



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

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Abstract

A taxonomic study of the fern genera *Austroblechnum*, *Cranfillia*, *Neoblechnum*, *Lomaridium*, and *Telmatoblechnum*, formerly *Blechnum s.l.* (Blechnaceae, Polypodiopsida), was conducted in southern and southeastern Brazil (Minas Gerais, Espírito Santo, Rio de Janeiro, São Paulo, Paraná, Santa Catarina, and Rio Grande do Sul) and 11 species were recognized (six of *Austroblechnum*, two of *Cranfillia*, one of *Neoblechnum*, one of *Lomaridium*, and one of *Telmatoblechnum*). One species has a circum-Antarctic distribution (plus Mexico), three species have a broadly Neotropical distribution, six species are restricted or almost restricted to South America and one is endemic to Brazil. New records are presented for six species in states from southeastern Brazil, in other regions of the country, as well as in other countries. Taxonomic descriptions, synonymies, lectotypifications, geographical distributions, and comments are presented for all genera and species occurring in the study area. We also give keys for the identification of Brazilian genera of Blechnaceae and for species of the genera treated here.

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

Resumo

Um estudo taxonômico dos gêneros *Austroblechnum*, *Cranfillia*, *Neoblechnum*, *Lomaridium* e *Telmatoblechnum*, anteriormente considerados como *Blechnum s.l.* (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 11 espécies (seis de *Austroblechnum*, duas de *Cranfillia*, uma de *Neoblechnum*, uma de *Lomaridium* e uma de *Telmatoblechnum*). Uma espécie tem distribuição circum-antártica (também no México), três têm ampla distribuição nos neotrópicos, seis estão restritas ou quase à América do Sul e uma espécie é endêmica do Brasil. Novos registros são apresentados para seis espécies em estados do Sul e Sudeste, em outras regiões do país e em outros países. São apresentadas descrições para os gêneros e espécies tratados na área de estudo, bem como sinonímia, lectotipificações, chaves para determinação dos gêneros de Blechnaceae do Brasil, além de comentários e distribuição geográfica para cada espécie.

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

Introduction

This is the second paper concerning the taxonomy of blechnoid ferns in southern and southeastern Brazil. The first (Dittrich *et al.* 2015) dealt with the *Blechnum occidentale* Linnaeus (1753: 1077) complex, now recognized as

Blechnum s.s. (Gasper *et al.* 2016a). The fern family Blechnaceae Newman is characterized by two (in *Lorinseria areolata* (Linnaeus 1753: 1069) Moore (1857: 45)) or more vascular bundles in the stipe, sori on both sides of the costae, with the sori borne along commissural, subcostal veins, introrse indusia (rarely absent) and often reddish young fronds (Rothfels *et al.* 2012, Sundue & Rothfels 2014). This family has a subcosmopolitan distribution, with ca. 267 species in 24 genera, with most species in the Southern Hemisphere (Gasper *et al.* 2016a). For the Americas, Tryon & Tryon (1982) estimated 50 species of *Blechnum s.l.* (57 species in the family), Rolleri and Prada (2006) listed 83 (90 for the family), and Gasper *et al.* (2016a) listed at least 106 species for the Neotropics. In Brazil, currently 30 species and hybrids are recognized (Dittrich & Salino 2015), but new records and/or species are likely. The main centers of diversity are tropical America and Australasia/Oceania (Dittrich *et al.* 2007). The family is clearly monophyletic (Hasebe *et al.* 1995, Cranfill 2001, Cranfill & Kato 2003, Smith *et al.* 2006, 2008, Rothfels *et al.* 2012, Gasper *et al.* 2016b), and has been recognized as a natural group since Kaulfuss (1827), but with a slightly varying circumscriptions, since *Stenochlaena* was only recently included (Lovis 1978). *Blechnum (s.l.)* was, until very recently, a non-monophyletic assemblage representing almost 80% of the family (Cranfill 2001, Cranfill & Kato 2003, Shepherd *et al.* 2007, Schuettelpelz & Pryer 2007, Perrie *et al.* 2014, Gasper *et al.*, 2016b). Now, the genus has been split into many genera, including in the Neotropics *Austroblechnum* Gasper & V.A.O.Dittrich, *Cranfillia* Gasper & V.A.O.Dittrich, *Lomaria* Willdenow (1809: 160), *Lomaridium* Gasper & V.A.O.Dittrich, *Lomariocycas* (Smith 1875: 305) Gasper & A.R. Sm. in Gasper *et al.* (2016a: 212), *Neoblechnum* Gasper & V.A.O.Dittrich, *Parablechnum* Presl (1851: 469), and *Telmatoblechnum* Perrie, Ohlsen & Brownsey in Perrie *et al.* (2014: 755) (Perrie *et al.*, 2014; Gasper *et al.*, 2016a, 2016b; PPG I, 2016), and the new classification for the family presented by Gasper *et al.* (2016a) is followed in this work. Some of these recently segregated genera are here taxonomically treated for southern and southeastern Brazil, one of the centers of endemism and richness for pteridophytes established by Tryon (1972). For a historical overview of blechnoid systematics in Brazil until the end of the 20th century, see Dittrich *et al.* (2015). In this century, taxonomic studies in the family have intensified (Dittrich 2005, Dittrich & Salino 2010, Dittrich *et al.* 2007, 2012, 2015, Santiago *et al.* 2014, 2015), and a complete taxonomic revision for Brazilian Blechnaceae, as part of the Brazilian Flora Online 2020, is in process.

Material & Methods

This study is based on vouchers from Brazilian and foreign herbaria plus observations of the plants in nature. Plants from the following herbaria were analyzed (abbreviations according to Thiers 2016): B, BHCB, BM, CESJ, CRI, CVRD, ESA, FI, FLOR, FUEL, FURB, GFJP, HB, HAS, HBR, HRCB, HUFU, ICN, INPA, JOI, K, MBM, MBML, OUPR, P, PACA, PMSP, PR, R, RB, S, SJRP, SP, SPF, UEC, and UPCB. Descriptions of the genera apply worldwide and are based on vouchers, as well as the publications by Perrie *et al.* (2014) and Gasper *et al.* (2016a). Descriptions of infrageneric taxa are based exclusively on specimens seen and apply primarily for Brazilian taxa. 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); the shape of apices and margins of pinnae follow Radford *et al.* (1974). The specific terminology for ferns, except for the leaf 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: Murillo (1968), Sehnem (1968), Sota (1970, 1972a, 1972b, 1973), Stolze (1981), Mickel & Beitel (1988), Murillo-Pulido & Harker-Useche (1990), Tryon & Stolze (1993), Moran (1995a), Smith (1995), Chambers & Farrant (1996), Kazmirczak (1999), León (1999), Mickel & Smith (2004), Dittrich *et al.* (2007), Sota & Ponce (2008), and Santiago *et al.* (2015).

Taxonomic treatment

Blechnaceae Newman (1844: 8)

Plants terrestrial, epipetric, rarely epiphytic or rheophytic or very rarely aquatic, sometimes scandent. *Rhizomes* erect, ascending or creeping, arborescent or scandent, slender to robust, sometimes stoloniferous, clothed with non-clathrate scales, radially dictyostelic; *fronds* monomorphic or dimorphic, very rarely trimorphic, reddish when young, entire to

bipinnate, buds rare, croziers sometimes covered with mucilage; *stipes* continuous with rhizomes, with two (in one case) or more vascular bundles arranged in an arc, generally scaly proximally, adaxially grooved; *rachises* adaxially grooved, the groove not continuous with grooves of costae, rarely proliferous; *pinnae* not articulate to the rachis or rarely articulate, aerophores sometimes present proximally, as well as buds; *veins* free or anastomosing, reaching the pinna margins or ending before margins, sometimes in hydathodes, rarely joined by a submarginal commissural vein (*Salpichlaena*), with a commissure along the central axis of the segments forming cenosori, adjacent and parallel to the costae, or sori borne on the areolar arches; *sori* elongate, continuous or not; *indusia* usually present, introrse; *sporangia* with a 3-rowed stalk, spreading along the veins or occasionally acrostichoid, without paraphyses; spores monolete, reniform, variously ornamented, without or very rarely with chlorophyll. $x = 27, 28, 29, 31, 32, 33, 34, 35, 36, 37, 40$.

Key to the Brazilian genera of Blechnaceae

1. Rachises climbing; sterile fronds bipinnate *Salpichlaena*
- Rhizomes climbing or plants not climbing; sterile fronds entire to 1-pinnate 2
2. Sterile and fertile leaves monomorphic or slightly dimorphic 3
- Sterile and fertile leaves clearly dimorphic 5
3. Leaves fully pinnate; pinnae articulate to rachises; rhizomes long-creeping, subterranean *Telmatoblechnum*
- Leaves pinnatifid to pinnatisect, never fully pinnate; pinnae not articulate to rachises; rhizomes erect or ascending, not subterranean 4
4. Rhizomes stout (> 15 cm in circumference), erect, clothed with linear blackish scales at least 25 mm long; stipes to 0.5 m long; leaf margins serrulate *Neoblechnum*
- Rhizomes slender (< 5 cm in circumference), erect or ascending, clothed with lanceolate brown scales at most 8 mm long; stipes usually much less than 0.5 m; leaf margins apparently entire (or finely denticulate, teeth visible only under magnification) *Blechnum*
5. Rhizome scales generally denticulate, with a dark central stripe; rhizomes long-creeping, generally climbing *Lomaridium*
- Rhizome scales entire, with or without a dark central stripe; rhizomes erect, short-creeping or rarely long-creeping, never climbing 6
6. Pinnae adnate throughout 7
- Proximal pinnae sessile or stalked 8
7. Sterile blades truncate at bases, lacking vestigial pinnae; fronds at least 32 × 7 cm *Cranfillia*
- Blades various but, if truncate at bases and lacking vestigial pinnae, then at most 12.4 × 2.6 cm *Austroblechnum*
8. Rachis each with a flagelliform apex bearing a bud *Cranfillia*
- Rachises lacking flagelliform apices, without buds (buds may be present at pinnae bases) 9
9. Rhizomes erect to creeping, never trunk-like; leaf blades truncate at base *Parablechnum*
- Rhizomes erect, trunk-like; pinnae gradually reduced towards the base of the blade 10
10. Blades coriaceous, the veins hardly visible; apical pinnae not surcurrent; fronds concolorous or discolorous; costae not deeply sulcate *Lomariocycas*
- Blades chartaceous, the veins clearly visible; apical pinnae surcurrent; fronds discolorous; costae deeply sulcate *Lomaria*

1. *Austroblechnum* Gasper & V.A.O.Dittrich in Gasper *et al.* (2016a: 202)

Type: *Austroblechnum penna-marina* (Poir.) Gasper & V.A.O.Dittrich

Plants terrestrial or epipetric; *rhizomes* erect, ascending, short or long-creeping, stoloniferous or not, moderately stout, sometimes with a small, thin caudex, bearing concolorous scales with entire margins; *fronds* dimorphic; *stipes* grooved, atropurpureous to dark, glabrous, with basal scales few, rather similar to those of rhizomes; *blades* lanceolate-acuminate or narrowly elliptic, pinnatisect to pinnate, rarely entire, ovate, with pinnae tapering downwards to rounded auricles, glabrous or with sparse trichomes; *rachises* grooved, glabrous or covered by few scales; *buds* absent; *aerophores* absent; *pinnae* partially or totally adnate to rachises, margins entire or crenate to serrate; *veins* free, 1 × –2 × forked, rarely simple, with clavate ends readily visible adaxially, forming hydathodes; *sori* linear, indusia entire to erose or fimbriate; $x = 33$.

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

1. Sterile blades truncate at base or with 1–2 reduced pinnae pairs (with or without vestigial pinnae beyond the normal ones) 2
- Sterile blades gradually reduced proximally, each with 3 or 4 pairs of reduced pinnae 4
2. Stipes of sterile fronds to 0.5 mm diam.; sterile fronds to 12 × 3 cm; plants above 2700 m *A. andinum*
- Stipes of sterile fronds at least 0.9 mm diam.; sterile fronds at least 27 × 6 cm; plants from 300–1700 m 3

3. Rhizome scales lanceolate, light tan, dull; sterile fronds at least 71 × 13 cm; stipes of sterile fronds at least 2.7 mm diam; vestigial pinnae 4–8 *A. divergens*
 - Rhizome scales lanceolate or narrowly triangular, dark tan to black, shiny; sterile fronds at most 36 × 12 cm; stipes of sterile fronds at most 1.9 mm; vestigial pinnae 0–3 pairs *A. organense*
4. Rhizomes long-creeping; blades pectinate *A. penna-marina*
 - Rhizomes erect or ascending; blades not pectinate 5
5. Stipes of sterile fronds at least 4.2 cm long; rhizomes non-stoloniferous, 20–100 cm long *A. lehmannii*
 - Stipes of sterile fronds at most 3.2 cm long; rhizomes stoloniferous, at most 5 cm long
6. Veins of larger pinnae regularly once forked or rarely only two pairs of veins forked; pinnae falcate; rhizome scales lanceolate-ovate or ovate; southern Brazil *A. squamipes*
 - Veins of larger pinnae simple, rarely the proximal one or two pairs once forked; pinnae not falcate; rhizome scales narrowly triangular; southeastern Brazil *A. andinum*

1. *Austroblechnum andinum* (Baker) Gasper & V.A.O.Dittrich in Gasper *et al.* (2016a: 202).

Lomaria andina Baker (1874: 482). *Blechnum andinum* (Baker) Christensen (1905: 150). Type:—BOLIVIA. La Paz, Unduavi, *without date*, R.W. Pearce *s.n.* (holotype K). Fig. 1A–C.

Plants epipetric; *rhizomes* erect, short, stoloniferous, the scales tan, concolorous, narrowly triangular, *ca.* 1–3 × 0.3 mm, margins entire; *fronds* dimorphic, the *fertile* ones as long as the sterile or longer, 9–11.8 cm long, the *sterile* 8–12 cm long; *stipes* filiform, dark tan to rarely stramineous, lustrous, longer on fertile fronds, of *sterile fronds* 1.1–3.2 cm long, 0.2–0.5 mm diam., proximally with few scales, these similar to those on rhizomes, of *fertile fronds* 4.5–5.2 cm long; *sterile blades* 3.2–9.2 × 1–2.6 cm, membranaceous, pinnate proximally, pinnatisect toward apices, glabrous, generally oblanceolate, rarely linear-oblanceolate or lanceolate, more or less abruptly reduced or truncate at bases, without vestigial pinnae, apices gradually reduced; *fertile blades* 4.5–7 × 0.6–0.8 cm, pinnate, linear to narrowly oblanceolate, gradually or abruptly reduced proximally, without vestigial pinnae; *rachises* glabrous on both sides or sparsely covered with short, pluricellular hairs abaxially; *sterile pinnae* 10–21 pairs, 0.4–1.2 × 0.2–0.4 cm, slightly to strongly ascending, partially to completely adnate, narrowly oblong to narrowly triangular, margins entire, plane, apices obtuse or rounded, *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, simple or rarely 1(–2) proximal pairs once forked, 2–5 secondary veins per pinna, with slightly clavate ends before margins.

Distribution and habitat:—Brazil (Minas Gerais, Rio de Janeiro and Espírito Santo [first record]), furthermore Peru and Bolivia. In the study area, the species is known from only two distant areas, both in southeastern Brazil: Serra do Itatiaia and Serra do Caparaó, in two National Parks, always above 2700 m. In Brazil, the species is considered as critically endangered (Dittrich *et al.* 2013). According to herbarium labels, plants of this species grow on, between, or even under rocks, in open as well as shaded areas. The vegetation type where the plants grow is the *campo de altitude*, a grassland of the Brazilian highlands restricted to southern and southeastern Brazil inside the Atlantic Forest domain, above the tree line.

Comments:—the closest species in the study area are *Austroblechnum squamipes* (Hieronymus) Gasper & V.A.O.Dittrich and *A. penna-marina* (Poiret) Gasper & V.A.O.Dittrich. It can be distinguished from *A. squamipes* by leaf blade base: truncate or not, but not reduced to semicircular lobes as in *A. squamipes*. Furthermore, *A. squamipes* is a more robust species, with thicker stipes (0.5–1 mm) and wider pinnae (0.5–0.7 cm) in the sterile fronds - vs. 0.2–0.5 mm and 0.2–0.4 cm respectively. From *A. penna-marina*, it is distinguished by the rhizomes (erect in *A. andinum*, long-creeping in *A. penna-marina*) and the blade division and texture (pectinate and subcoriaceous in *A. penna-marina*, not pectinate and membranaceous in *A. andinum*). From both species, *A. andinum* differs in having simple vs. regularly forked veins (in *A. andinum* just one or two proximal pairs of veins can be once forked).

Additional specimens examined:—BRAZIL. Minas Gerais: Itatiaia, *without date*, A.C. Brade *s.n.* (MBM 4715). Espírito Santo: Ibitirama, Parque Nacional do Caparaó, 20°26'25"S, 41°47'59"W, 2,800 m, 15 October 2011, J.P.S. Condack *et al.* 706 (RB—photo); *ibidem*, 10 May 2014, A. Salino *et al. s.n.* (BHCB 169849). Rio de Janeiro: Itatiaia, 2,800 m, 4–10 June 1913, A.C. Brade & F. Tamandaré de Toledo Jr. 6484 (B, HB, K, SP, SPF); *idem*, Agulhas Negras, 2,787 m, 27 May 1935, A.C. Brade 14540 (CESJ, K, RB); Resende: Parque Nacional do Itatiaia, Agulhas Negras, 2,700 m, 08 August 2006, J.P.S. Condack & C.G.V. Ramos 517 (RB—photo).

