

# PLEOPELTIS (POLYPODIACEAE), A REDIFINITION OF THE GENUS AND NOMENCLATURAL NOVELTIES

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**Abstract:** Recent evidence from morphological, cytological, and gene sequencing studies has provided several additional evidence that the genus *Pleopeltis* (Polypodiaceae) requires redefinition to include other polypod genera and species with peltate scales on the leaf blades. Groups to be included are *Polypodium* subg. *Marginaria* (species treated in the group of *P. polypodioides* (L.) Watt by Moran), and also including the *P. squamatum* and *P. plebeium* groups, *Dicranoglossum*, *Microphlebodium*, *Neurodium*, and *Pseudocolysis*. In this paper, we review all species of Polypodiaceae that we believe belong to *Pleopeltis* and make 35 species combinations, one varietal combination, one new status, and five hybrid combinations. In addition, three new names are necessary for species prevented from transfer because to do so results in homonymy. As redefined, *Pleopeltis* comprises ca. 90 species, mainly in the New World, but with two species and one hybrid in Africa, India, and Sri Lanka; it excludes *Lepisorus* in Asia and Africa, as well as many other especially simple-bladed Old World species once placed in *Pleopeltis* but now included in other Paleotropical genera, e.g., *Lemmaphyllum*, *Leptochilus*, and *Selliguea*. We provide a key to separate the American polypod genera, and address biogeographical data that derive from this new circumscription. In two appendices, we list previously accepted taxa of *Pleopeltis* for which combinations are already available, as well as salient synonymy.

**Key words:** fern classification, Neotropics, new combinations, *Polypodium*, synonymy

**Resumen:** La evidencia reciente proveniente de estudios morfológicos, citológicos y de la secuenciación de genes en Polypodiaceae, ha proporcionado información suficiente para considerar que el género *Pleopeltis* requiere una redefinición, con el fin de incluir otros géneros y especies de la familia que presentan escamas peltadas en las hojas; aquellas consideradas hasta el momento como *Polypodium* subg. *Marginaria* (especies tratadas en el grupo de *Polypodium polypodioides* (L.) Watt por Moran), también de los grupos de *P. squamatum* y *P. plebeium*, y de *Dicranoglossum*, *Microphlebodium*, *Neurodium* y *Pseudocolysis*. En este trabajo se revisaron todas las especies de Polypodiaceae que, de acuerdo a las evidencias morfológicas, al parecer pertenecen a *Pleopeltis*. En total se realizaron 35 combinaciones nuevas a nivel de especie, una en el nivel de variedad, un nombre con rango nuevo y cinco en los híbridos. Adicionalmente, fue necesario establecer tres nuevos nombres, dado que la transferencia a *Pleopeltis* dio lugar a homonimias. La nueva redefinición de *Pleopeltis* comprende ca. 90 especies, sobre todo en el Nuevo Mundo, dos especies y un híbrido en África, India y Sri Lanka; se excluye a *Lepisorus* en Asia y África. Se proporciona una clave para separar los géneros de Polypodiaceae americanos y la distribución geográfica que se deriva de esta nueva circunscripción. En dos apéndices se enumeran los nombres para las combinaciones de *Pleopeltis* que ya estaban disponibles, así como la sinonimia resultante de los cambios nomenclaturales.

**Palabras clave:** clasificación de helechos, Neotropical, nuevas combinaciones, *Polypodium*, sinonimia

The classical fern genus *Polypodium*, described by Linnaeus (1753), has been the home at one time of a huge number of distantly related species. Historically, characters common to most species assigned to *Polypodium* s.l. include a generally long- to short-creeping rhizome with two rows of alternating dorsal leaves, and usually round to

oblong (rarely linear), exindusiate sori. In the last two hundred years, many genera have been segregated from classical *Polypodium* s.l., in both the New World and Old World. Those segregates most often recognized in the Neotropics include *Campyloneurum*, *Dicranoglossum*, *Microgramma*, *Microphlebodium*, *Neurodium*, *Niphidium*, *Pecluma*, *Phle-*

*bodium*, *Pleopeltis*, *Serpocaulon*, and *Synammia*. With existing evidence from both morphology and molecular data, some of these genera can be maintained in their approximate original circumscription, e.g., *Synammia* (Schneider *et al.*, 2006) and *Serpocaulon* (Smith *et al.*, 2006); while others contain heterogeneous elements, e.g., *Polypodium* (Hennipman *et al.*, 1990), or are not monophyletic. Sometimes, the evidence for polyphyly has come through examination of morphological characters (Tejero-Díez, 2005; Tejero-Díez *et al.*, 2010); other evidence has accumulated as a result of cytological studies, especially the discovery of intergeneric hybrids (Gómez-Pignataro, 1975; Wagner and Wagner, 1975; Anthony and Schelpe, 1985; Mickel and Beitel, 1987) that contraindicate current taxonomic circumscriptions. Additional evidence derives from recent molecular studies (e.g., Schneider *et al.*, 2004; Otto *et al.*, 2009; Sprunt *et al.*, 2011). One of the most problematic genera is *Pleopeltis*, whose circumscription is the subject of this paper.

*Pleopeltis* was segregated from *Polypodium* by Willdenow 200 years ago. Initially, it contained only a single species, the type (*Pleopeltis angusta* Humb. & Bonpl. ex Willd.), but many authors have expanded its limits to include over 200 species, both in the Old and New Worlds. Nearly all of those species placed in *Pleopeltis* from the Paleotropics are now included in other genera, particularly *Lepisorus* and *Selliguea*, but other genera as well. The former genus, also with simple, often scaly blades, has been partly monographed by Zink (1993), and has been shown to be allied to the microsorioid ferns (Schneider *et al.*, 2004) in an exclusively paleotropical tribe Lepisoreae (Wang *et al.*, 2010a, b), and not to *Pleopeltis*. Also, the Malesian species of *Lepisorus* were treated by Hovenkamp (1998a, b) and the Chinese ones by Qi and Zhang (2009). Some other Old World species, especially simple-bladed ones, were also earlier combined in *Pleopeltis*, but are now placed in *Selliguea* and *Microsorium*.

As defined more recently (e.g., by Smith, 1981; Tryon and Tryon, 1982; Mickel and Beitel, 1988; Lellinger, 1989; Tryon and Stolze, 1993; Hooper, 1994, 1995; Lorea-Hernández, 1995; Mickel and Smith, 2004), *Pleopeltis* was believed to comprise a predominantly New World group of about ten species, the genus characterized by generally simple blades (except the type, *P. angusta*, which has pinnatifid blades with only a few pinna-pairs), a complex netted venation consisting of areoles of two or three orders, with 1-3 free included veins, sori borne at junction of these ultimate veins (compital sori), and peltate scales, at least in immature sori and often on laminar tissue too.

In addition, hybrids have been found between *Pleopeltis* and *Polypodium* ( $\times$ *Pleopodium*) in Africa (Anthony and Schelpe, 1985) and America (Wagner and Wagner, 1975;

Mickel and Beitel, 1987). These “intergeneric” hybrids have called into question the circumscription of both *Pleopeltis* and *Polypodium*. Also, some of the species now usually regarded as belonging to *Polypodium* were, in fact, originally described in *Pleopeltis*, e.g., *P. pinnatifida* Hook. & Grev. Even with the cytological evidence, many scaly-bladed species are still almost unanimously considered as belonging to *Polypodium* in various taxonomic revisions (Maxon, 1916; Weatherby, 1922; 1947; de la Sota, 1960, 1966; Tryon and Tryon, 1982), as well as in many recent floras, e.g., for Mexico (Mickel and Smith, 2004), Mesoamerica (Moran, 1995), the Venezuelan Guayana (Smith *et al.*, 1995), and Peru (Tryon and Stolze, 1993).

In the early 1990s, the Flora of North America North of Mexico (FNANM) project became the impetus for renewed investigation of the affinities of certain scaly polypods from the southern United States. Provided with preliminary molecular and isozyme data, Windham (1993) became convinced of the unnaturalness of *Polypodium* and the affinities of certain *Polypodium* species to *Pleopeltis*. In a prelude to their account of *Polypodium* and *Pleopeltis* in FNANM (FNAEC, 1993), Windham (1993) transferred several species from *Polypodium* to *Pleopeltis*: *P. guttatum*, *P. polypodioides*, *P. riograndensis*, and *P. thyssanolepis*.

In the last decade, the advent of cladistic analysis using both morphological and gene sequence data has provided additional strong evidence that *Polypodium* s.l. is clearly polyphyletic, and that many species of *Polypodium* with peltate and persistent laminar scales heretofore treated in *Polypodium* subg. *Marginaria*, as well as species in the *Polypodium polypodioides* group (Moran, 1995), *Dicranoglossum*, *Microphlebodium*, *Neurodium*, and *Pseudocolysis*, are much more closely allied to species of *Pleopeltis* (Schneider *et al.*, 2004; Tejero-Díez, 2005; Otto *et al.*, 2009) than they are to *Polypodium* s.str. The scale character, especially, helps to redefine the circumscription of *Pleopeltis* (Tejero-Díez, 2005; Otto *et al.*, 2009). Using this character and others, species of *Polypodium* from North America north of Mexico (Windham, 1993; Hooper, 1995) and some *Polypodium* spp. in South America (de la Sota, 2003; Kessler and Smith, 2005; de la Sota *et al.*, 2007; Salino, 2009; Prado and Hirai, 2010) have already been given new combinations in *Pleopeltis*. In this paper we review all polypod species that we believe belong to a redefined *Pleopeltis* and make the necessary new combinations for taxa that lack a name in *Pleopeltis*. These taxonomic judgments reflect the totality of data available on the group, both monographic information (with morphology as the prime source of characters) and recent molecular data (especially Otto *et al.*, 2009). In addition, we address biogeographical data that derive from the review of the literature.

From discussion presented above, we believe that there is no real or practical alternative to the redefinition of *Pleopeltis* (and thus also of *Polypodium*). We therefore emend the circumscription of *Pleopeltis* as indicated below, and transfer to it 38 species heretofore usually placed in *Polypodium*. Three new names (nom. nov.) are coined in *Pleopeltis* for species where the available name is pre-empted, and one varietal epithet is recombined; five hybrid combinations are also made. With additional data, it may become feasible, even desirable, to provide an infrageneric classification of the species within *Pleopeltis*, but at this point the data are inconclusive and inadequate, and in fact can be interpreted to indicate that no such subdivision may be possible. Clearly, there are groups of closely allied species, as suggested by previous monographers (Maxon, 1916; Weatherby, 1922, 1939; de la Sota, 1966), but these groups may need additional redefinition to make them monophyletic. A preliminary attempt at placing known species into subgroups of related species is made in the summary. This assessment is based on both molecular results (largely, Otto *et al.*, 2009; Sprunt *et al.*, 2011) and previous monographs, cited above.

