



<https://doi.org/10.11646/phytotaxa.362.3.1>

The fern genera *Lomaria*, *Lomariocycas*, and *Parablechnum* (Blechnaceae, Polypodiopsida) in southern and southeastern Brazil

VINÍCIUS ANTONIO DE OLIVEIRA DITTRICH^{1,2}, ALEXANDRE SALINO³, REINALDO MONTEIRO⁴ & ANDRÉ LUÍS DE GASPER⁵

¹Part of the senior author's doctoral dissertation, carried out at the Curso de pós-graduação em Biologia Vegetal, Universidade Estadual Paulista "Júlio de Mesquita Filho", campus de Rio Claro, SP, Brazil.

²Departamento de Botânica, Instituto de Ciências Biológicas, Universidade Federal de Juiz de Fora, Rua José Lourenço Kelmer, s/n - Campus Universitário, Bairro São Pedro, 36036-900, Juiz de Fora, MG, Brazil. E-mail: vinarc@gmail.com

³Departamento de Botânica, Instituto de Ciências Biológicas, Universidade Federal de Minas Gerais, Caixa Postal 486, 30123-970, Belo Horizonte, MG, Brazil. E-mail: salinobh@gmail.com

⁴Departamento de Botânica, Instituto de Biociências, Universidade Estadual Paulista "Júlio de Mesquita Filho", Av. 24A, 1515, Bela Vista, Caixa Postal 199, 13506-900, Rio Claro, SP, Brazil. E-mail: monteiro.reinaldo@gmail.com

⁵Departamento de Ciências Naturais, Universidade Regional de Blumenau, Rua Antônio da Veiga, 140, Itoupava Seca, 89030-903, Blumenau, SC, Brazil. E-mail: algasper@furb.br

Abstract

We conducted a taxonomic study of the fern genera *Lomaria*, *Lomariocycas*, and *Parablechnum* (Blechnaceae, Polypodiopsida) in southern and southeastern Brazil (Minas Gerais, Espírito Santo, Rio de Janeiro, São Paulo, Paraná, Santa Catarina, and Rio Grande do Sul). We recognized six species (one of *Lomaria*, one of *Lomariocycas*, and four of *Parablechnum*), three of which have a broad neotropical distribution and three that are endemic to Brazil. Four new records are reported for four species in different regions or states from Brazil, and a new record for Guyana. Taxonomic descriptions, synonymies, lectotypifications, a neotypification (*Parablechnum usterianum*), geographical distributions, and comments are given for all species occurring in the study region, as well as a key for the identification of the Brazilian species of *Parablechnum*.

Key words: Aspleniineae, eupolypods II, ferns, pteridophytes, taxonomy

Resumo

Um estudo taxonômico dos gêneros *Lomaria*, *Lomariocycas* e *Parablechnum* (Blechnaceae, Polypodiopsida) foi realizado nas regiões Sul e Sudeste do Brasil (Minas Gerais, Espírito Santo, Rio de Janeiro, São Paulo, Paraná, Santa Catarina e Rio Grande do Sul), sendo aceitas seis espécies (uma de *Lomaria*, uma de *Lomariocycas* e quatro de *Parablechnum*). Três espécies têm ampla distribuição nos neotrópicos e três são endêmicas do Brasil. Quatro novos registros são apresentados para quatro espécies em diferentes regiões ou estados do país e um novo registro é apresentado para a Guiana. São fornecidas descrições para as espécies tratadas na área de estudo, bem como sinonímia, lectotipificações, uma neotipificação (*Parablechnum usterianum*), comentários e distribuição geográfica para cada espécie, assim como uma chave para determinação das espécies de *Parablechnum*.

Palavras-chave: Aspleniineae, eupolipoides II, samambaias, pteridófitas, taxonomia

Introduction

In two previous papers (Dittrich *et al.* 2015, 2017), the blechnoid genera *Austroblechnum*, *Blechnum*, *Cranfillia*, *Lomaridium*, *Neoblechnum*, and *Telmatoblechnum* from southern and southeastern Brazil were taxonomically treated. In this paper (the last in the series), the remaining genera except *Salpichlaena* (not the focus of the study) are treated. Information on taxonomic studies of the family in the country and its taxonomic history are presented in the aforementioned papers.

Material & Methods

This study is based on vouchers from Brazilian and herbaria in other countries plus observations of the plants in nature. Specimens from the following herbaria were analyzed (abbreviations according to Thiers 2018): B, BHCB, BM, BOTU, CESJ, ESA, FI, FURB, GFJP, HB, HBR, HRCB, HUFU, ICN, K, MBM, MBML, OUPR, P, PACA, PMSP, R, RB, S, SJRP, SP, SPF, UEC, and UPCB. Furthermore, we consulted the virtual herbaria INCT-HVFF (2018) and Re flora (2018). Descriptions of the species are based exclusively on vouchers and are thus representative primarily for Brazil. The list of synonyms is incomplete, being restricted mainly to Brazilian types. Nomenclature of leaf parts follows Tryon (1960) while that of leaf, pinnae, and scale contour is according to Systematics Association Committee for Descriptive Terminology (1962), and that of the shape of apices and pinna margins follows Radford *et al.* (1974). Specific terminology for ferns, except for the frond parts, follows Lellinger (2002). Additionally, Stearn (2004) was followed for shapes not present in the studies previously cited above. In the section “Distribution and habitat”, we have used as a basis materials examined in herbaria from Brazil and Europe, besides the following works: Sehnem (1968), Tryon & Stolze (1993), Moran (1995), Smith (1995), Kazmirczak (1999), Dittrich *et al.* (2007), and Smith & Kessler (2018).

Taxonomic treatment

For a thorough description of the family, see Gasper *et al.* (2016). For a key to the Brazilian genera, see Dittrich *et al.* (2017). Here we follow the generic classification proposed by Gasper *et al.* (2016), adopted by PPG I (2016).

1. *Lomaria* Willdenow (1809: 160).—Lectotype (designated by Smith (1875: 303)): *Lomaria nuda* (Labillardière 1806: 96) Willdenow (1810: 289)

For a complete description of the genus, see Gasper *et al.* (2016).

Only one species in the study region, *Lomaria spannagelii*.

Lomaria spannagelii (Rosenst.) Gasper & V.A.O.Dittrich in Gasper *et al.* (2016: 211). *Blechnum spannagelii* Rosenstock (1907: 93).

Type:—BRAZIL. Santa Catarina: Lages, 1906, *Spannagel 86* [Rosenstock, *Filices austrobrasilienses*, no. 238] (holotype S05-9983, isotypes B 20 0033381, HB, NY00814248 (photo), NY00149785 (photo), P00627635, P00627636, P00627637, P00627640, P00627642, US00067446 (photo), W19090010308 (photo)). Fig. 1A–E.

Blechnum spannagelii f. *pectinata* Rosenst (1907: 94). Type:—BRAZIL. Santa Catarina, Lages, 1906, *Spannagel 86.1* [Rosenstock, *Filices austrobrasilienses*, no. 238] (holotype S05-9983, isotypes B 20 0033382, HBR0054989, NY00149786 (photo), P00627635, P00627636, P00627640, UC441972 (photo), US00067446 (photo), W19090010308 (photo)).

Plants terrestrial; *rhizomes* erect, massive, forming a caudex, stoloniferous, the scales proximally golden, distally nigrescent with pale margins and some golden with a dark central stripe, linear, 13–23 × 1.5–1.9 mm (at center), the golden scales generally larger, margins entire; *fronds* dimorphic, the *fertile* ones a bit longer and more erect than the sterile, 66–153 cm long, the *sterile* 57–126 cm long; *stipes* stramineous, variously longer or shorter in both types of fronds, of *sterile fronds* 5.2–29 cm long, 4–11 mm diam., scaly throughout, the scales similar to those on rhizomes, except for some smaller (ca. 4.5 mm long), lanceolate scales, of *fertile fronds* 11.6–27 cm long, 3.7–7.9 mm diam.; *sterile blades* 52–112 × 17–33 cm, chartaceous, mainly pinnate, distally pinnatisect, with linear and amorphous scales abaxially on costae and veins, discolorous when dried, oblanceolate, gradually reduced to apices and bases, proximally with vestigial pinnae; *fertile blades* 59–101 × 7.5–10.3 cm, pinnate, linear to narrowly oblanceolate, gradually reduced proximally to vestigial, sterile pinnae; *rachises* glabrous on both sides or sparsely covered with short, pluricellular hairs abaxially; *sterile pinnae* 39–60 pairs excluding the vestigial ones, 8.6–17 × 0.9–1.5 cm, mostly ascending, the basal ones patent to slightly reflexed, completely adnate, distally sursumcurrent, linear, margins entire, plane, apices obtuse, acute, or acuminate, *fertile pinnae* ca. 15 pairs, 2.3–5.4 mm × 1.3–1.5 mm, linear to more or less rounded (short and with spreading sporangia), strongly contracted; *veins* free, 1 × –2 × forked, rarely simple (and only distally), with slightly clavate ends, terminating on the margins.

Distribution and habitat:—Brazil (Minas Gerais, Espírito Santo [first record], Rio de Janeiro, São Paulo, Paraná, Santa Catarina, and Rio Grande do Sul). A Brazilian endemic restricted to cooler areas of the Atlantic Forest, growing from 400 m to 1,850 m (400–1,000 m in the south, 1,000–1,850 m in the southeast). Individuals of the species grow

in two types of vegetation (tropical rainforests and *Araucaria* forests), and are very common along streams especially in *Araucaria* forests, as well as in areas with flooded soils. Plants can be found also on degraded areas such as along trails, roads, and forest margins. The species is common in high elevation areas and, accordingly, is not threatened.

Comments:—Among the species of the study region, only two can be confused with *L. spannagelii*, namely *Neoblechnum brasiliense* (Desvoux 1811: 30) Gasper & V.A.O. Dittrich in Gasper *et al.* (2016: 214) and *Lomariocycas schomburgkii* (Klotzsch) Gasper & A.R. Sm. To differentiate it from *N. brasiliense*, see Dittrich *et al.* (2017). From *L. schomburgkii*, it can be distinguished by many features, among them the rhizome and stipe scales (golden at the base, nigrescent distally in *L. spannagelii*, all tan with darker center in *L. schomburgkii*), frond texture (chartaceous in *L. spannagelii*, coriaceous in *L. schomburgkii*), form of distal pinnae (the acroscopic side fully adnate and decurrent on rachis in *L. spannagelii*, the acroscopic side free from the rachis or, when adnate, not decurrent in *L. schomburgkii*), grooves on rachises and stipes (deep in *L. spannagelii*, shallow in *L. schomburgkii*), color of the fronds (strongly discoloured in *L. spannagelii*, not or weakly discoloured in *L. schomburgkii*), and venation (veins clearly visible in *L. spannagelii*, obscure in *L. schomburgkii*).