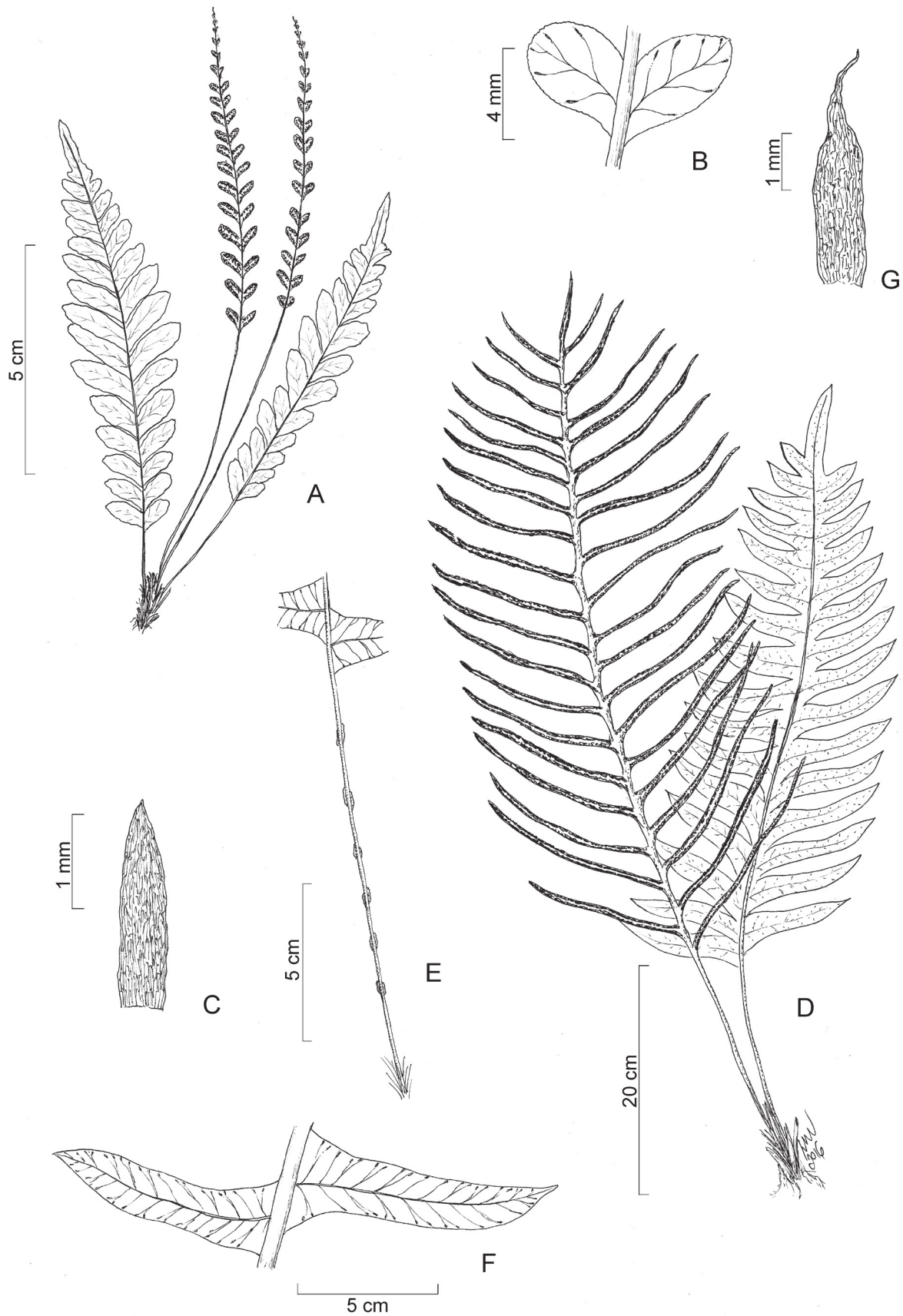


FIGURE 1. A–C. *Austroblechnum andinum*. A. Habit. B. Pinna pair showing venation. C. Rhizome scale. D–G. *Austroblechnum divergens*. D. Habit. E. Base of sterile blade showing vestigial pinnae. F. Pinna pair showing venation. G. Rhizome scale. (A–C from A.C. Brade s.n., CESJ0003368; D–G from V.A.O. Dittrich et al. 1807, CESJ).

2. *Austroblechnum divergens* (Kunze) Gasper & V.A.O.Dittrich in Gasper *et al.* (2016a: 202).

Lomaria divergens Kunze (1834: 57). *Blechnum divergens* (Kunze) Mettenius (1864: 225). Type:—Peru. Huánuco, Pampayaco, *without date*, E.F. Poeppig s.n. [Diar. 1141]. (holotype LZ, destroyed, isotypes W?, BM, photo). Fig. 1D–F.

Blechnum floresii var. *spruceana* Rosenstock (1909: 292). Type:—Ecuador. Andes, 1857–1859, *R. Spruce 5332* (holotype not located, isotype NY149760, photo).

Plants terrestrial or epipetric; *rhizomes* erect to ascending, non-stoloniferous, the scales lanceolate, 4 × 1.2 mm (at center), dull, light tan, margins entire; *fronds* dimorphic, the *fertile* ones frequently longer than the sterile, 70–100 cm long, the *sterile* 43–90 cm long; *stipes* stramineous to atropurpureous, the scales similar to those on rhizomes, longer on fertile fronds, of *sterile* fronds 1.9–9.9 cm long, 2.7–5.1 mm diam., of *fertile* fronds 7.5–16.4 cm long; *sterile blades* 29–96 × 13–24 cm, chartaceous, pinnatisect, mainly glabrous, on adaxial side with amorphous, light tan scales mainly at pinnae bases, ovate or ovate-lanceolate, truncate at base, with 4–8 pairs of vestigial pinnae, apices gradually reduced; *fertile blades* 53–71 × 12–21 cm, pinnate, ovate, lanceolate or narrowly elliptic, truncate at base, with vestigial pinnae; *rachises* adaxially glabrous, abaxially glabrous or sparsely covered with amorphous, light tan scales; *sterile pinnae* 19–25 pairs (excluding the vestigial ones), 7.4–15.2 × 1.7–2.7 cm, most patent, the apical ones slightly ascending and the basal ones sometimes slightly reflexed, fully adnate, ensiform, margins finely denticulate, plane or slightly revolute, apices acuminate; *fertile pinnae* 15–20 pairs, 11.4–12 cm × 3–4.5 mm, linear, strongly contracted; *veins* free, simple (the distal ones) or commonly once forked, with hydathodes before margins.

Distribution and habitat:—Brazil (Bahia [first record], Minas Gerais, Espírito Santo [first record], Rio de Janeiro, São Paulo, Paraná, and Santa Catarina), furthermore southern Mexico, Guatemala, Honduras, Costa Rica, Panama, Greater and Lesser Antilles, Colombia, Venezuela, Ecuador, Peru, and Bolivia. Not endangered in Brazil, where it is a relatively common species, especially at higher elevations. In the study area plants of this species grow generally in shaded areas close to streams in montane areas, mainly at the Tropical Atlantic Rain Forest, from 300–1350 m.

Comments:—this species is quite close to *Austroblechnum organense* (Brade) Gasper & V.A.O.Dittrich, from which it can be distinguished by its dull and lighter rhizome scales and by their many vestigial pinnae that make the stipes short, besides the plant size. It also resembles *Cranfillia mucronata* (Brade) V.A.O.Dittrich & Gasper, differing by its relatively larger size, by the vestigial pinnae, and, mainly, by the rhizome and stipe base scales—broad and light tan, vs. tiny and black in *C. mucronata*. Furthermore, fronds of *A. organense* have two or three proximal vestigial pinnae (none in *C. mucronata*). According to Moran (1995), the South American plants identified as *A. divergens* probably represent several different species. In the study area, however, there is no great morphological variation within the species.

Additional specimens examined:—BRAZIL. Espírito Santo: Castelo, Parque Estadual do Forno Grande, 20°31'51"S, 41°05'56"W, 1400m, 28 June 2008, *A. Salino et al. 13719* (BHCB). Minas Gerais: Aiuruoca, Picada para o Pico do Papagaio, 22°03'28"S, 44°38'59"W, 1629 m, *V.A.O. Dittrich et al. 1874* (CESJ); Antônio Carlos, Instituto Missionário São Mateus, ca. 1100 m, 24 July 1989, *A. Salino 1031* (BHCB, UEC); Belo Vale, 20°26'37"S, 43°56'10"W, 1300 m, 23 October 2001, *A. Salino & F.A. Carvalho 7647* (BHCB, HRCB); Carangola, Serra do Brigadeiro, Fazenda Neblina, ca. 1300 m, 28 May 1989, *A. Salino 756* (BHCB, UEC); Conceição do Mato Dentro, entorno do Parque Natural Municipal do Ribeirão do Campo, Capão do Felipe, 19°03'14"S, 43°37'04"W, 1200 m, 08 August 2003, *A. Salino & R.C. Mota 8888* (BHCB, HRCB); Nova Lima, Estação Ecológica de Fechos, 20°03'58"S, 43°57'33"W, 11 July 2001, *A. Salino et al. 7129* (BHCB, HRCB); Olaria, Serra do Cruz, ca. 21°53'24"S, 44°04'26"W, 1360 m, 23 June 2013, *V.A.O. Dittrich et al. 1807* (CESJ); Ouro Preto, Sala de Jantar, 21 June 1910, *A. Baeta s.n.* (OUPR 8319); Simonésia, RPPN Mata do Sossego, 20°04'02"S, 42°04'40"W, 1150–1600 m, 20 May 2006, *A. Salino et al. 11069* (CESJ). Rio de Janeiro: Itatiaia, Maromba, Serra do Itatiaia, 18 June 1930, *A.C. Brade 10067* (R); idem, Três Casas, Serra do Itatiaia, 800 m, 02 July 1930, *A.C. Brade 10381* (R); February 1882, *A.F.M. Glaziou 13343* (K); Serra do Imbé, Forquilha, April 1932, *A.C. Brade & J. Santos Lima 11608* (R). São Paulo: Bananal, Estação Ecológica de Bananal, nas trilhas da Estação e da Pedra Vermelha, 22°49'10"S, 44°21'58"W, 1130–1350 m, 03 August 2001, *A. Salino et al. 6252* (BHCB); Santo André, Paranapiacaba (via férrea São Paulo-Santos), Estação Biológica, September 1965, *O. Handro 1130* (R, SPF); São Luís do Paraitinga, Parque Estadual da Serra do Mar, Núcleo de Santa Virgínia, trilha para a nascente do Rio Itamambuca, 23°19'27"S, 45°05'19"W, 800–900 m, 08 September 2001, *A. Salino et al. 7412* (BHCB). Paraná: Antonina, Serra Capivari Grande, 14 April 1967, *G.G. Hatschbach 16351* (MBM, PACA); Jaguariaíva, 740 m, 11 May 1914, *P.K. Dusén 15954* (BM); Morretes, Parque Estadual Pico do Marumbi, 17 April 1999, *C. Kozera & O.P. Kozera 1022* (UEC). Santa Catarina: Biguaçu, Antinha, 04 March 1943, *R. Reitz 234* (PACA); Blumenau, Morro do Spitzkopf, 27°01'30"S, 49°07'58"W, 800 m, 03 May 2009, *A.L. de Gasper 959* (FURB); Brusque, Morro do Barão, 900 m, 25 July 1966, *R. Reitz & R.M. Klein 18019* (HBR, PACA); Corupá, Palmeiras II, 26°27'36"S, 49°24'36"W, 938 m, 24

August 2010, *A. Korte 4169* (FURB); Imaruí, Forquilha, 28°09'53"S, 48°52'11"W, 666 m, 28 January 2010, *J.L. Schmitt 1130* (FURB); Indaial, Parque Nacional da Serra do Itajaí, 27°05'24"S, 49°13'51"W, 601 m, 21 May 2010, *A. Korte 3403* (FURB); Monte Castelo, Serra da Garganta, 26°49'03"S, 50°13'24"W, 119 m, 17 September 2010, *A. Korte 4373* (FURB); Rio do Sul, Estrada Rio do Sul-Lontras, 27°14'51"S, 49°32'25"W, 720 m, 03 December 2013, *A.L. de Gasper 3276* (FURB). Bahia: Camacan, RPPN Serra Bonita, 15°23'30"S, 39°33'55"W, 835 m, 03 March 2006, *F.B. Matos et al. 1064* (UPCB, photo).

3. *Austroblechnum lehmannii* (Hieron.) Gasper & V.A.O.Dittrich in Gasper *et al.* (2016a: 203).

Blechnum lehmannii Hieronymus (1912: 473). *Blechnum lherminieri* subsp. *lehmannii* (Hieronymus) Lellinger (2003: 146). Type:—Colombia. Rio Timbiquí, *without date*, *F.C. Lehmann 8928* (holotype B 20 0031645, isotypes K000229679, K000229681, US 00067428, photo). Fig. 2A–C.

Blechnum mexiae Copeland (1932: 32). *Struthiopteris mexiae* (Copeland) Ching (1940: 243). Type:—BRAZIL. Minas Gerais: Carangola, 27 January 1930, *Y. Mexia 4237* (holotype UC419577, photo, isotypes B 20 0031839, BM000769802, CAS284844, photo, K, NO0109674, *n.v.*, NY, photo, P00627603, S, US 00067434, photo, VIC000016, photo).

Plants terrestrial; *rhizomes* ascending, long, non-stoloniferous, at apices densely clothed with atropurpureous to blackish, shiny, concolorous, narrowly triangular to lanceolate scales, 3.3–4 × 0.5–1.6 mm at the base, margins entire; *fronds* dimorphic, the *fertile* ones as long as the sterile, 23–33 cm long, the *sterile* 20–38 cm long; *stipes* completely stramineous or nigrescent proximally, with ovate, tan scales near apices and scales similar to those on rhizomes near bases, except for color (tan), of *sterile* fronds 3.5–8.7 cm long, 0.8–1.4 mm diam., of *fertile* fronds 5.5–13.1 cm long; *sterile blades* 18–28 × 4.1–5.7 cm, chartaceous, pinnatisect, narrowly elliptic, gradually reduced to apices and bases, proximal pinnae reduced to semicircular lobes or with lobes wider than long, glabrous; *fertile blades* 11–22 × 3.4–4.4 cm, pinnate, lanceolate to oblanceolate, truncate at base, with inconspicuous vestigial pinnae toward rhizomes; *rachises* glabrous on both sides or, mainly proximally, on the adaxial side, with tan, ovate-lanceolate scales; *sterile pinnae* 13–20 pairs, 2.2–3.2 × 1.2–1.8 cm at their bases, slightly to strongly ascending, fully adnate, triangular to broadly deltate, falcate, margins entire, plane or slightly revolute, apices acute, obtuse or rarely rounded; *fertile pinnae* 13–17 pairs, 19–35 × 1.8–2.7 mm, linear, strongly contracted; *veins* free, simple (distal ones), once forked (most) or 2 × forked (proximal pair), the proximal ones frequently arising from rachises, with hydathodes ending before margins.

Distribution and habitat:—Brazil (Minas Gerais, Espírito Santo, Rio de Janeiro, São Paulo, Paraná, Santa Catarina, and Rio Grande do Sul), furthermore Mexico, Guatemala, Honduras, El Salvador, Nicaragua, Costa Rica, Panama, Colombia, Venezuela, Ecuador, Peru, and Bolivia. This is a more or less common species in the study area, and therefore not threatened, growing generally in shaded areas close to streams in montane areas, in Tropical Atlantic Rain Forest, from (100) 300–1400 m.

Comments:—in the study area, the most similar species to *A. lehmannii* is *A. squamipes*. The first can be distinguished by the width of sterile fronds (> 4 cm, to 3.5 cm in *A. squamipes*), the habitat (forest in *A. lehmannii*, grassland in *A. squamipes*), the rhizomes ascending and long (>20 cm in *A. lehmannii*—according to Sota (1972) to one meter long) or, in *A. squamipes*, erect to ascending, at most 5 cm long, the stipes of sterile fronds (stramineous or with a dark base in *A. lehmannii*, predominantly atropurpureous in *A. squamipes*), the rhizome scales (narrowly triangular in *A. lehmannii*, ovate-lanceolate or ovate in *A. squamipes*) and the absence (in *A. lehmannii*) or presence (in *A. squamipes*) of stolons. Young plants of *Lomaridium plumieri* (Desv.) C.Presl are also similar to *A. lehmannii*, but the scales of the former are linear and tan, generally with a dark central stripe, while in *A. lehmannii* these are narrowly triangular to lanceolate, atropurpureous to blackish and concolorous. Sehnem (1968) misapplied the name *Blechnum onocleoides* (Spreng.) Christ (*sic*) to members of this species in southern Brazil (*Blechnum onocleoides* Swartz (1801: 75); according to Morton & Lellinger (1967), this is a synonym of *Lomaridium fragile* (Liebm.) Gasper & V.A.O.Dittrich, a species not found in Brazil. Mickel & Beitel (1988) proposed the synonymization of *Blechnum lehmannii* under *Blechnum lherminieri* (Bory in Kunze 1845: 173) Christensen (1905: 404) (= *Austroblechnum lherminieri* (Bory) Gasper & V.A.O.Dittrich in Gasper *et al.* (2016a: 203), stating that the plants are indeed the same species, with *Lomaria lherminieri* Bory being the older name. The senior author, however, has seen both type specimens at B and BM: *A. lehmannii* has narrower blades and, more importantly, the basal pinnae are gradually reduced to the rhizomes, while in *A. lherminieri* they are abruptly reduced. Considering these features, Lellinger (2003) reduced *B. lehmannii* to *B. lherminieri* subsp. *lehmannii* (Hieron.) Lellinger. We disagree with this decision and maintain *A. lehmannii* at species level. According to the photo presented by Kazmirczak (1999), the species exhibits vegetative propagation at the rhizome bases, a rare feature in the family and exclusive to this species in the study area.

