Gardens' Bulletin Singapore 71(1): 61–67. 2019
doi: 10.26492/gbs71(1).2019-03

Flora of Singapore precursors, 13. New names and lectotypifications in Athyriaceae and Polypodiaceae

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ABSTRACT. A review of names and types in *Diplazium* (Athyriaceae) and Polypodiaceae relevant to the *Flora of Singapore* has been undertaken. A new name and 11 lectotype designations (including one second step lectotypification), are given.

Keywords. *Asplenium*, *Diplazium*, *Goniophlebium*, *Microsorum*, new name

Introduction

While I was preparing treatments of *Diplazium* (Athyriaceae) and Polypodiaceae for the Flora of Singapore project, I found that some taxa needed a new name or reinstatement of an overlooked one, some synonyms needed clarification, and some lectotypifications in *Diplazium*, *Microsorum* and *Goniophlebium* were necessary. For four species a name change is necessary relative to our current understanding (Holttum, 1968b), one of which is a nomen novum, and 11 names are newly lectotypified or require a correction or second step lectotypification to an earlier attempt. All specimens cited have been seen unless indicated otherwise, those seen only as an on-line image are designated with an asterisk (*). All names dealt with are listed under the name of the species to which they are assigned in the forthcoming account in the Flora of Singapore or in *Flora Malesiana* (Hovenkamp et al., 1998).

Athyriaceae

Diplazium cordifolium Blume, Enum. Pl. Javae 2: 190 (1828); Holttum, Rev. Fl. Malaya, ed. 2, 2: 637 (1968). – *Anisogonium cordifolium* (Blume) Bedd., Ferns Brit. India 3: t. 331 (1870). – *Athyrium cordifolium* (Blume) Copel., Philipp. J. Sci., C. 3: 300 (1908); Holttum, Rev. Fl. Malaya 2: 548 (1955 ['1954']). – TYPE: Indonesia, Java, Kapala Tjibeureum, *J.C. Van Hasselt s.n.* (lectotype L [L0051534], designated here).

Diplazium fraxinifolium C.Presl, Reliq. Haenk. 1(1): 49 (1825). – TYPE: Philippines, Luzon, *T. Haenke s.n.* (lectotype PRC [PRC45306*], designated here).

Diplazium riparium Holttum, Gard. Bull. Straits Settlem. 11(2): 97 (1940); Holttum, Rev. Fl. Malaya, ed. 2, 2: 637 (1968). – *Athyrium riparium* (Holttum) Holttum, Rev. Fl. Malaya 2: 554 (1955 [‘1954’]). – TYPE: Peninsular Malaysia, Semenyih, *H.L. Hume 8186* (holotype SING [SING0069600]).

The Presl collection in PRC holds two specimens, of which the one designated as the lectotype for *Diplazium fraxinifolium* is the most complete.

Diplazium holttumii Hovenkamp, **nom. nov**. – *Diplazium malaccense* C.Presl, Epimel. Bot. 86 (1851 [‘1849’]), nom. illeg. superfl., excluding syn. *Asplenium sorzogonense* C.Presl; Holttum, Gard. Bull. Straits Settlem. 11(2): 91 (1940); Holttum, Rev. Fl. Malaya, ed. 2, 2: 637 (1968). – *Athyrium malaccense* Holttum, Rev. Fl. Malaya 2: 552 (1955 [‘1954’]). – TYPE: Malaysia, Malacca, *H. Cuming 389* (lectotype PRC [PRC450315*], designated by Holttum (1968a); isolectotypes K [K000539990, K000443337], L [L.3540651, L.3540653, L.3540652])

When he published *Diplazium malaccense*, Presl (1851, p. 86) included the earlier name *Asplenium sorzogonense* C.Presl in the protologue, thereby making the name *D. malaccense* superfluous and illegitimate. As *Athyrium malaccense*, this taxon was, however, explicitly distinguished from *Athyrium sorzogonense* (C.Presl) Milde (and its basionym *Asplenium sorzogonense* C.Presl) by Holttum (1955, pp. 544, 552) and this stands as the correct name in *Athyrium*. In addition to the characters Holttum cited to distinguish the two taxa, *Athyrium malaccense* can also be distinguished by the raised abaxial rachis and uninterrupted rachis ridges. When this species is transferred back into *Diplazium*, the illegitimate name *Diplazium malaccense* cannot be used and a new name is required.

Diplazium mixtum (Roxb.) C.V.Morton, Contr. US Natl. Herb. 38: 294 (1974). – *Asplenium mixtum* Roxb., Calcutta J. Nat. Hist. 4: 499 (1844). – TYPE: Indonesia, Ambon?, *anon. s.n.* (C. Smith?) (lectotype BR [BR0000006989866*], designated by Morton (1974)).