Additional specimens examined:—BRAZIL. Minas Gerais: Aiuruoca, Rio Aiuruoca, 13 March 1989, *Salino 657* (UEC); Alto Caparaó, Parque Nacional do Caparaó, caminho para Macieira, 29 April 1989, *Salino et al. s.n.* (UEC 57666); ibidem, Macieira, 29 April 1989, *Krieger et al. s.n.* (CESJ 24220); Baependi, Parque Estadual da Serra do Papagaio, estrada próximo a ponte da sede, 22°08'46.1"S, 44°44'23"W, 1647 m, 23 July 2010, *Souza et al. 948* (CESJ); Camanducaia, Sítio São João do Canta Galo, 22°42'50"S, 45°56'12"W, 1800–1900 m, 21 June 2000, *Salino 5634* (BHCB, HRCB); idem, Patrimônio São Domingos, estrada para o Cantagalo, 22°42'41"S, 45°55'50"W, ca. 1750 m, 29 March 2001, *Salino 6397 & Melo* (BHCB, HRCB); Delfim Moreira, Fazenda da Onça (área militar), trilha saindo da sede da Fazenda para cachoeira, 22°36'34"S, 45°20'51"W, 1725 m, 15 March 2011, *Giacomin et al. 1348* (CESJ); Marmelópolis, picada para o pico dos Marins, entre 22°30' e 22°31'S e 45°08'30" e 45°09'30"W, ca. 1400 m, 03 April 2002, *Dittrich 1143* (HRCB); Passa Quatro, Sertão dos Martins, 1400 m, 10 May 1948, *Brade 19062 & Silva Araújo* (K, RB); Poços de Caldas, rodovia BR-146 (MG-28), Poços de Caldas-Andradas, ca. 9 km da cidade, ca. 46°34'W, 21°47'S, ca. 1250 m, 16 June 1995, *Pietrobom-Silva 1975* (SJRJ); Sapucaí Mirim, Propriedade da Klabin, 19 August 2001, *Dittrich et al. 932* (HRCB). Unknown municipality: Christina, August 1912, *Luederwaldt 1922* (SP). Espírito Santo: Ibitirama, Parque Nacional do Caparaó, base da Pedra Roxa, ao longo do rio Pedra Roxa, 20°23'30"S, 41°44'17.6"W, 1140 m, 13 September 2008, *Salino et al. 13893* (BHCB). Rio de Janeiro: Itatiaia, Trilha entre os Abrigos Macieira e Abrigo Massenas, Parque Nacional do Itatiaia, 1800, 10 November 1993, *Sylvestre 923* (RB); Petrópolis, Correias, Vale Bonfim, 1200 m, 15 January 1976, *Barcia 899* (R). Unknown municipality: September 1876, *Glaziou 9942* (K); near Rio, November 1879, *Glaziou 11698* (K). São Paulo: Bananal, estrada de acesso à Estação Ecológica de Bananal, ca. 1000 m, 16 September 2001, *Dittrich et al. 969* (HRCB); Campos do Jordão, Parque Estadual de Campos do Jordão, próximo a entrada da trilha do rio Sapucaí, 07 June 1992, *Salino s.n.* (BHCB 29690, UEC 90239); ibidem, trilha do Rio Sapucaí, 22 March 1996, *Prado 825 & Marcelli* (SP); ibidem, trilha da Cachoeira da Celestina, 22°42'S, 45°28'W, 27 November 2001, *Dittrich 1071 & Mantovani* (HRCB). Unknown municipality: Bocaina, April 1894, *Loefgren s.n.* (SP 21688, SPF 94520). Paraná: Colombo, 01 December 1972, *Dombrowski 4442 & Kuniyoshi* (MBM, PACA); Lapa, Johanisdorf, 12 December 1972, *Hatschbach 30981* (MBM); Palmeira, Fazenda Santa Rita, 28 January 1981, *Dombrowski 12437 & Scherer* (MBM); Pirai do Sul, Tijuco Preto, 27 March 1974, *Kummrow 430* (MBM, PACA). Unknown municipality: Curitiba-Estrada Federal Rio Negro, 12 km do centro da cidade, 27 December 1950, *Tessmann s.n.* (MBM 4717). Santa Catarina: Alfredo Wagner, 08 January 1982, *Hornung s.n.* (ICN 51831); Anitápolis, 28 December 1951, *Reitz 4534* (HB, HBR, PACA); Biguaçu, 400 m, 16 January 1945, *Reitz 1372* (K); Lages, 950 m, 10 January 1951, *Sehnem 5533* (PACA); Nova Trento, Pinheiral, 700 m, 13 January 1948, *Sehnem 3103* (MBM, PACA); São Joaquim, Rodovia de acesso a cidade, 28°21'39"S, 49°59'16"W, 9 April 2010, *Salino et al. 14788* (FURB); Unknown municipality, 04 April 1905, *Spannagel s.n.* (SP 21719, SPF 94510). Rio Grande do Sul: Bom Jesus, Passo da Guarda, ad flumen Uruguay supremum, 900 m, 17/II/1952, *Sehnem 5866* (PACA); ibidem, 21 February 1952, *Sehnem 5828* (PACA); idem, Potreirinhos, 15/I/1963, *Camargo 3848* (PACA); idem, Fazenda Caraúna, s.d., *Dutra 277* (ICN, R); Cambará do Sul, Parque Nacional dos Aparados da Serra, 22 June 1980, *Waechter 1619* (ICN); idem, Faxinal, March 1986, *Sobral et al. 5033* (ICN); Caxias do Sul, Vale do Rio Joá, Vila Oliva, 400 m, 17 January 1947, *Sehnem 2541* (PACA); Esmeralda, 11 December 1982, *Bueno s.n.* (ICN 88272); Garibaldi, arredores da cidade, 29 July 1962, *Camargo 3728* (PACA); São Francisco de Paula, 900 m, 19/XII/1949, *Sehnem 4123* (PACA); Vacaria, Passo do Socorro, ad flumen Uruguay superius, 800 m, 28/I/1951, *Sehnem 5745* (PACA). Unknown municipality: Arroio das Capoeiras, Aparados da Serra, 1000 m, 16 January 1942, *Sehnem 869* (PACA); 15km além Tainhas, direção de Taimbézinho, 07 February 1966, *Sick B-861* (K); Itaimbézinho, 06 September 1982, *Bueno s.n.* (ICN 88310).

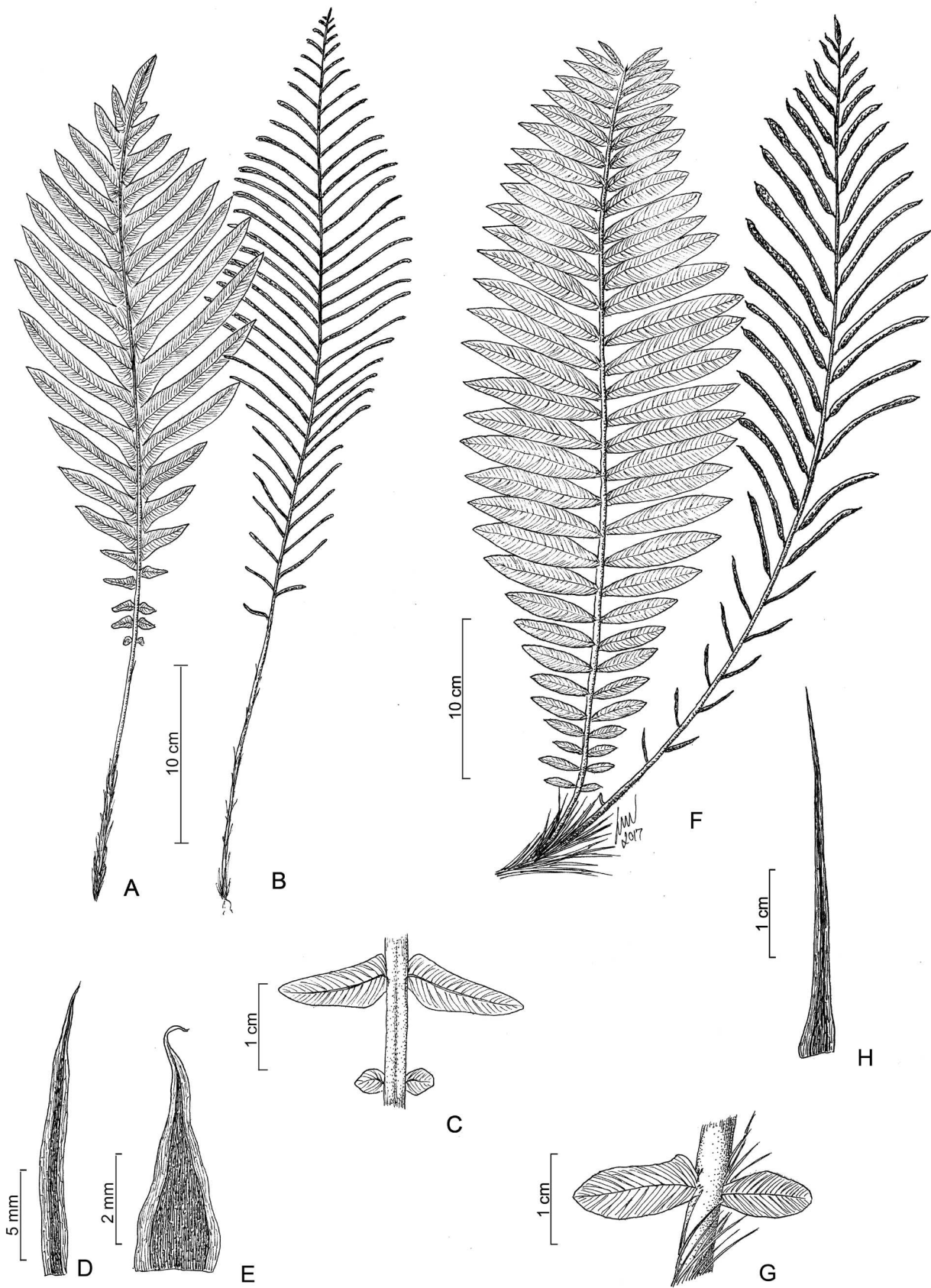


FIGURE 1. A–E. *Lomaria spannagelii*. A. Sterile frond. B. Fertile frond. C. Base of sterile blade showing reduced pinnae. D–E. Stipe scales. F–H. *Lomariocycas schomburgkii*. F. Fronds (sterile and fertile). G. Pair of reduced pinnae at the base of sterile frond. H. Stipe scale. (A–E from Krieger *et al. s.n.*, CESJ 24205; F–H from Silva *et al. 8253*, CESJ).

2. *Lomariocycas* (Smith 1875: 305) Gasper & A.R. Sm. in Gasper *et al.* (2016: 212).—Type: *Lomaria boryana* (Sw.) Willdenow (1810: 292), based on *Onoclea boryana* Swartz (1806: 111). = [*Blechnum boryanaum* (Sw.) Schlechtendal (1827: 35)] = *Lomariocycas tabularis* (Thunberg 1800: 171) Gasper & A.R.Sm. in Gasper *et al.* (2016: 213)

For a complete description of the genus, see Gasper *et al.* (2016).

Only one species in the study region, *Lomariocycas schomburgkii*.

Lomariocycas schomburgkii (Klotzsch) Gasper & A.R.Sm. in Gasper *et al.* (2016: 213).

Lomaria schomburgkii Klotzsch (1847: 346). *Blechnum schomburgkii* (Klotzsch) Christensen (1905: 159). Type:—GUYANA. without date, *R.H. Schomburgk 1162* (holotype B 20 0033237, B 20 0033238, B 20 0033239, B 20 0033240, isotypes K000633411, K000633412). Fig. 1F–H.

Blechnum obtusifolium Ettingshausen (1864: 59). *Lomaria obtusifolia* Presl (1836: 143), nom. nud. Type:—BRAZIL. without date, *F. Sellow et al. 101* [Herb. Bras. Reg. Berol. 101] (holotype B 20 0031991 (photo), isotype BM000769820).

Lomaria imperialis Fée & Glaz. in Fée (1869: 21). *Blechnum imperiale* (Fée & Glaz.) Christ in Schwacke (1900: 27). *Struthiopteris imperialis* (Fée & Glaz.) Ching (1940: 243) Type:—BRAZIL. Rio de Janeiro, Serra dos Órgãos, without date, *A.F.M. Glaziou 2801* (holotype P00627649).

Blechnum exiguum Dutra (1940: 36). Type:—BRAZIL. Rio Grande do Sul, São Leopoldo, Morro do Sapucaia, without date, *J. Dutra 320* (holotype ICN0014320 (photo), isotype R000030093).

Blechnum bradei Markgraf (1940: 214). Type:—BRAZIL. Minas Gerais, Serra da Mutuca bei Belo Horizonte, 1400 m, 16 November 1938, *F. Markgraf & A.C. Brade 3555* (holotype B 20 0030521, B 20 0030522, isotype HB).

Plants terrestrial; *rhizomes* erect, massive, forming caudex, at the apex with linear, curved, tan with darker center scales, 23–45 × 1.5–1.7 mm at the base, × 0.6–1 mm in the middle, margins entire; *fronds* dimorphic, fertile longer than sterile ones, rarely shorter, in a more erect position, sterile 40–64 cm long, fertile 57–93 cm long; *stipes of sterile fronds* 4.3–7.5 cm long, 2.8–3 mm diam., stramineous to atropurpleous, with scales similar to those on the rhizomes proximally; *of fertile fronds* 5.7–19 cm long; *sterile blades* 36–57 × 11–16 cm, subcoriaceous to coriaceous, entirely pinnate or pinnatisect distally, oblanceolate, both sides bearing scales on the costae, veins and laminar tissue between veins or glabrous adaxially, gradually reduced at the apices, gradually or relatively abruptly reduced at the bases, at the apices to a subconform pinna, at the base to auricles or small pinnae; *fertile blades* 49–88 × 8–8.7 cm, pinnate, narrowly oblanceolate, relatively abruptly reduced towards the apices and bases; *rachises* scaly, scales similar to those on the stipes proximally, narrowly triangular and sublinear towards the apex, 3.2–6.4 × 0.4–0.6 mm at the base, castaneous or whitish, concolorous or atrocostate, margins predominantly entire, with long projections; *sterile pinnae* 21–36 pairs excluding the auricles, 6.4–8.7 × 1–1.1 cm, deflexed (basal ones), patent or slightly to strongly ascending, sessile or rarely petiolulate (basal and medial ones) to gradually adnate towards the apices, especially on the basiscopic side, margins plane or revolute to strongly revolute, linear-elliptical to sublinear, the apices obtuse, acute or acuminate, on the abaxial costae and on the laminae between and on the veins with lax, light brown, concolorous scales with long marginal projections and a very elongate hairlike helicoid apex; *fertile pinnae* 37–48 pairs, 75–113 × 1.7–6 mm, linear, strongly contracted, with no green tissue beyond the indusia; *veins* free, unbranched, thickened at the apex, terminating before the margin, frequently difficult to perceive.

Distribution and habitat:—Brazil (Amazonas, Bahia, Goiás, Minas Gerais, Espírito Santo, Rio de Janeiro, São Paulo, Paraná, Santa Catarina, and Rio Grande do Sul), furthermore Costa Rica, Panama, Colombia, Venezuela, Guyana, Ecuador, Peru, and Bolivia. Not endangered in Brazil, where it is a common species, especially at higher elevations. In the study region, plants of this species grow mainly in open areas, often with marshy soil, rarely inside forests, between 0 m and 2,350 m, in the realm of the Atlantic forest (in areas with predominance of *Araucaria* forests, tropical rainforests, seasonal deciduous forests and *campos de altitude* or “high altitude grasslands”).

Comments:— The closest species to *L. schomburgkii* in the study region is *Lomaria spannagelii* (Rosenst.) Gasper & V.A.O. Dittrich. To differentiate them, see discussion under the latter. *Lomariocycas schomburgkii* has significant morphological variation throughout its distribution: fertile fronds may be longer or rarely shorter than the sterile ones, central pinnae may be patent to strongly ascendant and the base of the blades may be gradual to relatively abruptly reduced at the base. The Brazilian materials called *Blechnum bradei*, *B. obtusifolium*, *B. imperiale*, and *B. exiguum* (and their respective type specimens) fit in with this variation of the concept used here for *Lomariocycas schomburgkii*, and thus are considered as synonyms. Smith & Kessler (2018) did not mention the species for Brazil, treating this country’s materials as *L. obtusifolia*. However, one of the characteristics that differentiate the species according to the authors is their degree of pinnae adnation: *L. obtusifolia* with pinnae totally adnate to the rachis, *L. schomburgkii* with sessile pinnae. In Brazil there are specimens of both types, and there does not seem to exist a geographic or further morphological pattern that allows separation of specimens, based on this feature, between both

species. Thus, we prefer to maintain the oldest name, the most similar to the materials from the southeastern region of the country, and treat *L. obtusifolia* as a synonym for *L. schomburgkii*. Additional studies of the genus, preferably covering its entire distribution, are necessary to separate possibly distinct species in this complex.

