

# NEW RECORDS OF PTERIDOPHYTES FOR THE FLORA OF PERU

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## ABSTRACT

We document 137 species of pteridophytes new to the flora of Peru since the publication of the previous flora by Tryon and Stolze, in 1994. Some of these are recently described species (but no new species are described herein), while many are range extensions of known species from adjacent countries; a few are species that have been elevated in status from lesser rank, or species that have a new name, not mentioned by Tryon and Stolze. Most of these additions are the result of new collections, unknown at the time of the previous flora, and most are from montane rain forests and cloud forests, on the eastern slope of the Andes, from Dept. Amazonas to Dept. Cuzco. This area is known to be the richest for ferns, in Peru. These additions bring the known total of pteridophyte species for Peru to about 1200, making it one of the richest countries in the world for ferns and lycophytes.

## RESUMEN

Se registra 137 especies de pteridofitas nuevas para la flora del Perú desde la publicación previa en 1994 del trabajo de Tryon y Stolze. Algunas son especies recientemente descritas, mientras que la mayoría son registros de extensión de distribución desde países vecinos y unas pocas han sido elevadas en categoría desde rangos menores o tienen un nombre nuevo no mencionado por Tryon y Stolze. La mayoría de estas adiciones son el resultado de recolectas nuevas, desconocidas entonces para la flora previa. Estas adiciones incrementan a cerca de 1200 el total de especies conocidas para el Perú, haciendo de éste uno de los países más ricos en el mundo en helechos y licofitas.

## INTRODUCTION

It is almost an axiom in floristic work, especially in the tropics, that a flora is outdated by the time it is published. Ten years following the completion of the six-fascicle publication of the "Pteridophyta of Peru," by Tryon and Stolze (1989a, 1989b, 1991, 1992, 1993, 1994), approximately 137 additional species of ferns and

allies have been added to the flora. Thirty-five of these have been recently described in other publications, while the majority (80 spp.) are range extensions of species known previously only from adjacent countries; still others are species that were synonymized (we believe inappropriately; 19 spp.) or now go under a name not mentioned by Tryon and Stolze (2 spp.), or were treated at lesser (varietal) rank (1 sp.). Most of these species additions are the result of new collections, unknown at the time of completion and publication of the Tryon and Stolze flora. These additions, and two corrections (species erroneously reported from Peru), bring the previous (Tryon & Stolze 1994) total of 1060 up to 1195 species. The number will continue to grow, as new species are described and as taxonomic revisions of especially difficult and poorly studied groups (e.g., *Elaphoglossum*) are completed. As a conservative estimate, there may be as many as 100 species already collected but still undescribed, so that the total number of pteridophytes from Peru is likely to eventually approach, if not exceed, 1300 species.

In Peru, the most species-rich areas for ferns appear to be along the eastern slope of the Andes, in montane rain forests and cloud forests (León & Young 1996; Young 1992; Young & León 1999). Tryon and Stolze (1994) reported more than 390 pteridophyte species for each department in this zone, from Amazonas to Cuzco, and our new records increase these numbers further (Table 1). The four departments for which we report more than twenty new species are either in this zone (Amazonas, San Martín, and Pasco) or in lowland Amazonia (Loreto). Proportionally, the increase in the number of known species is highest in Loreto (12%) and Amazonas (11%). In both departments, intensive collecting has recently taken place in preparation for a local florula (in Amazonas, by Rodolfo Vásquez/Henk van der Werff) or in connection with ecological studies (in Loreto, by Hanna Tuomisto). A further indication of the incomplete, but improving knowledge of Peruvian ferns derives from recent collections by Henk van der Werff. In a 2004 shipment of ca. 255 sheets collected from Peru, all from Pasco, Prov. Oxapampa, about 40 species were first records for Dept. Pasco (of which ca. seven were new for Peru), and another four were putatively undescribed (no doubt more, but monographic study is needed). Numbers like this suggest that, ultimately, all of the departments on the eastern slope of the Andes will be found to contain ca. 500–600 species of pteridophytes. Obviously, southwestern Peruvian departments containing substantial dry areas (Arequipa, for instance) will always have low numbers of ferns, regardless how much collecting is done. For fern diversity, it is usually true that wetter is better, especially in the mountains; habitat diversity, both climatic and edaphic, can substantially add to this diversity.

We are reluctant to extrapolate or generalize from the pteridophyte data to other groups of plants or animals, because different taxonomic groups may vary in general biogeographic patterns, ecological requirements, and the state of

TABLE 1. Number of pteridophyte species in the different departments of Peru. The numbers of **known spp.** are taken from Tryon and Stolze (1994); the numbers of **new spp.** are from the present paper or publications cited in this paper. Many additional departmental records are known for species previously reported from Peru by Tryon and Stolze (1989a, 1989b, 1991, 1992, 1993, 1994), but these are not the subject of this paper (Smith, unpubl. data).

| Department    | Known spp | New spp | % New spp | Total spp |
|---------------|-----------|---------|-----------|-----------|
| Amazonas      | 398       | 42      | 11        | 440       |
| Loreto        | 252       | 31      | 12        | 283       |
| Pasco         | 393       | 24      | 6         | 417       |
| San Martín    | 490       | 24      | 5         | 514       |
| Cajamarca     | 225       | 17      | 8         | 242       |
| Cuzco         | 559       | 16      | 3         | 575       |
| Madre de Dios | 169       | 11      | 7         | 180       |
| Huánuco       | 541       | 11      | 2         | 552       |
| Junín         | 457       | 7       | 2         | 464       |
| Puno          | 188       | 4       | 2         | 192       |
| Ucayali       | 105       | 3       | 3         | 108       |
| Ayacucho      | 145       | 2       | 1         | 147       |
| Tumbes        | 20        | 1       | 5         | 21        |
| Piura         | 38        | 1       | 3         | 39        |
| Lambayeque    | 51        | 1       | 2         | 52        |
| Lima          | 72        | 1       | 1         | 73        |
| Ancash        | 86        | 1       | 1         | 87        |
| La Libertad   | 128       | 1       | 1         | 129       |
| Apurímac      | 57        | 0       | 0         | 57        |
| Arequipa      | 32        | 0       | 0         | 32        |
| Huancavelica  | 73        | 0       | 0         | 73        |
| Ica           | 1         | 0       | 0         | 1         |
| Moquegua      | 4         | 0       | 0         | 4         |
| Tacna         | 1         | 0       | 0         | 1         |

current knowledge. However, we expect that many groups of organisms will converge on the pattern that the highest numbers of new species records will be found from areas with wet climate, high habitat heterogeneity, and low exploration-density, especially the remote areas of the eastern Andes and western Amazonia.

Our ignorance of the Peruvian fern flora can be seen in statistics for *Elaphoglossum*. Mickel (in Tryon & Stolze 1991) recognized 124 species of *Elaphoglossum* (including *Peltapteris*); of these, 50 were newly described in the flora or in papers immediately preceding the flora. However, *Elaphoglossum* can not necessarily be taken as representative for the ferns, inasmuch as it is one of the largest (and consequently most complex and understudied) genera in the Andes.

Recent estimates for the number of pteridophyte species in tropical and subtropical Latin American countries include 1008 species for Mexico (Mickel

& Smith 2004), 1358 species for Mesoamerica (Davidse et al. 1995), and 1204 species for Venezuela (Smith 2005a). The lack of reliable estimates for Colombia, Ecuador, Bolivia, or Brazil make meaningful comparisons of diversity and species richness with those countries impossible, but we predict that all four will be found to contain in excess of 1200 species of pteridophytes, and the total may well approach 1500 species in Colombia.

The goal of this paper is to put on record, in a single place, as many as possible of the recent species additions to Peru, similar to the efforts for flowering plants done by Ulloa et al. (2004). We generally do not address in this paper differences in taxonomic opinion from the previous Tryon/Stolze treatment, except when those differences result in recognition of additional taxa at species rank. As an example of the kind of information not included in this paper, there is now evidence suggesting that *Notholaena nivea* (Poir.) Desv. (Tryon & Stolze 1989b) be placed in *Argyroschisma* (as *A. nivea* (Poir.) Windham) (Windham 1987). In fact, many of the infraspecific taxa treated by Tryon and Stolze (e.g., the three varieties of *Notholaena nivea*) have been or will be accorded species rank in floristic treatments of other neotropical countries (e.g., for Mexico, Mesoamerica, Venezuelan Guayana, Ecuador, and Bolivia; Mickel & Smith 2004; Davidse et al. 1995; Smith in Steyermark et al. 1995; Jørgensen & León-Yáñez 1999; Kessler & Smith, in prep.). Other examples illustrating these differing opinions might include *Asplenium radicans* L. var. *cirrhatum* (Rich. ex Willd.) Rosenst. and *A. radicans* var. *partitum* (Klotzsch) Hieron., both of which many authors (Adams in Davidse et al. 1995; Mickel & Smith 2004) elevate to species rank (as *Asplenium cirrhatum* Rich. ex Willd. and *A. flabellulatum* Kunze, respectively). These matters are largely a matter of taxonomic opinion, and the overall number of taxa recognized will not change. However, comparisons of taxon numbers at a given rank between countries need to take into account such subjective disagreements.

In this paper, we publish no new taxa or combinations, these are better left to monographers or those doing more detailed floristic work, and require the examination of types and perhaps further field and herbarium studies, both within and outside Peru. Ongoing floristic projects in adjacent areas, especially Bolivia (by Kessler and Smith) and Ecuador (by Øllgaard and collaborators), as well as the production of local florulas within Peru (Río Cenepa area, Dept. Amazonas, by Vásquez et al., in prep.; Cordillera de Yanachaga in Dept. Pasco) can be expected to shed light on many additional taxonomic problems and result in additional species descriptions.

Many of the species accepted and treated by Tryon and Stolze now are known from one or more additional departments within Peru. We do not mention these in the list below, or in Table 1, but specimens can be found in various herbaria, especially the Missouri Botanical Garden (MO) and the herbarium of the University of California, Berkeley (UC), as well as herbaria in Peru (CUZ,

HAO, HUT, USM). Some of these additions can also be found in the TROPICOS database: <http://mobot.mobot.org/W3T/Search/vast.html>

The following species are additions to the Peruvian flora since the completion of the Peruvian pteridophyte flora by Tryon and Stolze (1994). None of these species were recognized at species rank by Tryon and Stolze, and most of the names were not mentioned at any rank. A few names (e.g., *Adiantum villosissimum* Mett. ex Kuhn) were discussed as problematic species or possible synonyms of highly variable recognized species, or treated as synonyms. Further work on the Peruvian fern flora must await description of undescribed species, preferably in a monographic context or at least considering closely related species. An updated fern flora of the country is needed but probably attainable only in the distant future.