## Methods

We base our taxonomic decisions—the new combinations given below—on a knowledge of the species in the field and herbarium, information available in regional floras from U.S.A. (FNAEC, 1993), Mexico (Smith, 1981; Mickel and Beitel, 1988; Mickel and Smith, 2004), Mesoamerica (Lellinger, 1989; Lorea-Hernández, 1995; Maxon in Yuncer, 1938; Moran, 1995; Stolze, 1981), the Antilles (Proctor, 1977, 1985, 1989), and South America (Smith, 1985; Tryon and Stolze, 1993; Smith *et al.*, 1995; Jørgensen and León-Yáñez, 1999), as well as unpublished work by Smith and Mostacero on Venezuelan ferns and by Kessler and Smith on Bolivian ferns. We have also consulted relevant monographs and revisions on *Polypodium* (Maxon, 1916; Weatherby, 1922; de la Sota, 1966) and *Pleopeltis* (Hooper, 1994). Additional databases that have proven helpful are IPNI (International Index to Plant Names: <http://www.ipni.org:80/ipni/plantnamesearchpage.do>) and Tropicos (<http://www.tropicos.org/>).

## Results

*Pleopeltis* Humb. & Bonpl. ex Willd., *Sp. pl.*, ed. 4 [Willdenow], 5:211. 1810. – *Polypodium* subg. *Pleopeltis* (Humb. & Bonpl. ex Willd.) C.Chr., *Ind. Fil.* L. 1906. – Type: *Pleopeltis angusta* Humb. & Bonpl. ex Willd.  
*Marginaria* Bory, *Dict. Class. d'Hist. Nat.* 6:587. 1824. – *Polypodium* L. subg. *Marginaria* (Bory) C.Chr., *Ind. Fil.* L. 1906. – Type: *Marginaria polypodioides* (L.) Tidestr. [= *Acrostichum polypodioides* L.] = *Pleopeltis polypodioides* (L.) E.G.Andrews & Windham.

*Lepicystis* (J. Sm.) J. Sm., *London J. Bot.* 1:195. 1842. – *Goniophlebium* sect. *Lepicystis* J.Sm., *J. Bot. (Hook.)* 4:56. 1841. – Type: *Goniophlebium incanum* J.Sm. = *Pleopeltis polypodioides* (L.) E.G. Andrews & Windham.  
*Neurodium* Fée, *Mém. Soc. Mus. Hist. Nat. Strasbourg* 4:201. 1850. – Type: *Neurodium lanceolatum* (L.) Fée = *Pleopeltis marginata* A.R.Sm. & Tejero.  
*Paltonium* C. Presl, *Epim. Bot.* 156. 1851. [*Abh. Königl. Böhm. Ges. Wiss.*, ser. 5, 6:516. 1851]. Nom. superfl. for *Neurodium* Fée, and with the same type.  
*Eschatogramme* Trevis., *Atti Ist. Veneto*, ser. 2, 2:168. 1851. Nom. nud.  
*Dicranoglossum* J.Sm., *Bot. Voy. Herald* 232. 1854. – Lectotype (designated by J.Smith, *Hist. Filicum* 120. 1875): *Dicranoglossum furcatum* (L.) J.Sm. = *Pleopeltis furcata* (L.) A.R.Sm.  
*Cheilogramma* Maxon, *Proc. U. S. Natl. Mus.* 23:630. 1901 (also Maxon in Underwood, *Our native ferns*, ed. 6. 1900). 1901. – Type: *Cheilogramma lanceolata* (L.) Maxon = *Pleopeltis marginata* A.R.Sm. & Tejero.  
*Marginariopsis* C.Chr., *Dansk. Bot. Ark.* 6:42. 1929. – Type: *Marginariopsis wiesbaurii* (Sodiuro) C.Chr. = *Pleopeltis wiesbaurii* (Sodiuro) Lellinger.  
*Pseudocolysis* L.D.Gómez, *Brenesia* 10–11:116. 1977. – Type: *Pseudocolysis bradeorum* (Rosenst.) L.D.Gómez = *Pleopeltis bradeorum* (Rosenst.) A.R.Sm. & Tejero.  
×*Pleopodium* Schelpe & N.C.Anthony, *Bothalia* 15:557. 1985. – Type: ×*Pleopodium simianum* Schelpe & N.C.Anthony [= *Pleopeltis macrocarpa* (Bory ex Willd.) Kaulf. × *Polypodium polypodioides* (L.) Watt subsp. *ecklonii* (Kunze) Schelpe] = *Pleopeltis xsimiana* (Schelpe & N.C.Anthony) N.R.Crouch & Klopfer.  
*Microphlebodium* L.D.Gómez, *Phytologia* 59:58, text f. 1985. – Type: *Microphlebodium muenchii* (Christ) L.D.Gómez [= *Polypodium muenchii* Christ] = *Pleopeltis muenchii* (Christ) A.R.Sm. & Tejero.

**Plants** epiphytic, epipetric, or terrestrial; **rhizomes** long- to short-creeping, branched, leaves distant to clumped; rhizome scales concolorous to often bicolorous, non-clathrate to clathrate on the margins, cells of a central longitudinal band sometimes blackened and thickened, the transition to clathrate cells often abrupt, scales generally deltate, narrowly deltate, or lanceate, bases peltate, margins entire to denticulate, fimbriate, or erose, surfaces comose or glabrous; **blades** simple to pinnatifid, rarely pinnate-pinnatifid or more divided, monomorphic to subdimorphic or holodimorphic in a few species, stipitate, eventually (sometimes tardily) articulate; **laminar tissue** firm, generally subcoriaceous to coriaceous, sparsely to densely scaly with peltate, orbicular to ovate-lanceolate scales; **veins** free to netted, if netted, the main areoles in one row on each side of costa with 1-3 free or netted included veins; **sori** round to oblong, rarely marginal and coalescing or linear, in one row on each side of midrib (rachis

or costae, depending on blade dissection), exindusiate, with round, peltate scales (at least in immature sori) or naked, each sorus arising at apex of a single fertile vein or at the junction of several included veins (sori compital); **sporangia** glabrous; **spores** bilateral, yellowish or sometimes greenish, shallowly to prominently verrucate;  $x = 34, 35, 37$ .

Other morphological characters that help to establish the limits of *Pleopeltis*, or apply to subgroups within *Pleopeltis*, are: (a) the presence of leaf nectaries at the acroscopic bases of pinnae; (b) vascular bundles in stipes that fuse in a V pattern (Tejero-Díez *et al.*, 2010), where three small vascular bundles are fused in the proximal portion of the stipe and two large vascular bundles are fused in the distal portion; (c) blades with bifacial anatomy (Tejero-Díez *et al.*, 2010); and (d) poikilohydrous character (sensu Kessler and Siorak, 2007). Thus far, at least 12 species here placed in *Pleopeltis* are known to produce either green spores or the spores autofluorescence, which is an indication of chlorophyll production. Not all species of *Pleopeltis* have shown this characteristic, and the feature may not be uniform within a species (Sundue *et al.*, 2011). The occurrence of chlorophyllous spores in other polypod genera (grammitids always produce chlorophyllous spores) appears to be relatively rare, having been found in species of *Loxogramme*, *Platyserium*, and *Christiopteris*. Green spore production is uncommon in ferns, but is a synapomorphy of a few families (Equisetaceae, Hymenophyllaceae, Onocleaceae, and Osmundaceae) or other large clades (grammitids, in Polypodiaceae), and also appears also to be relatively common in a few other genera (e.g., *Elaphoglossum*, *Lomariopsis*).

According to Otto *et al.* (2009), *Pleopeltis* is a monophyletic group represented by three major subgroups. *Pleopeltis bradeorum* lies at the base of the *Pleopeltis* clade. Otto's study, coupled with that by Schneider *et al.* (2004), clearly call into question the historical definition of *Pleopeltis*.

The new combinations proposed here are relevant to ecological studies because species of *Pleopeltis* have special ecological preferences for life in the forest canopy in the temperate sub-humid and humid zones of the Neotropics (Wolf and Flamenco-S., 2006), where scaly blades, poikilohydrous character, and bifacial anatomy of blades in some species are obviously advantageous (Dubuisson *et al.*, 2009; Tejero-Díez, 2009; Moran, 2004: 154). The new combinations are also necessary for forthcoming taxonomic treatments, regional floras, ecological interpretations, and ongoing phylogenetic studies.

#### *New combinations proposed*

***Pleopeltis alan-smithii* (R.C.Moran) A.R.Sm. & Tejero, comb. nov.**

Basionym: *Polypodium alan-smithii* R.C.Moran (1990:

845, f. 1) – SW Mexico, Guatemala, Honduras, Nicaragua, Salvador (Moran, 1995; Mickel and Smith, 2004).

***Pleopeltis aturensis* (Maury) A.R.Sm., comb. nov.**

Basionym: *Polypodium aturense* Maury (1889: 134, f. 3) – S Venezuela (Smith *et al.*, 1995).

***Pleopeltis balaonensis* (Hieron.) A.R.Sm., comb. nov.**

Basionym: *Polypodium balaonense* Hieron. (1905: 529) – Colombia, Ecuador, Panama, Peru (de la Sota, 1966; Moran, 1995).

***Pleopeltis bradeorum* (Rosenst.) A.R.Sm. & Tejero, comb. nov.**

Basionym: *Polypodium bradeorum* Rosenst. (1912: 279) – S Belize, Costa Rica, Honduras, Mexico, Nicaragua, Panama (Moran, 1995).

***Pleopeltis christensenii* A.R.Sm., nom. nov.**

Basionym: *Eschatogramme panamensis* C.Ch. (1929: 37) – *Dicranoglossum panamense* (C.Ch.) L.D.Gómez, Brenesia 16:46. 1976, not *Pleopeltis panamensis* (Weath.) Pic.Serm. (1968: 189) – W Colombia, Costa Rica, NW Ecuador, Honduras, Nicaragua, Panama (Moran, 1995).

***Pleopeltis collinsii* (Maxon) A.R.Sm. & Tejero, comb. nov.**

Basionym: *Polypodium collinsii* Maxon (1916: 583, t. 41) – S Mexico (de la Sota, 1966; Moran, 1995; Mickel and Smith, 2004).

***Pleopeltis cryptocarpa* (Fée) A.R.Sm. & Tejero, comb. nov.**

Basionym: *Polypodium cryptocarpon* Fée (1857: 88) – Guatemala, Honduras, S Mexico, Nicaragua (Maxon, 1916; Moran, 1995; Mickel and Smith, 2004).

***Pleopeltis ecklonii* (Kunze) A.R.Sm., comb. nov.**

Basionym: *Polypodium ecklonii* Kunze (1836: 498) – Malawi, Mozambique, South Africa, Tanzania, Zimbabwe.

***Pleopeltis fallacissima* (Maxon) A.R.Sm. & Tejero, comb. nov.**

Basionym: *Polypodium fallacissimum* Maxon (1916: 567) – NE Mexico (Maxon, 1916; Mickel and Smith, 2004).

***Pleopeltis fayorum* (R.C.Moran & B.Øllg.) A.R.Sm., comb. nov.**

Basionym: *Polypodium fayorum* R.C.Moran & B. Øllg. (1998: 437, f. 4) – Ecuador, Peru.

***Pleopeltis fimbriata* (Maxon) A.R.Sm., comb. nov.**

Basionym: *Polypodium fimbriatum* Maxon (1916: 596) – Colombia, Ecuador (de la Sota, 1966).

***Pleopeltis friedrichsthaliana* (Kunze) A.R.Sm. & Tejero, comb. nov.**

Basionym: *Polypodium friedrichsthalianum* Kunze (1850(2): 55, t. 123) – Costa Rica (Maxon, 1916; Moran, 1995).

