 460$. (从 P. Giraldi 1272)

ig. 2 *Anomodon perlingulatus* Broth. ex Wu et Jia 1. Plant, $\times 0.8$; 2. A portion of branch, $\times 10$; 3~4. Stem leaves, $\times 30$; 5~7. Basal stem leaves, $\times 30$; 8~9. Branch leaves, $\times 30$; 10. Median leaf cells, $\times 460$. (from P. Giraldi 1272)

Claopodium leptopteris (C. Muell.) Wu et M. Z. Wang, comb. nov. Fig. 3. — *Haplocladium leptopteris* C. Muell., Nuov. Giorn. Bot. Ital. n. ser. 3: 116. 1896. TYPE: China. Shaanxi, Giraldi 939 (holotype, H).

Haplocladium leptopteris 系 C. Mueller 在 1896 年以 Giraldi 939 号陕西标本发表的新种。1992 年, R. Watanabe 核查了陕西标本, 认为 Brotherus 命名的该种标本 (未指明标本号) 为 *Haplocladium microphyllum* (Hedw.) Broth.。我们在本项研究中观察了由 P. Giraldi 采集的 *Haplocladium leptopteris* C. Muell. 标本, 其中 1679 号确实系 *H. microphyllum*, 但 Giraldi 939 号仍为 *H. leptopteris* C. Muell.。后者枝叶外形类似于 *H. larminatii* (Broth. et Par.) Broth., 然而叶片形小, 无深纵褶而可识别。进一步分析 Giraldi 939 号的 *H. leptopteris* C. Muell., 它的主要特征为茎叶和枝叶近似, 且未见茎上有鳞毛, 我们认为把它转入麻羽蘚

属 *Claopodium* 属更为合适。

4.2 偏叶麻羽藓 新拟名(原名皱叶麻羽藓)

Claopodium rugulosifolium S. Y. Zeng, Acta Bot. Yunnan. 3(2): 263. 1981.

早在 1981 年,曾淑英把西藏定结由陈书坤采集的 2064b(KUN)定名为皱叶麻羽藓 *Claopodium rugulosifolium* S. Y. Zeng。经观察此号模式标本,其叶片在湿润时未见有皱缩的现象,故建议中文名取其叶常向一侧偏斜的特性改名为偏叶麻羽藓为妥。

