

New combinations in Polypodiaceae

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Abstract: New combinations are made for *Dryopsis arunachalensis* Fraser-Jenk. & Benniamin under the genus *Dryopteris* Adans. as *D. arunachalensis* (Fraser-Jenk. & Benniamin) R.Kr.Singh & V.K.Rawat. and for *Phymatodes ovata* C.Presl under the genus *Lepisorus* (J.Sm.) Ching as *L. ovatus* (C.Presl) R.Kr.Singh & V.K.Rawat. Two new combinations are made for *Polypodiodes mieheorum* Fraser-Jenk. and *P. simonsiana* Fraser-Jenk. & Shalimov under the genus *Goniophlebium* (Blume) C.Presl as *G. mieheorum* (Fraser-Jenk.) R.Kr.Singh & V.K.Rawat and *G. simonsianum* (Fraser-Jenk. & Shalimov) R.Kr.Singh & V.K.Rawat respectively. In addition, lectotype is designated for the name *Polypodium ovatum* Wall. ex Hook. & Grev.

Keywords: Bangladesh, China, India, Lectotype, Myanmar, Nepal, *Polypodium ovatum*, Vietnam

Introduction

The molecular phylogenetic studies of the genus *Dryopteris* Adans. showed that it is paraphyletic in relation to the genera *Acrophorus* C.Presl, *Acrorumohra* (H.Itô) H.Itô, *Diacalpe* Blume, *Dryopsis* Holttum & P.J.Edwards, *Nothoperanema* (Tagawa) Ching and *Peranema* D.Don, and therefore all the later genera are merged into *Dryopteris* (Zhang, 2012; Zhang et al., 2012). Similarly, the molecular data showed that the genus *Polypodiodes* Ching is synonymous to the genus *Goniophlebium* (Blume) C.Presl, and the genera *Neocheiropteris* Christ and *Neolepisorus* Ching are synonymous to *Lepisorus* (J.Sm.) Ching (Wei & Zhang, 2022; Zhao et al., 2019). While working on the family Polypodiaceae J.Presl & C.Presl for flora of India, we found that *Dryopsis arunachalensis* Fraser-Jenk. & Benniamin should be transferred to *Dryopteris*, *Polypodiodes mieheorum* Fraser-Jenk. and *P. simonsiana* Fraser-Jenk. & Shalimov should be transferred to *Goniophlebium*, and *Phymatodes ovata* C.Presl should be transferred to *Lepisorus*. Furthermore, the lectotype for the name *Polypodium ovatum* Wall. ex Hook. & Grev. is designated here in accordance with the guidelines and recommendations of Article 9 of the Shenzhen Code (Turland et al., 2018).

Nomenclature

Dryopteris arunachalensis (Fraser-Jenk. & Benniamin) R.Kr.Singh & V.K.Rawat, *comb. nov.*

≡ *Dryopsis arunachalensis* Fraser-Jenk. & Benniamin, Annot. Checkl. Ind. Pterid. 2: 219. 2018.

Holotype: India, Arunachal Pradesh, Lohit District, Tezu, 6 February 1986, A.K. Awasthi 89378 (ASSAM).

Distribution: India (Arunachal Pradesh and Meghalaya).

Goniophlebium mieheorum (Fraser-Jenk.) R.Kr.Singh & V.K.Rawat, *comb. nov.*

≡ *Polypodiodes mieheorum* Fraser-Jenk., Annot. Checkl. Ind. Pterid. 2: 447. 2018.

Holotype: India, Arunachal Pradesh, Upper Siang, Migging to Tuting road, 780 m, 18 January 2013, A. Benniamin 30105 (ARUN).

Distribution: India (Arunachal Pradesh) and Myanmar.

Goniophlebium simonsianum (Fraser-Jenk. & Shalimov) R.Kr.Singh & V.K.Rawat, *comb. nov.*

≡ *Polypodiodes simonsiana* Fraser-Jenk. & Shalimov, Turczaninowia 18(3): 114, f. 1 & 2. 2015.

Holotype: Myanmar, Kachin state, North Triangle (Arahku), 4000 ft., 30 September 1953, F.K. Ward 21396 (BM).

