

## Note on *Aleuritopteris* Fée in Thailand

By

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**ABSTRACT** *Aleuritopteris* in Thailand is taxonomically revised, an artificial key being given to the species. Thai *Aleuritopteris* comprises six species of which two species, *A. siamensis* and *A. pseudoargentea*, are newly described.

The fern genus *Aleuritopteris* Fée, which has been included in *Cheilanthes* by many authors, is a genus comprising some 30 species mostly distributed in East and Southeast Asia, especially in China. The present author (Acta Phytotax. Sin. 19: 57. 1981) revised the genus chiefly based on the materials from China where the genus is represented most abundantly. In this short article, Thai species are to be revised, recognizing six species including two species newly described here.

When the author had an opportunity to visit Japan during March and May, 1981, he could examine specimens preserved in Japanese herbaria. There are a number of interesting materials from Southeast Asia, especially from Thailand, among the specimens recently collected and kept in the Japanese herbaria, especially in the Herbarium of Kyoto University (KYO). The specimens cited under each species in the following pages are preserved in KYO.

Key to the species of *Aleuritopteris* in Thailand

1. Lamina oblong-lanceolate to deltoid-oblong, 2-3(-4) times longer than broad, longer than or equal to stipe in length; pinnae usually 5-12-jugate.
2. Pinnae long-stipitate, spores with rod-like regular projections on the sporoderm .....1. *A. siamensis*
2. Pinnae sessile or short-stipitate, spores with rugose sporoderm.
3. Stipe, rachis and underside of pinnae densely covered with linear-subulate rufo-brown scales .....2. *A. rufa*
3. Stipe, rachis and underside of pinnae nearly glabrous, or at most only

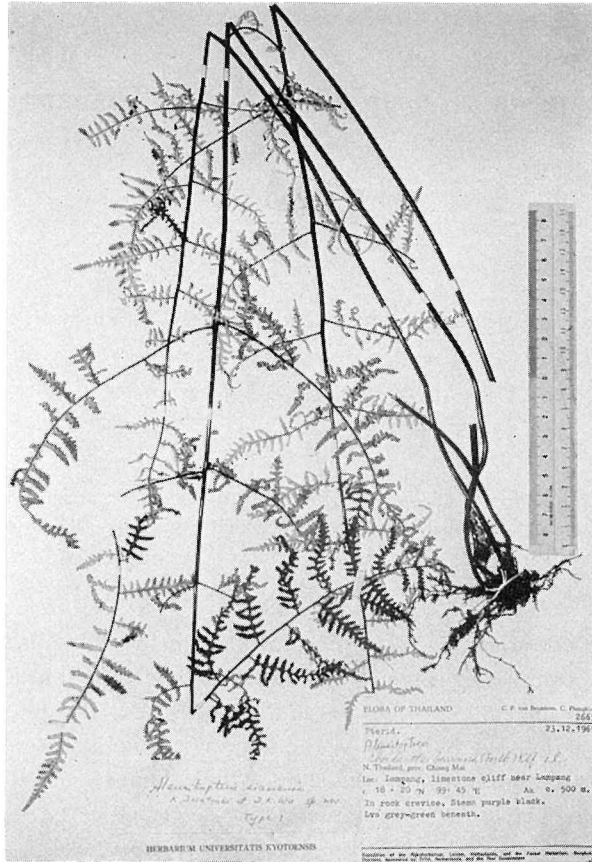


Figure 1. *Aleuriteopteris siamensis* (Holotype).

- sparingly scaly on stipe and rachis.
- 4. Scales on stipe ovato-subulate, rufo-brown, sometimes glandular along the margin .....4. *A. krameri*
  - 4. Scales on stipe lanceolate, thin, blackish in center and brownish at margin, not glandular at the margin.
    - 5. Indusium deeply lacerate and fimbriate .....3. *A. pseudofarinosa*
    - 5. Indusium not or slightly lacerate .....5. *A. formosana*
  - 1. Lamina pentagonal to ovate-pentagonal, almost equal in length and width, stipe 2-3 times longer than lamina; pinnae generally 3-4-jugate .....6. *A. pseudoargentea*
  - 1. ***Aleuriteopteris siamensis*** S. K. Wu, sp. nov. Fig. 1 & 3a.