Additional specimens examined:—BRAZIL. Minas Gerais: Alto Caparaó, Parque Nacional do Caparaó, próximo ao Terreirão, 2350 m, *Krieger et al. s.n.* (CESJ 24175, HRCB 39041); Camanducaia, Bairro do Mato, Sítio do Mato, mata da nascente do rio Camanducaia, 22°43'19"S, 45°35'45"W, ca. 1950 m, 30 March 2001, *Salino 6416 & Melo* (BHCB); Carangola, Fazenda Neblina, 20°43'S, 42°29'W, 1290 m, 10 July 1990, *Leoni 1168* (GFPJ); Catas Altas, Parque Natural do Caraça, Bocaina, 07 October 2000, *Salino 5753* (BHCB, HRCB); ibidem, 08 March 2002, *Salino 7935* (BHCB, HRCB); Marmelópolis, estrada para o pico dos Marins, entre 22°30'00" e 22°30'30" S e 45°08'15" e 45°08'45" W, ca. 1500 m, 03 April 2002, *Dittrich 1131* (HRCB); Moeda, Serra da Moeda, próximo a estrada que liga Moeda a BR-040, 18 October 1997, *Salino 3607* (HRCB); Ouro Preto, Morro de São Sebastião, *s.d.*, *Badini 4810* (OUPR); Poços de Caldas, Serra dos Poços, rodovia Poços de Caldas-Andrada, ca. 4 km de Poços de Caldas, 16 June 1995, *Pietrobon-Silva 1972* (MBM, SJRP); Santana do Riacho, Serra do Cipó, Rodovia MG-010, próximo à estátua do Juquinha, 07 February 2001, *Dittrich 848* (HRCB). Unknown municipality: 10 September 1873, *Mosén 2094* (R). Espírito Santo: Castelo, Parque Estadual de Forno Grande, 20°30'39"S, 41°04'53"W, 1105 m, 25 June 2008, *Salino et al. 13574* (BHCB). Rio de Janeiro: Itatiaia, estrada para Agulhas Negras, 2300 m, 11 February 1990, *Morel 123* (SJRP). Paraná: Campina Grande do Sul, Serra do Capivari Grande, 1800 m, 06 August 1961, *Hatschbach 8185* (MBM); idem, Morro Capivari Grande, 1650 m, *Dittrich 395 & Amado* (ICN); Curitiba, Capão da Imbuia, 04 January 1975, *Dombrowski 5727* (PACA); idem, Cidade Industrial, 26 August 1975, *Hatschbach 35814 & Pedersen* (MBM); Guarapuava, 10 km a oeste de Guarapuava, 1100 m, 14 December 1965, *Reitz 17643 & Klein* (PACA); Palmeira, Rio das Almas, 12 June 1969, *Hatschbach & Guimarães 21626* (MBM, UPGB); Piraquara, Nova Tirol, 930 m, 28 April 1970, *Hatschbach 24197* (MBM); idem, Roça Nova, 21 May 1974, *Hatschbach 34442 & Kummrow* (MBM); idem, Mananciais da Serra, 1050 m, 23 May 1998, *Dittrich 367 & Torres* (ICN); Ponta Grossa, Parque Estadual de Vila Velha, 07 January 2004, *Labiak 3057 & Schwartsburd* (HRCB); Quatro Barras, Rio Taquari, 21 February 1967, *Hatschbach 16034* (MBM, UPGB); São José dos Pinhais, Colônia S. Andrade, 01 June 1971, *Hatschbach 26709* (MBM, UPGB). Unknown municipality: Serra do Mar, Ypiranga, 16 January 1914, *Dusén 14427* (MBM). Santa Catarina: Água Doce, Jesuíno Mendes, 26°38'24"S, 51°39'36"W, 124 m, 13 April 2011, *Korte 6574* (FURB); Alfredo Wagner, Serra da Boa Vista, 27°43'23"S, 49°9'54"W, 120 m, 16 March 2011, *Korte 6198* (FURB); Angelina, Linha do Chaves, 27°32'24"S, 48°57'36"W, 718 m, 06 April 2010, *Stival-Santos 2395* (FURB); Antônio Carlos, RPPN Caraguatá, 27°27'0"S, 48°52'12"W, 710 m, 08 July 2010, *Stival-Santos 3253* (FURB); Blumenau, Parque Nacional da Serra do Itajaí, Área Virgem., 27°5'24"S, 49°8'24"W, 803 m, 27 May 2010, *Korte 3479* (FURB); Bom Retiro, Campo dos Padres, 16 January 1957, *Sehnem 6963* (PACA); Botuverá, Morro do Barão, 24 July 1966, *Reitz 17986 & Klein* (PACA); Florianópolis, Ilha de Santa Catarina, Parque do Rio Vermelho, final da estrada geral da praia, 5 m, 28 December 1994, *Falkenberg 6808 & Leonor-Souza* (MBM); Garuva, Alto Quiriri, 26°2'21"S, 48°57'16"W, 1200 m, 05 May 2015, *Funez 4348* (FURB); Ilhota, Morro do Baú, 850 m, 29 January 1948, *Reitz 2988* (PACA); Lages, 950 m, 10 January 1951, *Sehnem 5541* (PACA);); Major Gercino, 27°26'59"S, 49°8'24"W, 708 m, 20 April 2010, *Stival-Santos 2498* (FURB); Ponte Alta do Norte, 27°10'48"S, 50°24'0"W, 104 m, 31 May 2011, *Korte 6924* (FURB); Praia Grande, Serra do Faxinal, 29°10'44"S, 50°1'22"W, 958 m, 13 May 2010, *Schmitt 2229* (FURB); Rio Fortuna, Canyon Espreado/Campo dos Padres, 27°59'26"S, 49°19'14"W, 145 m, 09 March 2010, *Verdi 3855* (FURB); Rio Rufino, Morro das Torres, 27°54'0"S, 49°51'36"W, 143 m, 07 May 2009, *Verdi 2054* (FURB); São Cristovão do Sul, Caraguatá, 27°16'12"S, 50°13'12"W, 19 March 2008, *Gasper 1631* (FURB); Urubici, Morro da Igreja, 1680 m, February 1992, *W. Oliveira 112* (SJRP); Urupema, Interior de Urupema/Rio Rufino (SC), 27°57'48"S, 49°50'13"W, 147 m, 28 March 2012, *Kemmelmeier s.n.* (FURB 38308); Unknown municipality: Serra dos Pires, córrego Água Preta, 30 km do entroncamento da rodovia BR-348 com a BR-116, 1950 m (sic), 10 March 1991, *Oliveira 45* (SJRP – mixed with *Parablechnum cordatum*); rodovia BR-282, 2 km del acceso a Taquaras, 09 February 1994, *Krapovickas 44843 & Cristóbal* (MBM). Rio Grande do Sul: Bom Jesus, Serra da Rocinha, 1000 m, 18 January 1950, *Sehnem 4320* (PACA); ibidem, 19 January 1950, *Sehnem 4338* (PACA); idem, Passo da Guarda, ad flumen Uruguay supremum, 900 m, 16 January 1952, *Sehnem 5850* (PACA); idem, arredores da cidade, 28 July 1962, *Camargo 3646* (PACA); Camará do Sul, Parque Nacional dos Aparados da Serra, 22 June 1980, *Waechter 1612* (ICN, PACA); Derrubadas, Parque Estadual do Turvo, 07 February 1983, 171 *Bueno s.n.* (ICN 88280); Esmeralda, Estação Ecológica de Aracuri, 06 November 1982, *Waechter 1915* (ICN); Gramado, 10 November 1977, *Irgang s.n.* (ICN 32996); Montenegro, Linha Campestre, 500 m, 19 April 1949, *Sehnem 3759* (PACA); São Francisco de Paula, Tainhas, 09 February 1957, *Vianna s.n.* (ICN 1605); São Leopoldo, Capão do Frade, 27 November 1935, *Sehnem 691* (PACA); Vacaria, Passo da Guarda, Ad Uruguay superius, 800 m, 28 January 1951, *Sehnem 5724* (PACA); Viamão, *prope* Itapuã, *s.d.*, *Dutra 178*

(ICN). São Paulo: Campos do Jordão, São José dos Alpes, divisa com Pindamonhangaba, ca. 22°45'S, 45°35'W, ca. 1800 m, 20 November 1980, *Windisch 2882* (SJRP); idem, Parque Estadual de Campos do Jordão, trilha da Cachoeira da Celestina, aproximadamente 22°42'S, 45°28'W, 27 November 2001, *Dittrich 1068 & Mantovani* (HRCB); idem, estrada para São José dos Alpes, proximidades do Parque Estadual de Campos de Jordão, 1300 m, 02 April 2002, *Dittrich 1105* (HRCB); Caraguatatuba, Estrada da Intermediária, 23°38'44"S, 45°40'21"W, 1200 m, 25 April 2000, *Salino et al. 5421* (ESA, HRCB); Cunha, Reserva de Cunha, próximo ao Parque da Serra do Mar, 15 May 1992, *Pietrobon-Silva 456 & Santos* (SJRP); Itararé, Fazenda do IAC, 14 February 1993, *Souza et al. 2291* (ESA); Itirapina, Estação Ecológica de Itirapina, 22°10'–22°14'S, 47°51'–47°56'W, 705 m, 12 March 2002, *Dittrich et al. 1092* (HRCB); São Paulo, Parque Estadual da Serra do Mar, núcleo de Curucutu, trilha do Rio Mambu, ca. 23°59'38"S e 46°46'31"W, ca. 800 m, 13 April 2001, *Salino 6546* (BHCB). Amazonas: Santa Isabel do Rio Negro, Trilha da Bacia do Gelo para o Pico, Parque Nacional do Pico da Neblina, 0°47'43"N, 66°00'84"W, 2215 m, 19 September 2012, *Forzza et al. 7129* (RB). Bahia: Rio de Contas, base do Pico das Almas, 13°32'S, 41°58'W, 1500 m, 14 December 1988, *Harley 25577 & Prado* (SP). Goiás: Jataí, Queixada, 10 April 1949, *Macedo 1832* (MBM).

3. *Parablechnum* Presl (1851: 109). —Type: *Parablechnum procerum* (G. Forst.) Presl (1851: 109), based on *Osmunda procera* Forster (1786: 414)

For a complete description of the genus, see Gasper *et al.* (2016).

Key to the species of *Parablechnum* in southern and southeastern Brazil

- | | | |
|----|---|--------------------------------|
| 1 | Pinna bases with conical aerophores; bases of distal pinnae with bulbils abaxially | <i>Parablechnum proliferum</i> |
| 1' | Pinna bases without aerophores or, when present, non-conical; bases of pinnae without bulbils | 2 |
| 2 | Rhizomes long-creeping | <i>Parablechnum usterianum</i> |
| 2' | Rhizomes erect or ascending, rarely short-creeping | 3 |
| 3 | Pinnae sessile or stalked, bases cordate or subcordate | <i>Parablechnum cordatum</i> |
| 3' | Pinnae stalked, bases cuneate | <i>Parablechnum glaziovii</i> |

Parablechnum cordatum (Desv.) Gasper & Salino in Gasper *et al.* (2016: 216)

Lomaria cordata Desvaux (1811: 330). *Blechnum cordatum* (Desv.) Hieronymus (1908: 239). Type:—PERU. Concepción, without date, *J. Dombey s.n.* (holotype P00307042 (Herb. Jussieu 1368), isotype BM000769804). Fig. 2A–C.

Blechnum raddianum Rosenstock (1907: 91) (*nom. nov.* for *Lomaria*

brasiliensis Raddi, non *Blechnum brasiliense* Desvaux (1811: 330) [= *Neoblechnum brasiliense* (Desv.) Gasper & V.A.O. Dittrich in Gasper *et al.* (2016: 214)]. *Lomaria brasiliensis* Raddi (1825: 50). *Struthiopteris brasiliensis* (Raddi) Maxon & Morton (1939: 43) Type:—BRAZIL. Rio de Janeiro, Tijuca, without date, *G. Raddi s.n.* (holotype PI (photos at Pichi Sermolli & Bizzarri, 2005), isotype FI?).

Blechnum regnellianum (Kunze) Christensen (1913: 17) *syn. nov.* *Lomaria*

regnelliana Kunze (1849: 576). Lectotype (designated by Ramos Giacosa (2016: 93)) :—BRAZIL. Minas Gerais, Caldas, 10 February 1846, *A.F. Regnell I.490* (B 20 0033168 – fragment HB, isolectotypes BM000769810, S05-9986, S05-9988, S12-25786, US00067439, photo, US01100895, photo).

Blechnum itatiaense Brade (1935: 225) *syn. nov.* Lectotype (designated here):—BRAZIL. Serra do Itatiaia, 2000 m, 21 June 1930, *A.C. Brade 10115* (R000021796). Isolectotypes: R000021796a, BM000769805, RB00561298, RB00543238). Syntype: BRAZIL. Serra do Itatiaia, 2000 m, 21 June 1930, *A.C. Brade 10380* (not located).

Blechnum macahense Brade (1940: 6) *syn. nov.* Type:—BRAZIL. Rio de Janeiro, Macaé, Frade de Macaé, ca. 1200 m, 19 June 1937, *A.C. Brade & J. Santos Lima 15801* (holotype RB, not located, isotype HB).