***Pleopeltis furcata* (L.) A.R.Sm., comb. nov.**

Basionym: *Pteris furcata* L. (1753: 1073) – Brazil, Cuba, Colombia, Ecuador, Hispaniola, Suriname, Trinidad, Venezuela.

***Pleopeltis furfuracea* (Schltdl. & Cham.) A.R.Sm. & Tejero, comb. nov.**

Basionym: *Polypodium furfuraceum* Schltdl. & Cham.



- (1830: 607) – Costa Rica, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama (Maxon, 1916; Moran, 1995; Mickel and Smith, 2004). Attribution of this species to Bolivia and Peru (Moran, 1995; Mickel and Smith, 2004) pertains to *Pleopeltis disjuncta* M.Kessler & A.R.Sm. (Kessler and Smith, 2005).
- Pleopeltis hookeri* A.R.Sm., nom. nov.**  
 Basionym: *Taenitis furcata* Willd. var. *polypodioides* Hook. (1864: 188) – *Dicranoglossum polypodioides* (Hook.) Lellinger, Selbyana 2:283. 1978, not *Pleopeltis polypodioides* (L.) E.G.Andrews & Windham (1993) – Ecuador, Peru.
- Pleopeltis insularum* (C.V.Morton) A.R.Sm., comb. nov.**  
 Basionym: *Polypodium bombycinum* Maxon var. *insularum* C.V.Morton (1957: 193) – *Polypodium insularum* (C.V.Morton) de la Sota, Revista Mus. La Plata, Secc. Bot. 10:152, f. 1, 4, 12, 15, 16. 1967. – Ecuador (Galápagos Isl.) (de la Sota, 1966).
- Pleopeltis lepidotricha* (Fée) A.R.Sm. & Tejero, comb. nov.**  
 Basionym: *Goniophlebium lepidotrichum* Fée (1857: 93) – *Polypodium lepidotrichum* (Fée) Maxon – SE Mexico (de la Sota, 1966; Mickel and Smith, 2004).
- Pleopeltis lindeniana* (Kunze) A.R.Sm. & Tejero, comb. nov.**  
 Basionym: *Polypodium lindenianum* Kunze (1851: 83, t. 134) – Belize, S Costa Rica, El Salvador, Guatemala, Honduras, S Mexico, Nicaragua, (Maxon, 1916; Smith, 1981; Moran, 1995).
- Pleopeltis macrolepis* (Maxon) A.R.Sm. & Tejero, comb. nov.**  
 Basionym: *Polypodium macrolepis* Maxon (1916: 584) – Costa Rica, Panama (de la Sota, 1966).
- Pleopeltis madrensis* (J.Sm.) A.R. Sm. & Tejero, comb. nov.**  
 Basionym: *Polypodium madrense* J.Sm., in Seemann (1856: 338, t. 73) – Mexico (Moran, 1995; Mickel and Smith, 2004).
- Pleopeltis marginata* A.R.Sm. & Tejero, nom. nov.**  
 Basionym: *Pteris lanceolata* L. (1753: 1073) (not *Pleopeltis lanceolata* (L.) Kaulf. (1824: 245) – Antilles, Bahamas, Belize, Costa Rica, French Guiana, Guatemala, Honduras, S Mexico, Nicaragua, SE USA., This species has generally been treated in *Neurodium* (Pacheco, 1995).
- Pleopeltis microgrammoides* (Mickel & A.R.Sm.) A.R.Sm. & Tejero, comb. nov.**  
 Basionym: *Polypodium microgrammoides* Mickel & A.R.Sm. (2000: 236, f. 1D–G) – C Mexico (Mickel and Smith, 2004).
- Pleopeltis monosora* (Desv.) A.R.Sm., comb. nov.**  
 Basionym: *Polypodium monosorum* Desv. (1811: 319) – Colombia, Ecuador, Peru (Maxon, 1916; Tryon and Stolze, 1993).
- Pleopeltis montigena* (Maxon) A.R.Sm. & Tejero, comb. nov.**  
 Basionym: *Polypodium montigenum* Maxon in Yuncker (1938: 17: 306) – Costa Rica, Panama (Moran, 1995; Mickel and Smith, 2004).
- Pleopeltis murora* (Hook.) A.R.Sm. & Tejero, comb. nov.**  
 Basionym: *Polypodium murorum* Hook. (1837: t. 70) – Costa Rica, Colombia, Ecuador, Hispaniola, Venezuela (Maxon, 1916; Moran, 1995).
- Pleopeltis myriolepis* (Christ) A.R.Sm. & Tejero, comb. nov.**  
 Basionym: *Polypodium myriolepis* Christ in Bommer & Christ (1896: 661) – Costa Rica, Panama (de la Sota, 1966; Moran, 1995).
- Pleopeltis platylepis* (Mett. ex Kuhn) A.R.Sm. & Tejero, comb. nov.**  
 Basionym: *Polypodium platylepis* Mett. ex Kuhn (1869: 137) – Guatemala, Mexico, Venezuela (Maxon, 1916; Moran, 1995; Mickel and Smith, 2004).
- Pleopeltis plebeia* (Schltdl. & Cham.) A.R.Sm. & Tejero, comb. nov.**  
 Basionym: *Polypodium plebeium* Schltdl. & Cham. (1830: 607) – Costa Rica, Guatemala, El Salvador, Honduras, Mexico, Nicaragua, Panama (Maxon, 1916; Moran, 1995; Mickel and Smith, 2004).
- Pleopeltis polypodioides* (L.) E.G.Andrews & Windham var. *knoblochiana* (Mickel) A.R.Sm. & Tejero, comb. nov.**  
 Basionym: *Polypodium polypodioides* (L.) Watt var. *knoblochianum* Mickel in Mickel and Smith (2004: 502, f. 231M–R) – NW Mexico (Chihuahua, Sinaloa, Sonora) (Mickel and Smith, 2004).
- Pleopeltis pyrrolepis* (Fée) A.R.Sm. & Tejero, comb. nov.**  
 Basionym: *Goniophlebium pyrrolepis* Fée (1857: 94) – S Mexico (de la Sota, 1966; Moran, 1995; Mickel and Smith, 2004).
- Pleopeltis rosei* (Maxon) A.R.Sm. & Tejero, comb. nov.**  
 Basionym: *Polypodium rosei* Maxon (1916: 594) – Mexico (de la Sota, 1966; Moran, 1995; Mickel and Smith, 2004). The occurrence of this species in Honduras cited by Moran (1995) and Nelson *et al.* (1996) is suspect, and the record for Costa Rica, as reported by Moran (1995), is a misidentified specimen, and is instead *Pleopeltis tico*. We consider *Pleopeltis rosei* a Mexican endemic.
- Pleopeltis rzedowskiana* (Mickel) A.R.Sm. & Tejero, comb. nov.**  
 Basionym: *Polypodium rzedowskianum* Mickel in Mickel and Smith (2004: 507–508, f. 236 O–S) – W Mexico (Mickel and Smith, 2004).
- Pleopeltis sanctae-rosae* (Maxon) A.R.Sm. & Tejero, comb. nov.**  
 Basionym: *Goniophlebium sanctae-rosae* Maxon (1909: 8) – Guatemala, El Salvador, Honduras, S Mexico, Nicaragua (de la Sota, 1966; Moran, 1995; Mickel and Smith, 2004).
- Pleopeltis segregata* (Baker) A.R.Sm., comb. nov.**  
 Basionym: *Polypodium segregatum* Baker in Hooker and Baker (1874: 510) – Ecuador.

***Pleopeltis steirolepis* (C.Chr.) A.R.Sm., comb. nov.**

Basionym: *Polypodium steirolepis* C.Chr. (1917: 33) – Colombia, Ecuador, Venezuela.

***Pleopeltis subnuda* (C.Chr.) A.R.Sm., comb. nov.**

Basionym: *Eschatogramme furcata* (L.) C.Chr. var. *subnuda* C.Chr. (1929: 36) – Bolivia, Peru (Tryon and Stolze, 1993).

***Pleopeltis tico* (A.Rojas) A.R.Sm., comb. nov.**

Basionym: *Polypodium tico* A.Rojas (1996: 42-46) – Costa Rica.

***Pleopeltis villagranii* (Copel.) A.R.Sm. & Tejero, comb. nov.**

Basionym: *Polypodium villagranii* Copel. (1941: 292, t. 44) – E Mexico (Mickel and Smith, 2004).

***Pleopeltis xantholepis* (Harr.) A.R.Sm., comb. nov.**

Basionym: *Polypodium xantholepis* Harr. (1877: 36) – Peru (Maxon, 1916); closely related to *Pleopeltis pycnocarpa* (Tryon and Stolze, 1993) and possibly *Pleopeltis oreophila* (Sundue, pers. comm.).

**Hybrids*****Pleopeltis xaspidiolepis* (Baker) A.R.Sm., comb. nov.**

Basionym: *Polypodium aspidiolepis* Baker (1887: 26) – Costa Rica = *Pleopeltis friedrichsthaliana* × *thyssanolepis* – Costa Rica (Gómez-Pignataro, 1975; Wagner *et al.*, 1977).

***Pleopeltis xbartlettii* (Weath.) A.R.Sm. & Tejero, comb. nov.**

Basionym: *Polypodium bartlettii* Weath. (1935: 56) – ×*Pleopodium bartlettii* (Weath.) Mickel & Beitel (1987: 20, t. 1K-L) = putative hybrid between *Pleopeltis polylepis* and perhaps *P. polypodioides* – Mexico (Mickel and Smith, 2004).

***Pleopeltis xleucospora* (Klotzsch) T.Moore, Ind. fil. lxxvii. 1857, pro sp.**

Basionym: *Polypodium leucosporum* Klotzsch (1847: 404) = *Pleopeltis macrocarpa* × *thyssanolepis* (see Tryon and Stolze, 1993) – Bolivia, S Brazil, Colombia, Costa Rica, Jamaica, Peru, Venezuela.

***Pleopeltis xpinnatisecta* (Brade) A.R.Sm., comb. nov.**

Basionym: *Polypodium furfuraceum* Schldl. & Cham. f. *pinnatisectum* Brade 1969: 16, t. 5), as “*pinnatisecta*” = *Pleopeltis friedrichsthaliana* × *P. furfuracea* – Costa Rica (Lellinger, 1989).

***Pleopeltis xtricholepis* (Mickel & Beitel) A.R.Sm. & Tejero, comb. nov.**

Basionym: ×*Pleopodium tricholepis* Mickel and Beitel (1987: 17) – Mexico (Mickel and Smith, 2004).

**Discussion**

In this paper, we expand the circumscription of *Pleopeltis*. Using morpho-anatomical and molecular evidence (Tejero-Díez, 2005; Otto *et al.*, 2009; Sprunt *et al.*, 2011), the

genus now comprises primarily New World polypods with petlate or rarely basifixed, persistent laminar scales. We make 35 new combinations, one varietal combination, one new status, and coin three new names, which add to the list of species belonging to *Pleopeltis*, giving a total of ca. 90 *Pleopeltis* species (with seven varieties and eight named hybrids). As emended, *Pleopeltis* now has the largest number of species of any genus of Neotropical Polypodiaceae, and is one of the largest genera of Polypodiaceae in the World, approaching the Old World polypod genus *Microsorium*, which is, of now, still ill-defined.