#### ***Adiantum argutum* Splitg. (Pteridaceae)**

**PERU. Madre de Dios. Prov. Manu:** close to village of Diamante, S side of Río Alto Madre de Dios, 12°21'S, 70°57'W, 400 m, *Tuomisto 13368, et al.* (CUZ, USM, TUR, UC). **Prov. Tambopata:** Santuario Nacional Pampas del Heath, Río Heath, Pto. San Antonio, 12°57'12"S, 68°52'60"W, 210 m, *Aguilar & Castro 1055* (MO not seen, UC); Explorer's Inn, near confluence of Río Tambopata and Río La Torre, 39 km SW of Puerto Maldonado, 12°50'S, 69°20'W, *Smith 1363, et al.* (UC); 10 km NW from the mouth of Río Pariamanu, on the E bank of Río de las Piedras, 12°22'S, 69°14'W, 200 m, *Tuomisto 13683, et al.* (CUZ, TUR, USM).

#### ***Adiantum decoratum* Maxon (Pteridaceae)**

**PERU. Madre de Dios. Prov. Manu:** close to Cocha Cashu biological station on the S side of Río Manu, 11°54'S, 71°24'W, 400 m, *Tuomisto 13106, et al.* (CUZ, TUR, USM); 5 km E from Cocha Cashu biological station, 11°53'S, 71°21'W, 400 m, *Tuomisto 13150, et al.* (CUZ, TUR, USM); close to village of Altos de Maizal, N side of Río Manu, 11°49'S, 71°28'W, 400 m, *Tuomisto 13207, et al.* (CUZ, TUR, UC, USM); N side of Río Manu, 12°8'S, 71°3'W, 400 m, *Tuomisto 13351, et al.* (CUZ, TUR, USM).

#### ***Adiantum diogoanum* Glaz. ex Baker (Pteridaceae)**

**PERU. Cajamarca. Prov. San Ignacio:** Namballe, entre La Vega del Toro y Las Abejas, 4°58'46"S, 79°05'01"W, 800–1000 m, *Campos 4730, et al.* (MO, UC); Namballe, Caserío Las Abejas, camino hacia el Río Canchis (La Guayusa), 5°00'S, 79°04'W, 870–950 m, *Rodríguez R. 1642* (MO, UC, USM).

#### ***Adiantum dolosum* Kunze (Pteridaceae)**

**PERU. Madre de Dios. Prov. Manu** Pakitza, N side of Río Manu, 11°56'S, 71°17'W, 400 m, *Tuomisto 13308, et al.* (CUZ, TUR, USM); 10 km E from mouth of Río Manu, 3 km N from N bank of Río Madre de Dios, 12°16'S, 70°49'W, 300–400 m, *Tuomisto 13520, et al.* (CUZ, TUR, UC, USM); close to village of Diamante, S side of Río Alto Madre de Dios, 12°21'S, 70°57'W, 400 m, *Tuomisto 13379, et al.* (CUZ, TUR, UC, USM); W bank of Río de los Amigos, 3 km upriver from its mouth, 12°34'S, 70°6'W, 200–300 m, *Tuomisto 13649, et al.* (CUZ, TUR, USM). **Prov. Tambopata:** 5 km E downriver from mouth of Río de los Amigos on N bank of Río Madre de Dios, 12°35'S, 70°02'W, 200–300 m, *Tuomisto 13668, et al.* (CUZ, TUR, UC, USM); 10 km NW from the mouth of Río Pariamanu, 12°23'S, 69°22'W, 200 m, *Tuomisto 13690, et al.* (CUZ, TUR, USM).

#### ***Adiantum fuliginosum* Fée (Pteridaceae)**

**PERU. Loreto. Prov. Mariscal Ramon Castilla:** 3 km S of the village of Huanta, 3°17'S, 71°51'W, 100–150 m, *Tuomisto 5225, et al.* (TUR, USM, Z); 4–8.5 km NW from the village of Puerto Izango, Río Yaguayacu, 3°16'S, 72°2'W, 100–150 m, *Tuomisto 11317* (AMAZ, TUR, USM). **Prov. Maynas:** Explorama/ACEER reserve, 5–15 km E of the mouth of Quebrada Sucusari at lower Napo, 3°15'S, 72°50'W, 100–

200 m, *Tuomisto 7772, et al.* (AMAZ, TUR). **Prov. Requena:** 3 km E from Requena, 5°4'S, 73°48'W, 150–200 m, *Tuomisto 12746, et al.* (AMAZ, TUR, USM); 10 km E from Jenaro Herrera, 4°55'S, 73°35'W, 150–200 m, *Tuomisto 13009, et al.* (AMAZ, TUR, USM). **Madre de Dios. Prov. Manu:** from mouth of Río Azul ca. 10 km down to Río Madre de Dios, 12°33'S, 70°31'W, 300 m, *Tuomisto 13567, et al.* (CUZ, TUR, UC, USM); 5 km W from the mouth of Río de los Amigos, N bank of Río Madre de Dios, 12°33'S, 70°10'W, 200–300 m, *Tuomisto 13636, et al.* (CUZ, TUR, USM).

### ***Adiantum glaucescens* Klotzsch (Pteridaceae)**

**PERU. Amazonas. Prov. Bagua:** Distrito Imaza, Yamayakat. Nororiental del Marañón RENOM, alrededor de la quebrada de Kusut, 04°55'S, 78°19'W, 330–380 m, *Quipuscoa S. 230* (MO, UC, USM).

### ***Adiantum humile* Kunze (Pteridaceae)**

**PERU. Loreto. Prov. Maynas:** near Brilla Nueva, Borro [Bora] Indian village on upper Río Yaguasyacu, *Gentry & Revilla 20455* (MO not seen, UC, USM); Río Pastaza, Kapawari, 2°20'S, 76°20'W, 190 m, *Lewis et al. 12569* (MO not seen, USM). **Prov. Mariscal Ramon Castilla:** 3 km S of the village of Huanta, 3°17'S, 71°51'W, 100–150 m, *Tuomisto 5262, et al.* (AAU, AMAZ, TUR, U, USM); between roads Ex Petroleros and Bello Horizonte, Km 38–40 on Iquitos–Nauta road, 4°04'S, 73°28'W, 100–200 m, *Tuomisto 6678, et al.* (AMAZ, TUR, UC); Upper Río Itaya, ca. 2 km SSE of village Carbajal, 4°17'S, 73°35'W, 100–200 m, *Tuomisto 9685, et al.* (AMAZ, TUR, UC); Dist. Sargento Lores, Constancia Norte, Shapajillal, 4°07'19"S, 72°55'25"W, 116 m, *Vásquez 22995, et al.* (MO not seen, UC). **Madre de Dios. Prov. Manu:** S side of Río Manu, close to Cocha Cashu biological station, 11°55'S, 71°19'W, 400 m, *Tuomisto 13298, et al.* (CUZ, TUR, USM); 15 km E from the mouth of Río Manu, N bank of Río Madre de Dios, 12°17'S, 70°46'W, 300–400 m, *Tuomisto 13528, et al.* (CUZ, TUR, USM). **Pasco. Prov. Oxapampa:** Paujil, near Puerto Bermudez, *León 299* (USM). **Ucayali. Prov. Coronel Portillo:** Bosque Nacional von Humboldt, 230–260 m, *Narita 8* (USM). This species was initially listed for Peru by Tryon (1964) and later included as a synonym of *A. latifolium* (Tryon & Stolze 1989: 66).

### ***Adiantum paraense* Hieron. (Pteridaceae)**

**PERU. Loreto. Prov. Loreto:** 1.5 km E of the road to Iquitos at km 10 from Nauta, 4°28'S, 73°34'W, 100–150 m, *Tuomisto 4414, et al.* (AMAZ, TUR, U). **Prov. Maynas:** 7 km E of the oil palm plantation at Río Maniti, 3°38'S, 72°56'W, 100–150 m, *Tuomisto 4781, et al.* (TUR, USM); Upper Río Itaya, ca. 10 km SW of village Carbajal, 4°18'S, 73°40'W, 100–200 m, *Tuomisto 10166, et al.* (AMAZ, TUR, UC).

### ***Adiantum villosissimum* Mett. ex Kuhn (Pteridaceae)**

**PERU. Huánuco. Prov. Huánuco:** Exito, Balsa Playa, 1100 m, *Vargas C. 5317* (UC). **Junín:** Chanchamayo, 1500 m, *Schunke s.n.* (UC).

### ***Alsophila minervae* M. Lehnert (Cyatheaceae)**

**PERU. Pasco. Prov. Oxapampa:** trail to summit of Cordillera Yanachaga via Río San Daniel, 10°23'S, 78°27'W, 2500 m, *Smith & Boetger 7817* (USM) (Lehnert 2003:171).

### ***Alsophila mostellaria* M. Lehnert (Cyatheaceae)**

**PERU. Amazonas. Prov. Bongará:** road Pedro Ruiz–Florida, 5°51.7'S, 77°58.4'W, 2200 m, *Lehnert 243* (HOLOTYPE: USM; ISOTYPES: GOET, UC). **Cajamarca. Prov. Santa Cruz:** Dist. Catache, upper Río Zaña valley, ca. 5 km above Monte Seco, ca. 1800 m, Dillon et al. 4883 (HUT). **Pasco. Prov. Oxapampa:** road La Merced–Oxapampa, ca. 23 km from Oxapampa, 10°44.4'S, 75°21.2' W, 1500 m, *Lehnert 242, 321* (GOET, UC, USM). Additional collections cited by Lehnert (2003:172) from Depts. Cajamarca and Pasco.

### ***Alsophila salvinii* Hook., vel aff. (Cyatheaceae)**

**PERU. San Martín. Prov. Rioja:** along road Rioja–Pedro Ruiz, El Mirador, 5°40'29"S, 77°46'25"W, 1850 m, *van der Werff 15666, et al.* (MO, UC).

**Arachniodes macrostegia** (Hook.) R.M. Tryon & D.S. Conant (Dryopteridaceae)

**PERU. Loreto. Prov. Maynas:** *Moran* 3763 (USM); *Revilla* 2749 (UC); *Rimachi* 8285 (USM); 2 km S of the village of Mishana at Río Nanay, 3°52'S, 73°24'W, 100–150 m, *Tuomisto* 2370, *et al.* (TUR, USM); Puerto Almendras along Río Nanay, 3°51'S, 73°22'W, 100–200 m, *Tuomisto* 6434, with Ruokolainen (AMAZ, NY, TUR, USM). **Prov. Requena:** 4 km SE from Requena, 5°5'S, 73°49'W, 150–200 m, *Tuomisto* 12767, *et al.* (AMAZ, TUR, USM); 4 km E from Jenaro Herrera, 4°54'S, 73°38'W, 150–200 m, *Tuomisto* 13028, *et al.* (AMAZ, TUR, USM). **Pasco: Prov. Oxapampa:** Villa América, Quebrada Castillo, *Arana* 18 (USM).