Blechnum simile Sehnem (1968: 56) *syn. nov.* Type:—BRAZIL. Rio Grande do Sul, Aparados da Serra, Passo do Guarda, 800 m, 16 January 1952, *A. Sehnem*

5861 (holotype PACA (PACA–AGP 69078), photo, isotype MO 2457687, not seen).

Plants terrestrial, rarely lithophytic; *rhizomes* erect or, rarely, short-creeping, the scales light tan, diaphanous, concolorous, narrowly triangular, 6–15 × 0.9–3.5 mm at the base, margins entire; *fronds* dimorphic, the *fertile* ones longer than the sterile, 31–217 cm long, the *sterile* 20–207 cm long; *stipes* nigrescent to stramineous (going through atropurpureous) near the base, on most of the length stramineous or predominantly stramineous with atropurpureous dots, rarely completely atropurpureous, of *sterile fronds* 8–65 cm long, 4.8–5.2 mm diam., scaly throughout the length or only near the base, the scales similar to those of rhizomes; of *fertile fronds* 20–75 cm long; *sterile blades* 12–56 × 6.4–37 cm, chartaceous to coriaceous, pinnate, lanceolate or narrowly oblong, truncate at the base, without vestigial

pinnae, truncate at the apex, terminal pinna conform; *fertile blades* 32–45 × 5.1–27 cm, ovate-lanceolate or oblong-lanceolate; *rachises* scaly, the scales light tan or tan, concolorous, 5 × 1.4 mm at the base, lanceolate or narrowly triangular, margins predominantly entire, with rare denticules, or regularly denticulate, or with elongated projections; *bulbils* absent; *aerophores* elongated, discrete, present at the base of the stipes and of the pinnae, or absent; *sterile pinnae* 5–18 pairs, 6.9–30 × 1.3–2.7 cm, slightly to strongly ascendant or patent, petiolulate or sessile (basal and medium ones), basiscopically adnate at the base (apical ones), margins entire or serrulate, slightly revolute, the abaxial costa, especially on the proximal portion of the pinna, with tan, lanceolate scales, margins entire, apices (of pinnae) acute, attenuate or acuminate; *fertile pinnae* 5–16 pairs, 54–214 × 4–6 mm, linear, strongly contracted, with no green tissue beyond the indusium; *veins* free, simple or once forked, with clavate ends on the margin.

Distribution and habitat:—Brazil (Bahia, Mato Grosso [first record], Goiás, Distrito Federal, Minas Gerais, Espírito Santo, Rio de Janeiro, São Paulo, Paraná, Santa Catarina, and Rio Grande do Sul), furthermore Guyana [first record], Colombia, Venezuela, Ecuador, Peru, Bolivia, Chile, and Argentina. Distribution uncertain: the species may also be present in Mexico (Mickel & Smith, 2004), Central America, and the West Indies (Smith & Kessler, 2018). A very common species in the study region, not threatened in the country. Individuals of this species inhabit tropical rainforests and seasonal semideciduous forests, as well as riverine forests in areas dominated by *campos rupestres* (rupestrian fields) and *Cerrado*. Plants are, however, much more common in open areas such as ravines at roadsides, border of wide tracks, well-lit river banks, and wetlands. In the study region, they grow within elevations of 50 m and 2052 m.

Comments:—The analysis of material from a limited area as in the present study is insufficient to resolve the taxonomic problems in this species. To understand the problems among this and closely related taxa, a broader study of the genus is necessary. Tryon & Stolze (1993) and Smith (1995) drew attention to the difficulties in this species. Both adopted a wide definition of the species, and Smith (1995) claimed that even other taxa may be, in fact, morphological variations of *Parablechnum cordatum*. Following previous observations, *Parablechnum cordatum* is, in this study, broadly defined. Frequently, however, pteridologists separate *Blechnum regnellianum* from *P. cordatum*, without clarifying the diagnostic characters to separate them. Sehnem (1968), when referring to *B. regnellianum*, said that it may be differentiated from similar species by the veins very close to each other, juxtaposed (“20–25 cm”, that is, 20 to 25 veins per cm). In species descriptions of other species, at least two have, according to Sehnem (1968), up to 20 veins per cm. In herbaria, until the last decade, smaller individuals with fewer pinnae were generally called *B. regnellianum*, whereas larger individuals with more pinnae were called *B. cordatum* (= *P. cordatum*). In the present study, we verified that there is a continuum between these two forms, making it impossible to separate these materials into more than one taxon. Thus, the concept used here for *P. cordatum* includes what is frequently treated as *B. regnellianum*. *Blechnum raddianum* Rosenst. is based on *Lomaria brasiliensis*, since the epithet “*brasiliense*” was not available in *Blechnum* (*Blechnum brasiliense* (= *Neoblechnum brasiliense* (Desv.) Gasper & V.A.O. Dittrich) was described in 1811). *Blechnum raddianum* Hieronymus (1908: 239) is a later homonym for the same taxon and *Blechnum euraddianum* Brade (1940: 7) is a *nomen novum* for the same taxon, and consequently superfluous. Although no authentic material of *Lomaria brasiliensis* was seen by us, Raddi’s illustration (1825) leads us to believe that *Lomaria brasiliensis* and *P. cordatum* are the same species.

To differentiate *P. cordatum* from the other species of the genus in the study region, see comments under these species.

Additional specimens examined:—BRAZIL. Minas Gerais: Araçuaia, Parque Estadual da Serra do Brigadeiro, trilha para o Pico do Boné, 26 May 2000, *Salino et al. 5456* (BHCB, HRCB); Barbacena, Futuro Distrito Industrial de Barbacena, ca. 1150 m, 09 December 2002, *Dittrich 1262 & Salino* (HRCB); Belo Horizonte, Barreiro, 21 January 1935, *Mello Barreto 5028* (BHCB); Caldas, 1854, *Lindberg 614* (K); idem, Pocinhos do Rio Verde, ca. 21°56’S, 46°23’W, 1150–1200 m, 16 June 1995, *Pietrobon-Silva 1911* (MBM, SJRP); Camanducaia, mata do trevo de acesso a Camanducaia, 22°44’53’’S, 46°09’17’’W, 1180 m, 01 June 2001, *Salino 6896* (BHCB, HRCB); Carangola, Fazenda São Sebastião, 20°44’S, 42°00’W, 700 m, 10 March 1988, *Leoni 66* (GFJP); idem, Serra do Brigadeiro, Fazenda Neblina, 28 May 1989, *Salino s.n. & Cosenza* (MBM 178515, 178516, 186063; BHCB 28814); idem, Morro da Torre, 20°44’S, 42°04’W, 920 m, 23 June 1990, *Leoni 1146* (GFJP); Ibituruna, arredores do rio das Mortes, 14 June 2001, *Mota 460* (BHCB); Itabirito, BR-040, cond. Aconchego da Serra, June 1999, *Salino s.n.* (BHCB 50229, HRCB 32923); Itambé do Mato Dentro, Faz. do Caixão, 08 March 2000, *Mota 187* (BHCB); Juiz de Fora, Fazenda da Floresta, 13 August 1971, *Krieger s.n.* (SJRP 2246); Lavras, estrada Lavras – São João Del Rey, 25 December 2002, *Chaddad Jr. 140* (ESA); Mariana, Serra do Frazão, estrada Mariana-Santa Bárbara, 25 August 2000, *Salino 5671* (BHCB); Marmelópolis, estrada de acesso a Fazenda Saiqui, caminho para o Pico dos Marins, Serra da Mantiqueira, ca. 45°06’W, 22°29’S, ca. 1650 m, 12 July 1997, *Nonato 348 & Windisch* (SJRP); Moeda, Serra da Moeda, próx. à rod. que liga a

BR-040 a Moeda, 12 September 1998, *Salino 4334 & Morais* (BHCB); Monte Belo, Fazenda Queimada Grande, 07 September 1987, *Gentry et al. 59148* (UEC); Ouro Preto, Tripuhy, 17 June 1978, *Badini 10134* (OUPR); Poços de Caldas, Fonte dos Amores, 30 October 1997, *Rosa 10* (SJRJ); Santa Bárbara, Serra do Caraça, 06 December 1989, *Oliveira 2* (SJRJ); Santana do Riacho, Serra do Cipó, estrada de Lagoa Santa a Conceição do Mato Dentro, Chapéu de Sol, ca. 19°20'S, 43°40'W, ca. 1200 m, 02 February 1987, *Prado et al. 90* (SJRJ); idem, Serra do Cipó, Rodovia MG-010, próximo à estátua do Juquinha, 07 February 2001, *Dittrich 847* (HRCB); São Gonçalo do Rio Preto, Parque Estadual do Rio Preto, atrás da casa de hóspedes, 18°07'34"S, 43°21'24"W, 07 April 2000, *Salino et al. 5189* (BHCB, HRCB); São João del Rei, Serra do Lenheiro, 19 February 1985, *Krieger et al. s.n.* (SJRJ 2248); São Sebastião do Paraíso, 24 April 1945, *Brade 17969 & Barbosa* (K); Uberaba, vale do rio Grande, sítio Santa Luzia, 19°45'51"S, 47°57'56"W, 764 m, *Miziara 13* (SJRJ); Uberlândia, Estação Ecológica do Panga, 31 July 1991, *Ranal 551* (HUFU). Unknown municipality: Serra do Caparaó, 2000 m, 27 September 1941, *Brade 17043* (K); Parque Nacional do Caparaó, Vale Verde, 19 November 1988, *Krieger et al. s.n.* (CESJ 23111); Serra do Cipó, caminho da Usina, 10 March 1989, *Novelino et al. 626* (CESJ); Parque Nacional do Caparaó, 1780 m, 29 April 1989, *Krieger et al. s.n.* (CESJ 24157); Serra do Cipó, região de Congonhas, 29 May 1996, *Salino 2737* (BHCB, HRCB); BR-120, km 606, 15 April 2000, *Pontes s.n. & Salino* (BHCB 64531). Espírito Santo: Marechal Floriano, Vitor Hugo, 900 m, 18 October 2000, *Hatschbach et al. 71380* (MBM); Santa Teresa, Estação Biológica de Santa Lúcia, margem do Rio Timbuí, 20 August 1985, *Boudet Fernandes 1433* (MBML); idem, trilha que sobe a encosta ao lado da entrada do Country Club, 25 February 1996, *Salino 2641* (HRCB). Rio de Janeiro: Itatiaia, valley of the Rio Campo Belo, vicinity Monte Serrat, Mt. Itatiaia, Estação Biológica, ca. 800 m, 22°28'S, 44°38'W, 03 January 1929, *Smith 1647* (K); idem, Mont Serrat, 500 m, 1933, *Brade 12621* (K); Nova Friburgo, June 1947, *Vale s.n.* (BHCB 1395); Parati, Trilha para o Pico do Cuscuzeiro, próximo à divisa com o estado de São Paulo, ca. 23°18'S, 44°47'W, ca. 400 m, 07 August 2001, *Dittrich et al. 897* (HRCB); Petrópolis, Alto da Mosela prope Petrópolis, 1000 m, 04 June 1961, *Pabst 5623* (B); Rio de Janeiro, Tijuca, Estrada da Vista Chinesa, 22 February 1968, *Lanna Sobrinho s.n.* (PACA 74069). Unknown municipality: February 1874, *Glaziou 7009* (K). São Paulo: Analândia, Serra do Cuscuzeiro, próximo ao Morro do Camelo, ca. 850 m, 02 July 1988, *Salino 482* (BHCB, SJRP); Bananal, Estação Ecológica de Bananal, trilha da Pedra Vermelha, 08 March 2001, *Dittrich et al. 862* (HRCB); Caieiras, June 1907, *Usteri 26* (BM); Campos do Jordão, Pico de Itapeva, ca. 2000 m, 09 June 1992, *Salino 1417* (BHCB, HRCB); Cássia dos Coqueiros, margem do Rio Boiadeiro, ca. 21°20'S, 47°08'W, ca. 1050 m, 21 January 1997, *Nonato et al. 307* (SJRJ); Corumbataí, Serra dos Padres, rodovia SP-310, Km 197,8, ca. 700 m, 29 July 1993, *Rodrigues Jr. 542 & Pietrobon-Silva* (SJRJ); Cunha, Parque Estadual da Serra do Mar, núcleo Cunha, 16 December 1996, *Salino 2895* (BHCB, ESA); ibidem, 18 December 1996, *Salino 2989* (ESA); Itirapina, rodovia SP-225, km 97, ca. 500 m do trevo de Itirapina, ca. 22°16'S, 47°48'W, 23 May 1993, *Pietrobon-Silva 965 & Andrade* (SJRJ); Mogi Guaçu, Reserva Florestal de Mogi Guaçu, 16 April 1993, *Simabukuro 94* (BHCB); Natividade da Serra, Parque Estadual da Serra do Mar, Núcleo Santa Virgínia, Base de Vargem Grande, trilha para a Cachoeira da Boneca, 23°25'57"S, 45°12'36"W, ca. 800 m, 10 August 2001, *Dittrich et al. 919* (HRCB); Piracicaba, Mata da Bica, 22°45'16"S, 47°51'47"W, 23 August 1994, *Barreto 3003, Fernandes & Vitti* (ESA); Pirangi, 12 November 1995, *Zanetoni 3* (SJRJ); Santa Rosa de Viterbo, Fazenda Cascata, 15 October 1995, *Zanoelo 8* (SJRJ); São José do Rio Preto, Instituto Penal Agrícola, 10 March 1995, *Pietrobon-Silva et al. 2216* (SJRJ). São Luís do Paraitinga, Parque Estadual da Serra do Mar, Núcleo Santa Virgínia, antiga SP-125, ca. 920 m, 06 March 2001, *Dittrich 859 & Salino* (HRCB); ibidem, Trilha para a nascente do Rio Itamambuca, 23°19'27"S, 45°05'19"W, 800–900 m, 09 August 2001, *Salino et al. 7379* (BHCB); São Paulo, Parque Estadual da Serra do Mar, Núcleo Curucutu, trilha Embu Guaçu, 25 May 2000, *Garcia et al. 2003* (PMSP); ibidem, em afluente do rio Capivari, 23°59'46"S, 46°44'12"W, 800 m, 11 April 2001, *Salino 6483* (BHCB); ibidem, trilha do Rio Mambu, ca. 23°59'38"S, 46°46'31"W, 800 m, 13 April 2001, *Salino 6544, 6547* (BHCB, HRCB) (*6544* mixed with *Parablechnum usterianum*); São Sebastião, Parque Estadual da Serra do Mar, 23°44'26"S, 45°33'40"W, 600 m, 19 April 2000, *Salino et al. 5322* (BHCB, ESA, HRCB); Ubatuba, Rod. BR-101/SP-055, ca. 23°02'S, 45°04'W, 01 January 2003, *Athayde 1145* (SJRJ); Valinhos, estrada velha para Itatiba, ca. 22°57'S, 47°01'W, ca. 720 m, 28 July 1993, *Pietrobon-Silva 1037 & Andrade* (SJRJ). Unknown municipality: Serra da Bocaina, 1750 m, 28 April 1951, *Brade 20770* (K); estrada vicinal entre os municípios de São Pedro e Charqueada, 12 May 2000, *Peralta 850* (SJRJ). Paraná: Adrianópolis, Boa Vista, 19 February 1981, *Hatschbach 43618* (MBM); Antonina, Usina Hidrelétrica Parigot de Souza, 800 m, 15 April 2001, *J.M. Silva 3375 & Campos* (HRCB); Arapoti, Rio das Cinzas, 28 November 1968, *Hatschbach 20425* (MBM); Balsa Nova, Serra São Luís, 17 July 1970, *Hatschbach 24469* (MBM, PACA); Campina Grande do Sul, *Dittrich 360* (ICN); Campo Largo, Rodovia do Café, Viaduto da Santa, September 1971, *Dombrowski 3817* (MBM); Candói, 28 April 1963, *Hatschbach 10038* (MBM); Castro, January 1980, *Dombrowski 13317* (MBM); Cerro Azul, Rio do Turvo, 04 October 1973, *Hatschbach 32651* (MBM); Curitiba, Centro Politécnico, 25 September 1987, *Cervi 2476, Acra & Rodrigues* (SJRJ); Jaguariáiva,