Species recedit ab affinis Siamensis stipite rachique colore fere nigris lucidis, pinnis lateralibus distincte petiolatis, sporis superficie prominentiis bacilliformibus ordinatis ornatis.

Tota planta usque ad 70 cm alta, caespitosa; rhizomate brevi erectoque cum basi stipitis paleis fuscis anguste lanceolatis apice filiformibus dense vestito; stipite ca. 20–30 cm longo, atro-castaneo, lucido, tereti superme glabro. Lamina oblongo-lanceolata vel deltoideo-oblonga, basi rotunda, apice acuminata, 20–40 cm longa, 15–25 cm lata, bipinnato-tripinnatifida; pinnis lateralibus 7–11-jugis oppositis vel subalternis, inferioribus 3–7 cm remotis, basalibus unijugis maximis, 7–18 cm longis, 3–7 cm latis, oblongo-lanceolatis, apice longe acuminatis, basi stipitatis (stipite 10–15 mm longo) bipinnatifidis; pinnulis 8–12-jugis, basalibus 1–2-jugis anterioribus quam posterioribus brevioribus, leviter incisus vel subintegris, pinnulis inferioribus 1–2-jugis longioribus, 2–4 cm longis, 5–10 mm latis, lanceolatis, apice acutis, basi truncatis adnatisque, profunde pinnatifidis; segmentis ultimis 5–11-jugis, oblongo-lanceolatis, ca. 4 mm latis acutis, margine integris. Pagina in sicco textura chartacea, rachi fusco-castanea, glabra, pinnis infra leviter cremeo-farinosus; venis utraque obscuris. Soris maturitate confluentibus indusiis angustatis interruptis, margine subintegris. Sporibus globulo-trigonosis superficie prominentiis bacilliformibus ordinatis ornatis.

Thailand. Lampang: limestone cliff near Lampang, c. 18° 20' N 99° 45' E alt. 500 m, in rock crevice, *C. F. van Beusekom* & *C. Phengkklai* 2665 (type, KYO); en route from Pang La to Huay Tak, about 350 m alt., on limestone cliff, *T. Shimizu et al.* T-10713.

The ornamentation of spores of the present species resembles that of *Notholaena squamosa* group. This may suggest that *Aleuritopteris* is closely related to *Notholaena*.

2. ***Aleuritopteris rufa*** (Don) Ching in Hongk. Nat. 10: 200. 1941; Pichi-Ser. Ind. Fil. Suppl. 4: 8. 1965; S. K. Wu in Acta Phytotax. Sin. 19: 69. 1981.—*Cheilanthes rufa* Don, Prod. Fl. Nepal. 16. 1825.—*Aleuritopteris intermedia* Ching in Sporae Pterid. Sinic. 156. t. 34, f. 4–5. 1976. nom. nud.

Specimens examined. Chiang Mai: Doi Chiangdao, *M. Tagawa et al.* T-4074; *M. Tagawa et al.* T-9997; *T. Shimizu* & *M. Hutoh* T-10185; *G. Murata et al.* T-14969; *E. Hennipman* 3189.

Distr.: China (Taiwan, Kwangtung, Kweichow, Yunnan), Philippines, Malay Peninsula, Burma and Himalayas.

This species is wide-spread in the limestone regions of tropical and subtropical mainland Asia, and easily distinguished from the other related species by the presence of dense brown linear-subulate scales on stipe, rachis and underside of pinnae.

3. ***Aleuritopteris pseudofarinosa*** Ching et S. K. Wu in Acta Phytotax. Sin. 19: 72. 1981.—*Aleuritopteris farinosa* auct., non Fée, Gen. Fil. 104, t. 128, f. 18, f. 1.