**Asplenium eutecnum** A.R. Sm. (Aspleniaceae)

**PERU. Amazonas: Prov. Condorcanqui:** Dist. El Cenepa, Comunidad de Tutino, Pumpu-entsa, 340 m, *Vásquez* 24244, *et al.* (HOLOTYPE: HUT; ISOTYPES: MO, NY, UC). Also known from Loreto (Smith 2005b).

**Asplenium incurvatum** Fée (Aspleniaceae)

**PERU. Cajamarca: Prov. San Ignacio:** Tabaconas, Santuario Nacional Tabaconas Namballe, 5°17'30"S, 79°16'W, 2190–2200 m; *Campos & Tenorio* 5708 (MO, UC, USM). **Prov. San Marcos:** 6 km above San Marcos on road to Cajamarca, 2600–2700 m, *Weigend et al.* 97/328 (USM). **San Martín: Prov. Rioja:** Aguas Verdes, 5°40'S, 77°40'W, 800 m, on limestone, *van der Werff* 16616, *et al.* (MO not seen, UC, USM). This species is segregated from *A. serra* Langsd & Fisch. and appears to be restricted to limestone and sandstone outcrops).

**Asplenium monodon** Liebm. (Aspleniaceae)

**PERU. Cajamarca: Prov. San Ignacio:** Santo Tomas Bosque Primario, 4°55'S, 78°50'W, 2070 m, *Vásquez* 20521, *et al.* (MO not seen, UC).

**Asplenium palmeri** Maxon (Aspleniaceae)

**PERU. San Martín: Prov. Rioja:** Aguas Verdes, 5°40'S, 77°40'W, 800 m, on limestone, *van der Werff* 16612, *et al.* (MO not seen, UC, USM).

**Asplenium polyphyllum** Bertol. (Aspleniaceae)

**PERU. Cuzco: Prov. Urubamba:** Dist. Ollantaytambo, Huaytampo, 13°10'47"S, 72°21'10"W, 3650 m, *Calatayud* 1025, *et al.* (UC). Reported by Adams (in Davidse *et al.* 1995) from Peru, but without citation of specimen.

**Asplenium pseudirectum** Hieron. (Aspleniaceae)

**PERU. Madre de Dios: Prov. Manu:** Cocha Cashu Biological Station, along path 12, 11°52'S, 71°24'W, 400 m, *Tuomisto* 13074, *et al.* (CUZ, TUR, UC, USM); close to Cocha Cashu biological station, 11°53'S, 71°24'W, 400 m, *Tuomisto* 13159 *et al.* (CUZ, TUR).

**Blechnum gracile** Kaulf. (Blechnaceae)

**PERU. Amazonas: Prov. Bagua:** valley of Río Marañón above Cascadas de Mayasi near Campamento STe Montenegro (Kms 276–280 of Marañón road), 450 m, *Wurdack* 1822 (UC, US not seen, USM). **Prov. Luya:** Camporredondo, Jaípe, 6°09'07"S, 78°21'05"W, 2050 m, *Campos* 3646, *et al.* (MO not seen, UC, USM). **Cajamarca: Prov. San Ignacio:** La Coipa, La Lima, 5°26'S, 78°55'W, 1800 m, *Campos* 4009, with García (MO not seen, UC). **Huánuco: Prov. Leoncio Prado:** 60 km E of Tingo María, Divisoria Pass, 1500 m, *Tryon & Tryon* 5271 (USM). **Junín: Prov. Chanchamayo:** Chanchamayo, 2000 m, *Esposito* 636 (USM). **Pasco: Prov. Oxapampa:** Dist. Villa Rica, bosque de Protección San Matias-San Carlos, 1355 m, *Perea & Mateo* 083 (MO not seen, UC). **San Martín: Prov. Huallaga:** Abajo de La Morada, 6°57'S, 77°32'W, 2000–2200 m, *Quipuscoa* S. 1016, with Bardalae (F not seen, UC). Subsumed under *B. fraxineum* Willd. by Tryon and Stolze (1993:59); some of the specimens they cited under that name are *B. meridense* Klotzsch.

**Blechnum lechleri** Mett. (Blechnaceae)

**PERU. Pasco: Prov. Oxapampa:** Parque Nacional Yanachaga-Chemillen, Abra Yanachaga, 10°22'S, 75°27'W, *Vásquez* 28423, *et al.* (MO not seen, UC). One of the syntypes, "Peruvia, Tatanara," is also from Peru. Mentioned, but not accepted, by Tryon and Stolze (1993:68); a synonym is *B. violaceum* (Fée) Hieron. Widely distributed from the Lesser Antilles to Bolivia, and distinguished from *B. cordatum* (Desv.) Hieron. by the pronounced, dark, peglike aerophores at the pinna bases and the dark, atropurpureous rachises.

**Callipteris andina** Pacheco & R.C. Moran (Athuriaceae)

**PERU. Amazonas** (Pacheco & Moran 1999:353). It is doubtful whether *Callipteris* is separable from *Diplazium*, but no combination is available in the latter genus.

**Campyloneurum amazonense** B. León (as *C. amazonensis*) (Polypodiaceae)

**PERU. Amazonas:** ca. 12–18 km trail E of La Peca in Serranía de Bagua, 1800–1950 m, *Gentry et al.* 22930 (HOLOTYPE: USM; ISOTYPES AMAZ, F, MO, UC) (León 2005).

**Campyloneurum cochense** (Hieron.) Ching (Polypodiaceae)

**PERU. Amazonas: Prov. Chachapoyas:** Dist. Leymebamba, Alrededor de la Laguna de Los Cóndores, 6°51.102'S, 77°41.415'W, 2500–2700 m, *Quipuscoa S. 1270, et al.* (F not seen, UC). **San Martín: Prov. Mariscal Cáceres:** Parque Nacional del Río Abiseo, valle de Chochos, 3300 m, *León & Young* 2041 (USM).

**Ceradenia kalbreyeri** (Baker) L.E. Bishop (Grammitidaceae)

**PERU. Pasco: Prov. Oxapampa:** Chacos, 10°37'S, 75°17'W, 2500 m, *van der Werff* 17678, *et al.* (MO not seen, UC).

**Ceradenia cf. kookenamae** (Jenman) L.E. Bishop (Grammitidaceae)

**PERU. Cajamarca: Prov. San Ignacio:** San José de Lourdes, Picorana, 4°58'S, 78°53'W, 2470–2560 m, *Campos* 5593, *et al.* (MO not seen, UC, USM).

**Ceradenia spixiana** (Mart. ex Mett.) L.E. Bishop (Grammitidaceae)

**PERU. San Martín: Prov. Rioja:** along road Yorongos-Uquihua, *van der Werff* 16584 (MO not seen, UC).

**Ceradenia tryonorum** B. León & A.R. Sm. (Grammitidaceae)

**PERU. San Martín: Prov. Mariscal Cáceres:** Parque Nacional Río Abiseo, near El. Tingo, 7°58'S, 77°18'W, 2800 m, *León & Young* 3840 (HOLOTYPE: USM; ISOTYPES: TEX, UC). (León & Smith 2003:81).

**Cochlidium linearifolium** (Desv.) Maxon ex C. Chr. (Grammitidaceae)

**PERU. Amazonas: Prov. Bagua:** Comunidad de Yamayakat, Bosque primario, 05°03'24"S, 78°20'17"W, 600 m, *Vásquez* 23793, *et al.* (MO).

**Cyathea amazonica** R.C. Moran (Cyatheaaceae)

**PERU. Loreto: Prov. Maynas:** Quebrada Tamshiyacu, Casería Alianza, 4°05'S, 72°58'W, 130 m, *Gentry et al.* 29231 (MO); San Miguel, 2 km below Indiana, 3°30'S, 73°02'W, 130 m, *Gentry* 65689, *et al.* (MO); ca. 5 km NW from village of Gen Gen at Río Mormón, 3°37'S, 73°17' W, *Tuomisto* 3034 (AMAZ, TUR) (three additional collections cited by Moran 1995, all from Prov. Maynas).

**Cyathea boliviana** R. M. Tryon (Cyatheaaceae)

**PERU. Cuzco: Prov. Paucartambo:** carretera a Pilcopata, 2650 m, *León* 2204 (USM).

**Cyathea brevistipes** R.C. Moran (Cyatheaaceae)

**PERU. Pasco: Prov. Oxapampa:** *Foster et al.* 10532 (F not seen, USM) (Moran 1991).

**Cyathea caroli-henrici** M. Lehnert (Cyatheaceae)

**PERU. Cuzco: Prov. Urubamba:** 2050 m, *Bonino 1127* (CUZ) (Lehnert 2003:180).

**Cyathea concordia** B. León & R.C. Moran (Cyatheaceae)

**PERU. Amazonas:** Cordillera del Condor, 1950–2050 m, 3°52'48"S 78°26'00"W, *Beltrán & Foster 1183* (F, USM), type and only known collection (León & Moran 1996).

**Cyathea herzogii** Rosenst. (Cyatheaceae)

**PERU. Cuzco: Prov. La Convención:** Cordillera Vilcabamba, 12°38'S, 73°38'W, 1760 m, *Dudley 10588* (NA not seen, USM). **Junin: Prov. Satipo:** Northern Cordillera Vilcabamba, E slope, upper Río Puyeni watershed, 11°33'35"S, 73°38'W, 2090 m, *Boyle et al. 4749* (USM). Distinct at species rank from *Cyathea caracasana* (Klotzsch) Domin, where it was included by Tryon (1976: 77).

**Cyathea palaciosii** R.C. Moran (Cyatheaceae)

**PERU. Amazonas: Prov. San Martín:** 5°41'S, 77°48'W, 1950 m, *van der Werff 16721, et al.* (MO not seen, UC) (Moran 1995).

**Cyathea thelypteroides** A.R. Sm. (Cyatheaceae)

**PERU. Amazonas:** Bagua Distr., upper slopes and summit of Cerro Tayu, 05°15'56"S, 78°22'07"W, 1030 m, *van der Werff 16323, et al.* (HOLOTYPE: USM; ISOTYPES: MO, UC) (Smith 2005b).

**Cyathea tortuosa** R.C. Moran (Cyatheaceae)

**PERU. Amazonas: Prov. Bagua:** Dist. Imaza, Yamayakat, 5°03'20"S, 78°20'23"W, 400 m, *Vásquez 21790, et al.* (MO not seen, UC). **Madre de Dios:** Prov. Manu: Cerro de Pantiacolla, Río Palotoa 10–15 km NNW of Shintuya, 12°35'S, 71°18'W, 650–700 m, *Foster 10703* (F, UC); **San Martín:** along Yorongos–La Florida road near Rioja, 1000 m, *van der Werff 16542, et al.* (MO not seen, UC, USM). Also Depts. Pasco and Loreto (Moran 1991:100).

