

华南地区羽枝藓属(平藓科)和凋叶藓属(薄齿藓科)植物研究

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摘 要

本文研究了华南地区羽枝藓属 (*Pinnatella*) 和凋叶藓属 (*Caduciella*) 植物。简要讨论了羽枝藓属和凋叶藓属的系统位置。确认华南地区产羽枝藓属 4 种, 即爪哇羽枝藓 (*P. ambigua*)、纤细羽枝藓 (*P. anacamptolepis*)、嵌边羽枝藓 (*P. intralimbata*) 和东亚羽枝藓 (*P. makinoi*); 凋叶藓 2 种, 即广东凋叶藓 (*C. guangdongensis*) 和凋叶藓 (*C. mariei*)。其中爪哇羽枝藓为广东、贵州、海南岛之新记录, 纤细羽枝藓为中国大陆 (广东、广西) 和海南岛之新记录, 东亚羽枝藓为福建、广西和海南岛之新记录, 广东凋叶藓为海南岛之新记录, 暂将 *P. alopecurioides* 处理为存疑种。本文还包括分种检索表、各种的简要识别特征、产地及生境资料。

关键词: 凋叶藓属; 羽枝藓属; 华南地区

THE GENERA *PINNATELLA* (THAMNOBRYACEAE, MUSCI) AND *CADUCIELLA* (LEPTODONTACEAE, MUSCI) IN SOUTH CHINA

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Abstract

A taxonomic revision reveals that four species of the genus *Pinnatella*, *P. ambigua*, *P. anacamptolepis*, *P. intralimbata* and *P. makinoi*, two species of *Caduciella*, *C. guangdongensis* and *C. mariei* occur in South China. *P. ambigua* in Guangdong, Guizhou and Hainan Island, *P. anacamptolepis* in mainland China (Guangdong, Guangxi) and Hainan Island, *P. makinoi* in Fujian, Guangxi and Hainan Island, *C. guangdongensis* in Hainan Island are reported for the first time. *P. alopecurioides* is treated as a doubtful species. Diagnostic characters, distributions, localities, habitats and a key to the studied species are provided.

Key words: *Caduciella*; *Pinnatella*; South China

The genus *Pinnatella* Fleisch. has traditionally been placed in the subfam. Thamnioideae of family Neckeraceae⁽¹⁾. In 1986 Buck & Vitt⁽²⁾ implied it belonging to a new erected family, the Thamnobryaceae. Crum⁽³⁾ supported the erection of the Thamnobryaceae. But Enroth & Norris⁽¹¹⁾ questioned on

the demarcation between the Neckeraceae and the Thamnobryaceae. The present author maintained the Thamnobryaceae, but put it in Leucodontales rather than in Hypnales.

The family Leptodontaceae was established by Schimper in 1855 (cf. 3, 9). Unfortunately, it was not recognized by most bryologists until Buck⁽³⁾ resurrected it, including four genera *Forsstroemia*, *Leptodon*, *Leucodontopsis* and *Pseudocryphaea*. The resurrection was followed by Buck & Vitt⁽⁴⁾, Enroth^(8,9,10) and Stark⁽¹⁸⁾ with revisions. Enroth⁽⁸⁾ established a new genus *Caduciella* to accommodate *Pinnatella mariei*, and put it in the Leptodontaceae allied with *Leptodon*, *Forsstroemia* and *Cryptoleptodon*. Here I follow his arrangements.

Many bryologists have long been puzzled by the components and systematic positions of higher taxonomic ranks relating to the genera *Pinnatella* and *Caduciella*, i. e. Cryphaeaceae, Leucodontaceae, Neckeraceae, Thamnobryaceae, subfams. Alsioidae, Forsstroemioidae, Leptodontoidae and Thamnoidae^(1,3,4,6,8,11). No systematic study on these groups has, hitherto, been published. A thorough study on all the allied genera belonging to the above families and subfamilies is essential.

In the present study, South China is in a broad sense, covering the following provinces, Fujian, Guangdong, Guangxi, Guizhou, Hainan, Sichuan and Yunnan.

Previously, 6 species in the above two mentioned genera have been sporadically reported from South China^(2,5,8,10,12-15,17,19-22). In the study, all the specimens of the two genera in IBSC, SHM, partly in KUN and PE were examined. As a result, 4 species in *Pinnatella* and 2 species in *Caduciella* were recognized.