Tejero-Díez (2005) and Otto *et al.* (2009) indicated that petlate and persistent laminar scales, which are lacking in the related genera *Pecluma* (Evans, 1969) and *Polypodium*, are the principal characters that redefine *Pleopeltis*. Basifixed blade scales may occur in some specimens of *Phlebodium pseudoaureum* (Cav.) Lellinger or on costae and veins in *Microgramma*, *Pecluma*, *Polypodium hartwegianum*, and *Serpocaulon*. Not all species of a redefined *Pleopeltis* have petlate scales; an exceptional species is *P. muenchii*, having subpetlate scales, and scales appear to be completely absent on the blades of *P. marginata*.

The following key, excluding grammitid genera and *Phytomatosorus*, a sparingly naturalized genus (Tejero-Díez and Torres-Díaz, 2012), will assist in determining the American polypod genera (Polypodiaceae):

1. Spores tetrahedral, green; blades always lacking scales; petiole bases nearly always with a singular vascular bundle; veins usually free (with rare exceptions, e.g., *Enterosora*), if areolate, as in *Loxogramme*, then areoles without included veinlets.
  2. Sori generally round; blades generally pinnatifid or pinnatisect, a few spp. simple ..... *Polypodiaceae, Grammitidoideae*
  2. Sori linear, oblique between the midrib and blade margins; blades always simple ..... *Loxogramme*
1. Spores bilateral, whitish to amber-yellow (rarely greenish, e.g., some species of *Pleopeltis*); blades often with some scales; petioles bases usually with more than a single vascular bundle (except *Pleopeltis fallax*; some species of the *Polypodium vulgare* group have one vascular bundle at the distal end of petioles); veins free or often variously anastomosing and the areoles with included veinlets.
  3. Leaves strongly dimorphic, the sterile forming a “nest” or basket; laminar hairs stellate; sporangia acrostichoid, in large patches at tips of fertile leaves or in sinuses of forking blades; only Peru and Bolivia ..... *Platyserium*
  3. Leaves monomorphic, if dimorphic then sterile not nest- or basket-forming; laminar hairs, if any, not stellate, simple; sporangia in discrete sori, not usually localized at

tips of fertile leaves or in sinuses; widespread in the Neotropics.

4. Blades scaly, at least on the abaxial surfaces, sometimes the scales very small.
5. Blade scales basifixed, linear ..... *Phlebodium*
5. Blade scales peltate or with peltate bases, round to ovate-cuspidate.
6. Sori with persistent filiform paraphyses .....  
..... *Microgramma*
6. Sori without paraphyses, or paraphyses peltate (often caducous) ..... *Pleopeltis*
4. Blades without scales or these confined to the costae and primary veins, usually basifixed.
7. Blades simple.
8. Sori elongate, marginal, with blade margins reflexed over the sori ..... *Pleopeltis marginata*
8. Sori round or nearly so, usually nearer the midribs than the blade margins.
9. Sori in one row on each side of the midribs, except *Microgramma microsorooides* with several rows (SE Brazil) and then with blades elliptic ....  
..... *Microgramma*
9. Sori in 2 or more (up to ca. 20) ± regular rows on each side of midribs, except some specimens of *Campyloneurum angustifolium* and related spp., and then with blades linear-lanceolate.
10. Sori usually in 2 or more rows between main lateral (secondary) veins; sporangia glabrous ..... *Campyloneurum*
10. Sori in 1 row between main lateral (secondary) veins; sporangia bearing minute multicellular hairs on capsules ..... *Niphidium*
7. Blades pinnatifid to 1-pinnate, rarely more divided.
11. Stipes without grooves adaxially, black to reddish brown; rhizome scales basifixed (not auriculate); blades pectinate to 1-pinnate at bases; veins generally free or casually anastomosing, pinnae usually comb-like, usually > 20 lateral pairs per frond ..... *Pecluma*
11. Stipes grooved adaxially, at least distally, stramineous to brown; rhizome scales subpeltate (with two overlapping auricles); blades pinnatifid, pectinate, or pinnate; veins often anastomosing, if free (*Polypodium*), then pinnae not comb-like, generally < 20 pairs per frond.
12. Veins free, sometimes irregularly netted ..... *Polypodium*
12. Veins regularly netted, at least in the basal part of the segments (pinnae).
13. Marginal areoles present and sterile (without included veins), in (1 complete) 2 or more alternating rows; spores tuberculate ..... *Phlebodium*

13. Marginal sterile areoles absent, if present then irregular, not forming a regular row; spores rugulate, verrucate, papillate, low-tuberculate (*Polypodium vulgare* group), or with raised folds forming prominent wings (*Serpocaulon*).

14. Sori in 2-4 rows between strongly delineated main lateral veins .....  
...*Campyloneurum decurrens*, *C. magnificum*

14. Sori in a single row between the main lateral veins, which are apparent or not.

15. Rhizome scales clathrate, at least in lateral or peripheral portions if not over their entire surface, or with the center blackened and sclerotic ..... *Serpocaulon*

15 Rhizome scales not clathrate, uniformly colored (concolorous) or occasionally bicolorous (darkened central portion, clathrate margins).

16. Rhizome scales light brown (tan) to dark brown or bicolorous with dark brown or reddish central portion; areoles of blades elongate; spp. nearly all from north of the equator ..... *Polypodium*

16. Rhizome scales amber or orangish; vein areoles as long as wide; spp. from southern South America (Argentina, Chile, and Juan Fernández Islands) .....  
..... *Synammia*

*Summary of geographical distribution of Pleopeltis.* Species and infraspecific taxa of *Pleopeltis* are almost evenly divided between Mexico/Mesoamerica and South America. Seventy-six taxa are found in one or the other area, but not both, and several others barely extend their distributions into both parts of the Americas (e.g., *P. christensenii* into W Colombia, *P. platylepis* disjunct in W Venezuela, *P. marginata* into French Guiana; *P. balaoensis* and *P. bombycina* into Panama). Most species of *Pleopeltis* in the newly expanded sense are continental, but a few are endemic on Pacific (*P. insularum*, *P. masafuerae*, *P. tridens*) or Atlantic (*P. trinidadensis*) islands. The Antilles have only a single endemic species (*P. squamata*) and only 11 species total, with most of these widespread on both continents. According to Otto *et al.* (2009), southern Mexico to Panama is the putative area of origin for *Pleopeltis* but it is likely that areas within both tropical South America (Andes, southern Brazil) and North America (Mexico, Costa Rica/Panama) have been important secondary centers of radiation, because relatively few species between the two areas are shared, and because morphological similarities among species endemic to both areas are evident. Only seven species can be considered wide-ranging in the Neotropics, and two of these have also colonized regions in southern Africa and adjacent areas.



In Mexico/Mesoamerica, at least four separate radiations are evident: (1) the simple-bladed group of *Pleopeltis macrocarpa* (including also *P. complanata*, *P. conzattii*, *P. crassinervata*, *P. fructuosa*, *P. intermedia*, *P. mexicana*, *P. polylepis*, *P. stolzei*, and the strongly dimorphic *P. wiesbaurii*) in the mountains of Mexico, extending into Mesoamerica and South America. The only simple-bladed species of *Pleopeltis* that are apparently not clearly a part of this clade are *P. (Neurodium) marginata*, *P. (Microphlebodium) microgrammoides*, and perhaps *P. repanda*; (2) a radiation of pinnatifid species in the *Pleopeltis plebeia* group (including also *P. alan-smithii*, *P. guttata*, *P. madrensis*, *P. montigena*, and *P. rzedowskiana*); (3) a radiation of more heavily scaly-bladed, pinnatisect species related to *P. lepidotricha* (including also *P. collinsii*, *P. macrolepis*, *P. myriolepis*, *P. pyrrolepis*, *P. rosei*, *P. sanctae-rosae*, and *P. tico*, as well as *P. squamata* in the Greater Antilles); *P. tridens*, endemic to the Galápagos Islands, may be the sole representative of this clade south of the equator; and (4) the *P. furfuracea* group (including also *P. cryptocarpa*, *P. friedrichsthaliana*, *P. lindeniana*, *P. platylepis*, and *P. villagrani*), more poorly circumscribed (judging from the analyses by Otto *et al.*, 2009), a largely Mexican and Central American, with blades pinnatisect to more divided and rather densely scaly abaxially, also with concolorous, tan to light brown rhizomes scales; *Pleopeltis disjuncta*, from Peru and Bolivia, is a strongly disjunct member of this clade, and *P. platylepis*, largely confined to Mexico and Guatemala, has an outlying population in Venezuela.

In South America, there are at least three main clades: (1) *Pleopeltis remota* and allies (including also *P. appressa*, *P. aturensis*, *P. bryopoda*, *P. buchtienii*, *P. coenosora*, *P. fayorum*, *P. fraseri*, *P. masafuerae*, *P. oreophila*, *P. orientalis*, *P. pinnatifida*, *P. pleopeltifolia*, *P. pycnocarpa*, *P. segregata*, *P. steirolepis*, *P. tweediana*, and *P. xantholepis*), mostly confined to Andean regions, the species with sparingly to moderately scaly, pinnatifid or pinnatisect blades (more divided in *P. monosora* and *P. murora*), and rhizome scales with sharply to weakly bicolored scales, the mid-stripe sometimes black and sclerotic *P. megalolepis*, with nearly concolorous scales, may also belong to this clade; (2) the *P. hirsutissima* group (also *P. bombycina*, *P. fimbriata*, *P. insularum*, *P. lepidopteris*, *P. minarum*), these species with greatly reduced, densely scaly blades proximally species are largely confined to southeastern Brazil, Amazon regions, and lower elevations of the Andes, bordering the Amazon Basin; and (3) those species formerly treated in *Dicranoglossum*, related to *Pleopeltis furcata* (also *P. christensenii*, *P. desvauxii*, *P. hookeri*, and *P. subnuda*) they occur mostly at relatively low elevations around the edge of the Amazon Basin and in the Guianas, but some species extend also into Central America and the Antilles.

Using both morphological and molecular data, a few remaining species in *Pleopeltis* cannot clearly be placed in

any of the above clades. These include the related pair *P. microgrammoides* and *P. muenchii* in Mexico and Central America; *P. bradeorum* in Central America (basal in *Pleopeltis* in the analysis by Otto *et al.*, 2009); the complex of *P. fallacissima*, *P. riograndensis*, and *P. thyssanolepis*, in both Mexico, Central America, and South America, and the widespread *P. polypodioides* group, containing also *P. ecklonii* in South Africa and *P. minima* in S Brazil and adjacent countries. The relationships of *P. angusta*, the type of *Pleopeltis*, is not altogether clear either, but molecular data indicate an affinity to *P. polypodioides*, and beyond that to elements in the *P. furfuracea* group (Otto *et al.*, 2009).

In the compilation below, the number of species in each country has been checked in floristic and monographic literature: Tryon and Conant, 1975; Proctor, 1977; Smith 1993; Tryon and Stolze, 1993; Rodríguez, 1995; Nelson *et al.*, 1996; Boggan *et al.*, 1997; Jørgensen and León-Yáñez, 1999 Mickel and Smith, 2004; Monterrosa and Monro, 2008; Gómez and Arbeláez, 2009.