**Cyathea werffii** R.C. Moran (Cyatheaceae)

**PERU. Amazonas:** Puerto Nazareth, 540 m, *Ellenberg 3489* (UC), a paratype (Moran 1991:94).

**Cyathea windischiana** A.R. Sm. (Cyatheaceae)

**PERU. Amazonas:** Bagua Distr., Cerro Tayu, ca. 1 hour from Chiriaco, 05°15'56"S, 78°22'07"W, 800 m, *van der Werff 16207, et al.* (HOLOTYPE: UC; ISOTYPE: MO) (Smith 2005b).

**Cyathea xenoxyla** M. Lehnert (Cyatheaceae)

**PERU. Amazonas. Prov. Condorcanqui:** Cordillera del Condor, Puerto de la Vigilancia Alfonso Ugarte (PV 3), cabeceras del Río Comainas, tributaria al oeste del Río Cenepa, 3°55.0'S, 78°25.4'W, 1000–1300 m, *Beltrán & Foster 1083* (USM). **Prov. Chachapoyas:** road Chachapoyas–Mendoza, 52 km from Chachapoyas, ca. 10 km behind Molinopampa, 6°14.2'S, 77°35.9'W, 2400 m, *Lehnert 229* (GOET, UC, USM). **Cuzco. Prov. La Convención:** Dist. Echaraté, Lactahuaman, N del Río Apurimac, NE del Pueblo Libre, S de la Cordillera de Vilcabamba, 12°51'55.5"S, 73°30'40"W, 1650 m, *Baldeon et al. 3077* (USM). **Pasco. Prov. Oxapampa:** trail to summit of Cordillera Yanachaga via Río San Daniel, 10°23'S, 75°27'W, 2500 m, *Smith & Boetger 7846* (USM). **San Martín. Prov. Rioja:** road Moyobamba–Pedro Ruíz, Km 395, *Lehnert 216* (GOET, UC, USM). **Ucayali. Prov. Coronel Portell:** Dobson (?), *Ferreya s.n.* (USM). (Lehnert 2003:177).

**Danaea acuminata** Tuomisto & R.C. Moran (Marattiaceae)

**PERU.** Specimens from Depts. Loreto and Madre de Dios cited by Tuomisto and Moran (2001:28), e.g., **Madre de Dios: Prov. Manu:** 4 km S of village of Boca Colorado, 12°38'S, 70°25'W, 300 m, *Tuomisto 13589, et al.* (CUZ, TUR, U, UC, USM).

**Danaea bipinnata** Tuomisto (Marattiaceae)

**PERU.** Specimens from Dept. Loreto cited by Tuomisto and Moran (2001:33), e.g., **Loreto:** Mariscal

Ramon Castilla, 20.5–26 km NW from village of Puerto Izango, Río Yaguasyacu, 3°12'S, 72°10'W, 100–150 m, *Tuomisto 11387, et al.* (AMAZ, TUR, UC, USM).

### **Danaea leprieurii** Kunze (Marattiaceae)

**PERU.** Specimens from Depts. Loreto and Madre de Dios cited by Tuomisto and Moran (2001:50), e.g., **Loreto:** Maynas, Upper Río Itaya, ca. 5 km SSE of village Carbajal, 4°19'S, 73°35'W, 100–200 m, *Tuomisto 10116, et al.* (AMAZ, TUR, UC, US). **Madre de Dios:** **Prov. Manu:** 4 km S from village of Boca Colorado, 12°38'S, 70°25'W, 300 m, *Tuomisto 13592, et al.* (CUZ, TUR, UC, USM).

### **Dennstaedtia arcuata** Maxon (Dennstaedtiaceae)

All Peruvian specimens treated as *D. wercklei* (H. Christ) R. M. Tryon by Tryon and Stolze (1989b) are referred to *D. arcuata*, by Navarrete and Øllgaard (2000); this name was not mentioned by Tryon and Stolze.

### **Dennstaedtia auriculata** H. Navarrete & B. Øllg. (Dennstaedtiaceae)

**PERU. Cuzco:** **Prov. Convención:** Amaibamba, 1700 m, *Vargas 9805* (UC). This specimen cited as *D. arborescens* (Willd.) Maxon, by Tryon and Stolze (1989b:100), a species restricted to the Antilles by Navarrete and Øllgaard (2000).

### **Dennstaedtia cornuta** (Kaulf.) Mett. (Dennstaedtiaceae)

**PERU. Amazonas:** 12 km E of La Peca, 1700 m, *Barbour 2498* (MO not seen, UC). **Pasco:** **Prov. Oxapampa:** Palcazu, 10 km N of Oxapampa, 10°32'S, 75°23'W, 2100 m, *D. Smith 8479* (MO not seen UC); along road Chatarra-Cacazu, 10°32'S, 75°04'W, 890 m, *van der Werff 18292, et al.* (MO not seen, UC). This name not mentioned by Tryon and Stolze (1989b), but probably some of the specimens they cited as *D. dissecta* are *D. cornuta*; the former is considered to be restricted to the Antilles, s Mexico, and nw South America. See Navarrete and Øllgaard (2000).

### **Dennstaedtia coronata** (Sodirol) C. Chr. (Dennstaedtiaceae)

**PERU. San Martín:** **Prov. Huallaga:** abajo de La Morada, cerca al Río Guabayacu, 6°57'S, 77°32'W, 1900–2000 m, *Quipuscoa & Bardales 962* (UC). Name not mentioned by Tryon and Stolze (1989b). See Navarrete and Øllgaard (2000).

### **Dennstaedtia mathewsii** (Hook.) C. Chr. (Dennstaedtiaceae)

**PERU. Cajamarca:** **Prov. San Ignacio:** La Coipa, Vista Florida (camino a la Laguna), 5° 26'10"S, 78° 56'00"W, 1900–2000 m, *Campos 4048*, with García (MO not seen, UC); Huarango, El. Progreso, 5° 19'15"S, 78° 40'00"W, 1300–1450 m, *Campos 6276, et al.* (MO not seen, UC). **Pasco:** **Prov. Oxapampa:** Parque Nacional Yanachaga, El Huampal, 10°11'S, 75°34'W, 1200 m, *van der Werff 17908, et al.* (MO not seen, UC). Name treated as synonymous with *D. arborescens* (Willd) Maxon by Tryon and Stolze (1989b). See Navarrete and Øllgaard (2000), who considered *D. arborescens* to be restricted to the Antilles.

### **Dennstaedtia obtusifolia** (Willd.) T. Moore (Dennstaedtiaceae)

Specimens cited as *D. dissecta* (Sw.) T. Moore by Tryon and Stolze (1989b) are mostly to be referred to *D. obtusifolia*. According to Navarrete and Øllgaard (2000), *D. dissecta* is restricted to the Antilles, Mesoamerica, and nw S. America, and is not known from Peru.

### **Diplazium grandifolium** (Sw.) Sw. (Athyriaceae)

**PERU. Amazonas:** **Prov. Bongará:** Shillac, N by trail from Pedro Ruíz, 5°49'S, 78°01'W, 2300 m, *D. Smith & Vásquez S. 4908* (MO not seen, UC); Dist. Sipabamba, Shilla, ca. 1900 m, *Young & Eisenberg 355* (MO not seen, UC). Tryon and Stolze (1991:83) cited many specimens of this species from Peru, but all as var. *andicola* Stolze. We believe that this variety is a good species and that the correct name at species rank is *Diplazium balliviani* Rosenst., type from Bolivia. The true *D. grandifolium*, type from

the West Indies, does indeed occur in Peru, but apparently no specimens were seen by Tryon and Stolze. We note that the two Peruvian specimens of *D. grandifolium* cited are from 1900 and 2300 m, while 16 of 18 specimens seen of *D. balliviani* from the southern Andes are from low elevation, 100–400 m; two others, both from Bolivia, extend to 1100 m.

### **Diplazium immensum** Stolze (Athyriaceae)

**PERU. San Martín:** *Knapp & Alcorn 7749* (F, MO, neither seen). Cited by Tryon and Stolze (1991:77), under *D. macrophyllum* Desv. and as *D. immensum* by Stolze et al. (1994:41).

### **Diplazium lilloi** (Hicken) R. M. Tryon & A. F. Tryon (Athyriaceae)

**PERU. Cuzco: Prov. Urubamba:** Dist. Ollantaytambo, Huaytambo, 13°09'02"S, 72°30'28"W, 2300 m, *Calatayud & Farfán 1072* (MO not seen, UC).

### **Diplazium longisorum** (Baker) C. Chr. (Athyriaceae)

**PERU. San Martín: Prov. Rioja:** carretera Rioja–Pedro Ruíz, 1450 m, *van der Werff 15558* (MO not seen, UC).

### **Diplazium paucipinnum** Stolze (Athyriaceae)

**PERU. San Martín:** along Rioja–Pedro Ruíz, about bridge Serranoyacu, 1170 m, *van der Werff 16777*, *et al.* (UC) (Stolze et al. 1994:72).

### **Diplazium tabalosense** Hieron. (Athyriaceae)

**PERU. Amazonas: Prov. Bagua:** Rio Urubamba [Utcubamba], on Cerro Tapur above Hda. Misqui, ca. 40 km S of Bagua Grande, 1200 m, *Hutchison 1483* (UC, USM). **Loreto: [Prov. Alto Amazonas]:** above Pongo de Manseriche, mouth of Río Santiago, 200 m, *Mexia 6129* (UC). **Madre de Dios: Prov. Manu:** Río Manu close to Cocha Cashu Biological Station, 11°53'S, 71°24'W, 400 m, *Tuomisto 13177*, *et al.* (CUZ, TUR, UC, USM); Parque Nacional del Manú, Cocha Cashu Biological Station, *Foster P-84-57*, *P-84-86* (UC). Several of the specimens cited by Tryon and Stolze (1991:79) as *D. striatum* (L.) C. Presl are *D. tabalosense*, which differs from *D. striatum* by the glabrous costae, costules, and tissue between veins abaxially, less incised pinnae (blades never 2-pinnate, even at the base), and narrower indusia ca. 0.1–0.2(0.3) mm wide. Known from Venezuela, Ecuador, Peru, and Bolivia.

### **Diplazium wolfii** Hieron. (Athyriaceae)

**PERU. Junín: Prov. Satipo:** Gran Pajonal, Mapari, ca. 12 km SW of Chequitavo, 74°23'W, 10°45'S, 1300 m, *D. Smith 6789* (MO not seen, UC, USM) (see Stolze et al. 1994:22).

### **Elaphoglossum ambiguum** (Mett. ex H. Christ) Alston (Dryopteridaceae)

**PERU. Cajamarca: Prov. San Ignacio:** Chirinos, localidad de Pacasmayo, 5°15'00"S, 78°55'00"W, 1750 m, *Campos & García 4504* (MO not seen, UC, USM).