Key to the examined species of *Pinnatella* and *Caduciella*

1. Leaves on the tips of stems and branches caducous 2
1. Leaves not caducous 3
2. Costa up to half of leaf length, leaf apex usually mucronate, margin at apex serrate
..... *Caduciella guangdongensis*
2. Costa up to 3/4 of leaf length, leaf apex usually rounded, margin at apex entire *C. mariei*
3. Leaves with an intramarginal border of elongate cells *Pinnatella intralimbata*
3. Leaves without an intramarginal border 4
4. Costa faint, usually double and short, mostly reaching the middle of leaf *P. anacamptolepis*
4. Costa strong, single, vanishing just below leaf apex 5
5. Plants large, leaf base oval, gradually lanceolate upwards *P. makinoi*
5. Plants small, leaf short ovate-triangular, tip acute *P. ambigua*

Genus *Pinnatella* Fleisch. (Thamnobryaceae)

1. *Pinnatella ambigua* (Bosch. & Lac.) Fleisch., Hedwigia 45: 81. 1906.
Thamnium ambiguum Bosch & Lac., Bryol. Jav. 2: 72. 1863.

The species can be easily recognized by its smaller stature and short ovate-triangular, acute leaves.

Distribution China (Yunnan, new to Guangdong, Guizhou, Hainan), Bhutan, Myanma, Indonesia, Philippines, Vietnam.

Specimens examined Guangdong. Yangshan, on limestone rocks under bamboos, G. -Q. Zeng 282 (IBSC). -Guizhou. Libo, on limestone rocks, P. -J. Lin 4149 (IBSC). -Hainan. Bawangling Mts., on limestone rocks, L. Zhang 1281, 1324 (IBSC), 1304 (H, IBSC); on tree base, L. Zhang 1292 (IBSC), P. -Z. Zheng 71 (IBSC). Diaoluoshan Mts., on rocks under forest, P. -J. Lin & L. Zhang 758a, 762, 778b (IBSC), 764 (H, IBSC); on trunks, D. -K. Li 05350 (SHM, IBSC). -Yunnan. Xishuangbanna, X. -J. Li 2483, 80-2395, 80-2417 (KUM, IBSC); on tree trunks, Touw 196 (IBSC, KUN, L); on limestone rocks, M. -N. Zang 1127 (KUN, IBSC); on trunks under forest, L. Zhang 616b (KUN, IBSC).

2. *Pinnatella anacamptolepis* (C. Muell) Broth., Nat. Pfl. 1 (3): 857. 1906.

Neckera anacamptolepis C. Muell., Syn. Musc. Fr. 2: 663. 1851.

Porotrichum gracilescens Nog., Trans. Nat. Hist. Formosa 25: 66. 1935.

P. anacamptolepis is a distinct species. It can be easily recognized by the combination of following characters; Pseudoparaphyllia numerous, lanceolate, costa short, weak and usually double, frequently densely branched. According to Enroth⁽⁷⁾, the leaves has deep, regular, transverse undulation. In my examined specimens, the transverse undulation is weak.

Distribution China (Taiwan, new to mainland China (Guangdong, Guangxi) and Hainan), Indonesia, Japan, Papua New Guinea, Philippines, Sri Lanka.

Specimens examined Guangdong. Ruyuan, on trunks, IBSC No 10801 (IBSC), IBSC No 10802 (H, IBSC). Yingde, on trunks, X. -H. Xu 23 (3) a (IBSC). -Guangxi. Shangsi, on trunks, 1974 Collecting Team 1779 (IBSC); on thin soil over rocks, 1974 Collecting Team 2167, 2229, 2266 (IBSC); on branches, 1974 Collecting Team 2250 (IBSC). Xin'an, on thin soil over rocks, 1974 Collecting Team 1161 (IBSC). -Hainan Island. Bawangling Mts., on thin soil over rocks, 1974 Collecting Team 3300 (H, IBSC); on fallen branch, Reese 17537 (IBSC, FH, MO, LAF), Reese 17689 (IBSC, LAF); on small tree, Reese 17585 (IBSC, LAF). Diaoluoshan Mts., on tree base or trunks, 1977 Collecting Team 3014 (IBSC), 3069 (H, IBSC); on trunks, D. -K. Li 05138 (IBSC, SHM); P. -Z. Zheng 318 (IBSC).

3. *Pinnatella intralimbata* Fleisch., Hedwigia 45: 82. 1906.