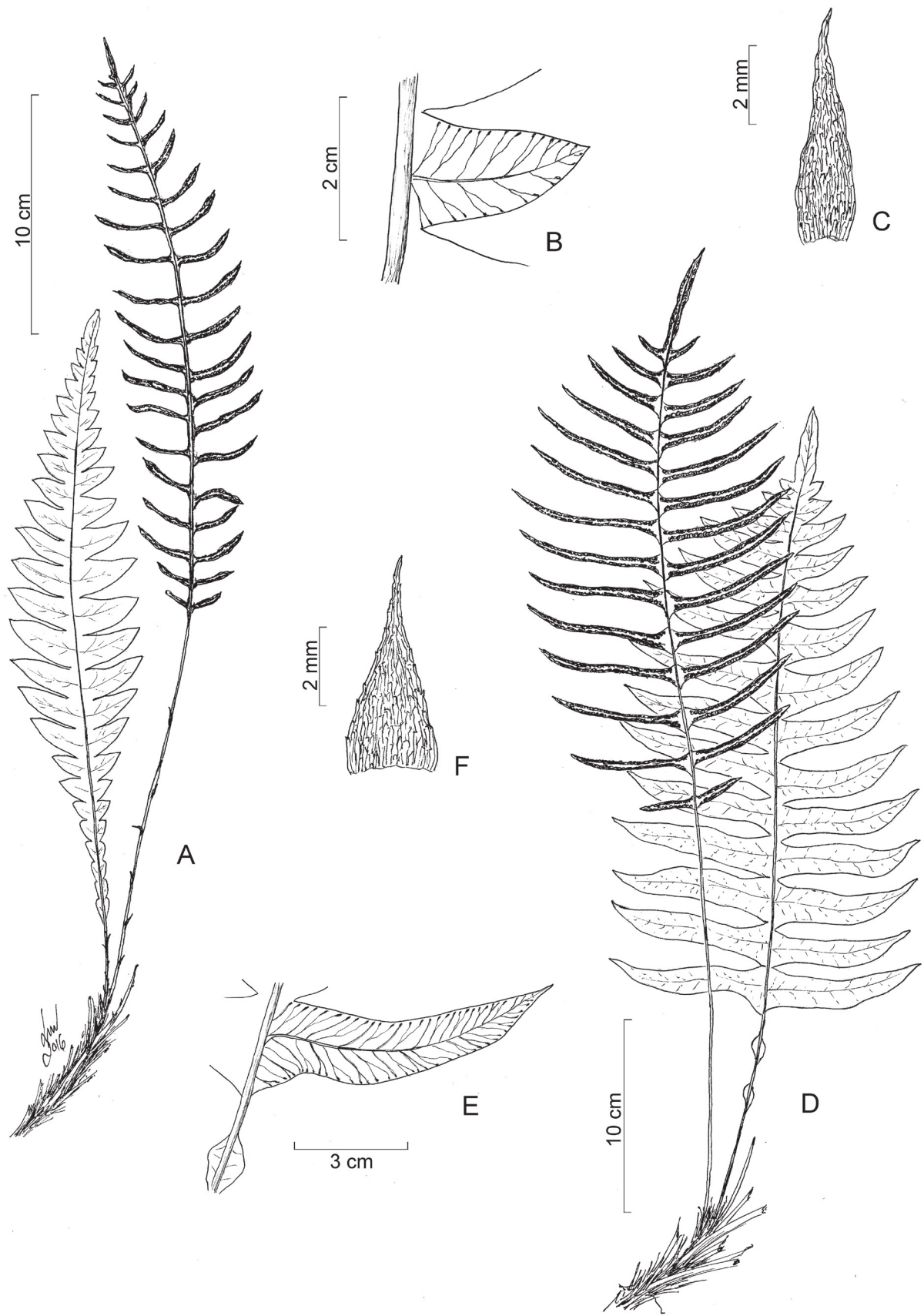


FIGURE 2. A–C. *Austroblechnum lehmannii*. A. Habit. B. Pinna and venation pattern. C. Rhizome scale. D–F. *Austroblechnum organense*. D. Habit. E. Pinna pair showing venation. F. Rhizome scale. (A–C from *A. Salino et al. 14054*, BHCB; D–F from *A.L. Gasper et al. 2658*, BHCB).

Additional specimens examined:—BRAZIL. Minas Gerais: Alto Caparaó, Parque Nacional do Caparaó, Vale Verde, 1100 m, 09 October 1990, *L. Krieger s.n.* (CESJ 15071); Araponga, Parque Estadual da Serra do Brigadeiro, proximidades da sede, 1,400 m, 10 July 1999, *A. Salino 4934* (BHCB, HRCB); Passa Quatro, Rio Retiro, 03 May 1948, *A.C. Brade & E. Silva Araújo 18953* (K, RB); Simonésia, RPPN Mata do Sossego, 1,150–1,600 m, 20°04'02"S, 42°04'40"W, 20 May 2006, *A. Salino et al. 11070* (CESJ); Córrego da Lapa bei Ouro Preto, 23 May 1902, *C.A.W. Schwacke 14597* (P). Espírito Santo: Castelo, Parque Estadual do Forno Grande, 20°31'51.1"S, 41°05'56.2"W, 1,450 m, 28 June 2008, *A. Salino et al. 13707* (BHCB); Santa Teresa, trilha que sobe a encosta ao lado da entrada do Country Club, 25 February 1996, *A. Salino 2638* (BHCB). Rio de Janeiro: Itatiaia, Serra do Itatiaia, Maromba, 25 June 1930, *A.C. Brade 10200* (R); Macaé, Pico do Frade de Macaé, 900–1000 m, 22 October 1985, *M. Leitman et al. 36* (RB); Nova Friburgo, Furnas, 17 March 1952, *P. Capell s.n.* (RB 77647); idem, 22°21'35"S, 42°34'00"W, 160 m, 01 September 2012, *A. Bonnet 1600271* (FURB), Santa Maria Madalena, Parque Estadual do Desengano, 21°53'48"S, 41°54'04"W, 24 July 2012, *C.M. Mynssen et al. 1314* (RB, photo); Teresópolis, Córrego Beija-flor, 1,200 m, 28 October 1929, *A.C. Brade 9803* (R); idem, Serra dos Penitentes, 25 November 1975, *R. Wels Windisch & A. Ghillány 409* (HB); 1874, *A.F.M. Glaziou 9348* (K). São Paulo: 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, *V.A.O. Dittrich et al. 917* (HRCB); Pindamonhangaba, Fazenda São Sebastião do Ribeirão Grande, 28 November 1993, *S.A. Nicolau & C.E. Espirito Santo 641* (SP); São Roque, 01 May 1977, *R. Wels Windisch & A. Ghillány 651* (HB); Serra Negra, 03 June 1927, *F.C. Hoehne s.n.* (SP 20656); Campos da Bocaina, Invernada do Pinhal, 10 April 1894, *A. Loefgren & G. Edwall s.n.* (BM, SP 21674, SPF 94533). Paraná: Campina Grande do Sul, Serra Virgem Maria, 30 January 1969, *G.G. Hatschbach 20959* (MBM, PACA); Morretes, Rio Sagrado de Cima, 100–300m, 08 August 1968, *G.G. Hatschbach 19576* (MBM, PACA); idem, Jurapê, 08 February 1979, *G.G. Hatschbach 41967* (MBM, PACA); idem, Parque Estadual Pico do Marumbi, ca. 600 m, 05 February 1999, *V.A.O. Dittrich 589* (ICN). Santa Catarina: Araranguá, ca. 200 m, 07 December 1944, *R. Reitz H655* (BM); Joinville, estrada Dona Francisca, 500 m, 21 June 1957, *R. Reitz & R.M. Klein 4463* (B, HBR, MBM, PACA); idem, 26°11'33"S, 49°02'52"W, 576 m, 10 December 2009, *T.J. Cadorin 933* (FURB); José Boiteux, Rio Laeisz, 26°54'43"S, 49°35'19"W, 823 m, 14 April 2010, *A. Korte 2738* (FURB); Morro Grande, Três Barras, 28°42'36"S, 49°46'12"W, 311 m, 23 November 2009, *M. Verdi 3146* (FURB); Paulo Lopes, Bom Retiro, 450 m, 13 December 1972, *A. Bresolin 1053* (HBR, PACA); Rancho Queimado, Serra da Boa Vista, 1200 m, 04 February 1953, *R. Reitz 5481* (HBR)—at PACA herbarium this number corresponds to *Austroblechnum organense* (Brade) Gasper & V.A.O.Dittrich; São Bento do Sul, Braço esquerdo, 26°21'54"S, 49°14'08"W, 417 m, 21 November 2009, *T.J. Cadorin 642* (FURB); Treviso, Nova Brasília, 28°26'37"S, 49°29'55"W, 555 m, 30 January 2010, *M. Verdi 3533* (FURB). Rio Grande do Sul: Caraá, Fraga, Apa Municipal de Caraá, 30 November 2006, *R.M. Senna & C. Mansan 1239* (HAS, photo); Maquiné, Reserva Biológica da Serra Geral, 05 February 2003, *C. Bencke 531* (HAS, photo).

3. *Austroblechnum organense* (Brade) Gasper & V.A.O.Dittrich in Gasper *et al.* (2016a: 203). *Blechnum organense* Brade (1935: 2). Lectotype (designated here):—BRAZIL. Rio de Janeiro: Serra dos Órgãos, 21 October 1929, *A.C. Brade 9758* (R). Syntype: Brazil, Rio de Janeiro, Rio Roncador, 1750 m, 03 November 1929, *A.C. Brade 9868* (R). Fig. 2D–F.

Plants terrestrial or epipetric; *rhizomes* erect or ascending, without stolons, at apices with lanceolate or narrowly triangular, dark tan to blackish, concolorous or not, translucent (the tan ones) or not (the other ones), shiny, 4.7–6 × 1.5–1.8 mm at the base, margins entire; *fronds* dimorphic, the *fertile* ones longer, shorter or as long as the sterile fronds, 31–50 cm long, the *sterile* 27–36 cm long; *stipes* atropurpureous or stramineous, sometimes atropurpureous and stramineous proximally (on different sides), with scales only near the rhizomes, these like those on rhizomes, lacking hairs, of *sterile fronds* 7.2–11.3 × 0.9–1.9 mm; of *fertile fronds* 21 cm long; *sterile blades* 19–23 × 6–11.6 cm, ovate or lanceolate, pinnatisect, the apices gradually reduced, truncate at base, with 0–1 reduced pinnae pairs and (0)1–3 pairs of vestigial pinnae, glabrous; *fertile blades* 9.3–13.6 × 6.4–10.8 cm, pinnate, ovate or deltate, truncate at base, with 2–4 pairs of almost imperceptible vestigial pinnae; *rachises* glabrous on both sides; *sterile pinnae* 9–19 pairs (excluding the vestigial ones), 3.2–8.4 × 0.8–1.7 cm, generally ascending, fully adnate, slightly falcate, apices acute to acuminate; *veins* free, once forked at proximal and median parts, distally simple, arising from costae or from rachises, with hydathodes at the margins or before.

Distribution and habitat:—Brazil (Minas Gerais, São Paulo, Santa Catarina, and Rio Grande do Sul [first record]), furthermore Colombia and Venezuela [first record]). This species occur in areas between 500 and 1700 m a.s.l., on plateaus and in mountain ranges such as Serra do Mar and Serra da Mantiqueira, generally close to streams

in deep shade of forests. In southern Brazil it can be found from 500 to 1200 m, whereas in southeastern Brazil it is confined to higher elevations (above 1300 m).

Comments:—this species is very close and maybe even conspecific with *A. divergens*. The features distinguishing both can be seen under *A. divergens*. The species is also similar to *Cranfillia mucronata* (Fée) V.A.O. Dittrich & Gasper, from which it can be distinguished by the size and form of rhizome scales and by the presence of vestigial pinnae at the base of blade in *A. organense* (no vestigial pinnae in *C. mucronata*). Brade (1935) did not designate a holotype in his description of *Blechnum organense*, citing two syntypes (*A.C. Brade 9758* and *9868*). Both specimens are in good condition, but *9758* is in better state and is therefore designated as lectotype.

Additional specimens examined:—BRAZIL. Minas Gerais: Delfim Moreira, 22°36'35"S, 45°20'30"W, 175 m, 17 March 2011, *A.L. de Gasper 2658* (FURB); Marmelópolis, picada para o pico dos Marins, entre 22°30' e 22°31'S e 45°08'30" e 45°09'30"W, 1,450 m, 03 April 2002, *V.A.O. Dittrich 1122* (HRCB); Rio de Janeiro: Teresópolis, Serra dos Órgãos, córrego Roncador, 1,700 m, 15 July 1940, *A.C. Brade 16373* (K, RB); ibidem, córrego Beija-flor, 1,300 m, 16 August 1940, *A.C. Brade 16533* (K). São Paulo: Campos do Jordão, Parque Estadual de Campos do Jordão, trilha da Cachoeira da Celestina, ca. 22°42'S, 45°28'W, 1,350–1,500 m, 27 November 2001, *V.A.O. Dittrich & A. Mantovani 1067* (HRCB). São José do Barreiro, Bocaina, Fazenda do Lageado, 1,600 m, March 1951, *F. Segadas Vianna & M. Starling 2661* (R). Unknown municipality: Serra da Bocaina, 1,700 m, 09 May 1957, *A.C. Brade 20911* (K, RB). Santa Catarina: Rancho Queimado, Serra da Boa Vista, 1,200 m, 04 February 1953, *R. Reitz 5481* (PACA) (at HBR herbarium this number corresponds to *Blechnum lehmannii* Hieron.). Rio Grande do Sul: Caraá, Fraga, APA municipal de Caraá, 03 December 2008, *R.M. Senna 1343* (HAS). VENEZUELA. Colonia Tovar, 1856, *J.W.K. Moritz 455* (B).

4. *Austroblechnum penna-marina* (Poir.) Gasper & V.A.O. Dittrich in Gasper *et al.* (2016a: 203). *Blechnum penna-marina* (Poir.) Kuhn (1868: 92). *Polypodium penna-marina* Poir. in Lamarck (1804: 520). *Lomaria penna-marina* (Poir.) Trevisan (1869: 570). *Struthiopteris penna-marina* (Poir.) Maxon & Morton (1939: 43). Type:—CHILE, Straits of Magellan, *P. Commerson s.n.* (holotype P, photo, isotypes FI, BM000769833, photo). Fig. 3A–C.

Blechnum penna-marina var. *boliviana* Rosenstock (1913: 60). *Blechnum penna-marina* (Poir.) Kuhn subsp. *boliviana* (Rosenst.) Chambers & Farrant (1996: 98). Type:—BOLIVIA, Unduavi, Nordyungas, 3,300 m, November 1910, *O. Buchtien s.n.* (Fil. Bol. Exsic. 45) (holotype BM000769834, isotype P).

Lomaria polypodioides Gaudichaud ex Desv. (1825: 98) (*non Blechnum polypodioides* Raddi (1819: 294), *nec Blechnum polypodioides* (Swartz 1788: 127) Kuhn (1868: 92) = *Lomarium fragile* (Liebmann 1849: 232) Gasper & V.A.O. Dittrich in Gasper *et al.* (2016a: 212). Type:—Falkland Islands, East Falkland (Isla Soledad), without date, *J.S.C.D. d'Urville s.n.* (holotype P n.v., isotype FI).

Plants terrestrial; *rhizomes* long-creeping, stoloniferous, the scales dark tan, concolorous, narrowly triangular, lanceolate or ovate, 1.5–2.5 × 0.7–0.8 mm at the base, margins entire; *fronds* dimorphic, the *fertile* ones longer and narrower than the sterile, 16–51 cm long, the *sterile* 8.1–37 cm long; *stipes* atropurpureous or light red, clothed mainly proximally with tan to light tan, concolorous, triangular or ovate scales with entire margins, longer on fertile fronds, of *sterile* fronds 0.5–11.6 cm long, 0.9–1.5 mm diam., of *fertile* fronds 19–27 cm long, wholly atropurpureous or stramineous distally; *sterile blades* 7.3–21 × 1–3.3 cm, subcoriaceous, pinnatisect or sometimes proximally pinnate, with sparse multicellular hairs on abaxial side, mainly on costae but also on veins, oblanceolate, pectinate, gradually reduced to apices and base, proximally the pinnae wider than long; *fertile blades* 14–30 × 1.2–3.3 cm, pinnate, narrowly obtrulate, gradually or more or less abruptly reduced proximally with some vestigial pinnae toward the rhizomes; *rachises* clothed, mainly proximally, with lanceolate, light tan scales abaxially and, adaxially with sparse, linear (with expanded bases), tan, concolorous scales; *sterile pinnae* 19–48 pairs, 0.5–1.7 × 0.2–0.6 cm, slightly ascending to slightly descending, more frequently patent, fully adnate, narrowly oblong, margins entire, slightly to strongly revolute, apices obtuse or rounded; *veins* free, once forked, rarely some distal veins simple, terminating as hydathodes at the margins.

Distribution and habitat:—Brazil (Minas Gerais [first unequivocal record], Rio de Janeiro, São Paulo, Santa Catarina, and Rio Grande do Sul), furthermore Peru, Bolivia, Argentina, Chile, Australia, New Zealand, and southern islands of Atlantic (*e.g.* Falkland Islands, Tristan da Cunha), Indian and Pacific oceans. This species is not very common in Brazil, being restricted to elevated, cold, open areas mainly in the south of country (southernmost plateaus, close to *Serra Geral* escarpments), but also on Itatiaia plateau (Mantiqueira range), above 800 m in south and from 1650–2350 m at the Itatiaia massif (southeast). It is not considered threatened (Dittrich *et al.* 2013).