### **Elaphoglossum exsertipes** Mickel (Dryopteridaceae)

**PERU. Amazonas:** near border with Dept. San Martín, 5°41'S, 77°48'W, 2000 m, *van der Werff 16650*, *et al.* (MO not seen, UC). **San Martín:** along road Rioja–Pedro Ruíz, El Mirador, 5°40'29"S, 77°46'25"W, 1850 m, *van der Werff 15659* (MO not seen, UC).

### **Elaphoglossum palmarum** M. Kessler & Mickel (Dryopteridaceae)

**PERU. San Martín: Prov. Rioja:** Pedro Ruíz–Moyobamba road, Km 390, Venceremos, 5°50'S, 77°45', 1800–1900 m, *D. Smith 4503* (MO not seen, UC). Previously cited by Mickel (in Tryon & Stolze 1991:143) as *E. litantum* (Sodiño) C. Chr., which is now known only from Ecuador.

### **Elaphoglossum tovarense** (Mett. ex Kuhn) T. Moore ex C. Chr., vel aff. (Dryopteridaceae)

**PERU. Amazonas: Prov. Bagua:** Yamayakat, 04°55'S, 78°19'W, 320 m, *Jaramillo 1189*, *et al.* (MO).

**Enterosora trichosora** (Hook.) L.E. Bishop (Grammitidaceae)

**PERU. Amazonas:** near border with Dept. San Martín, 5°41'S, 77°48'W, 2000 m, *van der Werff 16667*, et al. (MO not seen, UC).

**Equisetum myriochaetum** Schldtl. & Cham. (Equisetaceae)

**PERU. Amazonas:** **Prov. Bagua:** 25 km E of La Peca, 5900 ft, *Barbour 2880* (MO). **Cajamarca:** Huarango, Nuevo Mundo, 1600–1700 m, *Campos & Núñez 4623* (MO). Synonymized under *E. giganteum* by Tryon and Stolze (1994:15), but well characterized by Hauke (1963).

**Eriosorus hirtus** (Kunth) Copel. (Pteridaceae)

**PERU. Piura:** **Prov. Ayabaca:** Cerro de Aypate, Comunidad Campesina de Tacalpo, anexo Yanchalá, 4°42', 82°S, 79°34'150"W, 2800–2880 m, *Quipuscoa S. 643*, et al. (F not seen, UC).

**Eriosorus novogranatensis** A. F. Tryon (Pteridaceae)

**PERU. Amazonas:** San Martín, 5°41'S, 79°48'W, 1940 m, *van der Werff 16729* (MO not seen, UC, USM), 16747, et al. (MO not seen, UC).

**Huperzia dichotoma** (Jacq.) Trevis. (Lycopodiaceae)

**PERU. Pasco:** **Prov. Oxapampa:** along road Chatarra–Pto. Bermudez, 10°30'S, 75°03'W, 700 m, *van der Werff 18161*, et al. (MO not seen, UC).

**Huperzia firma** (Mett.) Holub, vel aff. (Lycopodiaceae)

**PERU. Amazonas:** **Prov. Leymebamba:** Dist. Leymebamba, ruta Laguna de Los Cóndores, La Atalyaya, alrededores de La Fila, 6°49.056'S, 77°44.134'W, 3000–3500 m, *Quipuscoa S. 1206*, et al. (F not seen, UC).

**Hymenophyllum dendritis** Rosenst. (Hymenophyllaceae)

**PERU. Huánuco:** [**Prov. Leoncio Prado**]: alrededores de Maria, 800 m, *Aguilar 304* (UC). Perhaps most of the specimens cited by Tryon and Stolze (1989a:59) as *H. apiculatum* Mett. ex Kuhn from Peru are better referred to *H. dendritis*, a low-elevation, smaller species (fronds mostly 3–5 cm long) with ovate, rather than obovate involucre, included, shorter receptacles (generally < 1 mm long vs. often slightly exerted receptacles ca. 2 mm long in *H. apiculatum*), and smaller sporangia (ca. 0.3 mm long vs. 0.5 mm long).

**Hymenophyllum platylobum** Bosch (Hymenophyllaceae)

**PERU. Puno:** [**Prov. Carabaya**]: San Gabán, *Lechler 2489* (HOLOTYPE: P, photo US; ISOTYPE: F). Treated by Morton (1947) and by Tryon and Stolze (1989a:68) as a synonym of *H. valvatum* Hook. & Grev, but we believe the two are specifically distinct.

**Jamesonia verticalis** Kunze (Pteridaceae)

**PERU. San Martín:** Dto. Huallaga, Saposoa, entre El Tambo y Jalca de El Rayo, camino a Leymebamba, 2800–3200 m, *Quipuscoa S. 2484*, et al. (F not seen, UC).

**Lellingeria aff. suspensa** (L.) A.R. Sm. & R.C. Moran (Grammitidaceae)

**PERU. Amazonas:** near border with Dept. San Martín, 5°41'S, 77°48'W, 2000 m, *van der Werff 16686*, et al. (MO not seen, UC).

**Lindsaea bolivarensis** V. Marcano (Lindsaeaceae)

**PERU. Loreto:** **Prov. Maynas:** ca. 7 km E of oil palm plantation at Río Maniti, 3°38'S, 72°56'W, 100–150 m, *Tuomisto 4721*, et al. (TUR, UC, USM); trail from the village of Panguana towards Río Maniti, about 8 km from Río Amazonas, 3°53'S, 73°5'W, 100–200 m, *Tuomisto 6124*, et al. (TUR, UC, USM); Explorama/ACEER reserve, 5–15 km E of the mouth of Quebrada Sucusari at lower Napo, 3°15'S, 72°50'W, 100–200 m, *Tuomisto 7755*, et al. (AMAZ, KSP, TUR); 2 km SE of the village Santa Ana at lower Río Tahuayo, 4°6'S, 73°7'W, 100–200 m, *Tuomisto 8863*, with Oré (AMAZ, TUR, USM) (Marcano 1989:254).

**Lindsaea coarctata** K.U. Kramer (Lindsaeaceae)

**PERU. Loreto: Prov. Maynas:** close to the village Nina Rumi at lower Río Nanay, 20 km SW of Iquitos, 3°51'S, 73°23'W, 100–200 m, *Tuomisto* 5863 (AMAZ, TUR, USM). **Prov. Mariscal Ramon Castilla:** 3–4 km W from village of Puerto Izango, Río Yaguasyacu, 3°18'S, 72°01'W, 100–150 m, *Tuomisto* 11227, *et al.* (AMAZ, TUR, UC, USM). **Prov. Requena:** 3 km E from Requena, 5°04'S, 73°48'W, 150–200 m, *Tuomisto* 12764, *et al.* (AMAZ, TUR, USM); 4 km SE from Requena, 5°05'S, 73°49'W, 150–200 m, *Tuomisto* 12778, *et al.* (AMAZ, TUR, USM).

**Lindsaea hemiptera** K.U. Kramer (Lindsaeaceae)

**PERU. Loreto: Prov. Maynas:** 14 km NW from the carretera to Nauta at km 40, 3°56'S, 73°30'W, 100–150 m, *Tuomisto* 3557, *et al.* (AAU, AMAZ, TUR, USM, Z); Experimental station 'El Dorado' of INIA, Km 25 along road Iquitos-Nauta, 3°57'S, 73°25'W, 100–200 m, *Tuomisto* 13049, with Ruokolainen (AMAZ, TUR, UC, USM).

**Lindsaea javitensis** Humb. & Bonpl. ex Willd. (Lindsaeaceae)

**PERU. Loreto: Prov. Maynas:** Experimental station 'El Dorado' of INIA, Km 25 along road Iquitos-Nauta, 3°57'S, 73°25'W, 100–200 m, *Tuomisto* 13051, with Ruokolainen (AMAZ, TUR, UC, USM).

**Lindsaea tetraptera** K.U. Kramer (Lindsaeaceae)

**PERU. Loreto: Prov. Maynas:** Experimental station of UNAP at Puerto Almendras along Río Nanay, 20 km air distance from Iquitos, 3°51'S, 73°22'W, 100–200 m, *Tuomisto* 6439, with Ruokolainen (AMAZ, TUR, USM); close to the experimental station of UNAP at San Gerardo, km 13 of the road Iquitos-Nauta, 3°55'S, 73°22'W, 100–200 m, *Tuomisto* 7217, with Ruokolainen (AMAZ, TUR, USM); Experimental station 'El Dorado' of INIA, Km 25 along road Iquitos-Nauta, 3°57'S, 73°25'W, 100–200 m, *Tuomisto* 13048, with Ruokolainen (AMAZ, TUR, UC, USM).

**Lomariopsis pricuriana** Fée (Dryopteridaceae)

**PERU. Loreto: Prov. Maynas:** C. Nueva Paleta, Río Napo, 3°01'S, 73°21'W, Flores 348, 353, 363 (AAU). **San Martín: Prov. Rioja:** road Rioja–Pedro Ruíz, 1450 m, *van der Werff* 15554 (UC). Additional collections from Loreto cited by Moran (2000:93).

**Megalastrum mollis** A.R. Sm. (Dryopteridaceae)

**PERU. Amazonas:** Bagua Distr., along road from Chiriaco towards Bagua, 5°16'57"S, 78°23'10"W, 750 m, *van der Werff* 16300, *et al.* (HOLOTYPE: UC; ISOTYPE: MO) (Smith. 2005b).

**Melpomene assurgens** (Maxon) A.R. Sm. & R.C. Moran (Grammitidaceae)

**PERU. Cajamarca: Prov. San Ignacio:** Tabaconas, Santuario Nacional Tabaconas-Namballe, 5°15'00"S, 79°19'00"W, 2300–2400 m, *Campos* 5691, *et al.* (MO not seen, UC, USM). Discussed under *Grammitis moniliformis* (Lag. ex Sw.) Proctor by Tryon and Stolze (1993:99).

**Melpomene peruviana** (Desv.) A.R. Sm. & R.C. Moran (Grammitidaceae)

**PERU. Ancash: Prov. Huaras:** N of Laguna Llanganuco, 9°03.1'S, 77°36.2' W, 4400, *Lehnert* 273 (UC). **Ayacucho: Prov. Huamanga:** Ayacucho–Andahuaylas, above Ocros, 13°23.5'S, 73°57.3'W, 4200 m, *Lehnert* 339 (UC, USM); Ayacucho–Andahuaylas, behind furcation to Vilcas Huamán, 13°22'S, 73°58'W, 4200 m, *Lehnert* 333 (UC, USM). Synonymized under *Grammitis flabelliformis* (Poir.) C. V. Morton by Tryon and Stolze (1993:102).