Fazenda Jardim do Trigo, PR-092, km 231,5, 800 m, 10 November 1989, *Morel 23* (SJRP); idem, Rio das Mortes, 23 November 1990, *Cervi 3260 & Dunaiski* (UPCB); idem, 26 April 1991, *Amorim 52* (SJRP); Lapa, Volta Grande, 02 March 1982, *Hatschbach 44906* (MBM); Morretes, Estrada de Ferro Curitiba-Paranaguá, Estação Marumbi, 483 m, 25 January 1951, *Tessmann s.n.* (MBM 4716); idem, Rodovia BR-277, Estrada do Arraial, 17 January 1969, *Hatschbach 20824 & Fontella* (MBM); idem, Caminho dos Jesuítas, December 1999, *Kersten 339 & Dittrich* (UPCB); Palmeira, Rodovia BR-277, km 156, próximo ao pedágio, 20 April 2000, *E. Barbosa et al. 471* (MBM); Paranaguá, Picadão Cambará-Col. Limeira, 50–100 m, 14 February 1968, *Hatschbach 18601* (MBM, PACA); Piraquara, Mananciais da Serra, 1050 m, 23 May 1998, *Dittrich 373* (ICN); Ponta Grossa, Parque Estadual de Vila Velha, 07 January 2004, *Labiak & Schwartsburd 3090* (HRCB); Porto Amazonas, Fazenda São Luís, 780 m, 22 December 1963, *Hatschbach 10793* (B, MBM); idem, Lajeado, 12 June 2001, *Ribas et al. 3614* (HRCB); Quatro Barras, Serra da Baitaca, Morro Anhangava, 13 March 1997, *Cordeiro 1407 & Cruz* (MBM); Tibagi, Fazenda Monte Alegre, Rio Laranjeira, 29 March 1953, *Hatschbach 3059* (MBM); idem, Rodovia do Café, Rio Capivari, 11 February 1976, *Hatschbach 38077* (MBM); Tijucas do Sul, Tabatinga, 11 January 1983, *Kuniyoshi 4594 & Kummrow* (MBM); Ventania, Rodovia PR-153, Rio Laranjinha, 03 September 1998, *Hatschbach et al. 68308* (MBM). Santa Catarina: Águas Mornas, Rio Miguel, 27°43'12''S, 48°57'36''W, 25 m, 12 August 2009, *Stival-Santos 786* (FURB); Alfredo Wagner, Soldadinho, 27°37'45''S, 49°24'39''W, 772 m, 28 November 2009, *Korte 1097* (FURB); Anitápolis, Rio das Pedras, 27°54'0''S, 49°8'24''W, 568 m, 14 July 2011, *Korte 7066* (FURB); Antônio Carlos, Santa Maria, 27°32'22''S, 48°52'13''W, 220 m, 05 February 2010, *Stival-Santos 1696* (FURB); Apiúna, Faxinalzinho, 27°10'49''S, 49°23'37''W, 793 m, 17 March 2010, *Korte 2160* (FURB); Biguaçu, Antinha, 04 March 1943, *Reitz s.n.* (PACA 73591); Blumenau, Parque Nacional da Serra do Itajaí, 27°3'24''S, 49°5'16''W, 17 August 2007, *Gasper 572* (FURB); Bom Jardim da Serra, Morro da Igreja, 28°7'24''S, 49°28'48''W, 08 April 2010, *Salino 14750* (FURB); Bom Retiro, Campo dos Padres, 1600 m, 17 January 1957, *Sehnem 6964* (PACA); Campo Alegre, Morro do Iquererim, 900 m, 15 March 1991, *W. Oliveira 77* (SJRP); Corupá, 26°27'36''S, 49°24'36''W, 938 m, 27 July 2017, *Kassner-Filho 1049* (FURB); Doutor Pedrinho, Ribeirão Rigo, 26°43'48''S, 49°29'59''W, 600 m, 04 May 2010, *Dreveck 2185* (FURB); Florianópolis, Ilha de Santa Catarina, Morro do Antão, 250 m, 20 January 1939, *Sehnem 804* (PACA); Imaruí, Forquilha da Aratingaúba/Parque Estadual da Serra do Tabuleiro, 28°10'10''S, 48°52'13''W, 604 m, 17 March 2010, *Verdi 4047* (FURB); Indaial, Parque Nacional da Serra do Itajaí, 27°5'24''S, 49°13'51''W, 601 m, 21 May 2010, *Korte 3392* (FURB); Jaraguá do Sul, Estrada para as Minas de Caulin, 26°16'56''S, 49°13'18''W, 100 m, 11 December 2012, *Gasper 3051* (FURB); Joinville, Serra Dona Francisca, Trilha do Castelo dos Bugres, 26°13'15''S, 49°3'13''W, 650 m, 01 January 2016, *Schwirkowski 1424* (FURB); Lages, Morro do Pinheiro Seco, 950 m, 14 April 1963, *Reitz 14891 & Klein* (MBM); Major Gercino, 27°26'59''S, 49°8'24''W, 708 m, 20 April 2010, *Stival-Santos 2516* (FURB); Massaranduba, Serra do Jacu, 26°33'1''S, 49°3'2''W, 617 m, 04 February 2011, *Korte 5908* (FURB); Morro Grande, Três Barras, 28°42'36''S, 49°46'12''W, 203 m, 11 December 2009, *Schmitt 952* (FURB); Nova Trento, Valsugana, 27°21'31''S, 49°3'2''W, 307 m, 14 July 2010, *Korte 4015* (FURB); Orleans, Rio Minador, 28°10'12''S, 49°24'36''W, 445 m, 09 December 2009, *Schmitt 828* (FURB); Palhoça, Morro do Cambirela, 900 m, 15 December 1971, *Bresolin 437* (PACA); Ponte Alta, Morro do Funil, 27°16'30''S, 50°7'57''W, 113 m, 25 March 2008, *Gasper 1668* (FURB); Praia Grande, Serra do Faxinal, 29°10'44''S, 50°1'22''W, 958 m, 13 May 2010, *Schmitt 2239* (FURB); Presidente Nereu, 27°16'12''S, 49°24'36''W, 28 January 2018, *Kassner-Filho 1768* (FURB); Rancho Queimado, 700 m, 28 June 1938, *Sehnem 1124* (PACA); Rio do Campo, Anta Branca (Antigo Alto Rio do Oeste), 26°54'36''S, 50°13'13''W, 786 m, 22 February 2010, *Korte 1921* (FURB); Rio dos Cedros, Alto Rio dos Cedros, 26°33'0''S, 49°19'12''W, 890 m, 16 June 2010, *Dreveck 2274* (FURB); Rodeio, São Pedro, 26°54'37''S, 49°24'41''W, 611 m, 30 March 2010, *Korte 2335* (FURB); São Bento do Sul, CEPA, 26°19'25''S, 49°18'26''W, 640 m, 30 March 2007, *Gasper 94* (FURB); Siderópolis, Reserva Biológica Estadual do Aguai, 28°32'58''S, 49°36'14''W, 314 m, 15 June 2009, *Verdi 2346* (FURB); Taió, Gramado, 27°0'1''S, 50°13'14''W, 893 m, 15 September 2010, *Korte 4315* (FURB); Vidal Ramos, Mulungu, 27°27'0''S, 49°19'12''W, 761 m, 14 September 2009, *Korte 139* (FURB); Vitor Meireles, Jacú-Paca, 26°49'18''S, 49°46'12''W, 701 m, 24 June 2010, *Korte 3881* (FURB); Unknown municipality: Serra dos Pires, córrego Água Preta, 30km do entroncamento da BR-348 com a 116, 1950 m (sic), 10 March 1991, *W. Oliveira 45* (SJRP – mixed with *Lomariocycas schomburgkii*). Rio Grande do Sul: Bom Jesus, Serra da Rocinha, Aparados da Serra, 1000 m, 17 January 1961, *Sehnem 7794* (PACA). Cambará do Sul, Itaimbezinho, 950 m, 24 February 1951, *Sehnem 6451* (PACA); ibidem, 900 m, 16 November 1953, *Sehnem 6452* (PACA – paratype of *Blechnum simile* Sehnem); ibidem, 26 February 1968, *Sehnem 9918* (PACA). São José dos Ausentes, Silveiras, Pico Montenegro, ca. 1400 m, 27 April 1997, *Windisch 8743* (SJRP); São Leopoldo, 22 January 1933, *Augusto s.n.* (ICN 17735). State Unknown: *s.d.*, *Burchell 2245* (K). Mato Grosso: Itiquira, Rod. MT-299, entroncamento com a BR-364, 22 February 1994, *Rodrigues Jr. 603* (BOTU).

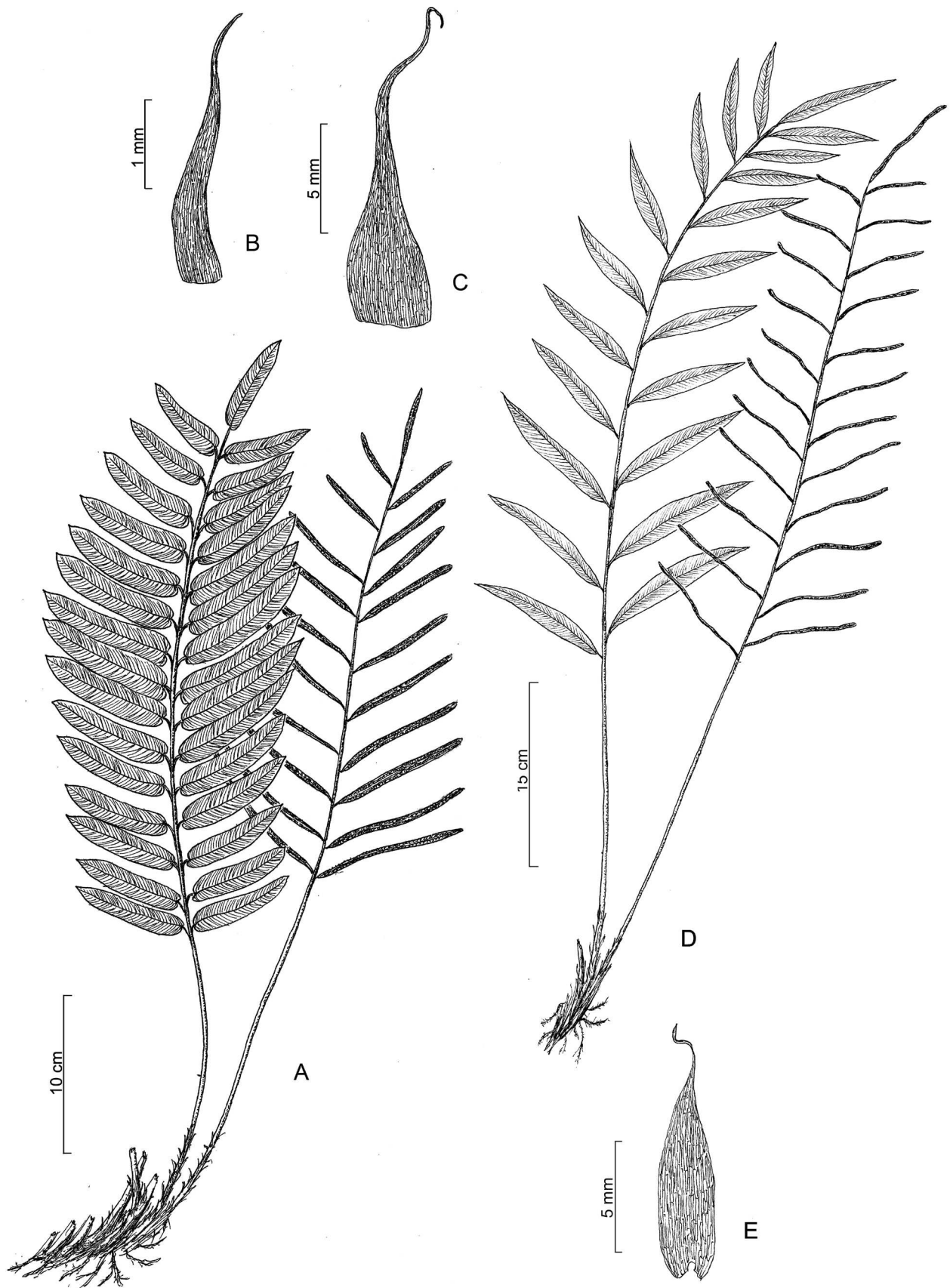


FIGURE 2. A–C. *Parablechnum cordatum*. A. Habit. B. Scale of sterile frond, abaxial surface of costa. C. Rhizome scale. D–E. *Parablechnum glaziovii*. D. Habit. E. Rhizome scale. (A–C from *Dittrich et al. 1615*, CESJ; D–E from *Dittrich 1862*, CESJ).