1850–52.—*Aleuritopteris anceps* (Blanford) Panigr. var. *brevifrons* S.P. Khullar in Amer. Fern Journ. 66: 24. f. 2–4. 1976.

Specimens examined. Chiang Mai: Doi Suthep, *K. Iwatsuki & N. Fukuoka T-3183*; *T. Shimizu & M. Hutoh T-10185 bis*.

Distr.: China (known from all provinces south of the Yangtze River), Philippines, Nepal and India.

4. ***Aleuritopteris krameri*** (Franch. et Sav.) Ching in Hongk. Nat. 10: 202. 1941.—*Cheilanthes krameri* Franch. et Sav. Enum. Pl. Jap. 2: 212. 1877. n.n., 619. 1879; Ogata, Ic. Fil. Jap. 8: pl. 364. 1940; M. Tagawa, Col. Illustr. Japan. Pterid. 189. 1959.—*A. formosana* sensu Wu in Acta Phytotax. Sin. 19: 73. 1981, non Hayata in Matsum. & Hayata, Enum. Pl. Form. 612. 1906.

Specimens examined. Chiang Mai: Doi Chiangdao, *T. Shimizu et al. T-10091*; *Tagawa et al. T-4211*; *E. Hennipman 3281*; *G. Murata et al. T-15192*. Lamphun:

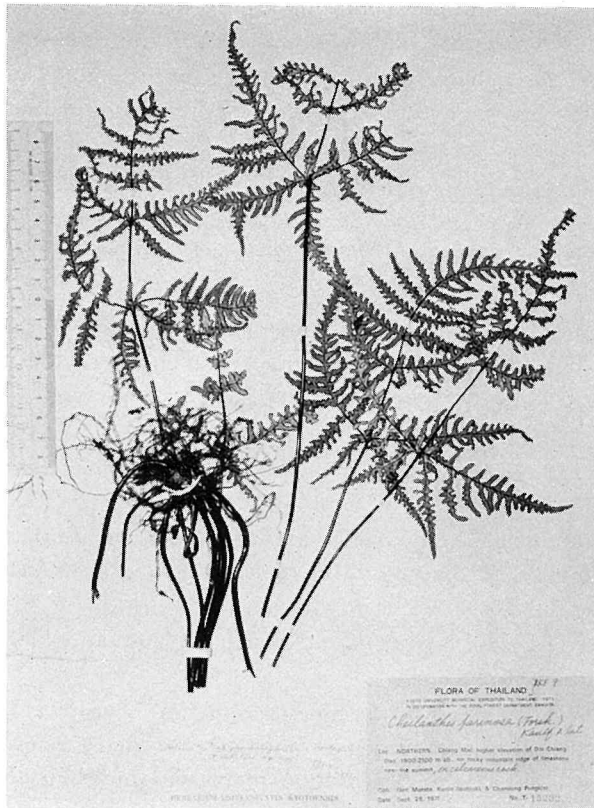


Figure 2. *Aleuritopteris pseudoargentea* (Holotype).

Doi Khun Tan, *M. Tagawa et al. T-9325*. Tak: Lan Sang National Park, *M. Tagawa et al. T-8584*. Nakhon Ratchasima, Khao Yai Nat. Park, *C.F. van Beusekom & C. Charoenpol 1841*.

Distr.: Japan, China (Taiwan).

The present species has generally been confused with *A. formosana* (Hayata) Tagawa by authors including the present author himself. On examining the type of *Cheilanthes formosana* Hayata, it was found that both are very distinct, the difference being shown in the key.

5. ***Aleuritopteris formosana*** (Hayata) Tagawa in Acta Phytotax. Geobot. 14: 191. 1952; Pichi-Ser. Ind. Fil. Suppl. 4: 8. 1965.—*Cheilanthes formosana* Hayata, Enum. Pl. Form. 612. 1906; Ogata, Ic. Fil. Jap. 8: t. 363. 1940.—*Cheilanthes farinosa* sensu H. Ito, Fil. Jap. Illustr. t. 64. 1944; T. S. Liu in Fl. Taiwan 1: 282. 1975, non Kaulf. 1824.