**Metaxya lanosa** A.R. Sm. & Tuomisto (Metaxyaceae)

Cited by Smith *et al.* (2001) from Loreto. Several additional collections are now known: **PERU. Loreto: Prov. Maynas:** Distr. Iquitos, El Dorado-INIA, Varillal Alto Húmedo, *McDaniel & Rimachi* 27814 (IBE not seen, USM); *Moran* 3630 (USM); *Rimachi* 7526 (USM).

**Microgramma acatalla** Alston (Polypodiaceae)

**PERU. [Loreto]: Prov. Maynas:** Iquitos, Estación Biológica, Allpahuayo-IIAP Bosque primario, 03°53'S, 73°25'W, 130 m, *Jaramillo & Marcos 703* (MO not seen, UC). **Pasco:** Dist. Pozuzo, Parque Nacional Yanachaga Chemillén, 10°11'S 75°34'W, 1225 m, *Monteagudo 4846, et al.* (MO not seen, UC); El Huampal, *van der Werff 17930A, et al.* (MO not seen, UC). Most likely, specimens identified as *M. piloselloides*, as defined by Tryon and Stolze (1993:152), are *M. acatallela*; the former is generally considered to be restricted to the Antilles, s Mexico, and Guatemala (e.g., Mickel & Smith 2004:398).

**Microgramma fosteri** B. León & H. Beltrán (Polypodiaceae)

–**PERU. Ucayali: Prov. Padre Abad:** Cordillera Azul del Biabo, cabeceras del Río Pisqui, 8°28'45.6"S, 75°43'5.21"W, 1220 m, *Beltrán 3643, et al.* (HOLOTYPE: USM) (León & Beltrán 2002).

**Micropolypodium caucanum** (Hieron.) A.R. Sm., vel aff. (Grammitidaceae)

**PERU. Pasco: Prov. Oxapampa:** road to Chacos, near top of ridge, 10°35'S, 75°06'W, 2400–2700 m, *van der Werff 18539, 18573, et al.* (MO not seen, UC); Chacos, 10°37'S, 75°17'W, 2500 m, *van der Werff 17697, et al.* (MO); Parque Nacional Yanachaga–Chemillén, Abra Yanachaga, 10°22'S, 75°27'W, 2900 m, *Vásquez 28455, et al.* (MO not seen, UC).

**Pecluma robusta** (Fée) M. Kessler & A.R. Sm. (Polypodiaceae)

**PERU. San Martín: Prov. Huallaga:** Dist. Saposoa, Arriba de Zarumilla, al NO del pueblo, 6°34'55"S, 77°23'06"W, 1350 m, *Quipuscoa S. 2096, et al.* (F not seen, UC) (Kessler & Smith 2005).

**Pleopeltis disjuncta** M. Kessler & A.R. Sm. (Polypodiaceae)

**PERU. Cuzco:** *Cook & Gilbert 1510* (US), as cited by Kessler and Smith (2005). See also Tryon and Stolze (1993:137), under *Polypodium furfuraceum* Schltdl. & Cham.

**Pleopeltis stolzei** A.R. Sm. (Polypodiaceae)

**PERU. Amazonas:** see Tryon and Stolze (1993:143), Kessler and Smith (2005). A synonym is *Pleopeltis macrocarpa* (Bory ex Willd.) Kaulf. var. *laciniata* Stolze.

**Polybotrya sessilisora** R.C. Moran (Dryopteridaceae)

**PERU. Loreto: Prov. Loreto:** 1.5 km E of road to Iquitos at Km 10 from Nauta, 4°28'S, 73°34'W, 100–150 m, *Tuomisto 4435, et al.* (AAU, AMAZ, TUR, U, USM); Río Tigre, 2 km E of the village Paraíso, 3°57'S, 74°17'W, *Tuomisto 13977, et al.* (AMAZ, USM, TUR); Río Tigre, 7 km NW of the village Paicheplaya, 3°00'S, 75°22'W, *Tuomisto 14560, et al.* (AMAZ, TUR, UC, USM). **Prov. Maynas:** Explorama/ACEER Reserve, 15–23 km E of mouth of Quebrada Sucusari at lower Napo, 3°15'S, 72°45'W, 100–200 m, *Tuomisto 7853, et al.* (AMAZ, KSP, TUR, UC); Upper Río Itaya, about 5 km SSE of the village Carbajal, 4°19'S, 73°35'W, 100–200 m, *Tuomisto 10120, et al.* (AMAZ, TUR, US).

**Polypodium appressum** Copel. (Polypodiaceae)

**PERU. Amazonas:** Izuchaca, 6°19'40"S, 77°31'05"W, *van der Werff 16936, et al.* (MO not seen, UC). **Junín: Prov. Tarma:** Agua Dulce, 1900 m, *Woytkowski 35479* (UC). The species was subsumed under the much more common *P. fraxinifolium* Jacq. by Tryon and Stolze (1993:132).

**Polypodium attenuatum** Humb. & Bonpl. ex Willd. (Polypodiaceae)

**PERU.** Tumbes Hwy to “El Caucho,” 400 m, *Coronado 230* (UC). Misidentified as *P. aureum* by Tryon, in 1957.

**Polypodium (Pleopeltis) fayorum** R.C. Moran & B. Øllg. (Polypodiaceae)

**PERU. Cajamarca: Prov. Santa Cruz:** 1800 m, *Sagastegui & Leiva 14092* (UC) (Moran & Øllgaard 1998:437).

**Polypodium funckii** Mett. (Polypodiaceae)

**PERU. Amazonas: Prov. Chachapoyas:** Chachapoyas–Mendoza, Km 52, *Lehnert 232* (UC). **Huánuco:** Carpish, 2800 m, *Coronado 70* (UC).

**Polypodium giganteum** Desv. (Polypodiaceae)

**PERU. Pasco: Prov. Oxapampa:** along road Chatarra-Cacazu, 10°32'S, 75°04'W, *van der Werff* 18272, *et al.* (MO not seen, UC).

**Polypodium gilliesii** C. Chr. (Polypodiaceae)

*Stork et al.* 9283 (UC), *Stork & Vargas* 9338 (UC), *Tryon & Tryon* 5418 (BM, UC), from Dept. Lima, *Sagastegui* 12956, *et al.* (UC), from Dept. La Libertad, as well as other specimens seen from Dept. Lima and Dept. Lambayeque from low elevations are this species, and not *P. lasiopus* Klotzsch, as cited Tryon and Stolze (1993:130). *Polypodium gilliesii* differs from *P. lasiopus*, where it was synonymized by both Hensen (1990) and Tryon and Stolze (1993), by having abaxially glabrous or nearly glabrous blades (lacking long, septate hairs) and generally longer, narrower, somewhat diverging, and darker rhizome scales (most prominently seen in Venezuelan specimens, the type locality); in addition, *P. lasiopus* grows at elevations above 1700 m in Peru, while *P. gilliesii* is recorded from 400–800(–1300) m, primarily on lomas.

**Polypodium intricatum** M. Kessler & A.R. Sm. (Polypodiaceae)

**PERU. Amazonas: Prov. Luya:** Dist. Camporredondo, Tullanya, Pascana, La Palma, 6°04'35"S, 78°21'45"W, 2710 m, *Vásquez* 22033, *et al.* (MO not seen, UC, USM). **Cajamarca:** *Campos & Nuñez* 4647 (UC). **San Martín: Prov. Rioja:** Pedro Ruíz–Moyobamba road, Km 390, 77°45'W, 05°50'S, 1800 m, *Smith* 4414 (MO not seen, UC, USM). See also Tryon and Stolze (1993:130), most specimens cited under *P. loriceum* L.

**Polypodium kunzeanum** C. Chr. (Polypodiaceae)

**PERU. Amazonas: Prov. Bongará:** Shillac, north by trail from Pedro Ruíz, 5°49'S, 78°01'W, 2300 m, *D. Smith* 4945, with *Vásquez* S. (MO not seen, UC). **Huánuco:** between Chinchao and Puente Durand, 2000 m, *Coronado* 85 (UC). Cited by Tryon and Stolze (1993) as a synonym of *P. sessilifolium* Desv., which we believe is not closely related. *Polypodium kunzeanum* has much less regular venation, sometimes with two included and themselves anastomosing veins within an areole, cordate-based, non-adnate pinnae (the basalmost with lobes overlapping the rachis), and non-clathrate rhizome scales. Both collections seen from Peru, neither cited by Tryon and Stolze (although *Smith* 4945 was annotated as *P. triseriale* vel aff.), are indicated as growing terrestrially.

**Polypodium loriceforme** Rosenst. (Polypodiaceae)

**PERU. Pasco: Prov. Oxapampa:** Dist. Chontabamba, carretera a la Suiza, 10°39'S, 75°27'W, 2130–2210 m, *Monteagudo* 4539, *et al.* (MO not seen, UC).

**Polypodium maritimum** Hieron. (Polypodiaceae)

**PERU. Cajamarca: Prov. San Ignacio:** San José de Lourdes, 4°59'22"S, 78°53'03"W, 2020 m, *Vásquez* 26336, *et al.* (MO not seen, UC); San José de Lourdes, camino al Cerro Picorana, 5°01'40"S, 78°54'30"W, 2100–2200 m, *Campos* 5507, *et al.* (MO not seen, UC).

**Polypodium polystichum** Link (Polypodiaceae)

**PERU. Huánuco: Prov. Huánuco:** Dist. Churubamba, Hacienda Mercedes, Cotirarda, 1560 m, *Mexia* 8216a (UC); Dist. Churubamba, Hacienda Exito, bank of Río Ysabel, 1100 m, *Mexia* 8163 (UC). **Pasco: Prov. Oxapampa:** Gran Pajonal, vicinity of Chequitavo, 10°45'S, 74°23'W, 1250 m, *D. Smith* 5161 (MO not seen, UC). Related to *P. fraxinifolium* Jacq. but with spreading, long-acuminate scales.

**Polypodium (Pleopeltis) tweedianum** Hook. (Polypodiaceae)

**PERU. Cajamarca:** Prov. Contumazá, entrada al Bosque Cachil, 2500 m, *Sagastegui* 15107, *et al.* (F not seen, UC). Related to *P. pycnocarpum* C. Chr., but with sharply bicolored rhizome scales with a sclerotic mid-stripe.

**Polystichum cochleatum** (Klotzsch) Hieron. (Dryopteridaceae)

**PERU.** See Tryon and Stolze (1991:54), under *P. pycnolepis* (Klotzsch) T. Moore; the name accepted by Tryon and Stolze for this species is, in our opinion, a synonym of their *P. orbiculatum* (Desv.) J. Rémy & Fée.

### **Polystichum rufum** M. Kessler & A.R. Sm. (Dryopteridaceae)

**PERU. San Martín: Prov. Lamas:** Dist. Lamas, below English Evangelical Mission, Lamas, *Belshaw* 3428 (UC, GH, US not seen). Specimen previously cited as *P. montevidense* (Spreng.) Rosenst. by Tryon and Stolze (1991:52).