Comments:—Looser (1947) *apud* Kazmirczak (1999) accepted four varieties in this species, based mainly on quantitative characters and blade texture. Chambers & Farrant (1996) also split the species into four taxa, but at a different rank (subspecies). These authors also used quantitative characters in circumscribing these subspecies, although they considered stipe color and shape of pinna bases and pinna margins important features. Sota (1970)

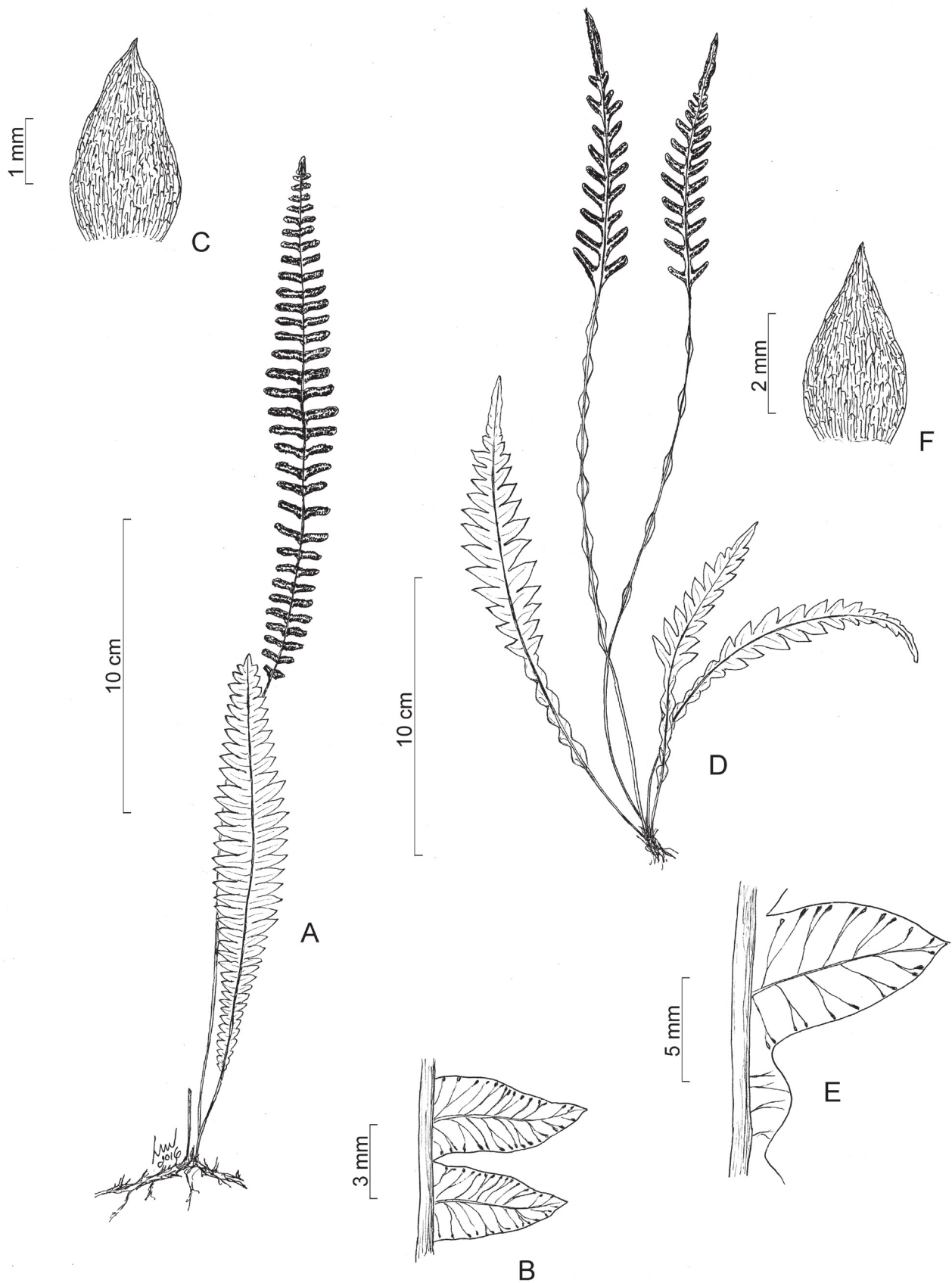


FIGURE 3. A–C. *Austroblechnum penna-marina*. A. Habit. B. Pinnae and venation pattern. C. Rhizome scale. D–F. *Austroblechnum squamipes*. D. Habit. E. Base of blade showing pinnae and venation. F. Rhizome scale. (A–C from *A. Salino et al.* 14745, BHCB; D–F from *A. Salino et al.* 12036, CESJ).

studied the taxonomy, ecology, and distribution of this species thoroughly, but did not subscribe to importance of the characters used by Looser (and later by Chambers & Farrant); consequently, he chose not recognize infraspecific taxa, since the morphological variation he observed was clinal and ecologically dependent. We agree with Sota's (1970) observations (1970) and, accordingly, we prefer not to recognize infraspecific taxa.

Additional specimens examined:—BRAZIL. Minas Gerais: Itamonte, Parque Nacional do Itatiaia, a caminho de Vargem Grande, 22°20'16,9"S, 44°44'6,6"W, 12 July 2007, *A. Salino et al. 12493* (BHCB). Rio de Janeiro: Itatiaia, Serra do Itatiaia, ca. 2,350 m, June 1902, *P.K. Dusén s.n.* (K); idem, Serra do Itatiaia, 20 June 1930, *A.C. Brade 10090* (RB); Resende: a ca. 1 km do Abrigo Rebouças, ca. 2,200 m, 24 July 2004, *V.A.O. Dittrich & M.C.O. Jorge 1313* (HRCB). July 1874, *A.F.M. Glaziou 7324* (K); August 1877, *A.F.M. Glaziou 9059* (K). São Paulo: Campos do Jordão, 20 September 1921, *F.C. Hoehne s.n.* (SP 8699, SPF 94523); idem, April 1937, *L. Lanstyack s.n.* (K, RB 33131). Santa Catarina: Bom Jardim da Serra, Morro da igreja, 28°07'24"S, 49°28'48"W, 08 April 2010, *A. Salino 14745* (FURB); Bom Retiro, Campo dos Padres, 16 December 1948, *R. Reitz 2379* (RB); Lages, 1905, *C. Spannagel s.n.* (Fil. Austr. Exsic. 236) (K); idem, 1921, *C. Spannagel 84* (HB, SP); São Joaquim, Morro da Igreja, 1,822 m, 22 January 1960, *J. Mattos 7032* (PACA); idem, near encruzilhada de Boava, 8 km south of São Joaquim, ca. 28°20'S, 49°56'W, 1,300 m, 05 January 1965, *L.B. Smith & R. Reitz 14286* (HBR, R); idem, rodovia de acesso a São joaquim, capão de floresta, 28°21'39"S, 49°58'16"W, 09 April 2010, *A. Salino et al. 14786* (FURB); Urubici, Parque Nacional de São Joaquim, 28°08'43"S, 49°37'06"W, 1,384 m, 09 May 2009, *A.L. de Gasper 2090* (FURB). Rio Grande do Sul: Bom Jesus, *without date*, *J. Dutra 746* (PACA); idem, Serra da Rocinha, 1,000 m, 19 January 1950, *A. Sehnem 4324* (PACA); Cambará do Sul, Itaimbezinho, 19 December 1950, *A. Sehnem 5203* (MBM, PACA); São Leopoldo, 10 October 1934, *A. Sehnem s.n.* (SP 50620). Unknown municipality: Rio dos Touros, Aparados da Serra, 800 m, 13 January 1942, *A. Sehnem 948* (PACA). Unknown state: Resende (Rio de Janeiro) or Itamonte (Minas Gerais), 16 February 1981, *M. Ranal 175* (HUFU).

5. *Austroblechnum squamipes* (Hieron.) Gasper & V.A.O.Dittrich in Gasper *et al.* (2016a: 203)

Blechnum mochaenum var. *squamipes* (Hieron.) de la Sota (1972b: 196). *Blechnum lanceolatum* var. *squamipes* Hieronymus (1896: 381).

Type:—ARGENTINA. Córdoba: Sierra de Achala, 03 December 1878, *G.H.E.W. Hieronymus s.n.* (Holotype B 20 0031627, isotypes B 20 0031626, P, SI n.v.). Fig. 3D–F.

Plants epipetric; *rhizomes* erect to ascending, stoloniferous, the scales ovate or ovate-lanceolate, tan, concolorous, 2.3–2.8 × 0.8–1.1 mm at the base, margins entire; *fronds* dimorphic, the *fertile* ones generally longer than the sterile, 20–31 cm long, the *sterile* 9–23 cm long; *stipes* for the most part atropurpureous and glabrous, longer on fertile fronds, of *sterile* fronds 0.9–3.1 cm long, 0.5–1 mm diam., proximally with scales similar to those on rhizomes, of *fertile* fronds 4.4–9.7 cm long; *sterile blades* 8–21 × 1.5–4.7 cm, glabrous, membranaceous to chartaceous, pinnatisect, narrowly obtrulate to oblanceolate, gradually reduced to apices and bases, proximally to semicircular lobes; *fertile blades* 7.9–11.9 × 1.7–2.5 cm, narrowly elliptic or lanceolate, truncate at base, with some vestigial pinnae proximally; *rachises* glabrous on both sides except for sparse, amorphous, tan scales with entire margins abaxially; *sterile pinnae* 13–27 pairs, 9–20 × 5–8 mm, patent (proximal ones) to ascending (median and distal ones), fully adnate, narrowly oblong, falcate, margins entire, plane, apices rounded (proximal ones), obtuse or acute (median and distal ones); *fertile pinnae* 10–14 pairs (excluding the vestigial ones), 9–20 × 1.9–2.4 mm, strongly ascending, linear, strongly contracted, with no green tissue beyond indusium; *veins* free, regularly forked or with 1–(2) distal pairs simple, with hydathodes before margins.

Distribution and habitat:—Brazil (Santa Catarina and Rio Grande do Sul), furthermore Bolivia and Argentina. It's a rare species in Brazil, with just a few specimens recorded from high areas (between 800 and 1000 m) in Rio Grande do Sul and Santa Catarina plateaus, on rocky cliffs in grasslands mixed with *Araucaria* forests. In Brazil, the species is considered as endangered by Dittrich *et al.* (2013).

Comments:—The closest species, in the study area, is *Austroblechnum lehmannii* (see this taxon for differences between them). The species nomenclature is confusing and was clarified by Sota (1972b). Sehnem (1968) has treated the specimens of this taxon as *Blechnum lanceolatum* var. *achalense* Hieronymus (1896: 381) (= *Blechnum mochaenum* var. *achalense* (Hieron.) Sota (1972b: 196)), a variety not found in Brazil and, according to Alan R. Smith (*pers. com.*), probably a synonym of *Austroblechnum vallegrandense* (M. Kessler & A.R. Sm. in Kessler *et al.* 2007: 79) Gasper & V.A.O.Dittrich in Gasper *et al.* (2016a: 203).

Additional specimens examined:—BRAZIL. Rio Grande do Sul: Cambará do Sul, Aparados, Fortaleza, 1,000 m, 02 May 1970, *A. Sehnem 10961* (PACA); São Francisco de Paula, Taimbé, 800 m, 13 February 1956, *A. Sehnem 6798* (MBM, PACA). Santa Catarina: Bom Jardim da Serra, Morro da Igreja, 28°07'24"S, 49°28'48"W, 08 April 2010, *A. Salino 14737* (FURB); Urubici; Serra do Oratório, April 1889, *E. Ule 306* (P); idem, RPPN Leão da Montanha, 13

November 2011, *A.L. de Gasper 2959* (FURB); Urupema, Fazenda Farofa, 1,535 m, 04 April 2007, *A. Salino 11979* (ESA).

2. ***Cranfillia*** Gasper & V.A.O.Dittrich in Gasper *et al.* (2016a: 207).

Type: *Cranfillia fluviatilis* (Brown 1810: 152) Gasper & V.A.O.Dittrich in Gasper *et al.* (2016a: 207).

Plants terrestrial; *rhizomes* short-creeping to usually suberect or erect, stoloniferous or not, slender to stout, clothed with reddish brown to blackish, sometimes bicolorous, lanceolate or oblong-attenuate, entire scales with acuminate tips; *fronds* dimorphic; *stipes* slender or stout, short to long, stramineous to dark brown, scaly proximally, often abundantly hairy, or hairs sometimes sparse to absent; *blades* concolorous, linear-oblong to deltate, pinnate or deeply pinnatifid proximally, pinnatifid distally, proximally truncate or with gradually to subabruptly reduced pinnae; *rachises* scaly and often pilose, the hairs uniseriate, septate, sometimes sparse; *buds* absent or rarely present (in *C. caudata*); *aerophores* absent; *pinnae* subpetiolulate proximally or often becoming fully adnate distally, oblong to lanceolate, sometimes falcate, entire to crenate or dentate along margins; *veins* free, 1 × or 2 × forked, terminating adaxially in small submarginal hydathodes; *sori* linear, indusia more or less entire, sometimes with uniseriate hairs; $x = 33$.

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

1. Blade of sterile fronds very gradually reduced to apices with an elongated, flagelliform tip; blade gradually reduced proximally...
..... *C. caudata*
1. Blade of sterile fronds gradually reduced to apices, pinnatifid, with no flagelliform tip; blade truncate proximally
..... *C. mucronata*

1. *Cranfillia caudata* (Baker) V.A.O.Dittrich & Gasper, *comb. nov.*—*Lomaria caudata* Baker in Hooker & Baker (1867: 179). *Cranfillia sprucei* (C. Chr.) Gasper & V.A.O.Dittrich in Gasper *et al.* (2016a: 208), *nom. superfl.* *Blechnum sprucei* Christensen (1905: 160). (*replaced synonym: Lomaria caudata* Baker, *non Blechnum caudatum* Cavanilles (1802: 262). Type:—ECUADOR. Andes, *R. Spruce 5329* (holotype K000006846, isotypes P00627638, P00627639, B 20 0034140 [holotype fragment]). Fig. 4D–F.

Plants terrestrial; *rhizomes* erect, the scales light tan with a dark central stripe or completely tan, shiny, lanceolate, 3–10 × 0.7–2.5 mm at the base, margins entire; *fronds* dimorphic, the *fertile* ones longer than the sterile, 59–68 cm long, the *sterile* 106–162 cm long; *stipes of sterile fronds* 6.6–15.2 cm long, 1.8–2.6 mm diam., dark tan at base, sometimes stramineous toward apices, scaly at base, the scales similar to those on rhizomes; *stipes of fertile fronds* 15.7–16 cm long; *sterile blades* 96–154 × 13–17 cm, chartaceous, pinnate, linear-lanceolate, gradually reduced toward apices and base; *fertile blades* 43–52 × 9.2–10.1 cm, pinnate, linear-elliptic, gradually reduced to base, without vestigial pinnae; *rachises* with indeterminate growth, the apices proliferous, flagelliform, on the abaxial surface with scales similar to those on rhizomes, pubescent, the hairs multicellular; *buds* present in some distal sterile pinna bases; *sterile pinnae* 39–61 pairs, 7.9–8.6 × 1.2–1.4 cm, narrowly triangular, sessile, bases truncate, reflexed (proximal ones) or patent (median and distal ones), margins crenate, plane (revolute only at vein tips), the proximal pinnae auriculate acroscopically, the auricles obtuse apically, pinna apices acuminate (median ones), obtuse or rounded (proximal and distal ones), abaxially pubescent on veins and costae, the hairs multicellular; *fertile pinnae* 48–51 pairs, 6–7.4 cm × 1.5–2.1 mm, linear, strongly contracted except the proximal ones that are similar to the sterile pinnae; *veins* free, 1 × –2 × forked, rarely simple, with hydathodes at the margins.

Distribution and habitat:—Brazil (Minas Gerais), furthermore Costa Rica, Colombia, Ecuador, Peru, Bolivia, and Argentina. Terrestrial plants in montane forests, between 1400 and 2000 m, restricted in Brazil to Serra da Mantiqueira (including Serra do Caparaó).

Comments:—a clear-cut species, differing from any other in the family in Brazil by its elongate, flagelliform, proliferous rachis (in adult sterile fronds). Brade (1950) called the plants of this taxon in Brazil *Blechnum longicauda* Christensen (1910: 10) (= *Cranfillia longicauda* (C. Chr.) Gasper & V.A.O.Dittrich in Gasper *et al.* 2016a: 208) but, according to Skottsberg (1954), *C. longicauda* is an endemic species from Masafuera, Juan Fernandez Islands, Chile, that can be differentiated from *C. caudata* by its larger size, distinct pinna shape, and glabrous rachises (pubescent in *C. caudata*). Brazilian specimens are closer to the type of *C. caudata* than to *C. longicauda*, differing by the crenate pinna margins and lack of scales on veins and blade tissue between veins. This new combination is necessary because the epithet “*caudata*” was available in *Cranfillia* and was not used by Gasper *et al.* (2016a), thus creating a superfluous name.