Asplenium prescottianum Wall. ex Hook., Sp. Fil. 3: 251 (1860). – *Diplazium prescottianum* (Wall. ex Hook.) C.Chr., Index Fil. 237 (1906); Holttum, Rev. Fl. Malaya, ed. 2, 2: 637 (1968). – *Athyrium prescottianum* (Wall. ex Hook.) Holttum, Rev. Fl. Malaya 2: 557 (1955 [‘1954’]). – *Diplazium sylvaticum* (Bory) Sw. var. *prescottianum* (Wall. ex Hook.) Curtis, J. Straits Branch Roy. Asiat. Soc. 25: 159 (1894). – TYPE: Singapore, 1922, *N. Wallich 235* (lectotype K-W [K001109599*], designated by Morton (1974)).

Roxburgh's name has been widely overlooked for this species, which, if truly distinct from *Diplazium sylvaticum* (Bory) Sw., appears to be restricted to Singapore. Morton's (1974) conjecture that the type specimen originates from Ambon does not match with this very restricted range. Further study is needed.

Diplazium phanerotis Kunze, Bot. Zeitung (Berlin) 4: 443 (1846). – TYPE: Indonesia, Java, *H. Zollinger 1491* (lectotype G [G00348439*], designated by Morton (1974), see note).

Asplenium varium Roxb., Calcutta J. Nat. Hist. 4: 498 (1844). – *Diplazium roxburghii* T.Moore, Index Fil. 176 (1860), 337 (1862), nom. nov., non *Diplazium varium* Gaudich. (1828). – TYPE: Ambon?, *W. Roxburgh* (C. Smith?) *2409* (lectotype BR [BR0000006984236], designated by Morton (1974)).

Diplazium cultratum C.Presl, Epimel. Bot. 84 (1851 ['1849']). – TYPE: Philippines, Luzon, *Cuming 199* (lectotype PRC [PRC 450327*], designated by Holttum (1968a); isolectotype L [L0537126]).

Athyrium crenatoserratum auct. non (Blume) Milde: Holttum, Rev. Fl. Malaya 2: 561 (1955 ['1954']). – *Diplazium crenatoserratum* auct. non (Blume) T.Moore: Holttum, Gard. Bull. Straits Settlem. 11(2): 84 (1940); Holttum, Rev. Fl. Malaya, ed. 2, 2: 637 (1968).

The name *Diplazium phanerotis* Kunze is here reinstated for the plant currently called *D. crenatoserratum* (Blume) T.Moore in Singapore and Peninsular Malaysia, a name that has been widely but incorrectly applied to this species (e.g. Holttum, 1940, 1955 (under *Athyrium*), 1968b). The type of *Diplazium crenatoserratum*, from Indonesia, Java, Bantam, *Blume s.n.* (lectotype L [L0051561], designated here), is unequivocally identical to *Diplazium pallidum* (Blume) T.Moore and not the species here called *Diplazium phanerotis*. A combination in *Diplazium* is not available for *Asplenium varium* Roxb., the earliest name.

In G, two sheets are marked as holotype of *Diplazium phanerotis* by Morton. Morton (1974) specifically designates the material of his photograph 3830 as holotype, which corresponds to G00348439, and his designation is here corrected to lectotype.

Diplazium polypodioides Blume, Enum. Pl. Javae 2: 194 (1828). – *Athyrium polypodioides* (Blume) Milde, Bot. Zeitung (Berlin) 28: 354 (1870), nom. illeg. non Schur (1866). – TYPE: Indonesia, Java, Parang, *C.L. Blume s.n.* (lectotype L [L0051563], designated here).

Diplazium asperum Blume, Enum. Pl. Javae 2: 195 (1828); Holttum, Rev. Fl. Malaya ed. 2, 2: 638 (1968). – *Athyrium asperum* (Blume) Milde, Bot. Zeitung (Berlin) 28:

353 (1870); Holttum, Rev. Fl. Malaya 2: 571 (1955 [‘1954’]). – TYPE: C.L. Blume, s.n., Java, Tjerimai (lectotype L [L0051565], designated here).

There is a single specimen in L with the name *Diplazium asperum* in Blume’s hand (L0051565), a second sheet (L0051530) with the annotation “Tjerimai”, corresponding to the location given in the protologue (“in sylvis montis Tjerimai”), is marked *D. aculeatum*, a name Blume did not publish, and presumably rejected in favour of *D. asperum*. Both may be considered original material. The sheet with the name *Diplazium asperum* is here selected as lectotype.