(1) North America (Mexico, from the Isthmus of Tehuantepec to U.S.A., excl. Florida) – 28 species, five vars., four hybrids; 14 endemic spp. and vars., the first extending into Chiapas (*Pleopeltis collinsii*, *P. conzattii*, *P. fallacissima*, *P. guttata*, *P. lepidotricha*, *P. madrensis*, *P. microgrammoides*, *P. polylepis* var. *erythrolepis*, *P. polylepis* var. *polylepis*, *P. polypodioides* var. *knoblochiana*, *P. riograndensis*, *P. rosei*, *P. rzedowskiana*, and *P. villagrani*), four endemic hybrids. *Pleopeltis platylepis* is also largely confined to this area, but its distribution extends to Guatemala, with a disjunct population in Venezuela.

(2) Central America (southern Mexico, Isthmus of Tehuantepec south to Panama) – 36 species, three vars., three hybrids; eight endemic spp. (*Pleopeltis complanata*, *P. friedrichsthaliana*, *P. lindeniana*, *P. macrolepis*, *P. montigena*, *P. myriolepis*, *P. panamensis*, and *P. tico*), two endemic hybrids.

(3) Caribbean Islands (Bahamas and Antilles) + SE U.S.A. – Seven species, two varieties, one hybrid; one endemic (*Pleopeltis squamata*).

(4) South America (excl. islands) – 50 species, two varieties, one hybrid; 36 endemics (*Pleopeltis alborufula*, *P. appressa*, *P. aturensis*, *P. ballivianii*, *P. bradei*, *P. bryopoda*, *P. buchtienii*, *P. coenosora*, *P. disjuncta*, *P. fayorum*, *P. fimbriata*, *P. fraseri*, *P. hirsutissima*, *P. intermedia*, *P. lepidopteris*, *P. megalolepis*, *P. minarum*, *P. minima*, *P. monoides*, *P. monosora*, *P. oreophila*, *P. orientalis*, *P. pinnatifida*, *P. pleopeltidis*, *P. pleopeltifolia*, *P. polypodioides* var. *burchellii*, *P. pycnocarpa*, *P. repanda*, *P. segregata*, *P. steirolepis*, *P. stolzei*, *P. subnuda*, *P. subvestita*, *P. trinidadensis*, *P. tweediana*, and *P. xantholepis*).

(4a) South Pacific islands (Galápagos and Juan Fernández) – Four species; three endemics (*Pleopeltis insularum*, *P. masafuerae*, and *P. tridens*).



(4b) Andean region (39 spp., one hybrid; 25 endemic taxa, including 24 species + one variety (*Pleopeltis appressa*, *P. ballivianii*, *P. bryopoda*, *P. buchtienii*, *P. coenosora*, *P. disjuncta*, *P. fayorum*, *P. fimbriata*, *P. fraseri*, *P. intermedia*, *P. megalolepis*, *P. minima*, *P. monosora*, *P. oreophila*, *P. orientalis*, *P. pinnatifida*, *P. polypodioides* var. *burchellii*, *P. pycnocarpa*, *P. segregata*, *P. steirolepis*, *P. stolzei*, *P. subnuda*, *P. subvestita*, *P. tweediana*, and *P. xantholepis*).

(4c) Amazonian region – Seven species; three endemics (*Pleopeltis aturensis*, *P. desvauxii*, and *P. repanda*).

(4d) Southeastern Brazil and adjacent areas (Paraguay, Uruguay, NE Argentina) – Ten species; nine endemics (*Pleopeltis alborufula*, *P. bradei*, *P. hirsutissima*, *P. lepidopteris*, *P. minarum*, *P. monoides*, *P. pleopeltidis*, *P. pleopeltifolia*, and *P. trinidadensis*).

(5) More widespread species, often throughout Neotropics, in two instances extending to, or with an outlier in, southern Africa and adjacent areas – Eight species (*Pleopeltis astrolepis*, *P. desvauxii*, *P. furcata*, *P. macrocarpa*, *P. marginata*, *P. polypodioides*, *P. remota*, and *P. thyssanolepis*).

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Appendix 1. Accepted names of *Pleopeltis* species, combinations previously published

- Pleopeltis alborufula*** (Brade) Salino, *Amer. Fern J.* 99:106. 2009. – Brazil (Est. Espírito Santo).
- Pleopeltis angusta*** Humb. & Bonpl. ex Willd., *Sp. pl.* 5:211. 1810. var. *angusta* – SW Mexico, Guatemala, El Salvador, Honduras, Nicaragua (Mickel and Smith, 2004).
- Pleopeltis angusta*** Humb. & Bonpl. ex Willd. var. *stenoloma* (Fée) Farw., *Amer. Midl. Naturalist* 12:297. 1931. – E Mexico, Guatemala (Mickel and Smith, 2004).
- Pleopeltis appressa*** M.Kessler & A.R.Sm., *Candollea* 60:273(–274, 284), f. 1D–G. 2005. – Bolivia (Kessler and Smith, 2005), Ecuador.
- Pleopeltis astrolepis*** (Liebm.) E.Fourn., *Mexic. pl.* 1:87. 1872. – S Mexico, Guatemala, Belize, Honduras, El Salvador, Nicaragua, Costa Rica, Panama, Colombia, Venezuela, Suriname, French Guiana, Ecuador?, Peru, Bolivia, Brazil, S Florida, Antilles (Weatherby, 1922; Mickel and Smith, 2004).
- Pleopeltis ballivianii*** (Rosenst.) A.R.Sm., *Candollea* 60:281. 2005. – Bolivia.
- Pleopeltis bombycina*** (Maxon) A.R.Sm., *Candollea* 60:281. 2005. – Panama, Colombia, Venezuela, Guyana, Bolivia, W Brazil (de la Sota, 1966).
- Pleopeltis bradei*** (de la Sota) Salino, *Amer. Fern J.* 99:106. 2009. – SE Brazil (de la Sota, 1966).
- Pleopeltis bryopoda*** (Maxon) de la Sota, *Darwiniana* 45:239. 2007. – Bolivia, NW Argentina; closely related to *Pleopeltis pycnocarpa* (C.Chr.) A.R.Sm. and *P. pinnatifida* Gillies ex Hook. & Grev., but seemingly distinct (Maxon, 1916; de la Sota, 2007); however, see discussion under the latter.
- Pleopeltis buchtienii*** (Christ & Rosenst.) A.R.Sm., *Candollea* 60:281. 2005. – Venezuela, Colombia, Ecuador, Peru, Bolivia.
- Pleopeltis coenosora*** R.C.Moran, *Novon* 20:311 (–313), f. 1–2. 2010. – Peru.
- Pleopeltis complanata*** (Weath.) E.A.Hooper, *Amer. Fern J.* 85:76. 1995. – Costa Rica, Panama (Weatherby, 1922).
- Pleopeltis konzattii*** (Weath.) R.M.Tryon & A.F.Tryon, *Rhodora* 84:129. 1982. – SW Mexico (Guerrero, Oaxaca) (Weatherby, 1922; Mickel and Smith, 2004).
- Pleopeltis crassinervata*** (Fée) T.Moore, *Index fil.* 345. 1862. – E Mexico, Guatemala, Honduras, Nicaragua, Costa Rica (Weatherby, 1922; Mickel and Smith, 2004).
- Pleopeltis desvauxii*** (Klotzsch) Salino, *Amer. Fern J.* 99:107. 2009. – Lesser Antilles (St. Vincent), Trinidad, Guianas, E Venezuela, Ecuador, Peru, Bolivia, Brazil.
- Pleopeltis disjuncta*** M.Kessler & A.R.Sm., *Candollea* 60:274, f. 2A–C. 2005. – Peru, Bolivia.
- Pleopeltis fallax*** (Schltdl. & Cham.) Mickel & Beitel, *Amer. Fern J.* 77: 21. 1987. [Mem. New York Bot. Gard. 46:287. 1988.] – E Mexico, Guatemala, Belize, Honduras, Nicaragua, Costa Rica (Maxon, 1916; Mickel and Smith, 2004).
- Pleopeltis fraseri*** (Mett. ex Kuhn) A.R.Sm., *Candollea* 60:281. 2005. – Colombia, Venezuela, Ecuador, Peru, Bolivia.
- Pleopeltis fructuosa*** (Maxon & Weath.) Lellinger, *Proc. Biol. Soc. Wash.* 89:722. 1977. – Costa Rica, Panama, Colombia, W Venezuela? (Weatherby, 1922).
- Pleopeltis guttata*** (Maxon) E.G.Andrews & Windham, *Contr. Univ. Michigan Herb.* 19:46. 1993. – Mexico (Maxon, 1916; Mickel and Smith, 2004).
- Pleopeltis hirsutissima*** (Raddi) de la Sota, *Darwiniana* 45:239. 2007. – Bolivia, Brazil, Paraguay, Uruguay, NE Argentina (de la Sota, 1966, 2007).
- Pleopeltis intermedia*** M.Kessler & A.R.Sm., *Candollea* 60:275 (–277, 285), f. 2D–G. 2005. – Bolivia, Peru.
- Pleopeltis lepidopteris*** (Langsd. & Fisch.) de la Sota, *Darwiniana* 45:239. 2007. – Brazil, Paraguay, Uruguay (de la Sota, 1966).
- Pleopeltis macrocarpa*** (Bory ex Willd.) Kaulf., *Berlin Jahrb. Pharm.* 21:41. 1820. – Guatemala, Honduras, Salvador, Costa Rica, Panama, Colombia, Venezuela, Ecuador, Suriname, French Guiana, Peru, Bolivia, Brazil, Paraguay, Uruguay, Chile, Argentina, Antilles, Africa, Madagascar, India, Sri Lanka (Mickel and Smith, 2004).
- Pleopeltis masafuerae*** (Phil.) de la Sota, *Darwiniana* 45:239. 2007. – Chile (Juan Fernandez Isl.)
- Pleopeltis megalolepis*** (Maxon & C.V. Morton) A.R.Sm., *Candollea* 60:281. 2005. – Peru, Bolivia.
- Pleopeltis mexicana*** (Fée) Mickel & Beitel, *Amer. Fern J.* 77:21. 1987. – Mexico, Guatemala, Honduras, El Salvador, Nicaragua (Mickel and Smith, 2004).
- Pleopeltis minarum*** (Weath.) Salino, *Amer. Fern J.* 99:107. 2009. – SE Brazil (Minas Gerais) (de la Sota, 1966; Salino, 2009).
- Pleopeltis minima*** (Bory) J.Prado & R.Y.Hirai, *Amer. Fern J.* 100:191. 2010 [2011]. – Bolivia, Argentina, Brazil, Paraguay, and Uruguay (Prado and Hirai, 2010).
- Pleopeltis monoides*** (Weath.) Salino, *Amer. Fern J.* 99:107. 2009. – E Brazil (Bahia, Espírito Santo, Minas Gerais) (de la Sota, 1966; Salino, 2009).
- Pleopeltis muenchii*** (Christ) A.R.Sm., *Proc. Calif. Acad. Sci.*, ser. 4, 40: 230. 1975 [“*munchii*”]. – S Mexico, Guatemala, Honduras, El Salvador (Mickel and Smith, 2004).
- Pleopeltis oreophila*** Sundue, *Amer. Fern J.* 97:110(–111), f. 1, E–H. 2007. – Peru (Sundue, 2007).
- Pleopeltis orientalis*** Sundue, *Amer. Fern J.* 97:107(–110), f. 1, A–D. 2007. – Colombia (Sundue, 2007).
- Pleopeltis panamensis*** (Weath.) Pic.Serm., *Webbia* 23:189. 1968. – Panama (Weatherby, 1922; Lellinger, 1989).
- Pleopeltis pinnatifida*** Gillies ex Hook. & Grev., *Icon. filic.* t. 157. 1829. Said to have come from “El Cerro del Morro, San Luis, Provincia Bonariæ” [Argentina, Prov. San Luis], and if so, this species is possibly synonymous with either *Pleopeltis bryopoda* (Maxon) A.R.Sm., which see, in Appendix 1. If conspecific with this, it is an earlier name (de la Sota, 1960). – Argentina, Bolivia; because of uncertainty in circumscription of this taxon, vis-à-vis related species, we do not adopt the name here.
- Pleopeltis pleopeltidis*** (Fée) de la Sota, *Darwiniana* 45:239. 2007. – S Brazil.
- Pleopeltis pleopeltifolia*** (Raddi) Alston, *Bol. Soc. Brot.*, ser. 2, 30:21. 1956. – S Brazil, Argentina, Paraguay, Uruguay (Ponce, 1996).
- Pleopeltis polylepis*** (A.Roem. ex Kunze) T.Moore var. *polylepis*, *Ind. filic.* 348. 1862. – Mexico (Weatherby, 1922; Mickel and Smith, 2004).
- Pleopeltis polylepis*** (A.Roem. ex Kunze) T.Moore var. *erythro-*