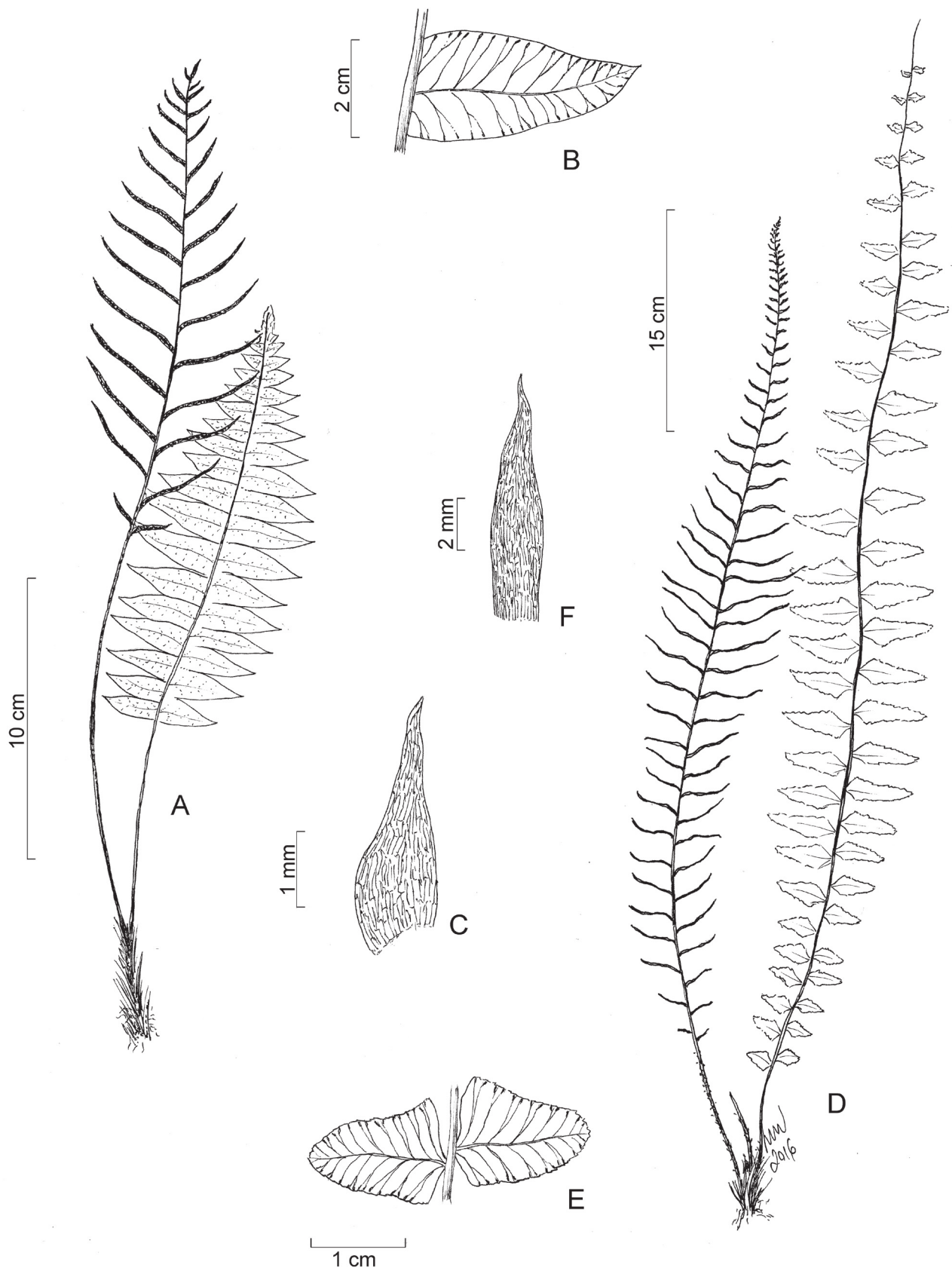


FIGURE 4. A–C. *Cranfillia mucronata*. A. Habit. B. Pinna and venation pattern. C. Rhizome scale. D–F. *Cranfillia caudata*. D. Habit. E. Pair of basal pinnae showing venation. F. Rhizome scale. (A–C from *F.S. Souza et al. 1482*, BHCB; D–F from *L.L. Giacomini et al. 1350*, CESJ).

Selected specimens examined:—BRAZIL. Minas Gerais: Aiuruoca, Parque Estadual da Serra do Papagaio, trilha para o Pico do Papagaio, 22°03'12"S, 44°39'05"W, 1,704 m, 11 May 2014, *V.A.O. Dittrich et al. 1886* (CESJ); Delfim Moreira, Fazenda da Onça, trilha da sede para cachoeira, 22°36'34"S, 45°20'51"W, 1,725 m, 15 March 2011, *L.L. Giacomini et al. 1350* (CESJ); Espera Feliz, entre a portaria de Pedra Menina e Macieira, 20°29'04"S, 41°49'35"W, 1,856 m, 29 August 2009, *A. Salino et al. 14561* (CESJ); Passa Quatro, Sertão dos Martins, 1,400 m, 08 May 1948, *A.C. Brade & E. Silva Araújo 19047* (RB); Serra do Caparaó, 2000 m, October 1941, *A.C. Brade 17098* (RB).

2. *Cranfillia mucronata* (Fée) V.A.O. Dittrich & Gasper, *comb nov.*—*Lomaria mucronata* Fée (1869: 20). *Cranfillia sampaioana* (Brade) Gasper & V.A.O. Dittrich (2016a: 208) *nom. superfl.* *Blechnum sampaioanum* Brade (1935: 225). (*replaced synonym: Lomaria mucronata* Fée, *non Blechnum mucronatum* Fée (1872–73: 17)). Type:—BRAZIL. Rio de Janeiro, *A.F.M. Glaziou 2423* (holotype P00639509, isotype S05-10126). Fig. 4A–C.

Plants terrestrial; *rhizomes* erect to ascending, non-stoloniferous, the scales narrowly triangular, black or dark tan, 2.1–3.4 × 0.7–0.8 mm at the base, margins entire or sparsely denticulate; *fronds* dimorphic, the *fertile* ones longer and narrower than the sterile, 48–67 cm long, the *sterile* 32–46 cm long; *stipes of sterile fronds* 10–23 cm long, 2.2–2.9 mm diam., flattened, proximally black, distally stramineous, at bases and frequently distally with scales similar to those of rhizomes, except for their color (light tan); *stipes of fertile fronds* 40–44 cm; *sterile blades* 19–32 × 7–17 cm, chartaceous, pinnatisect, glabrous or with very sparse hairs, ovate, elliptic-ovate, elliptic or narrowly triangular, gradually reduced to apices, truncate proximally, without vestigial pinnae (sometimes with one or two pinna pairs slightly smaller than more distal ones); *fertile blades* 17–23 × 2.7–6 cm, pinnate, linear, narrowly oblong or narrowly elliptic, gradually reduced to apices, more or less abruptly reduced proximally, without vestigial pinnae; *rachises* glabrous on both sides; *buds* absent; *sterile pinnae* 11–19 pairs, 3.8–9.2 × 1.1–1.6 cm, ensiform, slightly falcate or not, fully adnate except the basal-most pair that is free at the basiscopic side and adnate at the acroscopic, reflexed (the basal and sometimes the median ones), patent or ascending distally, surcurrent proximally or not, margins finely denticulate, plane or slightly revolute, apices acute to acuminate, rarely obtuse; *fertile pinnae* 13–17 pairs, 3.4–4.2 cm × 1–1.4 mm, linear, strongly contracted; *veins* free, 1 × –2 × –(3) × forked, with clavate endings before margins.

Distribution and habitat:—Brazil (Minas Gerais, Espírito Santo, Rio de Janeiro, São Paulo, Paraná, and Santa Catarina). A Brazilian endemic restricted to the Atlantic Forest, common in forested montane areas, generally growing on shaded areas in the forest, mainly on steep slopes. Individuals grow between 100 and 1000 m, with the lowest elevations in southern Brazil.

Comments:—the species can be easily distinguished from *Cranfillia caudata* (see the key), but confusions with *Austroblechnum divergens* and *A. organense* are more common (see differences between them under *A. divergens* and *A. organense*). Sehnem (1968) called plants of this species *Blechnum plumieri* (Desvaux 1811: 325) Mettenius (1856: 61) (= *Lomaridium plumieri* (Desv.) C. Presl), but this is a very different species treated now in another genus. Sehnem did not justify why he used this name, but quite possibly he adopted the whole synonym list proposed by Christensen (1905) for *Blechnum binervatum* (Poirot 1804: 521) Morton & Lellinger (1967: 67). This synonym list included *Lomaria mucronata* Fée, name later replaced by *Blechnum sampaioanum* Brade (= *Cranfillia mucronata* (Fée) V.A.O. Dittrich & Gasper). This (the acceptance and consequent transcription *ipsis litteris* of the synonyms) is evident in many species treated by Sehnem in his *Flora Illustrada Catarinense*. This new combination is necessary because the epithet “*mucronata*” was available in *Cranfillia* and was not used by Gasper *et al.* (2016a), thus creating a superfluous name.

Selected specimens examined:—BRAZIL. Minas Gerais: Araponga, Parque Estadual da Serra do Brigadeiro, trilha para o Pico do Boné, 26 May 2000, *A. Salino et al. 5498* (BHCB, HRCB). Espírito Santo: Iúna, 800–1,000 m, 07 February 1973, *G.G. Hatschbach & Z. Ahumada 31356* (MBM, PACA); Santa Teresa, Vargem Alta, 28 August 1985, *W. Boone 710* (MBML); idem, Estação Ecológica de Santa Lúcia, 24 February 1996, *A. Salino 2588* (BHCB); idem, São Lourenço, Reserva Biológica de São Lourenço, 700 m, 22 November 1998, *L. Kollmann et al. 600* (MBML). Rio de Janeiro: Itatiaia, Serra do Itatiaia, Sítio do Walter, May 1926, *A.J. Sampaio 4666* (HB); idem, Maromba, km 8, 18 June 1930, *A.C. Brade 10070* (R); Nova Friburgo, Alto Macaé, May 1884, *F.R. Mendonça 1349* (B); idem, Serra de Macaé, 18 October 1977, *J.P.P. Carauta et al. 2708* (PACA); Rio de Janeiro, Pico da Tijuca, 500–1,000 m, 16 July 1944, *F. Segadas Vianna 582* (HB); Teresópolis, Cascata Feroz, 16 April 1917, *A.J. Sampaio 2252* (HB, R); São Paulo: Lorena, Salto Santa Thereza, *without date*, *H. Luederwaldt s.n.* (SP 21752); Natividade da Serra, Parque Estadual da Serra do Mar, Núcleo Santa Virgínia, Base de Vargem Grande, trilha p/ a Cachoeira da Boneca, 23°25'57"S, 45°12'36"W, *ca.* 800 m, 10 August 2001, *V.A.O. Dittrich et al. 910* (HRCB); Ribeirão Grande, Parque Estadual Intervales, trilha da Caçadinha, 24°16'39"S, 48°25'09"W, 780 m, 15 April 2003, *A. Salino et al. 8464* (BHCB,

HRCB); Santo André, Rio Grande prope São Paulo, Serra do Mar, August 1913, *A.C. Brade 6628* (HB, R); São Luís do Paraitinga, Parque Estadual da Serra do Mar, Núcleo de Santa Virgínia, trilha para o Poço do Pito, 850 m, 03 November 2001, *V.A.O. Dittrich et al. 984* (HRCB); Sete Barras, Parque Estadual Intervales, Base de Saibadela, 24°12'–24°15'S, 48°03'–48°06'W, 250 m, 15 November 2001, *V.A.O. Dittrich 1059* (HRCB); Ubatuba, Parque Estadual da Serra do Mar, Núcleo Picinguaba, Trilha da Vargem Grande ao Ipiranguinha, 620 m, 30 October 2001, *V.A.O. Dittrich et al. 975* (HRCB). Paraná: Adrianópolis, Parque Estadual das Lauráceas, 12 January 2000, *V.A.O. Dittrich et al. 711* (HRCB); Campina Grande do Sul, caminho ao Cerro Verde, 02 August 1967, *G.G. Hatschbach 16871* (MBM, PACA); Guaratuba, Serra de Araraquara, 100 m, 04 January 1968, *G.G. Hatschbach 18243* (MBM, PACA); Morretes, Serra do Leão, 1000 m, 10 June 1969, *G.G. Hatschbach 21614* (MBM, PACA); idem, Parque Estadual Pico do

Marumbi, ca. 600 m, 05 February 1999, *V.A.O. Dittrich 592* (ICN); Piraquara, Serra Piramirim, estrada Itupava, 09 April 1996, *J.M. Silva et al. 1651* (K, MBM); Quatro Barras, Rio do Corvo, 900 m, 30 December 1969, *G.G. Hatschbach 23279* (MBM, PACA); São José dos Pinhais, Usina Hidrelétrica de Guaricana, 15 July 1988, *F.C. Straube 81* (MBM). Santa Catarina: Angelina, 27°27'S, 49°03'W, 822 m, 28 October 2009, *T.J. Cadorin 310* (FURB); Benedito Novo, Fazenda Campo do Zinco, 26°54'35"S, 49°29'52"W, 788 m, 02 November 2009, *J.L. Schmitt 471* (FURB); Blumenau, Parque Nacional da Serra do Itajaí, 27°03'24"S, 49°05'16"W, 31 May 2007, *A.L. de Gasper 578* (FURB); Corupá, Palmeiras II, 26°27'36"S, 49°24'36"W, 938 m, 24 August 2010, *A. Korte 4176* (FURB); Doutor Pedrinho, Forçação, 26°43'39"S, 49°35'06"W, 785 m, 26 January 2010, *T.J. Cadorin 1073* (FURB); Garuva, Morro Monte Crista, 27 February 2003, *O.S. Ribas et al. 5180* (MBM); Grão Pará, Parque Estadual da Serra Furada, 28°07'03"S, 49°25'59"W, 03 September 2011, *S.Z. Custódio 10* (FURB); Ilhota, Morro do Baú, 500 m, 21 January 1953, *R. Reitz 5183* (HBR); ibidem, ao longo da trilha para o topo, 720 m, 09 April 1994, *D.B. Falkenberg 6617* (FURB); Itaiópolis, Arroio das Pombas, 26°32'58"S, 49°56'51"W, 747 m, 03 February 2010, *A. Korte 1668* (FURB); Jaraguá do Sul, Ano Bom / Braço Esquerdo, 26°22'05"S, 49°08'23"W, 205 m, 01 February 2010, *S. Dreveck 1695* (FURB); Joinville, Estrada Dona Francisca, 600 m, 21 June 1957, *R. Reitz & R.M. Klein 4448* (B); idem, Rio Manso, 26°16'48"S, 49°08'24"W, 744 m, 25 February 2010, *S. Dreveck 1862* (FURB); Luiz Alves, Morro do Seba, 26°46'42"S, 48°58'24"W, 330 m, 12 April 2015, *A.L. de Gasper 3661* (FURB); Major Gercino, 27°26'58"S, 49°08'24"W, 708 m, 20 April 2010, *A. Stival-Santos 2609* (FURB); Nova Trento, Pinheiral, 750 m, 13 January 1948, *A. Sehnem 3100* (B, PACA); Orleans, Brusque do Sul, 28°15'35"S, 49°24'43"W, 309 m, 15 March 2010, *M. Verdi 3999* (FURB); Petrolândia, 27°32'24"S, 49°46'14"W, 915 m, 05 May 2008, *A.L. de Gasper 1768* (FURB); Ponte Alta, Morro do Funil, 27°16'30"S, 50°07'56"W, 113 m, 06 October 2009, *J.L. Schmitt 190* (FURB); Rio do Campo, Anta Branca (Antigo Alto Rio do Oeste), 26°54'36"S, 50°13'13"W, 786 m, 22 February 2010, *A. Korte 1949* (FURB); São Martinho, Chicão, 28°04'48"S, 48°52'12"W, 526 m, 26 January 2010, *J.L. Schmitt 1073* (FURB); Taió, Gramado, 27°00'01"S, 50°13'14"W, 893 m, 15 September 2010, *A. Korte 4342* (FURB).

3. *Lomaridium* Presl (1851: 514–515)

Type: *Lomaridium plumieri* (Desvaux 1811: 325) Presl (1851: 515)

Plants hemiepiphytic; *rhizomes* long-creeping, climbing trees or ascending to erect, non-stoloniferous, stout, clothed by mostly bicolorous, long-lanceolate, denticulate or entire (rare) scales; *fronds* dimorphic; *stipes* stout, long, stramineous or brown to dark brown, proximally with scales like those on rhizomes, glabrous or minutely but densely papillose; *blades* concolorous or bicolorous, the adaxial side dark green, abaxially silver-green, lanceolate or ovate-deltate, deeply pinnatisect or pinnate in the proximal half, usually with many pairs of greatly reduced, auriculate or vestigial pinnae proximally, distally pinnatifid, sometimes with an entire, acuminate blade tip; *rachises* glabrous or with scattered minute hairs, often atropurpureous; *buds* absent; *aerophores* absent; *pinnae* adnate, oblong-acute to linear-attenuate or narrowly triangular, sometimes falcate, margins entire, slightly revolute; *veins* free, simple or once forked, ending near margins in enlarged vein tips adaxially; *sori* linear, covered by linear indusia, these entire to subentire; $x = 29, 32$.

Only one species in the study area, *L. plumieri*.

Lomaridium plumieri (Desv.) Presl (1851: 515). *Lomaria plumieri* Desvaux (1811: 325). Type:—Habitat in Antillis, without date, anon. s.n. (holotype P00627576). Fig. 5A–C.

Lomaridium pteropus (Kunze) Gasper & V.A.O.Dittrich in *Gasper et al.* (2016a: 212). *Blechnum pteropus* (Kunze) Mettenius (1856: 61). *Lomaria pteropus* Kunze (1842: 97) (*nom. nov.* for *Acrostichum heterophyllum* Raddi, non *Lomaria heterophylla* Desvaux (1811: 330), nec *Blechnum heterophyllum* (Desv.) Schlechtendal (1827: 37)). *Acrostichum heterophyllum* Raddi (1825: 5). Type:—BRAZIL, Rio de Janeiro, Mandiocca, *G. Raddi* (PI, photo in Pichi Sermolli & Bizzarri (2005), isotypes FI, K, photo).