Specimens examined. Chiang Mai: on approach to Doi Inthanon, *M. Tagawa et al. T-2369*; Doi Inthanon, *M. Tagawa et al. T-2428*; Doi Suthep, *N. Fukuoka T-4441*; *T. Shimizu et al. T-19484*. Lamphun: en route from Ban Khun Tan to Doi Khun Tan, *M. Tagawa et al. T-9236*. Northern: Ban Mae La Noi, N of Mae Sariang, *K. Larsen et al. 2289*.

Distr.: China (Taiwan).

6. ***Aleuritopteris pseudoargentea*** S. K. Wu, sp. nov. Fig. 2 & 3b.

Species gregis *A. argenteae* (Gmel.) Fée, recedit multo majore, pinnis secundis a basalibus majoribus valde distantibus, basi tantum paulo decurrentibus, facie inferiore farina cremea (nec alba) obtectis.

Tota planta 35–45 cm alta, caespitosa; rhizomate brevi erectoque cum basi stipitibus paleis fusco-brunneis lucidis anguste lanceolatis dense obtecto; stipite tereti lucido fere nigro aut fusco-castaneo, ad 30 cm longo prope basin sparse paleaceo sursum glabro; lamina pentagona vel ovato-deltaidea, ca. 17 cm longa, basi 15 cm lata fere rotundata, apice acuminata, bipinnato-tripinnatifida; pinnis 1 beris 3–4-

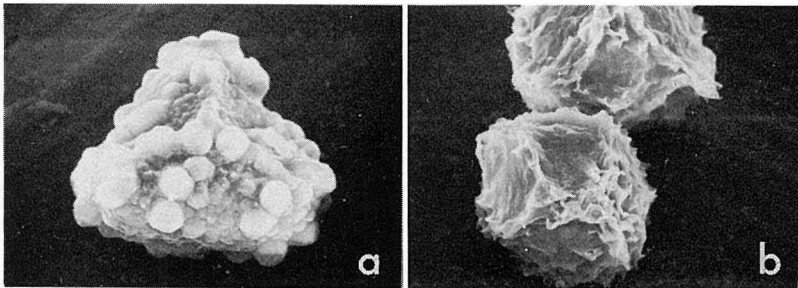


Figure 3. Spore. a: *Aleuritopteris siamensis* (C. F. van Beusekom & C. Phengkklai 2665).  $\times 2000$ .  
b: *A. pseudoargentea* (T. Shimizu & M. Hutoh T-10183).  $\times 1000$ .

jugis, basalibus maximis a sequentibus ca. 5 cm remotis, ad 10 cm longis, basi ca. 6 cm latis, acuminatis, sessilibus aut subadnatis, profunde bipinnatifidis; pinnulis 5–8-jugis, basi confluentibus vel jugis infimis duabus inter se ala angusta basi confluentibus, pinnulis anterioribus quam posterioribus minoribus, saepe non lobatis, pinnulis posterioribus praecipue basali multo longioribus, ad 5 cm longis, 1.5 cm latis, lanceolatis, acuminatis, basi costae adnatis, profunde pinnatifidis; segmentis oblongis, 6 mm longis, 1.5 mm latis, integris, pinnis secundi jugi iis basalibus similibus sed minoribus basi paulo decurrentibus. Pagina textura in sicco firme chartacea utraque facie glabra, subtus farina cremea oblecta; venis obscuris. Soris maturitate confluentibus, indusiis brunneis membranaceis, continuis margine integris. Sporis globulosis superficie rugosis.

Thailand. Chiang Mai: higher elevation of Doi Chiang Dao, 1900–2100 m alt., on rocky mountain ridge of limestone near the summit, on calcareous rock, *G. Murata*, *K. Iwatsuki* & *C. Pengklai* T-15232 (type KYO), T-15236; *ibid.*, *T. Shimizu* & *M. Hutoh* T-10183; *M. Tagawa* & *K. Iwatsuki* T-4401.

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