Parablechnum glaziovii (Christ) Gasper & Salino in Gasper *et al.* (2016: 216)

Blechnum glaziovii Christ (1899: 42). Lectotype (designated here):—BRAZIL. Rio de Janeiro, Petrópolis, 1885, *A.F.M. Glaziou 15717* (P00347404). Isolectotypes: P00347401, P00347402, P00347403, BM000769809, K000633399, RB00543443). Fig. 2 D–E.

Plants lithophytic, rarely terrestrial; *rhizomes* erect, the scales narrowly triangular, tan, concolorous, 12–13 × 1.5–2.6 mm, margins entire, with few denticules; *fronds* dimorphic, the fertile ones shorter or longer than the sterile, 27–32 cm long, the *sterile* 24–67 cm long; *stipes* atropurpureous to stramineous, at the base with scales similar to those on rhizomes, towards the apex with scales similar to those on rachis, longer on fertile fronds, of *sterile* fronds 10.1–12.2 cm long, 1.3–2.6 mm diam., of *fertile* fronds 16–30 cm long; *sterile* blades 12–27 × 9.4–16 cm, papyraceous to coriaceous, pinnate, adaxially glabrous, abaxially glabrous or scaly on the costa and veins, ovate to widely ovate, truncate at the base, without vestigial pinnae, truncate at the apex, terminal pinna conform; *fertile* blades 11–16 × 8.3–10 cm, pinnate, widely ovate or obtrullate, truncate at the base, without vestigial pinnae, truncate at the apex, terminal pinna conform; *rachises* glabrous or especially at the junction with the pinnae with a few narrowly triangular with expanded bases or linear, tan scales, margin entire or with long projections; *bulbils* absent; *aerophores* absent or slightly developed abaxially at the pinnae bases; *sterile pinnae* 2–12 pairs, 6.1–10 × 1.3–1.7 cm, strongly to slightly ascendant, rarely patent, petiolulate, lanceolate, margins entire or serrulate, plane or revolute, apices acute to acuminate, bases cuneate on both sides, the abaxial costa glabrous or with tan, concolorous scales with expanded bases and filiform apices, on veins with tiny, almost filiform scales with long lateral expansions, otherwise similar to those on the rachis, with or without sparse multicellular hairs on the blade between veins; *fertile pinnae* 4–7 pairs, 65–88 × 2.1–3.0 mm, linear, strongly contracted, with no green tissue beyond the indusium; *veins* free, simple or once forked, with strongly clavate ends on the margin.

Distribution and habitat:—Brazil (Amazonas [first record], Minas Gerais, Rio de Janeiro, and São Paulo). Endemic to Brazil, known so far only from southeastern Brazil. Specimens of this species grow on rocks and, sometimes, on soil, in montane areas bordering streams, in well-lit places, between 800 m and 1500 m (outside the study region to 2,060 m), in areas in the realm of Cerrado (*campos de altitude* or rupestrian fields and riparian forests) and of the Atlantic Forest (tropical rainforest). A relatively common species, not threatened.

Comments:—In the study region, the closest species to *P. glaziovii* are *P. cordatum* and *P. usterianum*. *Parablechnum glaziovii* is differentiated from the first by the clearly petiolulate and cuneate pinnae (with some degree of adnation at least on the distal pinnae of *P. cordatum* and with the pinnae bases cordate or subcordate). Also, it is almost restricted to creek edges or on boulders (and clearly a rheophyte). See under *P. usterianum* for differences from that species.

Christ (1899) cited only a collection (*Glaziou 15717*) in the protologue of *Blechnum glaziovii*, and did not designate a holotype. Consequently, we chose the best specimen at P (where the original collections of Glaziou are housed), annotated as “holotype” by T.C. Chambers, as the lectotype.

Additional specimens examined:—BRAZIL. Minas Gerais: Belo Vale, 20°26'37"S, 43°56'10"W, 1300 m, 23 October 2001, *Salino 7672 & Carvalho* (BHCB, HRCB); Jaboticatubas, Serra do Cipó, 07 August 1972, *Hatschbach 30042* (MBM); Lima Duarte, Parque Estadual de Ibitipoca, *R.F. Novelino et al. 476* (CESJ, MBM); Mariana, Parque Estadual do Itacolomi, Cibrão, 20°28'04"S, 43°28'50"W, 680 m, 13 February 2006, *Rolim 267 & Silva* (UB – photo); Minduri, Chapada das Perdizes, 21°36'09"S, 44°34'38"W, 1530 m, 31 August 2013, *Dittrich 1862* (CESJ); Rio Preto, Serra Negra, 22 January 2006, *Souza et al. 147* (CESJ); Santana do Riacho, Estrada de Lagoa Santa a Conceição do Mato Dentro, Serra do Cipó, Alto Palácio, ca. 19°20'S, 43°40'W, 02 February 1987, *Prado et al. 77* (SPF); idem, Serra do Cipó, próx. à estátua do Juquinha, 19°15'30"S, 43°33'04"W, 1500 m, 05 July 2001, *Souza et al. 25199* (ESA, HRCB); Santo Antônio do Itambé, Parque Estadual do Pico do Itambé, Cachoeira do Neném e trilha entre a cachoeira e Capivari, 18°25'27"S, 43°18'56"W, 1090 m, 04 October 2006, *Almeida et al. 517* (CESJ); São Roque de Minas, Parque Nacional da Serra da Canastra, 14 July 1997, *Salino 3223* (BHCB). Unknown municipality: Serra do Cipó, km 132 (ca. 153 km N of Belo Horizonte), 1400 m, 17 February 1968, *Irwin et al. s.n.* (MBM 72524). São Paulo: Natividade da Serra, Parque Estadual da Serra do Mar, Núcleo Santa Virgínia, base de Vargem Grande, trilha para Cachoeira da Boneca, 23°25'57"S, 45°12'36"W, ca. 800 m, 10 August 2001, *Dittrich et al. 908* (HRCB); Salesópolis, Reserva da USP, 23°39'21"S, 45°53'34"W, 870 m, 10 April 2007, *Prado & Labiak 1672* (NY – photo); São Luís do Paraitinga, Parque Estadual da Serra do Mar, Núcleo Santa Virgínia, trilha da Pirapitinga, ca. 800 m, 29 October 2001, *Dittrich et al. 973* (HRCB); São Paulo, Parque Estadual da Serra do Mar, Núcleo de Curucutu, trilha do rio Mambu, ca. 23°59'38"S, 46°46'31"W, ca. 800 m, 13 April 2001, *Salino 6552* (BHCB, ESA, HRCB). Amazonas: Santa Isabel do Rio Negro, Parque Nacional do Pico da Neblina, igarapé Cuiabixi, 0°47'18"N, 66°01'15"W, 2060 m, 20 November 2012, *Forzza et al. 7217* (RB, photo).

Parablechnum proliferum (Rosenst.) Gasper & Salino in Gasper *et al.* (2016: 217)

Blechnum proliferum Rosenstock (1907: 91). Lectotype (designated here):—BRAZIL. São Paulo: Santo André, Rio Grande, 1904, *M. Wacket* 132 [*Rosenstock Filices Austrobrasilienses*, no. 338] (S-R-684). Isolectotypes B 20 0033012, NY149779 (photo), UC441992 (photo), US01526847 (photo), US01526848 (photo), US00067438 (photo)). Syntype: *F.W. Bauer* 68 (not located). Fig. 3 A–C.

Struthiopteris vivipara Broadhurst (1912: 381). *Blechnum viviparum* (Broadh.) Christensen (1913: 17). Type:—COSTA RICA. San José: vicinity of La Palma, 1450–1550 m, 06–08 May 1906, *W.R. Maxon* 435 (holotype US 00067454 (photo), US00067455 (photo), isotype NY149790 (photo), NY149791 (photo)).

Plants terrestrial; *rhizomes* erect to decumbent, the scales lanceolate, narrowly triangular or almost linear, tan, concolorous, 5.3–16 × 0.4–1.8 mm at the base, margins entire; *fronds* dimorphic, the *fertile* ones longer than the sterile, 122–220 cm long, the *sterile* 88–194 cm long; *stipes* atropurpureous, scaly throughout, with amorphous, tan, broad scales, and scales similar to those on rhizomes, of *sterile fronds* 32–80 cm long, 6.6–9 mm diam., of *fertile fronds* 69–136 cm long; *sterile blades* 57–114 × 19–43 cm, pinnate, papyraceous, narrowly oblong, relatively abruptly reduced towards the apex to a conform pinna, truncate at the base, without vestigial pinnae; *fertile blades* 53–85 × 11–22 cm, pinnate, linear, relatively abruptly reduced towards the apex to a conform pinna, truncate at the base, without vestigial pinnae, abaxially scaly; *rachises* atropurpureous, with light-brown to whitish scales; *bulbils* present at the base of some pinnae, especially apical ones, adaxially; *aerophores* conical at the base of the pinnae abaxially, tuberculate aerophores present along sides of the stipes, especially at the base; *sterile pinnae* 14–21 pairs, 12–28 × 2.3–3.2 cm, petiolulate or sessile (proximal ones) to sessile (towards the apex), the apical ones proximally adnate at the basicopic side, ascendant, narrowly elliptical to almost linear, on the abaxial costa with castaneous, concolorous, twisted scales, the margins with elongated teeth, narrowly triangular with widened base, on the veins with scales similar to those on the costae but tiny, pinna apices acuminate, margins dentate, plane to slightly revolute; *fertile pinnae* 17–20 pairs, 128–190 × 5.5–7 mm, linear, strongly contracted, with no green tissue beyond the indusium; *veins* free, simple or once forked, with clavate ends on the margin.

Distribution and habitat:—Brazil (Minas Gerais, Espírito Santo [first record], Rio de Janeiro, and São Paulo), furthermore Panama, Costa Rica, and Bolivia. Individuals of this species preferentially grow in montane areas between (300) 800 m and 1300 m, usually at forest edges, mainly in areas with waterlogged soil (at least in the study region). The species mainly occurs in areas of tropical rainforest. A relatively common species in elevated areas, not threatened.

Comments: This species is close to *Parablechnum cordatum*, from which it is differentiated by the atropurpureous stipes, the conical aerophores at the pinna bases and the tuberculate ones on the stipe bases, with bulbils at the bases of the distal pinnae and the scaly rachises. Furthermore, the croziers in *Parablechnum proliferum* contain a large amount of mucilage, a feature that does not occur in any other species of the genus in the study region.

Additional specimens examined:—BRAZIL. Minas Gerais: Carangola, Fazenda Neblina, Serra do Brigadeiro, 1300 m, 28 May 1989, *Salino* 760 (UEC); Catas Altas, Parque Natural do Caraça, 20°05'46"S, 43°28'45"W, 1300 m, 30 August 1997, *Salino* 3382 (BHCB, HRCB); Juiz de Fora, 16 August 1979, *Krieger s.n.* (CESJ 2758); Lima Duarte, Parque Estadual do Ibitipoca, 20 August 1992, *Novelino et al.* 853 (CESJ); Ouro Preto, Granjeiras, 1936, *Badini* 10466 (OUPR); Santa Bárbara, Serra do Caraça, 06 December 1989, *Oliveira* 12 (SJRP). Unknown municipality: Gandarela, 300 m, 18 July 1972, *Emygdio* 3491 (R). Espírito Santo: Castelo, Parque Estadual de Forno Grande, próximo à sede, 20°30'39"S, 41°04'53"W, 1100 m, 29 June 2008, *Salino* 13734 (BHCB); Santa Teresa, Reserva Biológica Augusto Ruschi, trilha da Cachoeira, 19°55'14"S 40°33'37.3"W, 750–850 m, 02 December 2008, *Salino* 13992 (BHCB). Rio de Janeiro: Teresópolis, Fazenda Carlos Guinle, 950 m, *Brade* 9537 (R); idem, 02 October 1929, 05 November 1929, *Brade* 9882 (R). São Paulo: Bananal, Estação Ecológica de Bananal, ca. 1100 m, 09 March 2001, *Dittrich et al.* 865 (HRCB); Natividade da Serra, Parque Estadual da Serra do Mar, Núcleo Santa Virgínia, Base de Vargem Grande, trilha para a Cachoeira da Boneca, 23°25'57"S, 45°12'36"W, ca. 800 m, 10 August 2001, *Dittrich et al.* 920 (HRCB); Salesópolis, Estação Experimental de Boracéia, picada da cachoeira do Pilão, 05 March 1962, *Travassos* 405 (K, RB); Santo André, Estação Rio Grande, July 1904, *Edwall s.n.* (SP 21689); idem, Estação Alto da Serra, April 1912, *Luederwaldt s.n.* (BM); idem, Paranapiacaba (via férrea São Paulo-Santos), Estação Biológica, 28/IX/1967, *Handro* 1209 (SPF); idem, Reserva Biológica do Alto da Serra de Paranapiacaba, 26 November 1980, *Rosa* 3948 & *Pires* (SP); São Luís do Paraitinga, Parque Estadual da Serra do Mar, Núcleo Santa Virgínia, estrada ao lado do Rio Ipiranga, ligando o alojamento ao Núcleo de Cunha, 09 August 2001, *Dittrich et al.* 907 (HRCB); São Paulo, Parque do Estado de São Paulo, 08 October 1945, *Hoehne* 1882 (CESJ, K, SJRP, SPF); idem, Jardim Botânico, Água Funda, 10 October 1970, *Handro* 2151 (SPF); idem, Parque Estadual da Serra do Mar, Núcleo de Curucutu, trilha do Rio Mambu, ca. 23°59'38"S, 46°46'31"W, ca. 800 m, 13 April 2001, *Salino* 6551 (BHCB, ESA, HRCB). Unknown municipality: Serra do Mar, 1907, *Wacket* 338 (B, BM, K); Sant'Anna, November 1912, *Brade* 5388 (HB); idem, Campo Grande, 24 May 1914, *Brade* 6905 (HB). State Unknown: *s.d.*, *Burchell* 2446 (K).