### **Polystichum stuebelii** Hieron. (Dryopteridaceae)

**PERU. Cuzco: Prov. Urubamba:** Dist. Ollantaytambo, Huaytampo, 13°09'02"S, 72°30' 28"W, 2400 m, *Calatayud* 1109, *et al.* (MO not seen, UC). **Pasco: Prov. Oxapampa:** Dist. Oxapampa, Parque Nacional Yanachaga Chemillén, cercanías del Refugio el Cedro, 10°32'S, 75°21'W, 2420 m, *Monteagudo* 3814, *et al.* (MO not seen, UC). Probably included within *P. montevidense* (Spreng.) Hieron. by Tryon and Stolze (1991), but the name *P. stuebelii* not mentioned by them.

### **Polytaenium brasilianum** (Desv.) Benedict (Vittariaceae)

**PERU. Cuzco: Prov. Convención:** Tupitari, 2000 m, *Vargas C. 3440* (UC). This species was recognized as distinct by Tryon (1964), and the Vargas specimen cited as representative, but *Antrophyum brasilianum* (Desv.) C. Chr. was synonymized by Tryon and Stolze (1989b:87) under *A. cajenense* (Desv.) Spreng. [= *Polytaenium cajenense* (Desv.) Benedict]. The latter differs in having oblanceolate (vs. elliptic) blades and darkened (vs. stramineous) midribs abaxially towards the base of the blades.

### **Pteris consanguinea** Mett. ex Kuhn (Pteridaceae)

**PERU. Amazonas: Prov. Bagua:** 12 km E of La Peca, 1700 m, *Barbour* 2497 (MO not seen, UC). **Cajamarca: Prov. San Ignacio:** San José de Lourdes, 5°01'00"S, 78°57'00"W, 1500–1600 m, *Campos* 3890, *et al.* (MO not seen, UC); San José de Lourdes, 4°59'22"S, 78°53'03"W, 2020 m, *Vásquez* 26293, *et al.* (MO not seen, UC). **San Martín: Prov. Huallaga:** Dist. Saposoa, al sur de Añazco Pueblo, 2000 m, *Quipuscoa* S. 2328, *et al.* (F not seen, UC). Specimens placed here would key to *P. decurrens* C. Presl in Tryon and Stolze (1989b:77), but that species differs in a number of respects (see Prado & Windisch 2000).

### **Pteris muricatopedata** Arbeláez (Pteridaceae)

**PERU. Huánuco: Prov. Leoncio Prado:** Dto. Emileo Baldizan, Tingo María–Pucallpa La Divisora road, 1600 m, *Rimbach* 4993 (NY not seen). **Pasco: Prov. Oxapampa:** 4–5 km N of Mallampampa, 2400 m, *Smith & Canne* 5786 (NY not seen). Additional collection from Pasco cited by Arbeláez (1995:177).

### **Saccoloma membranaceum** Mickel (Dennstaedtiaceae, temporarily)

**PERU. Amazonas:** Dist. Bagua, Imaza, Quebrada Almendro, 5°18'S, 78°20'W, 400 m, *Vásquez* 26106, *et al.* (MO not seen, UC); Dist. Bagua, along road Imaza-Chiriaco, 5°03'24"S, 78°20'17"W, 400 m, *van der Werff* 16182, *et al.* (MO not seen, UC); Dist. Imaza, Tayu Mujaji, Comunidad de Wawas, 5°15'56"S, 78°22'07"W, 900 m, *Vásquez* 24644, *et al.* (MO not seen, UC). **Pasco: Prov. Oxapampa:** along road Chatarra-Cacazu, 10°32'S, 75°04'W, 890 m, *van der Werff* 18249 (MO not seen, UC).

### **Salpichlaena hookeriana** (Kuntze) Alston (Blechnaceae)

**PERU. Loreto: Prov. Maynas:** ca. 10 km SW of Iquitos at zoological park, *Moran* 3672 (UC); 7 km E of the oil palm plantation at Río Maniti, 3°38'S, 72°56'W, 100–150 m, *Tuomisto* 4771, *et al.* (AAU, AMAZ, TUR, U, USM); Explorama/ACEER reserve, 23–31 km E of the mouth of Quebrada Sucusari at lower Napo, 3°14'S, 72°39'W, 100–200 m, *Tuomisto* 7880, *et al.* (AMAZ, KSP, TUR, US); Upper Río Itaya, about 6 km SSE of the village Carbajal, 4°20'S, 73°35'W, 100–200 m, *Tuomisto* 10083, *et al.* (AMAZ, NY, TUR). **Prov. Mariscal Ramón Castilla:** 2–5 km SW from village of Puerto Izango, Río Yaguasyacu, 3°18'S, 72°01'W, 100–150 m, *Tuomisto* 11252, *et al.* (AMAZ, TUR, UC, USM). **Prov. Requena:** 2 km N from the biological station of Jenaro Herrera, 4°52'S, 73°39'W, 150–200 m, *Tuomisto* 12785, *et al.* (AMAZ, TUR,

(USM). **Prov. Loreto:** 5 km upriver from mouth of Río Pucacuro, 3°17'S, 74°59'W, *Tuomisto 14123*, et al. (AMAZ, TUR, USM). **Madre de Dios: Prov. Manu:** 4 km S from the village of Boca Colorado, 12°38'S, 70°25'W, 300 m, *Tuomisto 13588*, et al. (CUZ, TUR, USM). Subsumed by Tryon and Stolze (1993:70) under *S. volubile* (Kaulf.) J. Sm., but easily distinguished by the serrate sterile pinnule apices, strongly dimorphic, elaminate fertile pinnules ca. 1–2 mm wide and the buds in the axils of sterile pinnae. Tryon and Stolze also cited two specimens from Loreto (not seen) that are most likely this species.

**Schizaea fluminensis** Miers ex J. Sturm (Schizaeaceae)

**PERU. Loreto:** *Maas 6336*, et al. (AMAZ, USM); *Mejía s.n.* (USM). Cited by Vásquez (1997) for Loreto; see also León et al. (in press).

**Selaginella arthritica** Alston (Selaginellaceae)

**PERU. Huánuco: Prov. Leoncio Prado:** along road from Tingo Maria to Pucallpa, less than 1 km N of Sortilegio, 9°13'16"S, 75°50'15"W, 1310 m, *Croat 81744*, & Sizemore (MO not seen, UC, USM).

**Selaginella fragilis** A. Braun (Selaginellaceae)

**PERU. Loreto: Prov. Requena:** 140 m, *van der Werff 1010*, et al. (MO not seen, UC). Subsumed by Tryon and Stolze (1994:84) under *S. parkeri* (Hook. & Grev.) Spring, but this specimen, at least, seems specifically distinct, with much narrower penultimate divisions and long-flagelliform branch apices.

**Selaginella leucoloma** Alston ex Crabbe & Jermy (Selaginellaceae)

**PERU. Puno:** trail from Aricoma Pass to Santo Domingo, 5800 ft, *McCarroll 126*, pro parte (MICH). Cited by Valdespino (1995:366).

**Selaginella macilentata** Baker (Selaginellaceae)

**PERU. Junin:** Chanchamayo, 750 m, *Kunkel 347* (S). Cited by Valdespino (1995:322).

**Selaginella moritziana** Spring (Selaginellaceae)

**PERU. Pasco: Prov. Oxapampa:** San Alberto, 10°32'S, 75°21'W, 2400 m, *van der Werff 18597*, et al. (MO not seen, UC). *Selaginella pearcei* Baker, type from Peru, was subsumed under *S. novae-hollandiae* (Sw.) Spring by Tryon and Stolze (1994:77), but it is referred to *S. moritziana* var. *pearcei* (Baker) Valdespino, ined., by Valdespino (1995).

**Selaginella palmiformis** Alston ex Crabbe & Jermy (Selaginellaceae)

**PERU. Loreto: Prov. Mariscal Ramón Castilla:** ca. 3 km S of Huanta, 3°17'S, 72°51'W, 100–150 m, *Tuomisto 5231*, et al. (AAU, AMAZ, TUR, UC, USM). **Prov. Maynas:** surroundings of tourist lodge of Explorama Tours at Río Sucusari, 3°10'S, 72°52'W, 100–150 m, *Tuomisto 5818*, et al. (AAU, AMAZ, TUR, UC, USM); Maynas, trail from village of Panguana towards Río Maniti, ca. 8 km from Río Amazonas, 3°53'S, 73°05'W, 100–200 m, *Tuomisto 6101*, et al. (AMAZ, TUR, UC, US); Explorama/ACEER Reserve, 1.6–3.3 km E of mouth of Quebrada Sucusari at lower Napo, 3°15'S, 72°53'W, 100–200 m, *Tuomisto 7712*, et al. (AMAZ, KSP, TUR, UC, US). **Prov. Mariscal Ramón Castilla:** 3–4 km W from village of Puerto Izango, Río Yaguayacu, 3°18'S, 72°01'W, 100–150 m, *Tuomisto 11232*, et al. (AMAZ, TUR, UC, USM).

**Selaginella tomentosa** Spring (Selaginellaceae)

**PERU. Amazonas:** Río Cenepa, second ridge E of Huampami, 900–1000', *Berlin 633* (MO, UC). This species was synonymized under *S. geniculata* (C. Presl) Spring by Tryon and Stolze (1994), but *S. tomentosa* is easily distinguished by the decidedly short-hairy stems. It has been recognized by nearly all other pteridologists, e.g., by Alston et al. (1981:306).

**Sticherus aurantiacus** Østergaard & B. Øllg. (Gleicheniaceae)

**PERU. San Martín: [Prov. San Martín]:** Tarapoto, 750 m, *Williams 5972* (US); between Moyobamba and Huallaga, *Stübel 1103* (B).

**Sticherus boliviensis** (Maxon & C. V. Morton) J. Gonzales, comb. ined. (Gleicheniaceae)

PERU. **Puno: Prov. Sandia:** Limbani, 3200–3450 m, *Metcalf* 30539 (GH, MO, US).

**Sticherus decurrens** (Raddi) J. Gonzales, comb. ined. (Gleicheniaceae)

PERU. **Amazonas: Prov. Bagua:** between Aramango and Montenegro, 275 m, *López* 4163 (GH). **Cuzco:** Asunción, 1200 m, *Vargas* 7908 (GH); Quispicanchis, between Inambari and Quincemil, 500–650 m, *Vargas* C. 16487 (H). **Huánuco: Prov. Leoncio Prado:** Tingo Maria, 710 m, *Tryon & Tryon* 5263 (GH, USM). **JUNÍN: Prov. Chanchamayo:** La Merced, *Kunkel* 652 (GH). **Loreto: [Prov. Alto Amazonas]:** Pumayacu, between Balsapuerto and Moyobamba, 600–1200 m, *Krug* 3242 (MO, NY). **San Martín:** road Tarapoto-Yurimaguas, Km 12–15, 2250 m, *Hickok* 646 (GH). See Gonzales (2003).