Distribution: India (Arunachal Pradesh, Manipur and Meghalaya) and Myanmar.

Lepisorus ovatus (C.Presl) R.Kr.Singh & V.K.Rawat, *comb. nov.*

≡ *Phymatodes ovata* C.Presl, Tent. Pterid. 197. 1836. *Polypodium ovatum* Wall. ex Hook. & Grev., Icon. Filic. 1: t. 41. 1827, *nom. illeg., non* Burm.f., Fl. Ind. (N. L. Burman) 233. 1768.

Colysis ovata (C.Presl) J.Sm., Hist. Fil. 100. 1875.

Drynaria ovata (C.Presl) Fée, Mém. Foug., 5. Gen. Filic. 270. 1852.

Lepisorus ovatus (C.Presl) C.F.Zhao, R.Wei & X.C.Zhang, Cladistics 36(3): 251. 2019, *nom. inval.*

Microsorium ovatum (C.Presl) N.C.Nair & Bennet, Bull. Bot. Surv. India 11: 432. 1972.

Neocheiropteris ovata (C.Presl) B.K.Nayar & S.Kaur, Companion Handb. Ferns Brit. India: 86. 1974.

Neolepisorus ovatus (C.Presl) Ching, Acta Phytotax. Sin. 9: 99. 1964.

Pleopeltis ovata (C.Presl) T.Moore, Index Fil. (T.Moore) 2: lxxviii. 1857.

Lectotype (designated here): Nepal, Chandragiri, 1821, *Wallich cat. n. 276* (E00659280!, Figure 1); isolectotypes K001109695!, LE00008771! (Figure 2), LE00008772! (Figure 3), P01558235! (Figure 4), US00345213! (Figure 5).



Figure 1: Lectotype of *Polypodium ovatum* Wall. ex Hook. & Grev. (E00659280, © Royal Botanic Garden Edinburgh)



Figure 2: Isolectotype of *Polypodium ovatum* Wall. ex Hook. & Grev. (LE00008771, © Herbarium of the Komarov Botanical Institute, Russian Academy of Sciences, Saint Petersburg)



Figure 3: Isolectotype of *Polypodium ovatum* Wall. ex Hook. & Grev. (LE00008772, © Herbarium of the Komarov Botanical Institute, Russian Academy of Sciences, Saint Petersburg)



Figure 4: Isolectotype of *Polypodium ovatum* Wall. ex Hook. & Grev. (P01558235, © Muséum National d'Histoire Naturelle, Paris)



Figure 5: Isolectotype of *Polypodium ovatum* Wall. ex Hook. & Grev. (US00345213, © Smithsonian Institution, Washington D.C.)



Figure 6: Coloured illustration of *Polypodium ovatum* Wall. ex Hook. & Grev. [*Lepisorus ovatus* (C.Presl) R.Kr.Singh & V.K.Rawat]

Distribution: Bangladesh, China, Myanmar, Nepal, Vietnam and India (Northeast India).

Notes: The new combination made by Zhao et al. (2019) for *Phymatodes ovata* C.Presl under the genus *Lepisorus* (J.Sm.) Ching is invalid according to the Article 41.5 of ICN (Turland et al. 2018),

because they did not cited full and direct reference to basionym. They cited basionym as *Pleopeltis ovata* Wall. ex Bedd. instead of *Phymatodes ovata* C.Presl. Moreover, *Pleopeltis ovata* Wall. ex Bedd. (1866: 157) is an isonym of *P. ovata* (C.Presl) T.Moore. Hooker & Greville (1827) provided beautiful coloured illustration for *Polypodium ovatum* Wall. ex Hook. & Grev. (Figure 6).

Hooker & Greville (1827) described *Polypodium ovatum* based on specimens of N. Wallich. Six specimens were traced for the name *P. ovatum* Wall. ex Hook. & Grev. (E00659280, K001109695, LE00008771, LE00008772, P01558235 and US00345213). Among these, the better-preserved specimen E00659280, is designated here as the lectotype as it agrees well with the protologue.

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