Parablechnum usterianum (Christ) Gasper & Salino in Gasper *et al.* (2016: 217). *Lomaria usteriana* Christ in Usteri (1911: 135). *Blechnum usterianum* (Christ) Christensen (1917: 8). Neotype (designated here):—BRAZIL. São Paulo: [São Paulo] Ipiranga, June 1912, *H. Luederwaldt s.n.* (SPF 94516). Isonotype: BM000787908. Fig. 3D–H
Blechnum capense (L.) Schlttdl. var. *limosa* Rosenstock (1915: 362). Type: —BRAZIL.
São Paulo: Moóca prope urbem São Paulo, 09 February 1913, *A.C. Brade 5821*
(holotype S05-10153, isotype HB).

Plants terrestrial; *rhizomes* long-creeping, dark, the scales lanceolate or narrowly triangular, light tan, concolorous, 6.5–8.1 × 1.8–2 mm, margins entire; *fronds* dimorphic, the *fertile* ones longer than the sterile, 70–97 cm long, the *sterile* 41–80 cm long; *stipes* stramineous, nigrescent at the base, longer on fertile fronds, of *sterile fronds* 17–65 cm long, 2.1–3.4 mm diam., with scales similar to those of rhizomes, of *fertile fronds* 66–70 cm long; *sterile blades* 22–38 × 11–14 cm, chartaceous to coriaceous, pinnate, narrowly oblong, truncate at the base (without vestigial pinnae, sometimes with the proximal pair reduced), terminal pinna conform; *fertile blades* 22–65 × 5.6–8.2 cm, pinnate, narrowly elliptical, truncate at the base, without vestigial pinnae, relatively abruptly reduced towards the apex, terminal pinna conform; *rachises* abaxially glabrous or scaly, adaxially more or less scaly, the scales lanceolate or linear, whitish to light tan, concolorous, margins entire (lanceolate ones) or dissected (linear ones); *bulbils* absent; *aerophores* absent; *sterile pinnae* 3–17 pairs, 2–10 × 0.8–1.7 cm, slightly to strongly ascendant, basal ones petiolulate, sessile towards the apex and then adnate, especially on the basiscopic side, narrowly oblong to almost linear, margins entire to sparsely denticulate, plane to strongly revolute, apices obtuse, acute or acuminate, on the abaxial costa with whitish, twisted scales with a widened base, margins denticulate, on the adaxial costa with twisted, linear, whitish scales, the apices filiform, on the abaxial side of the blade with tiny, filiform, whitish or light tan scales; *veins* free, simple or 1 × (–2) × forked, with clavate ends on the margin.

Distribution and habitat:—Brazil (Minas Gerais, São Paulo, Paraná, Santa Catarina, and Rio Grande do Sul). Endemic to southeastern and southern Brazil. This species is almost always found in marshy terrain. It also occurs less frequently in river ravines or on the roadside, always in sunny locations. It is predominantly present in tropical rainforests and, especially, in *Araucaria* forests, also growing in regions where grasslands predominate. It grows between 40 m and 1,400 m; in the southeast only above 800 m, in the south up to 900 m. It is a relatively common species in the study region and, since it grows in disturbed habitats, is not threatened.

Comments: The nigrescent long-creeping rhizome of this species easily distinguish it from the other species of the genus in Brazil. Despite the long-creeping rhizomes, the leaves are approximate, since they originate from a point where the rhizome becomes ascendant. When rhizomes are not present, it is not always easy to separate *P. usterianum* from *P. cordatum* and *P. glaziovii*. Pinnae in *P. usterianum* are proportionally longer and narrower, strongly ascendant and with a relatively pronounced scale coverage abaxially on the costae and laminar tissue. Sehnem, on herbarium labels, and also Alston treated materials from this taxon as *Blechnum raddianum* Rosenst. (= *P. cordatum*).

Christ (*in litteris*) did not cite a specimen associated to this name, just a collection locality (Villa Mariana, São Paulo). We were unable to find any material we could consider as original in any herbarium that we have searched, as well as in any virtual Herbarium and even at BAS, where the material described by Christ is supposed to be found (Stafleu & Cowan 1976). Thus, a neotype is here designated for this name.

Additional specimens examined:—BRAZIL. Minas Gerais: Aiuruoca, rio Aiuruoca, 13 March 1989, *Salino 658 e 660* (UEC); Camanducaia, Fazenda São José, 22°45'18"S, 46°06'16"W, 1400m, 21 June 2000, *Salino 5627* (HRCB); Carandaí, Hermilo Alves, 14 February 1962, *Duarte 6312* (B); Delfim Moreira, estrada para a região do Pico dos Marins, 22°32'19"S, 45°14'20"W, 1340m, 03 April 2002, *Dittrich 1114* (HRCB); Ouro Fino, 06 May 1927, *F.C. Hoehne s.n.* (SPF 94531); Passa Quatro, Sertão dos Martins, 1400m, 10 May 1948, *Brade 19063 & Silva Araújo* (RB); Poços de Caldas, Alcoa, 15 March 2000, *Tameirão Neto 2992* (BHCB, HRCB); Sapucaí Mirim, Sítio “do Bob”, 19 August 2001, *Dittrich 930, Salino & L.C.N. Melo* (HRCB). Unknown municipality: *prope Águas Virtuosas*, XI.1899, *Silveira 80* (R). São Paulo: Campos do Jordão, estrada para São José dos Alpes, proximidades do Parque Estadual de Campos do Jordão, 1300 m, *Dittrich 1104* (HRCB); Itirapina, Estação Ecológica de Itirapina, 22°10'–22°14'S, 47°51'–47°56'W, ca. 705 m, 10 December 2003, *Dittrich 1306 & Leme* (HRCB); Moji-Guaçu, Reserva Florestal de Moji-Guaçu, 23 May 1990, *Simabukuro 86* (UEC); Natividade da Serra, Parque Estadual da Serra do Mar, Núcleo Santa Virgínia, Base de Vargem Grande, trilha para a Cachoeira da Boneca, 23°25'57"S, 45°12'36"W, ca. 800 m, 10 August 2001, *Dittrich et al. 909* (HRCB); São Paulo, Parque Estadual da Serra do Mar, Núcleo de Curucutu, trilha do Rio Mambu, ca. 23°59'38"S, 46°46'31"W, 800m, 13 April 2001, *Salino 6544* (BHCB, HRCB) (mixed with *Parablechnum cordatum*). Unknown municipality: Ipiranga, VI.1912, *Luederwaldt s.n.* (BM); Campo Grande, Serra do Mar, V.1914, *Brade 6906* (R); Vila Ema, XII.1932, *Brade 12403* (BM, R); Serra da Bocaina, Pinheiro, Barreiro,

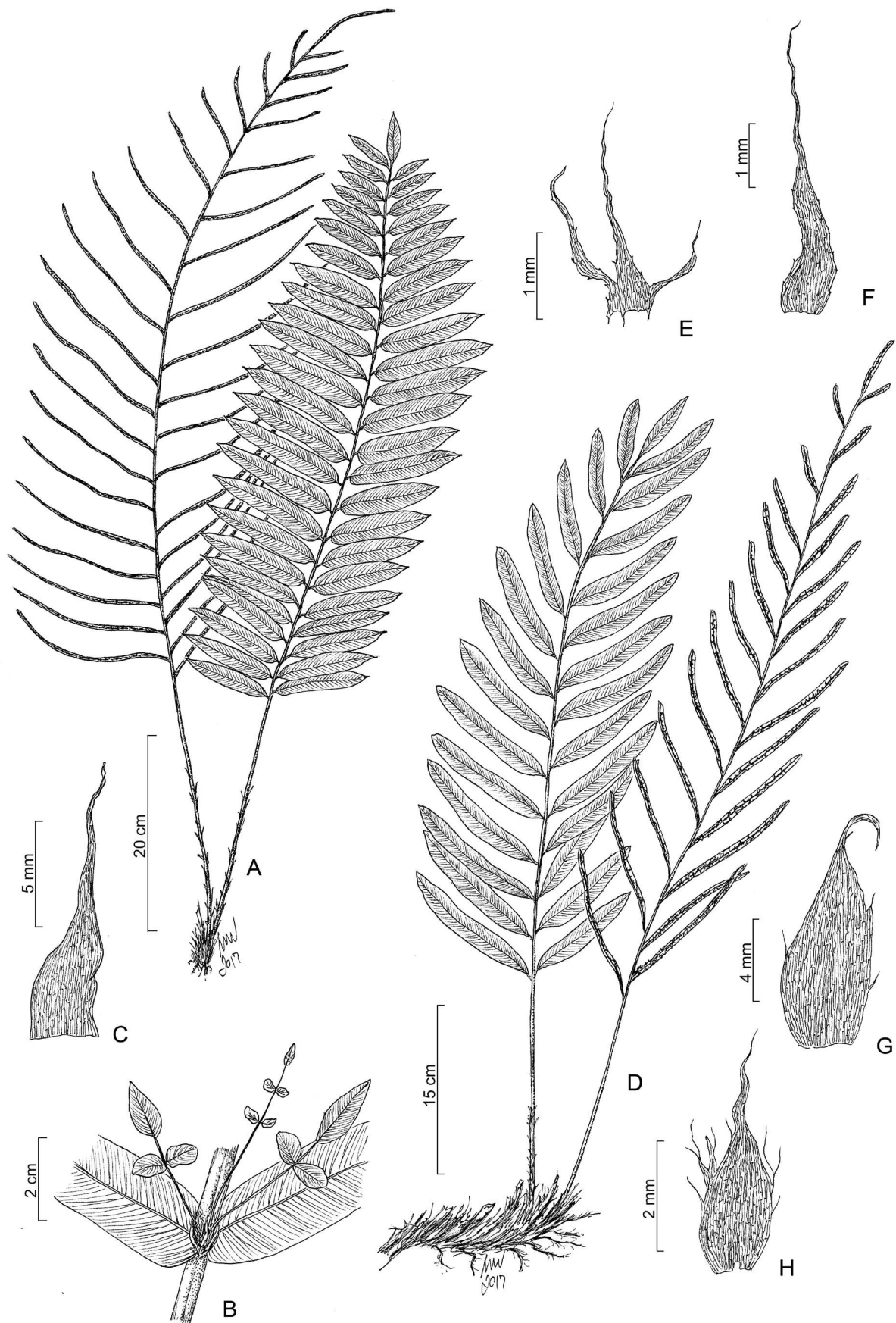


FIGURE 3. A–C. *Parablechnum proliferum*. A. Habit. B. Pair of apical pinnae showing proliferous buds. C. Rhizome scale. D–H. *Parablechnum usterianum*. D. Habit. E–F. Rhizome scales. G–H. Scales of sterile fronds, abaxial surface of costae. (A and C from Souza et al. 323, CESJ; B from Krieger s.n., CESJ 2759; D–H from Salino 10500 & Almeida, CESJ).

III.1951, *Segadas Vianna 3012 & Starling* (R). Paraná: Jaguariaíva, Rio das Mortes, 17 December 1991, *Cislinski 26 & Cervi* (UPCB); São José dos Pinhais, Colônia Santos Andrade, 800 m, 27 February 1985, *Hatschbach 48933* (MBM); São Mateus do Sul, Fazenda do Durgo, 26 February 1987, *R.M. Brites 1372 et al.* (MBM, UPCB). Santa Catarina: Frei Rogério, Núcleo Triticola, 27°10'48"S, 50°45'36"W, 874 m, 18 May 2011, *Korte 6903* (FURB); Garuva, Alto Quiriri, 26°2'21"S, 48°57'16"W, 1200 m, 05 May 2015, *Funez 4302* (FURB); Paulo Lopes, Sertão do Campo/Parque Estadual da Serra do Tabuleiro, 27°53'36"S, 48°45'21"W, 295 m, 10 June 2010, *Verdi 4940* (FURB); Porto União, by new airport east of Porto União, ca. 750 m, 19 December 1956, *Smith 8830 & Reitz* (R). Rio Grande do Sul: São Francisco de Paula, prope Santa Teresa, 900 m, 29 December 1953, *Sehnm 6530* (PACA); São Leopoldo, 40 m, 30 April 1941, *Sehnm 928* (PACA). Unknown municipality: Santa Cruz, 1904, *Jürgens & Stier s.n.* (Fil. Austr. Exsic. 69) (R 109456); idem, Fazenda dos Prazeres, s.d., *Dutra 18* (R).