## Appendix 1. Continuation.

- lepiss** (Weath.) T.Wendt, *Amer. Fern J.* 70:9. 1980. – U.S.A. (Texas), NW Mexico (Weatherby, 1922; Mickel and Smith, 2004).
- Pleopeltis polylepis** (A.Roem. ex Kunze) T.Moore var. **interjecta** (Weath.) E.A.Hooper, *Amer. Fern J.* 85:79. 1995. – SE Mexico, Guatemala, El Salvador (Hooper, 1994, 1995; Mickel and Smith, 2004).
- Pleopeltis polypodioides** (L.) E.G.Andrews & Windham var. **polypodioides**, *Contr. Univ. Michigan Herb.* 19:46. 1993. – SE U.S.A., Mexico, Guatemala, Belize, Honduras, El Salvador, Nicaragua, Costa Rica, Panama, Colombia, Venezuela, Antilles (Mickel and Smith, 2004).
- Pleopeltis polypodioides** (L.) E.G.Andrews & Windham var. **acicularis** (Weath.) E.G.Andrews & Windham, *Contr. Univ. Michigan Herb.* 19:46. 1993. – Mexico, Guatemala, Honduras, El Salvador, Nicaragua, Costa Rica, Panama (Mickel and Smith, 2004).
- Pleopeltis polypodioides** (L.) E.G.Andrews & Windham var. **burchellii** (Baker) A.R.Sm., *Candollea* 60:281. 2005. – Colombia, Venezuela, Guianas, Ecuador, Peru, Bolivia, Brazil.
- Pleopeltis polypodioides** (L.) E.G.Andrews & Windham var. **michauxiana** (Weath.) E.G.Andrews & Windham, *Contr. Univ. Michigan Herb.* 19:46. 1993. – SE U.S.A., E Mexico, Guatemala, Honduras, Nicaragua, Costa Rica, Panama, Colombia, Venezuela, Antilles, Bahamas (Moran, 1995; Mickel and Smith, 2004).
- Pleopeltis pycnocarpa** (C.Chr.) A.R.Sm., *Candollea* 60:282. 2005. – Ecuador, Peru, Bolivia, Argentina, Chile (Maxon, 1916).
- Pleopeltis remota** (Desv.) A.R.Sm., *Candollea* 60:282. 2005. – S Mexico, Guatemala, Nicaragua, Costa Rica, Panama, Colombia, Venezuela, Ecuador, Peru, Bolivia, Greater Antilles (Mickel and Smith, 2004).
- Pleopeltis repanda** A.R.Sm., *Ann. Missouri Bot. Gard.* 77:259, f. 3A–D. 1990. – E Venezuela, Guyana.
- Pleopeltis riograndensis** (T.Wendt) E.G.Andrews & Windham, *Contr. Univ. Michigan Herb.* 19:46. 1993. – SW U.S.A. (Arizona, Texas), N Mexico (Wendt, 1980; Mickel and Smith, 2004).
- Pleopeltis squamata** (L.) J.Sm., *Hist. fil.* 114. 1875. – Bahamas, Cuba, Jamaica, Haiti, Dominican Republic, Puerto Rico (de la Sota, 1966).
- Pleopeltis stolzei** A.R.Sm., *Candollea* 60:282. 2005. – Ecuador, Peru, Bolivia.
- Pleopeltis subvestita** (Maxon) A.R.Sm., *Candollea* 60:282. 2005. – Bolivia (Maxon, 1916); closely related to *Pleopeltis pycnocarpa* (C.Chr.) A.R.Sm.
- Pleopeltis thyssanolepis** (A.Braun ex Klotzsch) E.G.Andrews & Windham, *Contr. Univ. Michigan Herb.* 19:46. 1993. – Mexico, Guatemala, Honduras, Nicaragua, Costa Rica, Panama, Colombia, Venezuela, Ecuador, Peru, Bolivia, Jamaica, Hispaniola (Mickel and Smith, 2004).
- Pleopeltis tridens** (Kunze) J.Sm., *Hist. fil.* 114. 1875. – Ecuador (Islas Galápagos) (de la Sota, 1966).
- Pleopeltis trinidadensis** (Brade) Salino, *Amer. Fern J.* 99:107. 2009. – Brazil (Ilha de Trindade, E Espírito Santo) (de la Sota, 1966; Salino, 2009).
- Pleopeltis tweediana** (Hook.) A.R.Sm., *Candollea* 60:282. 2005. – Bolivia, Argentina (Maxon, 1916).
- Pleopeltis wiesbaurii** (Sodirol) Lellinger, *Proc. Biol. Soc. Wash.* 89:723. 1977. – Costa Rica, Panama, Colombia, Ecuador.

## Hybrids

- Pleopeltis ×melanoneuron** Mickel & Beitel, *Amer. Fern J.* 77:25, f. 2K. 1987 = *Pleopeltis crassinervata* × *fallax* – Mexico.
- Pleopeltis ×simiana** (Schelpe & N.C.Anthony) N.R.Crouch & Klopper, *Bothalia* 40:102. 2010 – South Africa, Zimbabwe.
- Pleopeltis ×sordidula** (Maxon & Weath.) Mickel & Beitel, *Amer. Fern J.* 77:21. 1987 = *Pleopeltis astrolepis* × *fallax* – Mexico.

**Appendix 2.** *Pleopeltis* taxonomic synonyms and unplaced names, belonging to *Pleopeltis* emend.

- Acrostichum ferrugineum* L., *Syst. Nat.*, ed. 12, 2:686. 1767, nom. illeg. superfl. = *Pleopeltis polypodioides* (L.) E.G.Andrews & Windham var. *polypodioides* (Lellinger, 1989)
- Acrostichum ferruginosum* L., *Sp. Pl.*, ed. 2:1525. 1763 = *Pleopeltis polypodioides* (L.) E.G.Andrews & Windham var. *polypodioides* (Lellinger, 1989)
- Cuspidaria subpinnatifida* Fée, *Gen. Fil. [Mém. Foug.]* 3:26. 1851. = *Pleopeltis desvauxii* (Klotzsch) Salino
- Dicranoglossum furcatum* (L.) J.Sm., in Seemann, *Bot. Voy. Herald* 6: 232. 1854 [late 1854 or early 1855] = *Pleopeltis furcata* (L.) A.R.Sm.
- Dicranoglossum panamense* (C.Chr.) L.D.Gómez, *Brenesia* 16:46. 1976 = *Pleopeltis christensenii* A.R.Sm.
- Dicranoglossum polypodioides* (Hook.) Lellinger, *Selbyana* 2:283. 1978 = *Pleopeltis hookeri* A.R.Sm.
- Drynaria prieurii* Fée, *Gen. Fil. (Mém. Foug.)* 5:271. 1852. = *Pleopeltis astrolepis* (Liebm.) E.Fourn. (Lellinger, 1989)
- Drynaria stenoloma* Fée, *Gen. Fil. [Mém. Foug.]* 5:272. 1852 = *Pleopeltis angusta* Humb. & Bonpl. ex Willd. var. *stenoloma* (Fée) Farw. (Mickel and Smith, 2004)
- Drynaria tortulosa* Fée, *Gen. Fil. [Mém. Foug.]* 5:271. 1852 = *Pleopeltis angusta* Humb. & Bonpl. ex Willd. var. *stenoloma* (Fée) Farw.
- Drynaria vestita* Fée, *Gen. Fil. [Mém. Foug.]* 5:271. 1852 = *Pleopeltis polylepis* (A.Roem. ex Kunze) T.Moore var. *polylepis*
- Grammitis elongata* Sw., *Deutschl. Krypt. Gew.* 1: 9, t. 7. 1804 = *Pleopeltis astrolepis* (Liebm.) E.Fourn. (Lellinger, 1989)
- Grammitis lanceolata* Schkuhr, 24. *Kl. Linn. Pfl.-Syst.* 1:9, t. 7, p.p. 1804 = *Pleopeltis astrolepis* (Liebm.) E.Fourn. (Lellinger, 1989)
- Grammitis revoluta* Spreng. ex Willd., *Sp. Pl.*, ed. 4, 5:139. 1810 = *Pleopeltis astrolepis* (Liebm.) E.Fourn. (Lellinger, 1989)
- Grammitis squamulosa* Splitg., *Tijdschr. Natuurl. Gesch. Physiol.* 7:398. 1840 = *Pleopeltis astrolepis* (Liebm.) E.Fourn. (Lellinger, 1989)
- Marginaria karwinskyana* C.Presl, *Tent. Pterid.* 188. 1836 = *Pleopeltis plebeia* (Schltdl. & Cham.) A.R.Sm. & Tejero (Mickel and Beitel, 1988)
- Neurodium lanceolatum* (L.) Fée, *Gen. Fil. (Mém. Foug.)* 3:28. 1852 = *Pleopeltis marginata* A.R.Sm. & Tejero
- Paltonium lanceolatum* (L.) C.Presl, *Epim. Bot.* 156. 1851 = *Pleopeltis marginata* A.R.Sm. & Tejero
- Pleopeltis angustifolia* D.C.Eaton, *Amer. J. Sci. Arts* 27:198. 1859 = *Pleopeltis astrolepis* (Liebm.) E.Fourn. (Lellinger, 1989)
- Pleopeltis corcovadensis* C.Presl, *Tent. Pterid.* 193. 1836 = *Pleopeltis macrocarpa* (Bory ex Willd.) Kaulf.
- Pleopeltis gomeziana* W.H.Wagner, *Bull. Torrey Bot. Club* 113:163. 1986 = *Pleopeltis wiesbaueri* (Sodiolo) Lellinger (Moran, 1995)
- Pleopeltis macrocarpa* (Bory ex Willd.) Kaulf. var. *complanata* (Weath.) Lellinger, *Proc. Biol. Soc. Wash.* 89:722. 1977 = *Pleopeltis complanata* (Weath.) E.A.Hooper
- Pleopeltis macrocarpa* (Bory ex Willd.) Kaulf. var. *laciniata* Stolze, *Fieldiana, Bot.*, n.s., 32: 143. 1993, non *Pleopeltis laciniata* (C.Presl) Bedd., 1892 = *Pleopeltis stolzei* A.R.Sm.
- Pleopeltis macrocarpa* (Bory ex Willd.) Kaulf. var. *trichophora* (Weath.) Pic. *Serm., Webbia* 23:189. 1968 = *Pleopeltis mexicana* (Fée) Mickel & Beitel
- Pleopeltis pleolepis* (Maxon & Copel.) Lellinger, *Amer. Fern J.* 74:60. 1984 = *Pleopeltis bradeorum* (Rosenst.) A.R.Sm. & Tejero (Mickel and Smith, 2004)
- Pleopeltis revoluta* (Spreng. ex Willd.) A.R.Sm., *Proc. Calif. Acad. Sci.*, ser. 4, 40:230. 1975 = *Pleopeltis astrolepis* (Liebm.) E.Fourn.
- Pleopeltis squalida* (Vell.) de la Sota, *Hickenia* 3:196. 2003 = *Pleopeltis minima* (Desv.) J.Prado & R.Y.Hirai (Prado and Hirai, 2010)
- × *Pleopodium fallacissimum* (Maxon) Mickel & Beitel, *Amer. Fern J.* 77: 20, f. 2F-G. 1987 = *Pleopeltis fallacissima* (Maxon) A.R.Sm. & Tejero
- × *Pleopodium leucosporum* (Klotzsch) Mickel & Beitel, *Amer. Fern J.* 77:16. 1987 = *Pleopeltis* × *leucospora* (Klotzsch) T.Moore
- × *Pleopodium simianum* Schelpe & N.C.Anthony, *Bothalia* 15:557. 1985 = *Pleopeltis* × *simiana* (Schelpe & N.C.Anthony) N.R.Crouch & Klopper
- Polypodium alborufulum* Brade, *Arq. Jard. Bot. Rio de Janeiro* 11:29. 1951 = *Pleopeltis alborufula* (Brade) Salino (Salino, 2009)
- Polypodium apagolepis* de la Sota, *Revista Mus. La Plata, Secc. Bot.* 10:133. 1967 = *Pleopeltis bombycina* (Maxon) A.R.Sm. (de la Sota, 1966)
- Polypodium argentinum* Maxon, *Contr. U.S. Natl. Herb.* 17:588. 1916 = *Pleopeltis pinnatifida* Gillies ex Hook. & Grev.
- Polypodium bernoullii* Baker, *Syn. Fil.* 510. 1874 = *Pleopeltis cryptocarpa* (Fée) A.R.Sm. & Tejero (Smith, 1981; Mickel and Beitel, 1988)
- Polypodium bolivari* de la Sota, *Revista Mus. La Plata, Secc. Bot.* 10:138. 1967 = *Pleopeltis bombycina* (Maxon) A.R.Sm. (Smith et al., 1995)
- Polypodium bonapartii* Rosenst., *Repert. Spec. Nov. Regni Veg.* 7:309. 1909 = *Pleopeltis wiesbaurii* (Sodiolo) Lellinger (Lellinger, 1989)
- Polypodium cancellatum* Fée, *Gen. Filic.* 242. 1852 = *Pleopeltis lindeniana* (Kunze) A.R.Sm. & Tejero (Lellinger, 1989)
- Polypodium cartilagineum* C.Presl ex Ettingsh., *Denkschr. Kaiserl. Akad. Wiss., Math.-Naturwiss. Kl.* 22:79. 1864 = *Pleopeltis plebeia* (Schltdl. & Cham.) A.R.Sm. & Tejero (Lellinger, 1989)
- Polypodium ceteracinum* Michx., *Fl. Bor.-Amer.* 2:271. 1803. = *Pleopeltis polypodioides* (L.) E.G.Andrews & Windham var. *polypodioides* (Lellinger, 1989)
- Polypodium cheilostictum* Fée, *Mém. Foug.* 8:87. 1957 = *Pleopeltis plebeia* (Schltdl. & Cham.) A.R.Sm. & Tejero (Lellinger, 1989)
- Polypodium chrysoconion* Spreng., *Syst. Veg.*, ed. 16, 4:51. 1827 = *Pleopeltis polypodioides* (L.) E.G.Andrews & Windham var. *polypodioides* (Lellinger, 1989)
- Polypodium colysoides* Maxon & Copel., *Univ. Calif. Publ. Bot.* 19:292. 1941 = *Pleopeltis bradeorum* (Rosenst.) A.R.Sm. & Tejero