The species can be easily recognized by its intramarginal zone. Redfearn et al.⁽¹⁷⁾ reported *P. alopecuroides* from Xishuangbanna. Wu⁽²¹⁾ reported *P. cf. alopecuroides* also from Xishuangbanna. I have planned to examine all the relative specimens in PE, unfortunately, only one specimen (W. -X. Xu 11245) has been located. After carefully studied, I found the specimen is *P. intralimbata*. As for the existence of *P. alopecuroides* in China, further studying is needed.

Distribution China (Yunnan), Australia, Indonesia, Laos, Malaysia, Thailand, Vietnam.

Specimens examined Yunnan. Lüchun, on rocks, M. Zang 343b (KUN, IBSC). Simao,

W. -X. Xu 11245 (PE). Xishuangbanna, on limestone rocks, X. -J. Li 2457, 2488 (KUN, IBSC); Touw 101 (KUN, IBSC, L); L. Zhang 620 (KUN, IBSC).

4. *Pinnatella makinoi* (Broth.) Broth., Nat. Pfl. 1 (3): 856. 1906.

Porotrichum makinoi Broth., Hedwigia 38: 227. 1809.

A commonest species of the genus frequently found in limestone habitat in South China.

Distribution China (Guangdong, Guizhou, Sichuan, Taiwan, Xizang (Tibet), Yunnan, new to Fujian, Guangxi and Hainan, Japan).

Specimens examined Fujian. Jian'ou, on trunks, D. -K. Li 019100, 019273 (IBSC, SHM). -Guangdong. Lechang, on limestone rocks, G. -Q. Zeng 453 (IBSC). Shixing, H. Wu & X. Liao 900043, 900125, 900136, 900206 (CANT, IBSC). Yangshan, on limestone rocks, G. -Q. Zeng 293, 346 (IBSC), L. Zhang 313, 319, 408 (IBSC), -Guangxi, Huaqiao, on rocks, P. -C. Wu & Y. -X. Lin 55-B (IBSC, PE). -Guizhou. Libo, on limestone rocks under forest, L. Zhang 1658, 1669 (IBSC). -Hainan. Bawangling, on limestone rocks under forest, L. Zhang 1221, 1341 (IBSC). Diaoluoshan Mts., on trunks, 1977 Collecting Team 3230 (IBSC).

Doubtful species

Pinnatella alopecturoides (Hook.) Fleisch., Hedwigia 45: 84. 1906.

See discussion under the species *P. intratimbata*.

Genus *Caduciella* Enroth (Leptodontaceae)

5. *Caduciella guangdongensis* Enroth, Bryologist 96 (3): 471. 1993.

Enroth (1993) described this species recently based on one specimen from Ding Hu Shan, Guangdong. It's a small plant and can be easily distinguished from *C. mariei* by its leaves with mucronate tips, weak costa and serrulate margin at apex.

Distribution China (Guangdong, new to Hainan).

Specimens examined Guangdong. Ding Hu Shan, on trunks, P. -J. Lin & Z. -H. Li 214 (IBSC); Touw c53 (IBSC, L). Yinde, on barks, Nanzhidi 6070 (H, IBSC). -Hainan. Diaoluoshan Mts., on fallen tree, Reese 17947 (FH, H, IBSC, MO, NY).

6. *Caduciella mariei* (Besch.) Enroth, J. Bryol. 16: 612. 1991.

Neckera mariei Besch., Ann. Sci. Nat. Bot. ser. 7: 93. 1885.

Pinnatella mariei (Besch.) Broth., Nat. Pflanzenfam. 1 (3): 857. 1906; Wu, Trop. Bryol. 5: 27-33, 1992.

Pinnatella microptera Fleisch., Musci Fl. Buitenzorg 3: 915, 1908; Redfearn et al, Bryologist 92 (2): 183-185, 1989.

Enroth⁽⁶⁾ overlooked Redfearn et al. (1989) reporting this species as *Pinnatella microptera* from

Xishuangbanna, Yunnan and treated it as a new addition to China. Wu (1992) reported it as *P. mariei* from Xishuangbanna again. *C. mariei* is a marked species and can be easily recognized by its caducous upper stems and branches, rounded leaf apices and strong costa.

Distribution China (Yunnan), Tropical regions of Old World.

Specimens examined Yunnan. Xishuangbanna, on trunks, X. -J. Li 2691 (IBSC, KUN); M. -N. Zang 1132, with *Pinnatella intralimbata* (IBSC, KUN).

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