Acknowledgements

We thank the Margaret Mee Foundation for the scholarship provided to the senior author to visit European herbaria and the CNPq/Reflora program for financial support, all curators from the herbaria cited in the text, CAPES for the scholarship provided to the senior author for three years, Fundação O Boticário de Proteção à Natureza and Fapemig for financial support, CNPq for grants to A. Salino, Luiz Menini Neto for the illustrations, and Carlos Sanchez, Paulo Henrique Labiak, Alan R. Smith and Michael Kessler for useful suggestions to the text. This is part of the senior author's doctoral dissertation, carried out at the Curso de pós-graduação em Biologia Vegetal, Universidade Estadual Paulista "Júlio de Mesquita Filho", campus de Rio Claro, São Paulo, Brazil.

References

- Brade, A.C. (1935) Contribuição para a Flora do Itatiaia. Filices novae Brasilianae. III. *Arquivos do Instituto de Biologia Vegetal* 1 (3): 223–230.
- Brade, A.C. (1940) Filices novae Brasilianae VI. *Anais Reunião Sul-Americana de Botânica* 2: 5–11.
- Broadhurst, J. (1912) The genus *Struthiopteris* and its representatives in North America-II. *Bulletin of the Torrey Botanical Club* 39 (8): 357–385.
<https://doi.org/10.2307/2479303>
- Ching, R.C. (1940) On a natural classification of the family "Polypodiaceae". *Sunyatsenia* 5: 237–268.
- Christ, K.H.H. (1899) Énumération de quelques fougères de L'Herbarier Delessert. *Annuaire du Conservatoire et du Jardin Botaniques de Genève* 3: 29–45. Available from: <https://www.biodiversitylibrary.org/item/25012#page/7/mode/1up> (accessed 30 July 2018)
- Christensen, C. (1905) *Index Filicum*, Vol. 1. H. Hagerup, Copenhagen, 744 pp.
<https://doi.org/10.5962/bhl.title.402>
- Christensen, C. (1913) *Index Filicum, Suppl. 1906-1912*. H. Hagerup, Copenhagen, 131 pp.
<https://doi.org/10.5962/bhl.title.402>
- Christensen, C. (1917) *Index filicum: supplément préliminaire pour les années 1913, 1914, 1915, 1916*. H. Hagerup, Copenhagen, 60 pp.
<https://doi.org/10.5962/bhl.title.402>
- Desvaux, A.N. (1811) Observations sur quelques nouveaux genres de fougères et sur plusieurs espèces nouvelles de la même famille. *Magazin für die Neuesten Entdeckungen in der Gesamten Naturkunde* 5: 297–330.
- Dittrich, V.A.O., Heringer, G. & Salino, A. (2007) Blechnaceae. In: Cavalcanti, T.B. & Ramos, A.E. (Eds.) *Flora do Distrito Federal, Brasil*, V. 6. Embrapa Recursos Genéticos e Biotecnologia, Brasília, pp. 91–108.
- Dittrich, V.A.O., Salino, A. & Monteiro, R. (2015) The *Blechnum occidentale* (Blechnaceae, Polypodiopsida) species group in southern and southeastern Brazil. *Phytotaxa* 231 (3): 201–229.
<https://doi.org/10.11646/phytotaxa.231.3.1>
- Dittrich, V.A.O., Salino, A., Monteiro, R. & Gasper, A.L. de (2018) The family Blechnaceae (Polypodiopsida) in Brazil: Key to the genera and taxonomic treatment of *Austroblechnum*, *Cranfillia*, *Lomaridium*, *Neoblechnum* and *Telmatoblechnum* for southern and southeastern Brazil. *Phytotaxa* 303 (1): 1–33.
<https://doi.org/10.11646/phytotaxa.303.1.1>
- Dutra, J. (1940) A flora pteridófito do estado do Rio Grande do Sul. *Anais da Primeira Reunião Sul-Americana de Botânica* 2: 19–68.

- Ettingshausen, C. (1864) Denkschriften der Kaiserlichen Akademie der Wissenschaften, Wien. *Mathematisch-naturwissenschaftliche Klasse* 23: 59, t. 8, f. 4. Available from: <https://www.biodiversitylibrary.org/item/31603> (accessed 31 July 2018)
- Fée, A.L.A. (1869) *Cryptogames Vasculaires du Brésil I*. Berger-Levrault, Strassbourg.
- Forster, J.G.A. (1786) *Florulae Insularum Australium Prodromus*. Typis Joann. Christian Dietrich, Gottingae (Göttingen), 94 pp. Available from: <https://www.biodiversitylibrary.org/item/41812> (accessed 30 July 2018)
- Gasper, A.L. de, Dittrich, V.A.O., Smith, A.R. & Salino, A. (2016) A classification for Blechnaceae (Polypodiales: Polypodiopsida): New genera, resurrected names, and combinations. *Phytotaxa* 275 (3): 191–227. <https://doi.org/10.11646/phytotaxa.275.3.1>
- INCT-HVFF (2018) Herbário Virtual da Flora e dos Fungos. Available from: <http://inct.splink.org.br> (accessed 1 October 2017)
- Hieronymus, G. (1908) Plantae Stübelianae. Pteridophyta. Von Dr. Alphons Stübel auf seinen Reisen nach Sudamerika besonders in Colombien, Ecuador, Peru und Bolivien gesammelte Pteridophyten (Gefäßkryptogamen). III. *Hedwigia* 47: 204–249. Available from: <http://biodiversitylibrary.org/page/457777> (accessed 30 July 2018)
- Kazmirczak, C. (1999) *A família Blechnaceae (Presl) Copel. (Pteridophyta) no Rio Grande do Sul* (Master's Thesis). Instituto de Biociências, Universidade Federal do Rio Grande do Sul, Porto Alegre, 153 pp.
- Klotzsch, J.F. (1847) Beiträge zu einer Flora der Aequinoctial-Gegenden der neuen Welt: Filices. *Linnaea* 20: 337–432. Available from: <http://biodiversitylibrary.org/page/35383898> (accessed 30 July 2018)
- Kunze, G. (1849) Filices et Lycopodiaceae. *Linnaea* 22: 575–581. Available from: <https://www.biodiversitylibrary.org/page/126114> (accessed 30 July 2018)
- Labillardière, J.J.H. (1806) *Novae Hollandiae Plantarum Specimen* 2: 1–254. Available from: <https://www.biodiversitylibrary.org/page/40882055> (accessed 30 July 2018)
- Lellinger, D.B. (2002) A modern multilingual glossary for taxonomic pteridology. *Pteridologia* 3: 1–263. <http://dx.doi.org/10.5962/bhl.title.124209>
- Markgraf, F. (1940) Neue Pflanzenarten aus Brasilien. *Notizblatt des Botanischen Gartens und Museums zu Berlin-Dahlem* 15: 214–221. <https://doi.org/10.2307/3995111>
- Maxon, W.R. & Morton, C.V (1939) New ferns from Bolivia and Peru. *Bulletin of the Torrey Botanical Club* 66: 39–45. <https://doi.org/10.2307/2481014>
- Mickel, J.T. & Smith, A.R. (2004) The pteridophytes of Mexico. *Memoirs of the New York Botanical Garden* 88: 1–1054.
- Moran, R.C. (1995) *Flora Mesoamericana, Vol. 1: Psilotaceae a Salviniaceae*, Universidad Nacional Autónoma de México, Missouri Botanical Garden & The Natural History Museum, London.
- Pichi Sermolli, R.E.G. & Bizzarri, M.P. (2005) A revision of Raddi's pteridological collection from Brazil (1817–1818). *Webbia* 60 (1): 1–393. <https://doi.org/10.1080/00837792.2005.10739597>
- PPG I (2016) A community-derived classification for extant lycophytes and ferns. *Journal of Systematics and Evolution* 54: 563–603. <https://doi.org/10.1111/jse.12229>
- Presl, C.B. (1836) *Tentamen Pteridographiae seu Genera Filicacearum praesertim juxta venarum decursum et distributionem exposita*. Typis Filiorum Theophili Haase, Pragae, 290 pp. <https://www.biodiversitylibrary.org/item/14546>
- Presl, C.B. (1851) Epimeliae botanicae. *Abhandlungen der Königlichen Böhmischen Gesellschaft der Wissenschaften*, ser. 5 6: 361–624, t. 1–15. [Reprinted as *Epimeliae botanicae*: 1–264, t. 1–15 (1851). Haase, Prague.] Available from: <http://gallica.bnf.fr/ark:/12148/bpt6k97451h> (accessed 30 July 2018)
- Raddi, G. (1825) *Plantarum brasiliensium nova genera et species novae, vel minus cognitae. Pars I / collegit, et descripsit Iosephus Raddius*. A. Pezzati, Florence, 101 pp. Available from: https://archive.org/details/bub_gb_-Fy76RfGP4AC (accessed 30 July 2018)
- Radford, A.E., Dickison, W.C., Massey, J.R. & Bell, C.R. (1974) *Vascular plant systematics*. Harper & Row, New York, 891 pp.
- Ramos Giacosa, J.P. (2016) Blechnaceae In: Anton, A., Zuloaga, F. & Belgrano, M. (Eds.) *Flora Vascular de la República Argentina, V. 2: licófitas, helechos y gymnospermae*. Iboda/Conicet, San Isidro, pp. 86–104.
- Reflora (2018) Reflora - Herbário Virtual. Available from: <http://floradobrasil.jbrj.gov.br/reflora/herbarioVirtual/> (accessed 10 October 2017)
- Rosenstock, E. (1907) Beiträge zur Pteridophytenflora Südbrasilens II. *Hedwigia* 46: 57–167.
- Rosenstock, E. (1915) Filices brasilienses novae. *Hedwigia* 56: 355–371.
- Schlechtendal, D.F.L. von (1827) *Adumbratio Filicum in promontorio Bonae Spei provenientium*. Dümmler, Berlin, 56 pp.
- Schwacke, C.A.W. (1900) *Plantas Novas Mineiras 2*. Imprensa Oficial do Estado de Minas Geraes, Belo Horizonte, 42 pp.
- Sehnem, A. (1968) Blechnaceae. In: Reitz, R. (Ed.) *Flora Illustrada Catarinense*. Herbário Barbosa Rodrigues, Itajaí, pp. 1–90.
- Smith, A.R. (1995) Blechnaceae. In: Steyermark, J., Berry, P., Holst, B. & Yatskievych, K. (Eds.) *Flora of the Venezuelan Guayana* -

- Volume 2 - Pteridophytes, Spermatophytes - Acanthaceae-Araceae. Missouri Botanical Garden Press, St. Louis, pp. 23–29.
- Smith, A.R. & Kessler, M. (2018) Prodrromus of a fern flora for Bolivia. XXXIII. Blechnaceae. *Phytotaxa* 334 (2): 99–117.
<https://doi.org/10.11646/phytotaxa.334.2.1>
- Smith, J. (1875) *Historia Filicum*. Macmillan & Co., London, 429 pp. Available from: <https://www.biodiversitylibrary.org/item/115408> (accessed 30 July 2018)
- Stafleu, F.A. & Cowan, R.S. (1979) *Taxonomic Literature, a Selective Guide to Botanical Publications and Collections with Dates, Commentaries and Types*, ed. 2, Vol. 2. *Regnum Vegetabile* 98. A.R.G. Gantner Verlag, Rugell, 991 pp.
- Stearn, W.T. (2004) *Botanical Latin*. Timber Press, Portland, 546 pp.
- Swartz, O.P. (1806) *Synopsis Filicum* 5. London, 445 pp. Available from: <https://www.biodiversitylibrary.org/item/155409> (accessed 30 July 2018)
- Systematics Association Committee for Descriptive Terminology (1962) Terminology of simple symmetrical plane shapes (Chart 1). *Taxon* 11: 145–156, 245–247.
<https://doi.org/10.2307/1216718>
- Thiers, B. (2017) [continuously updated]. *Index Herbariorum: A global directory of public herbaria and associated staff*. New York Botanical Garden's Virtual Herbarium. Available from: <http://sweetgum.nybg.org/science/ih> (accessed 31 October 2017)
- Thunberg, C.P. (1800) *Prodromus plantarum Capensium: quas in promontorio Bonae Spei Africes, annis 1772–1775* /. J. Edman, Upsaliae, 83 pp. Available from: <https://www.biodiversitylibrary.org/item/1816> (accessed 30 July 2018)
- Tryon, R.M. (1960) New species of ferns from Central and South America. *Rhodora* 62: 1–10. Available from: <http://www.jstor.org/stable/23305798> (accessed 30 July 2018)
- Tryon, R.M. & Stolze, R.G. (1993) Pteridophyta of Peru. Part V. *Fieldiana, Botany, New Series* 32: 1–204. Available from: <https://www.biodiversitylibrary.org/item/20369> (accessed 30 July 2018)
- Usteri, A. (1911) *Flora der Umgebung der Stadt São Paulo*. Jena, Gustav Fischer, 271 pp. Available from: <https://www.biodiversitylibrary.org/item/92478> (accessed 30 July 2018)
- Willdenow, C.L. (1809) Einige bemerkungen über die Gattung *Onoclea*. *Der Gesellschaft Naturforschender Freunde zu Berlin Magazin für die neuesten Entdeckungen in der gesammten Naturkunde* 3: 160. Available from: http://gdz.sub.uni-goettingen.de/dms/load/img/?PID=PPN608227714_0003%7CLOG_0033 (accessed 30 July 2018)
- Willdenow, C.L. (1810) *Species Plantarum*. 4th ed. Impensis G. C. Nauk., Berlin, 542 pp.