Diplazium proliferum (Lam.) Kaulf., Enum. Filic. 182 (1824) (note a). – *Asplenium proliferum* Lam., Encycl. 2(1): 307 (1786). – *Callipteris prolifera* (Lam.) Bory, Voy. îles Afrique 1: 283 (1804). – *Diplazium swartzii* Blume, Enum. Pl. Javae 2: 191 (1828), nom. illeg. superfl. (note b). – *Asplenium spinulosum* Mett., Abh. Senckenberg. Naturf. Ges. 3: 216 (repr. 172) (1859), nom. illeg. superfl. – *Asplenium mettenii* E.Fourn., Ann. Sci. Nat., Bot. sér. 5: 311 (1873), nom. illeg. superfl., nom. nov. for *Asplenium spinulosum* Mett., nom. illeg. – TYPE: Réunion (“Bourbon”), *Commerson s.n.* (lectotype P [P00564927*], designated here, see note c).

Diplazium accedens Blume, Enum. Pl. Javae 2: 192 (1828); Holttum, Rev. Fl. Malaya ed. 2, 2: 637 (1968). – *Athyrium accedens* (Blume) Milde, Bot. Zeitung (Berlin) 28: 353 (1870); Holttum, Rev. Fl. Malaya 2: 558 (1955 [‘1954’]). – TYPE: Indonesia, Java, *Blume s.n.* (L?, not located, see note d).

Diplazium repandum Blume, Enum. Pl. Javae 2: 191 (1828). – TYPE: Indonesia, Java, *C.L. Blume s.n.* (lectotype L [L0051567], designated here.)

a. *Diplazium proliferum* (Lam.) Kaulf. is not preceded by *D. proliferum* (Lam.) Thouars, a name often cited but actually non-existent: Thouars (Petit-Thouars, 1811) did not make the combination (ICN 35.2, ex. 6, Turland et al., 2018). The combination in *Diplazium* is to be ascribed to Kaulfuss, as noted by Ballard (1954).

b. *Diplazium swartzii* Blume was intended to be a nom. nov in *Diplazium* for *Asplenium proliferum* Lam., non *D. proliferum* Kaulf., as Blume explicitly states that it is different from *D. proliferum* Kaulf. However, Blume also cited *Asplenium decussatum* Sw. in synonymy, a name that should have been transferred to *Diplazium* instead of creating a new name.

c. The Herb. Lamarck in P has one other sheet [P00564928*] marked by Morton “type sheet 2”. However, the designated sheet [P00564927*] is the one of which Morton distributed a photograph (nr. 2765) labelled as holotype of *Asplenium proliferum* Lam. Additional sheets with original material are P00674626* and, in MPU, MPU018121* from “Ile de France” and MPU018120* from “Bourbon”.

d. The protologue for *Diplazium accedens* Blume gives as origin "Java", but there are no specimens in L from Java with the name in Blume's hand. There are two such annotated specimens (L.3543155, L.3543154), but they are both from 'Celebes' [Sulawesi], while several specimens from Java are marked "*Diplazium accedens* var?", possibly in Blume's hand.

Diplazium sorzogonense (C.Presl) C.Presl, Tent. Pterid.: 114 (1836); Holttum, Rev. Fl. Malaya, ed. 2, 2: 637 (1968). – *Asplenium sorzogonense* C.Presl, Reliq. Haenk. 1(1): 45 (1825). – *Diplazium malaccense* C.Presl, Epimel. Bot.: 86 (1851 ['1849']), nom. illeg. superfl. – *Hypochlamys sorzogonensis* (C.Presl) Fée, Mém. Foug., 5. Gen. Filic.: 200 (1850-1852), as '*sorgonensis'*. – *Athyrium sorzogonense* (C.Presl) Milde, Bot. Zeitung (Berlin) 28: 354 (1870); Holttum, Rev. Fl. Malaya 2: 552 (1955 ['1954']) – *Allantodia sorzogonense* (C.Presl) Ching, Acta Phytotax. Sin. 9: 52 (1964). – TYPE: Philippines, Luzon, *T. Haenke s.n.* (lectotype PRC, designated by Holttum (1968a), not traced).

Polypodiaceae

Goniophlebium percussum (Cav.) W.H.Wagner & Grether, Occas. Pap. Bernice Pauahi Bishop Mus. 19: 88 (1948). – *Cyathea percussa* Cav., Descr. Pl. 548 (1802). – TYPE: Marianas, *L. Née s.n.* (lectotype MA [MA475601*], designated here).

Marginaria verrucosa Hook., Gen. Fil.: t. 14 (1838). – *Goniophlebium verrucosum* (Hook.) J.Sm. in Hooker, Gen. Fil. t. 51 (1840); Holttum, Rev. Fl. Malaya, ed. 2, 2: 632 (1968). – *Polypodium verrucosum* (Hook.) Wall. ex Hook., Gard. Ferns t. 41 (1862); Holttum, Rev. Fl. Malaya 2: 206 (1955 ['1954']). – TYPE: Penang & Singapore, *N. Wallich 296* (lectotype K [K000638172], first step designated by Rödl-Linder (1990), second step designated here; isolectotype K [K000638173]).

