

Polystichum (Dryopteridaceae) of Hainan Island, China

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Polystichum chunii Ching is reported as a new record for the fern flora of Hainan Island. Taxonomy and nomenclature of the *Polystichum* species from Hainan island, China are discussed.

Key words: New record, Hainan Island, *Polystichum chunii*, taxonomy

Recently we collected a second species of *Polystichum* from Hainan, *P. chunii* Ching from Qixianling (formerly Qizhiling) of Baoting Prefecture, not far from the highest mountain, Wuzhishan of Hainan Island, China. Before this new discovery, *P. anomalum* (Hook. & Arn.) J. Sm., was the only species of *Polystichum* in Hainan, recorded by the name *P. eximium* (Mett. ex Kuhn) C. Chr. (Ching *et al.*, 1964; Kung *et al.*, 2001).

In Hainan, there are only two species of *Polystichum* Roth, a large fern genus with its great diversity in mountain areas of Eastern Asia. Similarly, some other temperate worldwide distributed large genera have only very limited number of species within each genus in Hainan island, such like *Athyrium* Roth with a single species, *Athyrium hainanense* Ching in Hainan, only found on the top of Wuzhishan (Ching & Hsieh, 1986; Zhang, 1996), and *Aleuritopteris* Fée with also two species, *A. humatifolia* X. C. Zhang &

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L. Shi (Zhang & Shi, 1994), which is now known as a synonym of *A. chrysophylla* (Hook.) Ching (Fraser-Jenkins, 1997a), only found on granite cliffs below the top of Wuzhishan, and *A. squamosa* (C. Hope & C. H. Wright) Ching (Dong *et al.*, 2004) on limestone rocks in the dry northwestern part of the island. This is one of the characteristics of Hainan fern flora, mainly of tropical in nature. Many of the temperate fern genera are not distributed or poorly represented like the above genera.

Interestingly the two species of *Polystichum* from Hainan are all bearing gemmae on the apex of rachis, normally one to three big gemmae below the apex of *P. anomalum* (*P. eximium*), or sometimes small ones also on the costae of upper pinnae, or sometimes no gemmae at all either on some fronds or on all the fronds of one plant. The character of gemma-bearing occurs in at least two different groups of Asian *Polystichum*, and in its closely related exindusiate genus *Cyrtomidictyum* Ching, an endemic genus in South Korea, Japan and East China. Gemma-bearing species of *Polystichum* also distributed in the New World humid forests.

Key to species of *Polystichum* in Hainan

1. Plant 40–50 cm high; lamina linear-lanceolate; apex of pinnule acute, with a sharp spine 1. *P. chunii*
 1. Plant 70–200 cm high; lamina broad-lanceolate to long-triangular; apex of pinnule without a sharp spine 2. *P. anomalum*

1. ***Polystichum chunii* Ching** in *Sinensia* 1: 2, 1929; Hu & Ching, *Ic. Fil. Sin.* 1:25–25, pl. 13, 1930; Tardieu & C. Chr. in *Lecomte, Fl. Indo-Chine* 7 (2): 342, 1941; S.H. Fu, *Ill. Imp. Pl. Chin. Pterid.* 182, 1957; H.S. Kung *et al.*, *Fl. Reipub. Popul. Sin.* 5 (2): 15, pl. 4, f. 7–12, 2001.

China. Hainan: Baoting, Qixianling, alt. 1100 m, on limestone cliffs on top of mountain. Zhang Xian-Chun *et al.* 3511 (PE).

Distribution: China. Hainan, SW Hunan, Guangxi, and Guizhou. Alt. 800–1350 m, on rocks in evergreen forest. Type from Luocheng, N Guangxi.

Chinese name: Chen-shi-er-jue (陳氏耳蕨: 中國主要植物圖說—蕨類植物門)

The present species may be confused with *Polystichum attenuatum* Tagawa & K. Iwats. of Thailand, *P. subattenuatum* Ching & W. M. Chu of Yunnan (Kung *et al.*, 2001),