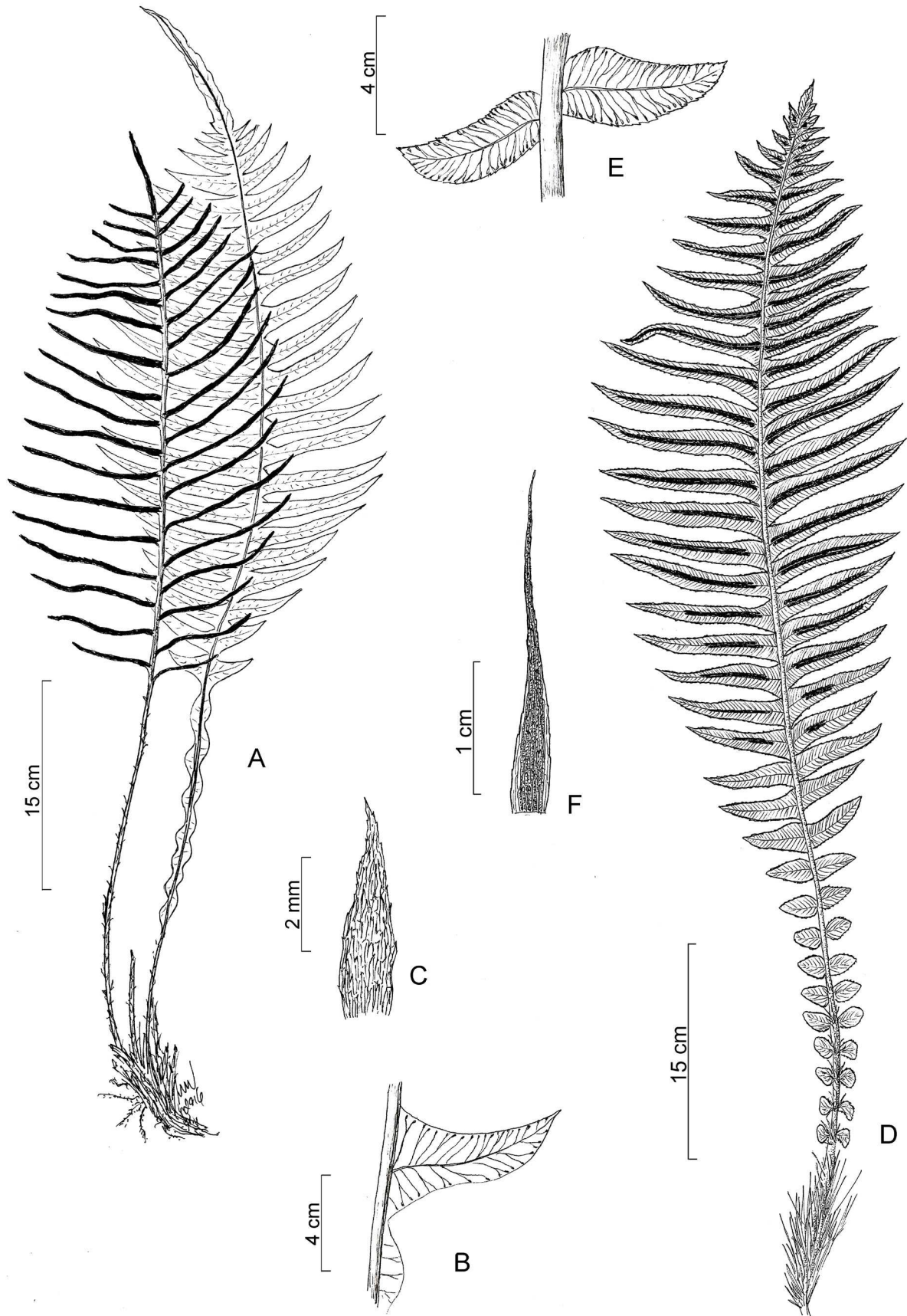


FIGURE 5. A–C. *Lomaridium plumieri*. A. Habit. B. Basal pinnae showing venation pattern. C. Rhizome scale. D–F. *Neoblechnum brasiliense*. D. Habit. E. Pair of basal pinnae showing venation. F. Rhizome scale. (A–C from *F.S. Souza et al.* 613, CESJ0052285; D–F from *C. Kozera* 3992, CESJ0062336, CESJ0062336_01).

Plants terrestrial, epipetric, hemiepiphytic or holoepiphytic; *rhizomes* long creeping, densely clothed with tan, denticulate or not, mostly with a dark central stripe, linear-lanceolate to linear scales, 5–13 × 0.1–1.2 mm, apices uniseriate; *fronds* dimorphic, the *fertile* longer or shorter than the sterile, 46–76 cm long, the *sterile* 44–102 cm long; *stipes* of the sterile fronds 3.2–23 cm long, 2.4–4.8 mm diam., adaxially shallowly grooved, stramineous to atropurpureous, proximally with scales similar to those on rhizomes; *stipes* of the fertile leaves 3.1–14.5 cm long; *sterile blades* 38–87 × 12–32 cm, papiraceous to chartaceous, glabrous, completely pinnatisect or pinnate at base and pinnatisect toward apices, lanceolate to ovate, gradually reduced toward apices and pinnatifid or reduced to a subconform terminal pinna, truncate at base, with the basal-most pinna pair long decurrent on the stipes or with (0)2–7(11) pairs of vestigial pinnae toward rhizomes; *fertile blades* 38–55 × 5.7–18 cm, pinnate, linear-elliptic to elliptic, more or less abruptly reduced toward base; *rachis* adaxially glabrous, abaxially with linear, sparse scales, in fertile fronds sometimes proximally narrowly alate; *sterile pinnae* 9–33 pairs, 6.7–20 × 1.4–1.8 cm, slightly to strongly ascending, broadly adnate, sursumcurrent or (mainly apical ones) strongly sursumcurrent, linear to linear-oblong, margins entire, plane or slightly revolute, apices acute to acuminate; *fertile pinnae* 15–23 pairs, 7.1–11.5 cm × 3.3–3.5 mm, linear; *veins* free, simple or once forked, the proximal commonly arising from rachis, with clavate ends behind the margin.

Distribution and habitat:—Brazil (Bahia, Minas Gerais, Espírito Santo, Rio de Janeiro, São Paulo, Paraná, Santa Catarina, and Rio Grande do Sul), furthermore Paraguay, Uruguay [first record], Argentina and somewhere in Antilles (type specimen). Distribution uncertain: the limits between taxa in this genus are very ill defined, and a thorough revision of it is needed. This species is fairly common in the study area and it is not threatened in Brazil. It occurs in forests (climbing by rhizomes or as holoepiphytes, on tree ferns or angiosperms, without any obvious preference for phorophytes at the study area), but also over rocks covered with humus and on ravines in the edge of forests. In the study area the species can be found from 0–1,800 m in tropical rain forests, seasonal deciduous or semideciduous forests, *Araucaria* forests, *restingas*, and riverine forests in grassland-dominated regions. Field observations indicate that this species needs to climb on a phorophyte in order to produce fertile fronds.

Comments:—young plants of this species can be confused with *Austroblechnum lehmannii* in the study area, but they differ by the proximal pinnae—semicircular and closer to each other in *A. lehmannii*, vestigial, non semicircular and distant or normal, not very reduced in *L. plumieri*. Furthermore, *L. plumieri* has long creeping rhizomes, whereas *A. lehmannii* has decumbent or sometimes erect rhizomes.

The name *Blechnum plumieri* (Desv.) Mett. (= *Lomaridium plumieri*) has been misapplied to *Blechnum sampaioanum* Brade (= *Cranfillia mucronata*) by Sehnem (1968) and seemingly was never used for the taxon known as *Blechnum acutum* (Desvaux 1827: 290) Mettenius (1864: 225) (= *Lomaridium acutum* (Desv.) Gasper & V.A.O.Dittrich). According to Morton & Lellinger (1967), the name was based solely in a description and plate by Plumier of a plant from Martinique, but the senior author has seen the type of *Lomaria acuta* Desv. at P. In Brazilian herbaria, the name most commonly applied to this taxon is *Blechnum binervatum* (Poir.) C.V.Morton & Lellinger subsp. *acutum* (Desv.) Tryon & Stolze (1993: 64). At P, the senior author had the opportunity to examine type specimens and other materials collected in tropical America, and verified that the plant described as *Lomaria acuta* by Desvaux (= *Lomaridium acutum*) is not the same as Brazilian, Paraguayan and Argentinian plants. The pinnae, in *L. acutum*, are cuneate at base and slightly adnate, while the pinnae in *Lomaridium plumieri* are broadly adnate (sursumcurrent). Also, *L. acutum* is fully pinnate, whereas *L. plumieri* is pinnate only at the very base. Finally, sterile pinna apices are acute to acuminate in *L. plumieri*, long-acuminate in *L. acutum*. But this is just the tip of the iceberg, since the problem of which name must be applied to the southeastern and eastern South American plants only starts. Many species in this genus were described and it is not easy to decide which materials match exactly the plant described by Desvaux. Notwithstanding, some type specimens match very well the plants from southeastern Brazil, Paraguay and Argentina, viz. *Lomaria angustifolia* Kunth in Humboldt *et al.* (1815: 18), *Lomaria meridensis* Klotzsch (1847: 345), *Lomaria martinicensis* Sprengel (1822: 5) and *Lomaria plumieri* Desv. The oldest of these names is *Lomaria plumieri*, published in 1811 by Desvaux and transferred to *Lomaridium* forty years later by Presl (1851). Thus, the proper name to be applied to Brazilian, Argentinian, Paraguayan and Uruguayan plants is *Lomaridium plumieri* (Desv.) Mett., not *Lomaridium acutum* (Desv.) Gasper & V.A.O.Dittrich. *Lomaridium fragile* (as *Blechnum fragile* (Liebm.) Morton & Lellinger (1967: 68)) was cited for Brazil by Sylvestre (1994), but no material of this species has been seen for the country, the species occurring mostly in Central America and Andean countries.

The type specimen of *Acrostichum heterophyllum* (= *Lomaridium pteropus*) is a bit different of most plants we consider as *L. plumieri*, having winged stipes. Notwithstanding, we find many intermediate specimens between this form and the more common form found in *L. plumieri* and, for now, we prefer to treat all of them as *L. plumieri*, pending a comprehensive revision of *Lomaridium*.

Additional specimens examined:—BRAZIL. Minas Gerais: Araponga, Parque Estadual da Serra do Brigadeiro,

proximidades da Sede, 1,400 m, 07 October 1999, *A. Salino 4895* (BHCB); Barbacena, Futuro Distrito Industrial de Barbacena, ca. 1,150 m, 09 December 2002, *V.A.O. Dittrich & A. Salino 1260* (HRCB); Belo Vale, 20°26'37"S, 43°56'10"W, 1,300 m, 23 October 2001, *A. Salino & F.A. Carvalho 7662* (BHCB, HRCB); Caldas, *without date*, *G.A. Lindberg s.n.* (K); idem, Pocinhos do Rio Verde, ca. 21°56'S, 46°23'W, 1,150–1,200 m, 16 June 1995, *M.R. Pietrobom-Silva 1907* (SJRP); Camanducaia, Pinheirão, 22°42'53"S, 46°09'17"W, ca. 1,720 m, 19 October 2001, *L.C.N. Melo et al. 169, 170* (BHCB, HRCB); Carangola, 1,200 m, 01 April 1987, *L. Krieger & R.F.N. Camargo s.n.* (CESJ 21478, MBM 277106, UEC 77492); Catas Altas, Serra do Caraça, Parque Natural, trilha para a Capelinha, 18 December 1999, *A. Salino 4991* (BHCB, HRCB); Juiz de Fora, Teixeira, 14 August 1970, *L. Krieger s.n.* (CESJ 9188); Moeda, Serra da Moeda, km 2 da Estrada da Moeda, 20°18'S, 43°58'W, 1,500 m, 15 November 1987, *C.N. Ferreira s.n.* (BHCB 11433, UEC 63328); Nova Lima, Estação Ecológica de Fechos, 20°03'58"W, 43°57'33"W, 30 January 2002, *F.A. Carvalho et al. 54* (BHCB); Ouro Branco, 22 June 1984, *L. Krieger s.n.* (CESJ 20635, HRCB 39052); Ouro Preto, Camarinhas, 1937, *J. Badini s.n.* (OUPR 10476); Poços de Caldas, Serra dos Poços, rodovia Poços de Caldas—Andradas, ca. 9 km da cidade, ca. 21°47'S, 46°34'W, ca. 1,250 m, 16 June 1995, *M.R. Pietrobom-Silva 1973* (SJRP); Santa Bárbara, Serra do Caraça, 06 December 1989, *W. Oliveira 3, 28* (SJRP); São Roque de Minas, Parque Nacional da Serra da Canastra, Casca d'Anta, 20°18'20"S, 46°31'13"W, 14 July 1997, *A. Salino 3198* (BHCB); Sapucaí Mirim, propriedade da Klabin, 19 August 2001, *V.A.O. Dittrich et al. 931* (HRCB). Espírito Santo: Santa Teresa, Nova Lombardia, Goipaboaçu, 02 December 1985, *W. Boone 940* (MBML); Serra, Estação Biológica do Mestre Álvaro, subida para o morro do Mestre Álvaro, perto de Vitória, 21 November 1982, *J.R. Pirani et al. 188* (SP); Venda Nova do Imigrante, 11 March 1974, *L. Krieger s.n.* (CESJ 13419). Rio de Janeiro: Itatiaia, Estação Biológica, trail between Ponte Maromba and Macieiras, Mt. Itatiaia, 22°27'S, 44°39'W, 1,200–1,900 m, 04 January 1929, *L.B. Smith 1666* (K); Nova Friburgo, Alto Macaé, May 1884, *Mendonça 1351* (B); Petrópolis, 1872, *T.A. Preston s.n.* (K); idem, Vale do Rio Bomfins, antiga Fazenda Bomfins, próxima ao bairro Corrêas, ca. 1,800 m, 17 August 1989, *L.S. Sylvestre 265* (RB); Parati, Rodovia Rio-Santos, quase na divisa com São Paulo, 02 February 1996, *A. Salino 2499* (BHCB, UEC); idem, Parque Nacional da Serra da Bocaina, trilha para o pico do Cuscuzeiro, 23°18'14"S, 44°47'16"W, 500 m, 07 August 2001, *A. Salino et al. 7368* (BHCB); Rio de Janeiro, Tijuca, October 1928, *A.C. Brade 21375* (HB); idem, Reserva Florestal do Instituto de Conservação da Natureza, perto da gruta Geonoma, 02 February 1966, *J.P. Lanna Sobrinho 1614* (PACA); Santa Maria Madalena, Santo Antonio de Imbé, April 1932, *A.C. Brade & J. Santos Lima 11607* (R); 1815, *A. Cunningham s.n.* (K); August 1877, *A.F.M. Glaziou 9060* (K); Teresópolis, Rio Paquequer, 1200 m, 04 October 1929, *A.C. Brade 9570* (R); *without date*, *A.F.M. Glaziou 1762* (K). São Paulo: Analândia, Serra do Cuscuzeiro, ca. 950 m, 01 June 1993, *A. Salino 1776* (BHCB); Anhembi, Fazenda Barreiro Rico, 11 July 1981, *M. Ranal 136* (HUFU, SP); Bananal, Estação Ecológica de Bananal, rio das Cobras entre a primeira e a sétima queda, 22°47'32"S, 44°21'33"W, 1200 m, 09 December 2001, *A. Salino et al. 7525* (BHCB); Campos do Jordão, 5–20 November 1937, *P. Campos Porto 3081* (K); idem, Parque Estadual de Campos do Jordão, 22°42'S, 45°28'W, 1,300–1,400 m, 28 November 2001, *V.A.O. Dittrich & A. Mantovani 1079* (HRCB); Capão Bonito, Fazenda Intervalles, trilha da Cassadinha, 30 October 1991, *A. Salino 1151* (UEC); Caraguatatuba, Parque Estadual da Serra do Mar, estrada intermediária km 33, estação de bombeamento da Petrobrás, 23°40'58"S, 45°38'14"W, 590 m, 18 April 2000, *A. Salino 5260* (BHCB, HRCB); Cunha: Parque Estadual da Serra do Mar, Núcleo Cunha, 18 December 1996, *A. Salino 2958* (BHCB, ESA, HRCB); Iporanga, Fazenda Intervalles, trilha para o mirante, 23 May 1996, *J. Prado et al. 954* (SP); Itararé, Estrada Itararé-Bonsucesso, descida da Serra, 24°16'28"S, 49°09'34"W, 06–10 September 1993, *V.C. Souza et al. 4221* (ESA); Jquitiba, Fazenda Itereí, 21 November 1994, *J. Prado et al. 535* (SP); Pindamonhangaba, Fazenda São Sebastião do Ribeirão Grande, 17 December 1995, *S.A. Nicolau et al. 981* (SP); Santo André, Rio Grande, Serra do Mar, *without date*, *M. Wacket s.n.* (Fil. Austr. Exsic. 68) (K); idem, Reserva Biológica do Alto da Serra de Paranapiacaba, 750–890m, 26 November 1980, *N.A. Rosa & J.M. Pires 3901* (SP); São Luís do Paraitinga, Parque Estadual da Serra do Mar, Núcleo de Santa Virgínia, 23°18'42"S, 45°07'11"W, 800–850m, 11 March 2001, *A. Salino et al. 7861* (BHCB); São Paulo, Jaraguá, February 1912, *H. Luederwaldt s.n.* (SP 21682); idem, Parque Estadual da Serra do Mar, núcleo de Curucutu, trilha para o Rio Branco, 23°59'07"S, 46°44'07"W, 800 m, 12 April 2001, *A. Salino 6503* (BHCB); São Roque da Fartura, Serra dos Poços, rodovia SP-342, a 4 km da divisa com MG, ca. 21°51'S, 46°46'W, ca. 1100–1150m, 15 June 1995, *M.R. Pietrobom-Silva 1864* (SJRP); Sete Barras, Parque Estadual Intervalles, Base de Saibadela, trilha do Rio, ca. 80 m, 13 December 2000, *V.A.O. Dittrich & C. von Allmen 818* (CESJ, HRCB); idem, Parque Estadual Carlos Botelho, núcleo de Sete Barras, ca. 24°12'S, 47°55'W, ca. 300 m, 25 September 2002, *V.A.O. Dittrich & T.B. Breier 1169* (HRCB); December 1912, *Toledo s.n.* (K); Ubatuba, Cascata Ipiranguinha, 16.III.1973, *Handro 2219* (SPF); idem, Trilha para Natividade da Serra, 15 April 2000, *V.A.O. Dittrich 760* (HRCB); idem, Parque Estadual da Serra do Mar, Núcleo Picinguaba, trilha do Corisco, ca. 23°20'S, 44°50'W, 02 May 2001, *V.A.O. Dittrich et al. 872* (HRCB); idem, Parque Estadual da Serra do Mar, Núcleo Picinguaba, trilha para o Pico do Corcovado, ca. 500 m, 01 November 2001, *V.A.O. Dittrich et al. 981* (HRCB); unknown municipality: Serra dos Itatins, 900 m, March 1924, *A.C. Brade 8266*