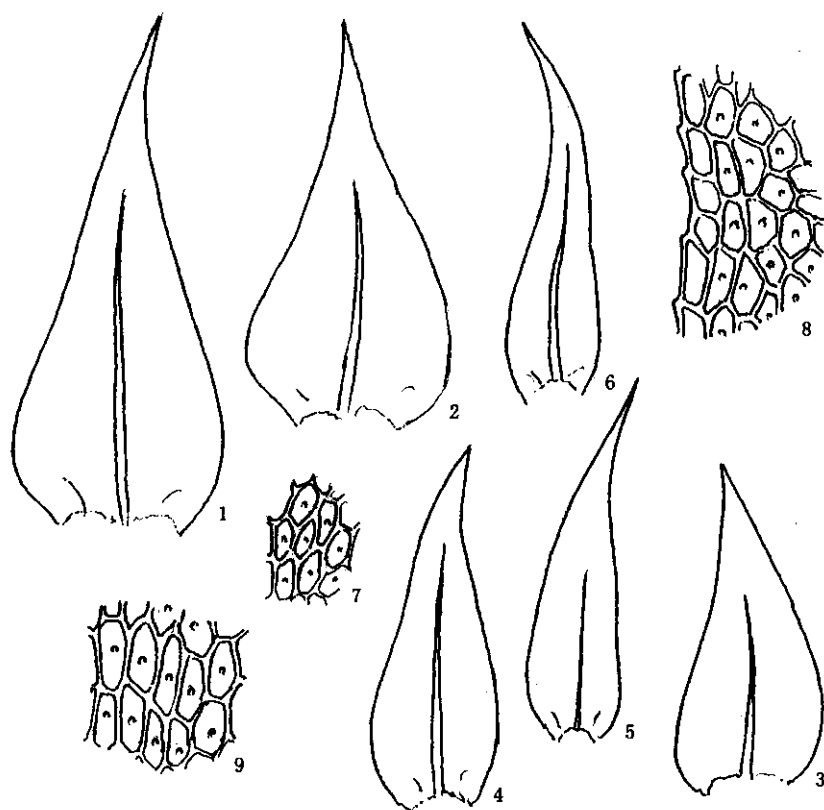


图 3 卵叶麻羽藓 1~2. 茎叶, $\times 75$; 3. 基基部叶, $\times 75$; 4~6. 枝叶, $\times 75$; 7. 叶尖部细胞, $\times 460$; 8. 叶中部边缘细胞, $\times 460$; 9. 叶基部细胞, $\times 460$ 。(从 P. Giral di 939)

Fig. 3 *Claopodium leptopteris* (C. Muell.) Wu et M. Z. Wang 1~2. Stem leaves, $\times 75$; 3. Basal stem leaf, $\times 75$; 4~6. Branch leaves, $\times 75$; 7. Apical leaf cells, $\times 460$; 8. Medium marginal leaf cells, $\times 460$; 9. Basal leaf cells, $\times 460$ 。(from P. Giral di 939)

5 毛羽藓属

Bryonoguchia Iwatsuki et Inoue, Misc. Bryol. Lichenol. 5: 107. 1970.

Bryochenea Gao et K. C. Chang, Bull. Bot. Res. (Harbin) 2: 115. 1982, syn. nov.

1970 年, Iwatsuki 和 Inoue 提升羽藓属中 *Thuidium molkenboeri* Lac. 为独立的属,与羽藓属的区分点为枝尖通常着生假根,枝叶边缘具粗齿,且每一枝叶细胞具长刺状疣。1982 年,该种的湖北标本(五峰县,傅运生 5023 号)又被作为羽藓科的 1 个新属 *Bryochenea* Gao et Chang 予以报道,模式种为 *Bryochenea ciliata* Gao et Chang。经细致校阅其模式图,我们

认为它无疑是毛羽藓 *Bryonoguchia molkenboeri* (Lac.) Iwatsuke et Inoue 的同物异名, 因此, 两属应予归并。

5.1 毛羽藓

Bryonoguchia molkenboeri (Lac.) Iwatsuke et Inoue, Misc. Bryol. Lichenol. 5: 107. 1970.

Bryochenea ciliata C. Gao et K. C. Chang, Bull. Bot. Res. (Harbin) 2: 117. F. 2. 1982, syn. nov. TYPE: China. Hubei, Wufeng Co., Y. S. Fu 5023 (holotype, IFP).

我们在进行本项研究时观察了湖北神农架千家坪至老君山途中由 Luteyn 所采集的 682 号标本, 为毛羽藓在湖北的另一新记录, 进一步证实了我们观点的正确, 傅运生 5023 号可能因生境条件差异而反映叶细胞的疣较低。但从它在我国其它二个地区的分布包括长白山和西藏的日喀则来看, 毛羽藓的分布区无疑趋向明显退缩而在中国呈间断分布。

5.2 短叶毛羽藓

Bryonoguchia brevifolia S. Y. Zeng, Acta Bot. Yunnan. 13(4): 377. fig. 1. 1991.