## Appendix 2. Continuation.

- Polypodium costaricanum* Hieron., *Bot. Jahrb. Syst.* 34:530. 1905, not *P. costaricense* Christ = *Pleopeltis myriolepis* (Christ) A.R.Sm. & Tejero (Lellinger, 1989)
- Polypodium furfuraceum* Schldtl. & Cham. var. *rufum* E. Fourn., *Mexic. Pl.* 1:83. 1872 = *Pleopeltis cryptocarpa* (Fée) A.R.Sm. & Tejero
- Polypodium guatemalense* Klotzsch, *Repert. Spec. Nov. Regni Veg.* 10:279. 1912 = *Pleopeltis bradeorum* (Rosenst.) A.R.Sm. & Tejero (Lellinger, 1989)
- Polypodium gyroflexum* Christ, *Bull. Herb. Boissier* 6:994. 1898 = *Pleopeltis gyroflexa* (Christ) Schwartsb., comb. ined., type from NE Brazil. Schwartsburd (pers. comm., Schwartsburd, P.B. in press. *Amer. Fern J.* 103(4): type from NE Brazil) has concluded that this is conspecific with *Pleopeltis repanda* A.R.Sm., in which case *Pl. gyroflexa* has priority.
- Polypodium xhuancayanum* Kunkel, *Biota* 6:157, f. C, D. 1966. Kunkel (1966) believed this to “be a hybrid between *Polypodium lasiopus* Klotzsch (now *Serpocaulon lasiopus* (Klotzsch) A.R.Sm.) and *Polypodium pycnocarpum* C.Chr.” (now *Pleopeltis pycnocarpa* (Klotzsch) A.R.Sm.), and this status was echoed by Tryon and Stolze (1993). This parentage seems highly unlikely, both because of the distant relationship between these two genera (*Pleopeltis* and *Serpocaulon*) and on the basis of Kunkel’s original illustration (poor) and description (inadequate); in fact, it seems unlikely to be a hybrid at all, but perhaps a sterile specimen of *Pleopeltis buchtienii* (Christ & Rosenst.) A.R.Sm., or a species related to that. The type is *Kunkel 6485* (Herb. Kunkel), 3,800 m, from Huancayo, Peru (not seen).
- Polypodium incanoides* Fée, *Gen. Fil. [Mém. Foug.]* 5:88. 1857 = *Pleopeltis polypodioides* (L.) E.G.Andrews & Windham var. *polypodioides*? (Lellinger, 1989)
- Polypodium incanum* Sw., *Nov. Gen. Sp. Pl. Prodr.* 131. 1788 = *Pleopeltis polypodioides* (L.) E.G.Andrews & Windham var. *polypodioides* (Lellinger, 1989)
- Polypodium incanum* Sw. var. *fimbriatum* M.Martens & Galeotti, *Nouv. Mém. Acad. Roy. Sci. Bruxelles* 15:36. 1842 (reprinted in: *Mém. Foug. Mexique* 36. 1842) = *Pleopeltis thysanolepis* (A.Braun ex Klotzsch) E.G.Andrews & Windham (Lellinger, 1989; Mickel and Smith, 2004)
- Polypodium incanum* Sw. var. *oblongum* E.Fourn., *Mexic. Pl.* 1:83. 1872, as “*oblonga*” = *Pleopeltis polypodioides* (L.) E.G.Andrews & Windham var. *polypodioides*? (Lellinger, 1989)
- Polypodium incanum* Sw. var. *umbrosum* Liebm., *Kongel. Danske Vidensk. Selsk. Skr., Naturvidensk. Math. Afd., ser. 5*, 1:212. 1849 = *Pleopeltis cryptocarpa* (Fée) A.R.Sm. & Tejero (Mickel and Smith, 2004)
- Polypodium insularum* (C.V.Morton) de la Sota, *Revista Mus. La Plata, Secc. Bot.* 10:152, f. 1, 4, 12, 15, 16. 1967 = *Pleopeltis insularum* (C.V.Morton) A.R.Sm.
- Polypodium karwinskianum* A.Braun ex Mett., *Abh. Sencckenb. Ges. Frankfurt* 2:66. 1856, in part = *Pleopeltis plebeia* (Schldtl. & Cham.) A.R. Sm. & Tejero. Note: the type of *Polypodium karwinskianum* comprises two specimens: one corresponds to *Pleopeltis plebeia* and the other to *Pleopeltis remota* (Desv.) A.R.Sm. (Maxon, 1916; Lellinger, 1989)
- Polypodium lanceolatum* L., *Sp. Pl.* 2: 1082. 1753 = *Pleopeltis macrocarpa* (Bory ex Willd.) Kaulf. (not *Pleopeltis lanceolata* Kaulf. (1824: 245) (Lellinger, 1989)
- Polypodium lanceolatum* L. var. *complanatum* Weath., *Contr. Gray Herb.* 65:8. 1922 = *Pleopeltis complanata* (Weath.) E.A.Hooper
- Polypodium lanceolatum* L. var. *crassinervatum* (Fée) Weath., *Contr. Gray Herb.* 65:8. 1922 = *Pleopeltis crassinervata* (Fée) T.Moore
- Polypodium lanceolatum* L. var. *elisabethae* Jenm., *Bull. Bot. Dept. Jamaica, n.s.*, 4:199. 1897 = *Pleopeltis xleucospora* (Klotzsch) T.Moore (Lellinger, 1989)
- Polypodium lanceolatum* L. var. *trichophorum* Weath., *Contr. Gray Herb.* 65:8. 1922 = *Pleopeltis mexicana* (Fée) Mickel & Beitel
- Polypodium lepidotrichum* (Fée) Maxon, *Contr. U.S. Natl. Herb.* 17:591. 1916 = *Pleopeltis lepidotricha* (Fée) A.R.Sm. & Tejero
- Polypodium lepidotum* Willd ex Schldtl., *Adumbr.* 17, t. 8. 1825 = *Pleopeltis macrocarpa* (Bory ex Willd.) Kaulf.
- Polypodium leucosticton* Kunze ex Klotzsch, *Linnaea* 20:380. 1847 (Maxon, 1916) = *Pleopeltis remota* (Desv.) A.R.Sm. (Lellinger, 1989)
- Polypodium leucosticton* Kunze ex Klotzsch var. *hartwegianum* Hieron., *Hedwigia* 48:260. 1909, as “*hartwegiana*” = *Pleopeltis remota* (Desv.) A.R.Sm. (Lellinger, 1989)
- Polypodium macbridense* Shimek, *Bull. Lab. Nat. Hist. Iowa State Univ.* 4:199, t. 20, f. 6–9. 1897 = *Pleopeltis furfuracea* (Schldtl. & Cham.) A.R.Sm. & Tejero (Lellinger, 1989)
- Polypodium macrocarpum* Bory ex Willd., *Sp. Pl.*, ed. 4, 5:147. 1810. = *Pleopeltis macrocarpa* (Bory ex Willd.) Kaulf.
- Polypodium macrosorum* Fée, *Gen. Fil. (Mém. Foug.)* 5: 241. 1852 = *Pleopeltis monosora* (Desv.) A.R.Sm.
- Polypodium margallii* Rovirosa, *Pteridogr. Mex.* 206, t. 38A, f. 1–5. 1909 = *Pleopeltis furfuracea* (Schldtl. & Cham.) A.R.Sm. & Tejero (Lellinger, 1989)
- Polypodium margaritifera* Christ, *Bull. Herb. Boissier, sér. 2*, 5:2. 1905 = *Pleopeltis fallax* (Schldtl. & Cham.) Mickel & Beitel (Lellinger, 1989)
- Polypodium mesetae* Christ, *Bull. Herb. Boissier, sér. 2*, 6:49. 1906. = *Pleopeltis polypodioides* (L.) E.G.Andrews & Windham var. *polypodioides* (Lellinger, 1989)
- Polypodium mickelii* de la Sota, *Revista Mus. La Plata, Secc. Bot.* 10:163, t. 8, f. 24. 1966 = *Pleopeltis collinsii* (Maxon) A.R.Sm. & Tejero (Smith, 1981; Mickel and Beitel, 1988; Mickel and Smith, 2004)
- Polypodium microchasmum* Baker, *J. Bot.* 25:44. 1887 = *Pleopeltis remota* (Desv.) A.R.Sm. (Lellinger, 1989)
- Polypodium microlepis* Fée, *Gen. Filic.* 238. 1852 = *Pleopeltis minima* (Desv.) J.Prado & R.Y.Hirai (Prado and Hirai, 2010)
- Polypodium mixtum* Sodiro, *Crypt. Vasc. Quit.* 339. 1893 = *Pleopeltis* sp.?
- Polypodium molestum* Mett., *Ann. Sci. Nat.*, V, 2:254. 1864 = *Pleopeltis monosora* (Desv.) A.R.Sm. (Maxon, 1916)
- Polypodium mollendense* Maxon, *Smithsonian Misc. Coll.* 65:1. 1915 = *Pleopeltis masafuerae* (Phil.) de la Sota