(HB). Paraná: Antonina, São Sebastião, 03 July 1969, *G.G. Hatschbach 21694* (MBM, PACA); Candói, Rio Jordão, Cachoeira Tia Chica, 12 February 1993, *S.M. Silva 2335* (BHCB); Catanduvás, 05 December 1969, *G.G. Hatschbach 23134* (HB, MBM); Curitiba, Parque Barigui, 27 May 1996, *V.A.O. Dittrich et al. 131* (UPCB); Guarapuava, Serra da Esperança, 03 December 1969, *G.G. Hatschbach & P. Ravenna 23062* (MBM, PACA); Guaraqueçaba, Rio do Cedro, ca. 50 m, 19 October 1967, *G.G. Hatschbach 17476* (MBM, PACA); Guaratuba, Morrete, July 1951, *A. Frenzel s.n.* (MBM); Jaguariaíva, Rio Samambaia, 19 December 1974, *R. Kummrow 815* (MBM, PACA); Laranjeiras do Sul, 08 November 1966, *J.C. Lindeman & J.H. Haas 2938* (B, MBM, RB); Mallet, 01 January 1904, *P.K. Dusén 3076* (R); Mandirituba, Rio do Maurício, 900 m, 18 January 1970, *G.G. Hatschbach 25982* (MBM, PACA, UPCB); Marmeleiro, border with Santa Catarina, ca. 25 km south of Marmeleiro, ca. 800 m, 11 May 1966, *J.C. Lindeman & J.H. Haas 1305* (MBM, RB); Matelândia, 28 November 1966, *J.C. Lindeman & J.H. Haas 3436* (MBM); Morretes, Serra do Leão, 1,000 m, 10 October 1969, *G.G. Hatschbach 22410* (MBM, PACA); idem, Serra da Graciosa, caminho dos Jesuítas, 25 November 1989, *A. Salino 831* (BHCB, HRCB, UEC); idem, Parque Estadual Pico do Marumbi, ca. 580m, 28 February 1999, *V.A.O. Dittrich & M.C.O. Jorge 594* (ICN); Palmeira, 18 January 1967, *L.T.D. Dombrowski & Y.S. Kuniyoshi 2339* (MBM, PACA); Paranaguá, Rio Cachoeirinha, 28 July 1951, *G.G. Hatschbach 2437* (MBM); idem, Ilha do Mel, Morro Bento Alves, 03 October 1999, *C. Kozera et al. 1258* (ESA, UEC); Pato Branco, 21 January 1952, *R. Reitz 4692* (HBR, PACA); Piraquara, Roça Nova, 24 November 1903, *P.K. Dusén 2224* (R); Pitanga, Borboleta, 13 December 1973, *G.G. Hatschbach 33503* (MBM, PACA); Ponta Grossa, Sítio Malabar, 27 January 1985, *L. Krieger s.n.* (CESJ 21061); idem, Parque Estadual de Vila Velha, 07 January 2004, *P.H. Labiak & P.B. Schwartsburd 3049* (HRCB); Rio Branco do Sul, Pinhal, 23 January 1976, *Y.S. Kuniyoshi 3737* (MBM); Três Barras do Paraná, Fazenda Giacometti-Marodin, 26 March 1993, *A. Salino et al. s.n.* (BHCB 30141); Desvio Ypiranga, 26 October 1909, *P.K. Dusén 8834a* (K); Pinheirinho, ca. 25km SE of Medianeira, ca. 425 m, 28 November 1966, *J.C. Lindeman & J.H. Haas 3436* (K). Santa Catarina: Águas Mornas, Canto do Schutch, 27°37'48"S, 48°52'12"W, 413 m, 20 February 2010, *A. Stival-Santos 1892* (FURB); Angelina, 27°27'S, 49°03'W, 822 m, 28 October 2009, *T.J. Cadorin 247* (FURB); Antônio Carlos, 27°27'00"S, 48°52'12"W, 710 m, 09 November 2009, *T.J. Cadorin 509* (FURB); Benedito Novo, Fazenda Campo do Zinco, 26°54'35"S, 49°29'52"W, 788 m, 02 November 2009, *J.L. Schmitt 462* (FURB); Biguaçu, 27°21'36"S, 48°46'48"W, 440 m, 04 November 2009, *T.J. Cadorin 371* (FURB); Blumenau, Parque Nacional da Serra do Itajaí, 27°03'24"S, 49°05'16"W, 30 June 2007, *A.L. de Gasper 569* (FURB); Bom Retiro, Fazenda Reunidos Canto Novo Ltda., 27°54'05"S, 49°29'51"W, 111 m, 21 January 2015, *A.A. de Oliveira 1027* (FURB); Botuverá, Cinema, 27°16'12"S, 49°13'48"W, 526 m, 24 September 2009, *A. Korte 355* (FURB); Caçador, Reserva Genética Florestal de Caçador, 100 m, 16 October 1994, *D.B. Falkenberg 6751* (FURB); Camboriú, Cobra Fria, 27°05'24"S, 48°46'50"W, 341 m, 09 November 2010, *A. Korte 4881* (FURB); Campo Alegre, 900 m, 06 September 1957, *R. Reitz & R.M. Klein 4944* (HBR); Campo Belo do Sul, Morro Agudo / Fazenda Gateados, 27°59'24"S, 50°53'42"W, 875 m, 13 December 2008, *M. Verdi 2021* (FURB); Campos Novos, 27°32'24"S, 51°28'48"W, 700 m, 16 December 2008, *A. Stival-Santos 349* (FURB); Canoinhas, Rio dos Pardos, Serra da Morte, 26°22'53"S, 50°34'49"W, 122 m, 08 November 2007, *A.L. de Gasper 906* (FURB); Chapecó, 30 December 1963, *R. Reitz & R.M. Klein 16640* (HBR); Concórdia, Pinheiro Preto, 27°16'11"S, 52°09'18"W, 503 m, 28 November 2008, *M. Verdi 1104* (FURB); Corupá, RPPN Emílio Fiorentino Batistella, 26°24'10"S, 49°20'39"W, 600 m, 10 August 2007, *A.L. de Gasper 536* (FURB); Doutor Pedrinho, Forcação, 26°43'39"S, 49°35'06"W, 785 m, 26 January 2010, *T.J. Cadorin 1013* (FURB); Florianópolis, Morro da Lagoa, 27°34'36"S, 48°28'32"W, 444 m, 23 February 2010, *T.J. Cadorin 1381* (FURB); Garuva, Monte Crista, 900 m, 19 January 1961, *R. Reitz & R.M. Klein 10660* (HBR); idem, Estrada Bonita (Serra do Quiriri), 26°06'01"S, 48°57'38"W, 800 m, 24 November 2010, *A. Korte 5106* (FURB); Guabiruba, Aymoré, 27°05'24"S, 49°02'58"W, 256 m, 28 October 2009, *A. Stival-Santos 1103* (FURB); Ibirama, April 1911, *H. Luederwaldt s.n.* (SP 21683); Ilhota, Parque Botânico Morro do Baú, 26°48'15"S, 48°56'36"W, 340 m, 29 April 2014, *E. Caglioni 357* (FURB); Imaruí, Forquilha, 28°09'53"S, 48°52'11"W, 666 m, 28 January 2010, *J.L. Schmitt 1161* (FURB); Indaial, Parque Nacional da Serra do Itajaí, 27°05'24"S, 49°13'51"W, 601 m, 21 May 2010, *A. Korte 3436* (FURB); Ipumirim, Linha Silvano, 27°00'S, 52°12'W, 874 m, 24 January 2009, *A.L. de Gasper 2046* (FURB); Itaiópolis, Rio do Bispo, 26°38'25"S, 49°51'38"W, 601 m, 10 June 2010, *A. Korte 3704* (FURB); Ituporanga, Rio do Norte, 27°21'39"S, 49°30'11"W, 708 m, 19 October 2014, *A.L. de Gasper 3629* (FURB); Jacinto Machado, Morro São Cristovão, 28°53'24"S, 49°51'36"W, 380 m, 13 October 2009, *M. Verdi 1822* (FURB); Jaraguá do Sul, 26°18'51"S, 49°09'08"W, 413 m, 30 April 2011, *T.J. Cadorin 3134* (FURB); Joinville, Barragem do 8º Salto—Serra do Pirai, 26°16'49"S, 49°03'02"W, 698 m, 18 August 2010, *A. Korte 4088* (FURB); José Boiteux, Rio Laeisz, 26°54'43"S, 49°35'19"W, 823 m, 14 April 2010, *A. Korte 2742* (FURB); Leoberto Leal, Rio Feijão, 27°27'01"S, 49°13'50"W, 850 m, 05 November 2009, *A. Korte 781* (FURB); Major Gercino, Reserva Indígena Águas Claras, 27°21'37"S, 48°57'38"W, 258 m, 06 October 2010, *A. Korte 4581* (FURB); Major Vieira, Rio da Serra, 26°38'24"S, 50°24'00"W, 100 m, 27 October 2010, *A. Korte 4759* (FURB); Massaranduba, Serra do Jacu, 26°33'01"S, 49°03'02"W, 617 m, 04 February 2011, *A. Korte 5895* (FURB); Matos

Costa, Pedra Branca, 26°27'36"S, 51°01'48"W, 109 m, 14 January 2008, *A.L. de Gasper 1248* (FURB); Mirim Doce, 27°10'49"S, 50°07'51"W, 596 m, 27 January 2010, *A. Korte 2889* (FURB); Monte Castelo, Serra da Garganta, 26°49'03"S, 50°13'24"W, 119 m, 17 September 2010, *A. Korte 4406* (FURB); Morro Grande, Três Barras, 28°42'36"S, 49°46'12"W, 203 m, 11 December 2009, *J.L. Schmitt 887* (FURB); Nova Trento, Rio Veado, 27°21'38"S, 49°08'13"W, 479 m, 29 September 2010, *A. Korte 4485* (FURB); Orleans, Rio Hipólito—Parque Nacional de São Joaquim, 28°15'37"S, 49°29'58"W, 646 m, 22 May 2009, *A.L. de Gasper 2121* (FURB); Papanduva, Serra do Espigão, 1,000 m, 20 April 1962, *R. Reitz & R.M. Klein 12651* (HBR); Ponte Alta, Morro do Funil, 27°16'30"S, 50°07'56"W, 113 m, 06 October 2009, *J.L. Schmitt 156* (FURB); Praia Grande, Serra do Faxinal, 29°10'44"S, 50°01'22"W, 958 m, 13 May 2010, *J.L. Schmitt 2194* (FURB); Presidente Getúlio, Santa Rita, 27°05'25"S, 49°46'14"W, 516 m, 09 April 2010, *A. Korte 2628* (FURB); Presidente Nereu, Braço do Salão—Fazenda Sabiá, 27°10'53"S, 49°13'53"W, 533 m, 27 October 2009, *J.L. Schmitt 355* (FURB); Rio do Campo, Anta Branca (Antigo Alto Rio do Oeste), 26°54'36"S, 50°13'13"W, 786 m, 22 February 2010, *A. Korte 1934* (FURB); Rio do Sul, Alto Matador, 26 June 1959, *R. Reitz & R.M. Klein 8891* (HBR); Rio do Sul, Mirador, 27°05'25"S, 49°35'26"W, 792 m, 10 December 2009, *A. Korte 1460* (FURB); Rio dos Cedros, São Bernardo, 26°43'50"S, 49°19'18"W, 448 m, 20 April 2010, *S. Dreveck 2116* (FURB); Rodeio, São Pedro, 26°54'37"S, 49°24'41"W, 611 m, 30 March 2010, *A. Korte 2384* (FURB); Santa Cecília, Fazenda Ubatã, 27°00'01"S, 50°18'37"W, 119 m, 18 December 2007, *A.L. de Gasper 1198* (FURB); Santa Terezinha, Nova Esperança, 26°43'49"S, 49°57'02"W, 535 m, 05 February 2010, *A. Korte 1688* (FURB); Santo Amaro da Imperatriz, Pilões, 07 June 1956, *R. Reitz & R.M. Klein 3265* (HBR); Santo Amaro da Imperatriz, Rio da Nova Descoberta, 27°48'36"S, 48°46'51"W, 558 m, 20 October 2010, *A. Korte 4706* (FURB); São Bento do Sul, Braço esquerdo, 26°21'54"S, 49°14'08"W, 417 m, 21 November 2009, *T.J. Cadorin 581* (FURB); São Martinho, Chicão, 28°04'48"S, 48°52'12"W, 526 m, 26 January 2010, *J.L. Schmitt 983* (FURB); Seara, Nova Teotônia, 04 August 1944, *F. Plaumann 410* (HBR); Taió, Passo Manso, Fazenda Tarumã, 27°00'01"S, 50°07'46"W, 812 m, 09 October 2009, *J.L. Schmitt 211* (FURB); Timbó, Morro Azul, trilha da araucária, 26°45'46"S, 49°12'43"W, 537 m, 13 December 2013, *A.L. de Gasper 3220* (FURB); Treviso, Brasília, 28°26'37"S, 49°29'55"W, 572 m, 24 November 2009, *J.L. Schmitt 704* (FURB); Treze Tilias, Linha Mazeto, 27°00'00"S, 51°28'48"W, 800 m, 15 April 2011, *A. Korte 6622* (FURB); Vitor Meireles, Serra Cambará, 26°54'35"S, 49°51'47"W, 587 m, 01 June 2010, *A. Korte 3534* (FURB); Witmarsum, Krauer Central, 26°54'37"S, 49°46'14"W, 439 m, 13 April 2010, *A. Korte 2686* (FURB); Unknown municipality: Rodovia BR-2, Serra do Espigão, 1,300 m, 20 October 1961, *G.F.J. Pabst & E. Pereira 6081* (B). Rio Grande do Sul: Bom Jesus, Fazenda Caraúna, March 1931, *J. Dutra 309* (ICN); Cambará do Sul, Itaimbezinho, 06 September 1982, *R.M. Bueno s.n.* (ICN 88317); Canela, Linha São Paulo—Canastra, 22 September 1988, *S. Diesel s.n.* (PACA 71256); Carlos Barbosa, Santo Antonio de Boava, 13 April 1963, *O.R. Camargo 3889* (PACA); Caxias do Sul, Ana Rech, Hotel Bela Vista, 17 April 1969, *M.E. Corso s.n.* (PACA 70509); Encruzilhada do Sul, 23 September 1985, *B. Irgang et al. s.n.* (ICN 67658); Esmeralda, 31 January 1982, *R.M. Bueno 27* (ICN); Garibaldi, arredores da cidade, 02 November 1962, *O.R. Camargo 3756* (PACA); Gravataí, Morro Itacolomi, 22 December 1958, *A. Backes 175* (ICN); Mariana Pimentel, 17 April 1982, *R.M. Bueno s.n.* (ICN 88300); Montenegro, Estação São Salvador, 1940, *J.E. Leite 1931* (SP); Porto Alegre, Morro da Extrema, July 1996, *R.M. Senna s.n.* (ICN 107432); Rio Grande, Quitéria, próximo à Quinta, 26 November 1986, *J.A. Jarenkow 529* (PACA); Santa Cruz do Sul, February 1905, *C. Jürgens s.n.* (Fil. Austr. Exsic. 68) (B); Santa Maria do Herval, ca. 600 m, February 1913, *W. Herter s.n.* (ICN 45443); São Francisco de Paula, 900 m, 19 December 1949, *A. Sehnem 4125* (B, PACA); São Leopoldo, Fazenda Pedreira, 08 November 1935, *A. Sehnem 615* (PACA); Sapucaia do Sul, Morro Sapucaia, 290 m, 28 July 1989, *I. Fernandes 549* (ICN); Silveira Martins, 05 March 1893, *C.A.M. Lindman 1151* (K); Torres, Lageadinho, 21 December 1979, *J.L. Waechter 1500* (ICN, PACA); Três Cachoeiras, 23 June 1979, *J.L. Waechter et al. 1269* (ICN). Unknown state: *without date*, *W.J. Burchell 2468* (K). URUGUAY. Cerro Largo, Isla Zapata, January 1877, *J. Arechavaleta 457* (P).

4. *Neoblechnum* Gasper & V.A.O.Dittrich in Gasper *et al.* (2016a: 214)

Type: *Neoblechnum brasiliense* (Desv.) Gasper & V.A.O.Dittrich in Gasper *et al.*, *Phytotaxa* 275(3): 214.

Plants terrestrial; *rhizomes* erect, stout, trunk-like, non-stoloniferous, clothed by black, glossy, acicular, curved, entire scales; *fronds* monomorphic; *stipes* stout, short, brown to blackish, proximally with scales smaller but otherwise similar to those on the rhizomes, glabrous or glabrescent distally; *blades* concolorous, oblong-lanceolate, pinnate to pinnatisect, gradually reduced at base, without vestigial pinnae, apices pinnatifid; *rachises* glabrous or with tiny capitate hairs; *buds* absent; *aerophores* absent; *pinnae* adnate to rachis, decurrent, linear to linear-lanceolate, margins serrulate; *veins* free, once forked, each ending at pinna margins; *sori* linear, indusia entire to subentire; $x = 66$.

Neoblechnum brasiliense (Desv.) Gasper & V.A.O.Dittrich in Gasper *et al.* (2016a: 214). *Blechnum brasiliense* Desvaux (1811: 330). *Blechnopsis brasiliensis* (Desv.) Presl (1851: 475). Type:—BRAZIL. *Without date*, *J. Dombey s.n.* (holotype P [Jussieu Herbarium 1390], isotypes P, US, photo). 5A–C.

Blechnum brasiliense Desv. var. *angustifolium* Sehnem (1959: 529). Type:—BRAZIL, Rio Grande do Sul, Vacaria, Passo do Socorro, 28 January 1951, *A. Sehnem 5747* (holotype PACA, photo).

Blechnum corcovadense Raddi (1819: 294). Type:—BRAZIL. Rio de Janeiro, Corcovado, *without date*, *G. Raddi s.n.* (holotype PI, n.v., isotypes B 20 0030578, FI, K, photo, US, not seen).

Blechnum nitidum Presl (1822: 187). Type:—BRAZIL. Rio de Janeiro, *without date*, *Pohl? s.n.* (holotype not located, isotype GH?, *fide* Murillo (1968)).

Blechnum fluminense Vellozo (1831: 106). Lectotype (designated by Murillo (1968: 338):—BRAZIL. Rio de Janeiro. Fl. Flum. 11: t. 106. 1831 [1827].