**Sticherus ferrugineus** (Raddi) J. Gonzales, comb. ined. (Gleicheniaceae)

PERU. **Cuzco: Prov. Convención:** Río Apurímac, above Hacienda Luisiana, *Wade* 1333 (GH). **Loreto:** Río Marañón Valley, between mts. of Río Pastaya and Río Huallaga, San Lorenzo, 150 m, *Killip* 29219 (NY, US). See Gonzales (2003).

**Sticherus lanosus** (H. Christ) J. Gonzales, comb. ined. (Gleicheniaceae)

PERU. **Cuzco:** 5 km N of Aguas Calientes, 2000 m, *Solomon* 3172 (MO); Urubamba, Machu Pichu, 2000 m, *Saunders* 1232 (GH). **Huánuco:** Cerros del Sira, 9°25'S, 74°44'W, 1560 m, *Dudley* 13193 (GH). **Puno:** Carabaya, Ollachea-San Gabán road, Chacaneque, *Boeke* 3139 (MO, NY); Valle de Marcapata, 2000 m, *Herrera* 1592 (US). See Gonzales (2003).

**Sticherus lanuginosus** (Fée) Nakai (Gleicheniaceae)

Previously often called *S. penniger* (Mart.) Copel. [= *Gleichenia pennigera* (Mart.) T. Moore, in *Tryon & Stolze* 1989a], which is considered a synonym of *S. pruinosus* (Mart.) Ching, by Gonzales (2003).

**Sticherus melanoblastus** Østergaard & B. Øllg. (Gleicheniaceae)

PERU. **Pasco: Prov. Oxapampa:** La Suiza Nueva, 10°38'S, 75°27'W, 2240 m, *van der Werff* 17622, *et al.* (MO not seen, UC). Mentioned as possibly in Peru by Østergaard Anderson and Øllgaard (2001).

**Sticherus velatus** (Kunze) Copel. (Gleicheniaceae)

PERU. **Huánuco:** Pampayacu, Jul 1829, *Poeppig* s.n. (HOLOTYPE: W; the fragment of *Poeppig* s.n. at US annotated as isotype of *S. velatus* is in fact *S. lanosus*). **Cuzco:** La Convención, Valle Santa Ana, 1000–1500 m, *Herrera* 2637 (US); Cuchero, *Poeppig* 1117 (W). See Gonzales (2003). This species synonymized under *Gleichenia tomentosa* (Cav. ex Sw.) Spreng. by Tryon and Stolze (1989a:42).

**Tectaria microsora** A.R. Sm. (Dryopteridaceae)

PERU. **Amazonas: Prov. Bagua:** Distr. Imaza, Comunidad Aguaruna de Putuim, 4° 55'S, 78° 19'W, 680 m, *Rodríguez R.* 967, *et al.* (HOLOTYPE: HUT; ISOTYPES: MO not seen, UC, USM); Distr. Imaza, region del Marañón, comunidad de Yamayakat, Quebrada Kusu–Chapi, Río Marañón, 04° 55'S, 78° 19'W, 550 m, *Vásquez* 19644 (MO, UC); same locality, 600 m, *Rodríguez R.* 288 (MO, UC, USM); Dist. Bagua, along road from Chiriaco towards Bagua, 05° 16'57"S, 78° 23', 10°W, 800 m, *van der Werff* 16260 (MO, UC). **Prov. Condorcanqui:** Distr. El Cenepa, región Nororiental del Marañón, Río Cenepa, comunidad Tutino, 04° 33'S, 78° 10'W, 350 m, *Vásquez* 18404, *et al.* (MO, UC); see Smith (2005b).

**Tectaria pilosa** (Fée) R.C. Moran (Dryopteridaceae)

PERU. **Amazonas: Prov. Bagua:** Dto. Imaza, Comunidad de Yamayakat, 05°03'24"S, 78°20'17"W, 450 m, *Rojas* 567, *et al.* (MO not seen, UC). **Prov. Condorcanqui:** Dto. El Cenepa, Comunidad Aguaruna Pagki–Suwa, Río Cenepa, quebrada Tayo, 04°31'35"S, 78°10'34"W, 289 m, *Vásquez* 22151, *et al.* (MO not seen, UC, USM). **Ayacucho: Prov. La Mar:** between Santa Rosa and Hacienda Luisiana, 640 m, *Wasshausen & Encarnación* 630 (US not seen, USM). **Loreto: [Prov. Alto Amazonas]:** above Pongo de

Manseriche, bank of Río Santiago, 200 m, *Mexia* 6354 (UC). **Prov. Maynas:** Explor Napo Camp at Río Sucusari, 03°20'S, 72°55'W, 120 m, *van der Werff* 12926, *et al.* (MO not seen, UC). Treated by Tryon and Stolze (1991:25) as a variant of *T. incisa*, but we think *T. pilosa* is adequately distinct, at species rank. They also cited specimens from Depts. Cajamarca, Huánuco, Madre de Dios, and Pasco that may be this species.

### **Tectaria pubens** R.C. Moran (Dryopteridaceae)

**PERU. Loreto: Prov. Maynas:** ca. 50 km downriver from Iquitos, Explorama Lodge, ca. 120 m, *Moran* 3647 (HOLOTYPE: MO; ISOTYPE: UC); additional collections from the same general locality cited by Moran (1992:138).

### **Terpsichore chrysleri** (Copel.) A.R. Sm. (Grammitidaceae)

**PERU. Amazonas: [Prov. Bongara]:** Laguna de Pomacochas, 2550 m, *van der Werff* 15809, *et al.* (MO not seen, UC). **Cajamarca: Prov. San Ignacio:** Tabaconas, El Pajonal, camino al Páramo y al Cerro Coyona, 5°17'30"S, 79°16'02"W, 2250 m, *Campos* 5728, *et al.* (MO not seen, UC); San José de Lourdes, 5°00'S, 78°54'W, 1800 m, *Vásquez* 26157, *et al.* (MO not seen, UC). Subsumed under *Grammitis asplenifolia* (L.) Proctor by Tryon and Stolze (1993:104), but easily distinguished; some (probably most) of the specimens cited by them as *G. asplenifolia* are, in fact, *Terpsichore chrysleri*, specifically *van der Werff* 8608 (UC) and *Woytkowski* 35485 (UC), but *Terpsichore asplenifolia* (L.) A.R. Sm. s. str. also occurs in Peru.

### **Terpsichore mollissima** (Fée) A.R. Sm. (Grammitidaceae)

**PERU. Pasco: Prov. Oxapampa:** Parque Nacional Yanachaga, El Huampal, 10°11'S, 75°34'W, 1200 m, *van der Werff* 17846, *et al.* (MO not seen, UC). **San Martín: Prov. Rioja:** Moyobamba–Pedro Ruíz, Km 383, 5°50'S, 77°30'W, ca. 2000 m, *Lehnert* 221 (UC, USM).

### **Terpsichore subtilis** (Kunze ex Klotzsch) A.R. Sm. (Grammitidaceae)

**PERU. Amazonas:** near border with San Martín, 5°41'S 77°48'W, 2000 m, *van der Werff* 16675, *et al.* (MO).

### **Terpsichore youngii** B. León & A.R. Sm. (Grammitidaceae)

**PERU. Cuzco:** near San Lorenzo, 2300–2500 m, *León & Young* 4487 (HOLOTYPE: USM; ISOTYPE: UC) (León & Smith 2003:84).

### **Thelypteris cinerea** (Sodirol) A.R. Sm. (Thelypteridaceae)

**PERU. Amazonas:** road Chachapoyas–Mendoza, a little past Molinopampa, 6°14'11"S, 77°35'49"W, 2400 m, *van der Werff* 15095, *et al.* (MO not seen, UC).

### **Thelypteris steyermarkii** A.R. Sm. (Thelypteridaceae)

**PERU. Cuzco: Prov. Paucartambo:** Kosñipata Valley, Km 150, San Pedro, Río Unión and Río Kosñipata junction, 1800 m, in sandy beach-river, *Núñez* 11958 (MO).

### **Trichomanes accedens** Hook. (Hymenophyllaceae)

**PERU. Amazonas:** Quebrado El Almendro, 5°14'40"S, 78°21'24"W, 430 m, *van der Werff* 14560, *et al.* (MO not seen, UC). **Loreto: Prov. Requena:** 140 m, *van der Werff* 10112, *et al.* (MO not seen, UC). **Prov. Maynas:** Mishana, along Río Nanay, 140 m, *van der Werff* 10193 (MO not seen, UC); Experimental station of UNAP at Puerto Almendras along Río Nanay, 20 km air distance from Iquitos, 3°51'S, 73°22'W, 100–200 m, *Tuomisto* 6429, with Ruokolainen (TUR, US, USM). Discussed and considered probably synonymous with *T. cristatum* Kaulf. by Tryon and Stolze (1989a:98).

### **Trichomanes dactylites** Sodirol (Hymenophyllaceae)

**PERU. Cajamarca: Prov. San Ignacio:** San José de Lourdes, laderas del Cerro Picorana, 4°58'00"S, 78°53'01"W, 2500–2540 m, *Campos* 5933, *et al.* (MO not seen, UC).

**Trichomanes pilosum** Raddi (Hymenophyllaceae)

**PERU. Amazonas: Prov. Bagua:** Dist. Imaza, Quebrada Almendra, 5°14'40"S, 78°21'34"W, 400 m, *van der Werff 16124, et al.* (MO not seen, UC).

**Trichomanes spruceanum** Hook. (Hymenophyllaceae)

**PERU. Loreto: Prov. Maynas:** Dist. Iquitos, Puerto Almendras, 130 m, on white sand, *van der Werff 9845, et al.* (MO not seen, UC).

## DELETIONS FROM THE FLORA

**Elaphoglossum peruvianum** (L. D. Gómez) Mickel (Dryopteridaceae)

Treated by Mickel (in Tryon & Stolze 1991:170, under *Peltapteris*), but now regarded as a heterotypic synonym of *Elaphoglossum moorei* (E. Britton) H. Christ, according to Moran and Mickel (unpublished ms.); we also subsume *Peltapteris* in *Elaphoglossum*.

**Megalastrum yungense** (H. Christ & Rosenst.) A.R. Sm. & R.C. Moran (Dryopteridaceae)

The specimen of *M. yungense* cited in Fl. Peru (Tryon & Stolze 1991:14), *D. Smith 4424* (MO not seen, NY, UC), is actually *M. biseriale* (Baker) A.R. Sm. & R.C. Moran, so *M. yungense* is not yet known from Peru.

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