1991 年, 从云南维西标本中又报道了毛羽藓属的 1 个新种: 短叶毛羽藓 *Bryonoguchia brevifolia* S. Y. Zeng, 叶细胞平滑无疣, 其系统位置尚有待进一步确定。它与毛羽藓的区别可检索如下:

1. 茎叶阔卵形, 具长披针形尖, 纵褶少数; 叶边全缘, 具疣状突起; 叶细胞多长卵形, 每个叶细胞多具单个刺状疣 毛羽藓 *B. molkenboeri* (Lac.) Iwatsuki et Inoue
1. 茎叶阔心脏形, 具短尖, 纵褶多数; 叶边具不规则粗齿或刺状齿; 叶细胞多呈虫形, 平滑无疣 短叶毛羽藓 *B. brevifolia* S. Y. Zeng
1. Stem leaves widely ovate, with lanceolate apex, pauciplicate; leaf margin entire, papillose; leaf cells oblong-ovate, each cell mostly with a single setuose papilla *B. molkenboeri* (Hedw.) Iwatsuki et Inoue
1. Stem leaves widely cordate, with short apex, multi-plicate; leaf margin irregularly grossipapillose or setuose dentate; leaf cells lineariform, smooth *B. brevifolia* S. Y. Zeng

6 沼羽藓属

Helodium (Sull.) Warnst., Krypt. Fl. Brandenburg 2: 675, 692. 1905.

本属植物在我国见于寒温带地区, 但较毛羽藓属植物为常见。1977 年, 《东北藓类植物志》记载东北地区有该属的 3 个种, 包括沼羽藓 *Helodium blandowii* (Web. et Mohr) Warnst.、东亚沼羽藓 *H. sachalinense* (Lindb.) Broth. 和狭叶沼羽藓 *H. paludosum* (Aust.) Broth., 而《中国藓类植物属志》下册 (Chen 1978) 中认为中国仅有沼羽藓和东亚沼羽藓 2 种。经标本检视, 我们认为在中国境内现确实有东亚沼羽藓和狭叶沼羽藓, 而沼羽藓在中国的报道尚缺乏可靠的依据。东亚沼羽藓和狭叶沼羽藓的主要识别点在于体形大小、叶形和叶细胞等。两者可检索如下:

1. 茎叶基部呈椭圆形, 渐上呈披针形, 叶边无齿或突起; 叶细胞疣状突起位于前方; 中肋背面平滑 狭叶沼羽藓 *H. paludosum* (Aust.) Broth.
1. 茎叶基部心形, 向上突成毛状细尖; 叶基边缘具多数纤毛; 叶细胞疣状突起位于中央; 中肋背面具疣或刺状疣 东亚沼羽藓 *H. sachalinense* (Lindb.) Broth.
1. The base of stem leaves widely elliptic, lanceolate above; leaf margin without teeth or papillae; the papilla of leaf cells at the upper corner; the back of leaf costa smooth *H. paludosum* (Aust.) Broth.
1. The base of stem leaves cordate, suddenly piliform above; basal leaf margin with multi-ciliae; the papilla of leaf cells in the middle; the back of leaf costa papillose or setose *H. sachalinense* (Lindb.) Broth.

7 锦丝藓属

Actinothuidium (Besch.) Broth., Nat. Pfl. 1(3): 1019. 1908.

羽藓科中体形最大的一分类群,具一回密羽状分枝,而极易识别于其它羽藓类植物。在本项研究进行之前,本种仅知见于吉林长白山、四川木里、云南中甸及西藏察隅、林芝等地。经野外考察及大量室内工作已肯定锦丝藓 *Actinothuidium hookeri* (Mitt.) Broth. 在我国西南地区的分布遍及四川西北部、云南西北部及西藏东南部。此外,王启无于本世纪 40 年代在河北中台谢家炉所采的 1042 号为我国西南地区与长白山之间锦丝藓的唯一记录。然而,在过去半个世纪间锦丝藓未曾在河北地区(Zhao 1998)再有所发现,估计与这一地区及邻近地区森林的逐渐消失不无关联。考虑锦丝藓的化石已在欧洲被发现(Abramova & Abramov 1963),证实目前锦丝藓属所显示典型的东亚特有属状况是欧亚类型的属经历地史变迁后原有分布区缩小所致。锦丝藓目前在台湾高山地区仍生长良好,亦佐证了这一地史形成的事实。

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