## Appendix 2. Continuation.

- Polypodium moricandii* Mett., *Abh. Senckenberg. Naturf. Ges.* 2:87, t. 1, f. 47-48. 1857 = *Pleopeltis macrocarpa* (Bory ex Willd.) Kaulf.
- Polypodium nigripes* Hook., *Sp. Filic.* 5:17. 1863, non Hassk., 1844: 4 = *Pleopeltis steirolepis* C.Chr.
- Polypodium nivosum* Fée, *Gen. Fil. (Mém. Foug.)* 8: 89. 1857 = *Pleopeltis furfuracea* (Schltdl. & Cham.) A.R.Sm. & Tejero (Lellinger, 1989)
- Polypodium onostum* Hook., *Icon. Pl.* 8: t. 749. 1845 = *Pleopeltis monosora* (Desv.) A.R.Sm. (Maxon, 1916)
- Polypodium oulolepis* Fée, *Gen. Fil. [Mém. Foug.]* 8:86. 1857 = *Pleopeltis madrensis* (J.Sm.) A.R.Sm. & Tejero (Maxon, 1916; Mickel and Beitel, 1988)
- Polypodium peltatum* Cav., *Descr. Pl.* 244. 1802 = *Pleopeltis polylepis* (A.Roem. ex Kunze) T.Moore var. *polylepis*
- Polypodium xpinnatisectum* (Brade) L.D.Gómez, *Amer. Fern J.* 66:28. 1976 = *Pleopeltis xpinnatisecta* (Brade) A.R.Sm.
- Polypodium platybasis* Baker, *Syn. Filic.* 511. 1874 = *Pleopeltis tweediana* (Hook.) A.R.Sm. (de la Sota, 1977)
- Polypodium plebeium* Schltdl. & Cham. var. *columbiense* Kuhn, *Abh. Naturf. Ges. Halle* 11:40. 1869, as "*columbiensis*" = *Pleopeltis remota* (Desv.) A.R.Sm. (Lellinger, 1989)
- Polypodium plebeium* Schltdl. & Cham. var. *cooperi* Baker, *J. Bot.* 25:25. 1887 = *Pleopeltis plebeia* (Schltdl. & Cham.) A.R.Sm. & Tejero (Moran, 1995)
- Polypodium plebeium* Schltdl. & Cham. var. *palmense* Christ, *Bull. Herb. Boissier, sér. 2, 5:4*. 1905 = *Pleopeltis remota* (Desv.) A.R.Sm. (Lellinger, 1989)
- Polypodium purpusii* Christ, *Bull. Herb. Boissier, sér. 2, 7:416*. 1907 = *Pleopeltis thyssanolepis* (A.Braun ex Klotzsch) E.G.Andrews & Windham (Lellinger, 1989)
- Polypodium pycnocarpum* C.Chr. var. *buchtienii* (Christ & Rosenst.) R.M.Tryon & Stolze, *Fieldiana, Bot., n.s.* 32:136. 1993 = *Pleopeltis buchtienii* (Christ & Rosenst.) A.R.Sm.
- Polypodium pyrrolepis* (Fée) Maxon, *Contr. U.S. Natl. Herb.* 17:593. 1916 = *Pleopeltis pyrrolepis* (Fée) A.R.Sm. & Tejero
- Polypodium raddii* Desv., *Mém. Soc. Linn. Paris* 6:232. 1827 = *Pleopeltis hirsutissima* (Raddi) de la Sota (Maxon, 1916; de la Sota, 1960, 2007)
- Polypodium ratiborii* Copel., *Univ. Calif. Publ. Bot.* 19:304, t. 65. 1941 = *Pleopeltis pinnatifida* Gillies ex Hook & Grev. (de la Sota, 1960, 2007; Ponce, 1996)
- Polypodium rhagadiolepis* Fée, *Gen. Fil. [Mém. Foug.]* 5:237. 1852 = *Pleopeltis thyssanolepis* (A.Braun ex Klotzsch) E.G.Andrews & Windham (Lellinger, 1989)
- Polypodium rufulum* C.Presl, *Del. Prag.* 1:164. 1822 = *Pleopeltis hirsutissima* (Raddi) de la Sota (Maxon, 1916; de la Sota, 1960, 2007)
- Polypodium ruiz-lealii* de la Sota, *Opera Lilloana* 5:144, f. 25. 1961 = *Pleopeltis pinnatifida* Gillies ex Hook & Grev. (Ponce, 1996; de la Sota, 2007)
- Polypodium rusbyi* Maxon, *Contr. U.S. Natl. Herb.* 17:570. 1916 – Bolivia (Maxon, 1916) = *Pleopeltis buchtienii* (Christ & Rosenst.) A.R.Sm.
- Polypodium sanctae-rosae* (Maxon) C.Chr., *Index Filic., Suppl.* 1, 62. 1913 = *Pleopeltis sanctae-rosae* (Maxon) A.R.Sm. & Tejero
- Polypodium sepultum* Kaulf., *Enum. Filic.* 194. 1824 = *Pleopeltis lepidopteris* (Langsd. & Fisch.) de la Sota (de la Sota, 1965)
- Polypodium skinneri* Hook., *Sp. Filic.* 4:214, t. 276B. 1862 = *Pleopeltis cryptocarpa* (Fée) A.R.Sm. & Tejero (Mickel and Beitel, 1988)
- Polypodium sporadolepis* Kunze ex Mett., *Abh. Senckenberg. Naturf. Ges.* 2:67. 1857 = *Pleopeltis buchtienii* (Christ & Rosenst.) A.R.Sm.
- Polypodium squalidum* Vell., *Fl. Flumin. Icon.* 11: t. 76. 1827 = *Pleopeltis minima* (Desv.) J.Prado & R.Y.Hirai (Prado and Hirai, 2010)
- Polypodium thyssanolepis* A.Braun ex Klotzsch *Contr. Univ. Michigan Herb.* 19:46. 1993. var. *thyssanolepis* = *Pleopeltis thyssanolepis* (A.Braun ex Klotzsch) E.G.Andrews & Windham
- Polypodium thyssanolepis* A.Braun ex Klotzsch var. *bipinnatifidum* Christ, in Bommer and Christ, *Bull. Herb. Boissier* 4:661. 1896 = *Pleopeltis xaspidiolepis* (Baker) A.R.Sm. (Lellinger, 1989)
- Polypodium thyssanolepis* var. *riograndense* T.Wendt, *Amer. Fern J.* 70:6. 1980 = *Pleopeltis riograndensis* (T.Wendt) E.G.Andrews & Windham
- Polypodium tricholepis* Schrad., *Gött. Anz. Ges. Wiss.* 867. 1824 = *Pleopeltis lepidopteris* (Langsd. & Fisch.) A.R.Sm.
- Polypodium tuerckheimii* Christ, *Bull. Herb. Boissier, sér. 2, 5:254*. 1905 = *Pleopeltis fallax* (Schltdl. & Cham.) Mickel & Beitel (Lellinger, 1989)
- Polypodium typicum* Fée, *Crypt. Vasc. Brés.* 2:52, t. 96, f. 2. 1873 = *Pleopeltis pleopeltidis* (Fée) A.R.Sm.
- Polypodium vellatum* Schkuhr, *24. Kl. Linn. Pfl.-Syst.* 2: 188, t. 11b. 1805. = *Pleopeltis polypodioides* (L.) E.G.Andrews & Windham var. *polypodioides* (Lellinger, 1989)
- Polypodium verapax* Christ, *Bull. Herb. Boissier, sér. 2, 5:253*. 1905 = *Pleopeltis lindeniana* (Kunze) A.R.Sm. & Tejero
- Polypodium vexillare* Christ, in Schwacke, *Pl. Nov. Mineiras* 2:21. 1900 = *Pleopeltis hirsutissima* (Raddi) de la Sota (de la Sota, 1960; Ponce, 1996)
- Polypodium wendlandii* Hieron., *Hedwigia* 44:180. 1905 = *Pleopeltis myriolepis* (Christ) A.R.Sm. & Tejero (Lellinger, 1989)
- Pteropsis angustifolia* (Sw.) Desv., *Mém. Soc. Linn. Paris* 6:218. 1827 = *Pleopeltis angusta* Humb. & Bonpl. ex Willd. var. *stenoloma* (Fée) Farw.
- Pteropsis underwoodiana* Maxon, *Contr. U.S. Natl. Herb.* 16:51, t. 28. 1912 = *Pleopeltis wiesbaurii* (Sodirol) Lellinger (Lellinger, 1989)
- Taenitis lanceolata* (L.) Kaulf., *Enum. Filic.* 130. 1824 = *Pleopeltis marginata* A.R.Sm. & Tejero
- Taenitis swartzii* Jenm., *J. Bot.* 17:263. 1879 = *Pleopeltis astrolepis* (Liebm.) E.Fourn. (Lellinger, 1989)

**Excluded names**

- Pleopeltis fuscopunctata* (Hook.) R.M.Tryon & A.F.Tryon, *Rhodor* 84:129. 1982 = *Microgramma dictyophylla* (Kunze ex Mett.) de la Sota
- Pleopeltis percussa* (Cav.) Hook. & Grev., *Icon. fil.*, t. 67. 1828 = *Microgramma percussa* (Cav.) de la Sota