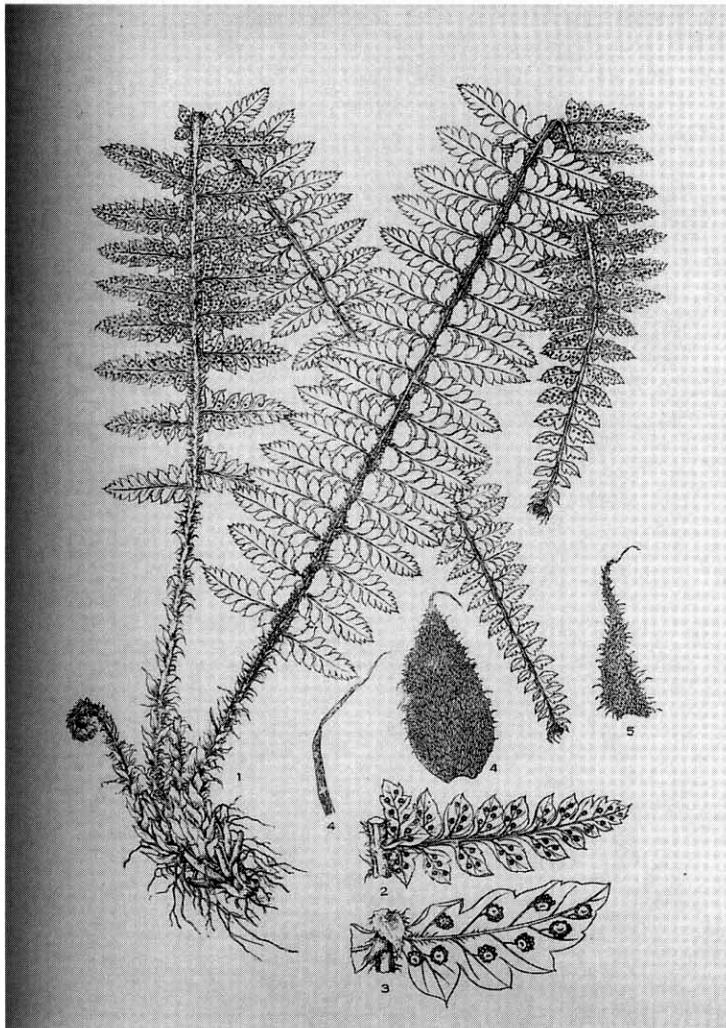


Figure: 1. *Polystichum chunii* Ching: 1. Habit; 2. Pinna; 3. Pinnule from the base of pinna, showing venation and sori; 4. Scales from stipe; 5. Scale from rachis. (from Ic. Fil. Sin.)

and *P. manii* Fraser-Jenk. from Assam (Fraser-Jenkins 1997b, Zhang *et al.* 2001). More detail studies are needed for this group of ferns.

2. *Polystichum anomalum* (Hook. & Arn.) J. Sm., Ferns Brit. For. 151, 1866; Bedd., Ferns Brit. Ind. t. 219, 1869; Sledge in Bot. J. Linn. Soc. 84: 19, 1982; Dixit, Census Ind.

Pterid. 156, 1984; Fraser-Jenk, Asp. Pl. Sci. 13: 265, 1991; Chandra, Ferns Ind. 197, 2000; *Polypodium anamalum* Hook. & Arn, J. Bot. 8: 360, t. 11. 1856; *Aspidium anomalum* Hook., Sp. Fil. 4: 27, 1862.

Polystichum eximium (Mett. ex Kuhn) C. Chr in Bull. Dept. Biol. Coll. Sci. Sun Yats. Univ. 6: 8, 1933; S.H. Fu, Ill. Imp. Pl. Chin. Pl. Pterid. 183, f. 245, 1957; Daigobo in H. L. Li *et al.*, Fl. Taiwan 1: 389, 1975; Edie, Ferns Hong Kong 208, f. 114, 1978; K. H. Shing in J. F. Cheng & G. F. Zhu, Fl. Jiangxi 1: 258, f. 258, 1993; C. F. Zhang, Fl. Zhejiang 1: 222, f. 1-233, 1993; K. Iwatsuki, Fl. Jap. 1: 129, 1995; H. S. Kung *et al.*, Fl. Repub. Pop. Sin. 5(2): 19, 2001; T. C. Lee *et al.*, Fl. Hong Kong Pterid. 304, pl. 39, f. 5-9, photos 78-79, 2003; *Phegopteris eximia* Mett. ex Kuhn, Linnaea 36: 107, 1869.

Polystichum fibrillosum Ching in Bull. Fan Mem. Inst. Biol. 2: 189, pl. 4, 1931.

Polystichum gemmiferum Tagawa, Acta Phytotax. Geobot. 3: 31, 1934.

Polystichum indochinense Tardieu & C. Chr, Notul. Syst. 7: 82, 1938.

Polystichum tiaolooshanense Ching, Acta Phytotax. Sin. 9: 366, 1964; Ching *et al.* in Chun *et al.*, Fl. Hainanica 1: 145, f. 64, 1964.

Distribution: China. Zhejiang, Jiangxi, Hunan, Taiwan, Hainan, Hongkong, Guangxi, Sichuan, Guizhou and Yunnan, alt. 250-1850 m, along valley streams in evergreen forests. Also in Sri Lanka, India, Thailand, Vietnam, and Japan. Type from Sri Lanka.

Chinese name: Hui-lü-er-jue (灰綠耳蕨: 中國主要植物圖說—蕨類植物門), Diao-luo-shan-er-jue (吊羅山耳蕨: 海南植物志), Arisan-er-jue (阿里山耳蕨: 台灣植物志), Hu-nan-er-jue (華南耳蕨: 香港植物志—蕨類植物門)

The basionym of *Polystichum anomalum* (Hook. & Arn.) J. Sm. is *Polypodium anamalum* Hook. & Arn., which was validly published by Hooker and Arnott in 1856, 13 years earlier than *Phegopteris eximia* Mett. ex Kuhn (1869). The types of these two names were both collected from Sri Lanka. Taxonomically it is the same species, although Fraser-Jenkins subdivided it into varieties; the correct name of this species should be *Polystichum anomalum* (Hook. & Arn.) J. Sm. (Fraser-Jenkins 1997a, b).

In Chinese and Japanese flora this species is recorded by the name *Polystichum eximium* (Mett. ex Kuhn) C. Chr. (Fu, 1957; Iwatsuki, 1995; Kung *et al.* 2001), which is a synonym of *Polystichum anomalum* (Hook. & Arn.) J. Sm. The nomenclature of many Chinese or East Asian plants have to be updated according to already existed evidences, and more of them are pending for further taxonomical and monographical studies. Such as the scientific names of another common fern, *Nephrolepis auriculata* (L.) Trimen should be changed to *N. cordifolia* (L.) C. Presl by the execution of conservation against the former (Verdcourt, 1996).

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중국 하이난섬(海南島)의 *Polystichum*(관종과)

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중국의 하이난섬에 *Polystichum chunii* Ching이 분포하고 있음이 본 조사를 통하여 밝혀졌다. 아울러 중국 하이난섬에 분포하는 *Polystichum* 2종에 대하여 분류 및 명명에 관한 논의를 수행하였다.

주요어: *Polystichum chunii*, 중국 하이난섬

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