For *Goniophlebium percussum*, Rödl-Linder (1990: 381) cites two specimens collected on the Marianas by Luis Née as type: "MA, not traced", and a single pinna of presumably the same collection studied by Christensen ("S-PA, not traced"). The specimen in MA is MA475601 and the pinna-fragment was apparently in Christensen's own herbarium, now in BM [BM001039823]. Here I designate the specimen in MA as lectotype.

Rödl-Linder (1990: 381) selects "Wallich 296, Penang & Singapore (K, Herb. Hookerianum)" as type of *Marginaria verrucosa* Hook. In K there are 2 sheets to which this selection may apply, K000638172 and K000638173. There are no distinguishing details on the plate accompanying the protologue, and both specimens are incomplete, but clearly this species. Here I select sheet K000638172 as lectotype.

Microsorum membranifolium (R.Br.) Ching, Bull. Fan Mem. Inst. Biol. 10: 239 (1941). – *Polypodium membranifolium* R.Br., Prodr. Fl. Nov. Holland. 147 (1810). – TYPE: Australia, Cooktown, *J. Banks s.n.* (holotype BM).

Polypodium nigrescens Blume, Enum. Pl. Javae 2: 126 (1828). – *Phymatodes nigrescens* (Blume) J.Sm., Ferns Brit. For.: 94 (1866); Holttum, Rev. Fl. Malaya, 2: 193 (1955 [‘1954’]);– TYPE: Indonesia, Banda, June 1821, *Reinwardt 68* (lectotype L [L.3580788], designated here.)

Nooteboom (1997: 339) selects *Blume s.n.* L 908.303-605, from Java, as lectotype of *Polypodium nigrescens*, but this sheet number refers to a specimen (L.3569612) that does not have any annotation in Blume’s own hand, and it is identified by Nooteboom as *Microsorum rubidum* (Kunze) Copel. The only other candidate specimen in L for the type of *Polypodium nigrescens* is L.3580788, a sheet with “68 *Polypodium phymatodes* L. Banda junio 1821” in Reinwardt’s hand, and labelled “*Polypodium nigrescens*” in Blume’s hand. It is indeed identified by Nooteboom as *Microsorum membranifolium* (R.Br.) Ching. Nooteboom’s lectotypification can be rejected under ICN 9.19 (c) (Turland et al., 2018), and the sheet L.3580788 is here designated as lectotype.

Microsorum scolopendria (Burm.f.) Copel., Univ. Calif. Publ. Bot. 16: 112 (1929). – *Polypodium scolopendria* Burm.f., Fl. Ind.: 232 (1768). – *Phymatodes scolopendria* (Burm.f.) Ching, Contr. Inst. Bot. Natl. Acad. Peiping 2: 63 (1933); Holttum, Rev. Fl. Malaya 2: 191 (1955 [‘1954’]). – *Phymatosorus scolopendria* (Burm.f.) Pic.Serm, Webbia 28: 460 (1973). – TYPE: Indonesia, Java?, *D. Pryon* (lectotype G [G00360042], designated here).

In the protologue of *Polypodium scolopendria*, Burman cites a number of literature references and a specimen, collected by D. Pryon. The report of both a Malay (*simbar minganang*) and a Javanese (*daun sambang*) name for this specimen strongly suggest that it originates from Java. Nooteboom (1997: 361) states that the type is an unseen specimen in Herb. Hermann. However, in Herb. Hermann (see http://data.nhm.ac.uk/dataset/hermann-herbarium) the specimen cannot be traced. I can only conjecture that Nooteboom’s reference is due to confusion caused by the partial similarity of the names Burman and Hermann.

There are two sheets of this species in the Burman collection in G (Herb. Delessert). One is a sterile frond, annotated with the name *daun sambang* [G00360110]. The other sheet [G00360042] is a fertile frond, annotated with the name simbar minganan. Both are labelled as *D. Pryon*. Both sheets are clearly original material. The sheet with the fertile frond has an annotation by Fosberg (ann. 1954) that the sheet should be designated as holotype. Again, Nooteboom’s lectotypification is rejected under ICN 19.9 (c) and here I follow Fosberg’s suggestion and select sheet G00360042 as lectotype.

ACKNOWLEDGEMENTS. Clarifications and lectotypifications like these would not be possible without publicly available digitized specimens and would be much more time consuming without digital access especially to early botanical literature. All institutions that are in any way contributing to the unified digital and remote access to biodiversity information are gratefully acknowledged.

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