Plants terrestrial; *rhizomes* erect, stout, forming a caudex to 50(70) cm high, non-stoloniferous, the scales linear, tan to more frequently blackish, shiny, 2.5–3.1 cm × 1.0–1.4 mm at the base, 0.2–0.3 mm wide at center; *fronds* monomorphic, 36–177 cm long; *stipes* 0.5–18.5 cm long, 5.5–9.2 mm wide, the scales on base similar to those on rhizomes, black, smaller; *blades* 88–136 × 9.7–32 cm, chartaceous, pinnate proximally, mostly pinnatisect, oblanceolate, gradually reduced proximally (without vestigial pinnae) and distally; *rachises* abaxially scaly proximally, the scales typically smaller than those on rhizomes (<1 cm), similar in shape, whitish or tan, with a dark central stripe or not; *pinnae* 31–56 pairs, 5.7–24 × 0.7–1.6 cm, ascending, fully adnate, sursumcurrent, linear (the largest ones) to triangular or ovate (the basal ones), margins serrate, plane or revolute, apices acuminate (the largest ones) to obtuse (the basal ones); *veins* free, simple or 1 × (–) × forked, with hydathodes at the margins.

Geographical distribution and habitat preference:—Brazil (Ceará [first record], Pernambuco, Bahia, Mato Grosso, Goiás, Distrito Federal, Mato Grosso do Sul [first record], Minas Gerais, Espírito Santo, Rio de Janeiro, São Paulo, Paraná, Santa Catarina, and Rio Grande do Sul); furthermore Guatemala, Colombia, Venezuela, Ecuador, Peru, Bolivia, Paraguay, Uruguay, and Argentina. A very common species in Brazil, not threatened in the study area. It grows in degraded areas, along trails, roads, forest edges, clearings in the forest, river banks, and other disturbed sites, on slightly humid to flooded soils. Less frequent in shaded areas such as in forests. It is found in tropical rain forests, *Araucaria* forests and in seasonal deciduous and semideciduous forests, from 0–1800 m.

Comments: among the species of the family with monomorphic fronds in the study area, *N. brasiliense* can be distinguished by its arborescent habit (trunks to 1 m high) combined with fronds with serrulate margins and blackish scales on rhizomes and stipe bases. The morphologically closest species to *Neoblechnum brasiliense* in Brazil is in fact a species with dimorphic fronds, *Lomaria spannagelii* (Rosenst. 1907: 93) Gasper & V.A.O.Dittrich in Gasper *et al.* (2016a: 211). To differentiate between them, when sterile, the best features are the pinna margins (entire in *L. spannagelii*, serrulate in *N. brasiliense*) and the rhizome scales (light to dark tan in *L. spannagelii*, blackish in *N. brasiliense*). Furthermore, in *L. spannagelii* the adaxial costae are broadly grooved and, in dried specimens, the blades are clearly discoloured. Sehnem (1959) described *Blechnum brasiliense* var. *angustifolium* Sehnem, stating this variety differed from the more typical one by having longer stipes, narrower pinnae with undulate-serrate margins, and by the broader sori and indusia. This seems to be an usual morphological variation within the species, due to its wide geographical distribution, and so we do not recognize it as a variety.

Selected specimens examined:—BRAZIL. Minas Gerais: Araponga, Parque Estadual da Serra do Brigadeiro, trilha para o Pico do Boné, 26 May 2000, *A. Salino et al. 5459* (BHCB); Barbacena, Futuro Distrito Industrial de Barbacena, 21°13'15.64"S, 43° 44'36.24"W, ca. 1,180 m, 09 December 2002, *V.A.O. Dittrich & A. Salino 1255* (HRCB); Belo Horizonte, Jardim Botânico, 18 July 1935, *H.L. Mello Barreto 5038* (BHCB); Belo Vale, 20°26'37"S, 43°56'00"W, 1,300 m, 23 October 2001, *A. Salino & F.A. Carvalho 7654* (BHCB); Camanducaia, Mata dos Vargas, 20 August 2001, *V.A.O. Dittrich et al. 938* (HRCB); Carangola, Serra do Brigadeiro, Fazenda Neblina, ca. 1,300 m, 28 May 1989, *A. Salino 809* (UEC); Caratinga, Estação Biológica de Caratinga, 09 June 1998, *A. Salino et al. 4326* (BHCB); Coronel Pacheco, Estação Experimental, 450 m, 19 June 1944, *E.P. Heringer 1423* (K); Entre Rios de Minas, 09 May 1970, *L. Krieger s.n.* (CESJ 9112); Itabirito, Serra de Itabirito, km 14 da rodovia Itabirito-Belo Horizonte, 20°14'S, 43°48'W, 1,300 m, 14 November 1987, *E.R. Ferraz s.n.* (BHCB 11376); Juiz de Fora, 16 August 1979, *F.R.G. Salimena 71* (UEC); Mariana, estrada Mariana-Santa Bárbara, 25 August 2000, *A. Salino 5659* (BHCB); Marliéria, Parque Florestal do Rio Doce, Salão Dourado, 15 June 1995, *A. Salino 2143* (BHCB); Nova Lima, Estação Ecológica de Fechos, 20°03'58"S, 43°57'33"W, 11 July 2001, *A. Salino et al. 7170* (BHCB, HRCB); Ouro Preto, Rodrigo Silva, 1904, *L. Damazio s.n.* (BHCB 1397); Patos de Minas, 01 September 1950, *A.P. Duarte 3077* (RB); Santa Bárbara, Fazenda Bocaina, 09 July 1999, *M.F. Vasconcelos s.n.* (BHCB 48891); Santa Rita de Jacutinga, 26 July 1970, *L. Krieger s.n.*

(CESJ 9024); Santana do Garambéu, trecho do alto Rio Grande adjacente a zona urbana de Santana do Garambéu, 21°34'49"S, ca. 44°08'W, 1,100–1,150 m, 06 July 2001, *A. Salino & R.C. Mota 7004* (BHCB); São Gonçalo do Rio Preto, Estação de Pesquisa Ambiental do Peti, 19°53'33"S, 43°21'55"W, 20 June 2002, *A. Salino 8038* (BHCB); São Roque de Minas, Parque Nacional da Serra da Canastra, 20°10'17"S, 46°39'52"W, 13 July 1997, *A. Salino 3153* (BHCB, HRCB); Uberlândia, Estação Ecológica do Panga, 22 June 2000, *M. Ranal 1029* (HRCB, HUFU); Viçosa, Fazenda da Serra, 1,200 m, 02 May 1930, *Y. Mexia 4654* (K); Furnas, 05 July 1995, *A. Salino 2184* (BHCB); Jequeri-Canaã, área da Usina de Cachoeira Grande, 28 September 1997, *A. Salino 3490* (BHCB, HRCB). Espírito Santo: Ibirapu, Estação Ecológica do Morro da Vargem, ca. 19°53'S, 40°23'W, 300–470 m, 29 May 1990, *H.Q. Boudet Fernandes et al. 2989* (MBML); Linhares, Reserva Florestal de Linhares, 20 March 1999, *A. Salino & P.O. Moraes 4532* (BHCB); Santa Teresa, Vargem Alta, 25 April 1984, *J.M. Vimercat 62* (MBML); Vila Velha, rodovia ES-060, ca. 1 km ao N da praia das Sereias, 08 December 1994, *J.R. Pirani et al. 3463* (K, SPF). Rio de Janeiro: Itatiaia, vicinity Monte Serrat, Mt. Itatiaia, Estação Biológica, ca. 800 m, 22°28'S, 44°38'W, 31 December 1928, *L.B. Smith 1580* (K); Parati, Parque Nacional da Serra da Bocaina, trilha para o pico do Cuscuzeiro, 23°18'14"S, 44°47'16"W, 400 m, 07 August 2001, *A. Salino et al. 7367* (BHCB); Rio de Janeiro, Floresta da Tijuca, restaurante A Floresta, 24 May 1960, *A. Castellanos 23070* (PACA); Santa Maria Madalena, 24 November 1977, *J.P.P. Carauta 2765* (RB); 27 July 1873, *C.W.H. Mosén 93* (FI); Serra dos Órgãos, 26 September 1901, *E.R. Wagner s.n.* (K). São Paulo: Águas de São Pedro, 29 November 1997, *T.D.S. Novato 7* (SJRP); Analândia, Serra do Cuscuzeiro, ca. 22°08'S, 47°40'W, 29 November 1987, *A. Salino 209* (BHCB); Atibaia, Fazenda Grota Funda, Pedra Grande, 23 May 1987, *L.C. Bernacci et al. s.n.* (UEC 47735); Bananal, Estação Ecológica de Bananal, trilha da Estação, 22°49'10"S, 44°21'58"W, 1130–1350 m, 09 March 2001, *A. Salino et al. 6330* (BHCB); Brotas, Fazenda Santa Elisa, ca. 470 m, 08 September 1991, *A. Salino 1049* (BHCB, HRCB, UEC); Campos do Jordão, São José dos Alpes, caminho de 1,600–1,800 m, 06 March 1984, *R.F. Novelino et al. 237* (CESJ—mixed with *Lomariocycas schomburgkii* (Klotzsch) Gasper & A.R.Sm.); Campinas, Reserva Florestal Santa Genebra, Barão Geraldo, 13 February 1992, *A. Salino 1272* (UEC); Caraguatatuba, Parque Estadual da Serra do Mar, núcleo de Caraguatatuba, estrada da intermediária km 30.5, 23°41'32"S, 45°37'06"W, 600 m, 18 April 2000, *A. Salino et al. 5273* (BHCB); Cunha, Parque Estadual da Serra do Mar, Núcleo de Cunha, trilha da Casa de Pedra ao Indaiá, 23°14'45"S, 44°59'36"W, 1,070 m, 16 December 1996, *A. Salino 2901* (BHCB, ESA); Itirapina, Estação Ecológica de Itirapina, 22°10'–22°14'S, 47°51'–47°56'W, 705 m, 12 March 2002, *V.A.O. Dittrich et al. 1090* (HRCB); Moji-guaçu, Reserva Biológica de Moji-guaçu, 12 July 1989, *E.A. Simabukuro 9* (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, *V.A.O. Dittrich et al. 918* (HRCB); Peruíbe, Estação Ecológica da Jureia, *without date*, *V.C. Souza 118* (ESA); Piracicaba, estrada para Limeira, 15 April 1993, *K.D. Barreto et al. 277* (ESA); Presidente Prudente, Margens do rio Paranapanema em área da Reserva Florestal do Morro do Diabo a ser inundada pela construção de barragem de usina hidrelétrica, 09–11 September 1985, *P.G. Windisch 4264* (UPCB); Ribeirão Grande, Parque Estadual Intervales, Trilha da Caçadinha, 24°16'39"S, 48°25'09"W, 780 m, 15 April 2003, *A. Salino et al. 8424* (BHCB, HRCB); Rio Claro, Buraco da Mãe Preta, ca. 600 m, 18 September 2002, *J.S. Leme et al. 2* (HRCB); São Carlos, Fazenda Canchim, ca. 8 km NE of São Carlos, 22 June 1961, *G. Eiten et al. 3212b* (K); São José dos Campos, Rio Paraíba do Sul, 22 June 2002, *M.A. Assis et al. 1555* (HRCB); São Luís do Paraitinga, Parque Estadual da Serra do Mar, Núcleo Santa Virgínia, Trilha da Pirapitinga, 23°20'29"S, 45°08'48"W, 900–950 m, 04 March 2001, *A. Salino et al. 6090* (BHCB); São Miguel Arcanjo, Parque Estadual de Carlos Botelho, Trilha da Represa, 24°03'30"S, 47°59'23"W, 25 April 2002, *R.G. Udulutsch et al. 710* (ESA); São Paulo, Parque Estadual da Serra do Mar, Núcleo de Curucutu, trilha para o Rio Branco, 23°59'07"S, 46°44'07"W, 800 m, 12 April 2001, *A. Salino et al. 6528* (BHCB, HRCB); São Sebastião, ilha do Montão de Trigo, 20 m, 20 April 1973, *P.G. Windisch 291* (HB, HRCB); Sete Barras, Parque Estadual Intervales, Base de Saibadela, 13 December 2000, *V.A.O. Dittrich & C. von Allmen 810* (HRCB); *idem*, Parque Estadual Carlos Botelho, núcleo de Sete Barras, estrada Sete Barras—São Miguel Arcanjo, ca. 24°12'S, 47°55'W, ca. 300 m, 28 September 2002, *V.A.O. Dittrich & T.B. Breier 1240* (HRCB); Ubatuba, Ilha Anchieta, Parque Estadual da Ilha Anchieta, trilha do Saco Grande, 09 May 1993, *A. Salino 1743* (BHCB, UEC); *idem*, entre a BR-101 e a Trilha do Jatobá, 23°20'26"S, 44°50'13"W, 0–40 m, 05 April 2001, *A. Salino et al. 6721* (BHCB); halfway between Cananeia and Jacupiranga, 50 m, 09 September 1976, *P.H. Davis et al. 60815* (UEC). Paraná: Adrianópolis, Parque Estadual das Lauráceas, 08 January 2000, *V.A.O. Dittrich et al. 656* (UPCB); Almirante Tamandaré, Parque Primavera, 29 May 1991, *J.T. Motta s.n.* (MBM 230921); Antonina, Sapitanduva, 20 m, 21 March 1972, *G.G. Hatschbach & O. Guimarães 29331* (MBM, PACA); Campina Grande do Sul, rodovia BR-002, Rio Bonito, 26 May 1963, *G.G. Hatschbach 10066* (MBM, PACA); Cerro Azul, Rio do Turvo, 21 July 1970, *G.G. Hatschbach 24510* (MBM, PACA); Colombo, Canguiri, 05 June 1968, *N. Imaguire 2081* (MBM, UEC); Contenda, rodovia BR-476, Serrinha, 21 July 2001, *V.A.O. Dittrich 888* (HRCB); Curitiba, Parque Barigui, 18 June 1996, *C. Kozera & V.A.O. Dittrich 150* (UPCB); Guaraqueçaba, Rio do Cedro, 50 m, 19 October 1967, *G.G. Hatschbach 17494* (MBM, PACA);

idem, Ilha do Superagüi, Morro do rio das Pacas, faces noroeste e sudeste, 25°25'S, 48°15'W, 0 180 m, 20 January 1993, *J. Prado et al.* 483 (MBM, UPCB); idem, Reserva Natural Salto Morato, 01 July 1999, *G. Gatti* 651 (UPCB); Guaratuba, 12 September 1971, *L. Krieger s.n.* (CESJ 11501); Marechal Cândido Rondon, Pato Bragado, 25 March 1977, *G.G. Hatschbach* 39846 (MBM, PACA); Matelândia, 28 November 1966, *J.C. Lindeman & J.H. Haas* 3438 (MBM); Matinhos, *without date*, *M.T.D. Dombrowski* 2982 (PACA); Morretes, Passa Sete, 12 February 1971, *M.T.D. Dombrowski & Y.S. Kuniyoshi* 3250 (PACA); idem, Parque Estadual Pico do Marumbi, 20 November 1999, *C. Kozera & I. Isernhagen* 1327 (ESA, UEC, UPCB); Paranaguá, Sertãozinho, 10 June 1960, *G.G. Hatschbach* 7064 (MBM); idem, Ilha do Mel, morro Bento Alves, ca. 70 m, 21 April 1999, *V.A.O. Dittrich & C. Kozera* 626 (ICN); Piraquara, Roça Nova, 21 May 1974, *G.G. Hatschbach & R. Kummrow* 34440 (MBM, PACA); Ponta Grossa, Parque Estadual de Vila Velha, 07 January 2004, *P.H. Labiak & P.B. Schwartzburd* 3092 (HRCB); Pontal do Paraná, Pontal do Sul, rodovia Engenheiro Darci Gomes de Moraes, ca. 25°36'S, 48°24'W, 01 January 2001, *F.P.F. Athayde* 845 (SJR); São Mateus do Sul, Fazenda do Durgo, 30 November 1986, *F. de Melo et al.* 82 (UPCB); Tijucas do Sul, Vossoroca, 15 February 1974, *R. Kummrow* 363 (MBM, PACA); Xambê, região norte do município, 17 June 1966, *J.C. Lindeman & J.H. Haas* 1613 (MBM). Parque Nacional do Iguaçu, 13 July 1968, *without collector*, *s.n.* (ICN 5094). Santa Catarina: Agrolândia, Vila dos Koch, 27°27'03"S, 49°51'44"W, 544 m, 29 April 2010, *A. Korte* 2962 (FURB); Agronômica, Planalto Areado, 27°21'36"S, 49°40'48"W, 514 m, 09 June 2009, *S. Dreveck* 982 (FURB); Águas Mornas, Canto do Schutch, 27°37'48"S, 48°52'12"W, 413 m, 20 February 2010, *A. Stival-Santos* 1807 (FURB); Alfredo Wagner, Lomba Alta, 27°43'20"S, 49°24'33"W, 612 m, 21 April 2009, *S. Dreveck* 846 (FURB); Angelina, Rio Fortuna, 27°27'02"S, 49°03'00"W, 841 m, 08 April 2010, *A. Stival-Santos* 2463 (FURB); Apiúna, Faxinalzinho, 27°10'49"S, 49°23'37"W, 793 m, 17 March 2010, *A. Korte* 2170 (FURB); Araranguá, 28°53'25"S, 49°19'15"W, 8 m, 07 December 2010, *A. Korte* 5479 (FURB); Ascurra, Ilze Grande, 27°00'00"S, 49°19'14"W, 154 m, 01 April 2010, *A. Korte* 2463 (FURB); Balneário Barra do Sul, próximo à Mineração Nilson e Veiga do Sul, 26°27'36"S, 48°41'24"W, 20 m, 05 November 2009, *S. Dreveck* 1221 (FURB); Benedito Novo, Alto São João, 26°49'12"S, 49°30'W, 690 m, 25 May 2010, *S. Dreveck* 2264 (FURB); Blumenau, Parque Nacional da Serra do Itajaí, 27°03'24"S, 49°05'16"W, 22 March 2007, *A.L. de Gasper* 570 (FURB); Bombinhas, Praia Mariscal, 27°10'48"S, 48°30'36"W, 5 m, 06 July 2010, *S. Dreveck* 2298 (FURB); Botuverá, RPPN Prima Luna, 27°15'51"S, 49°01'43"W, 100 m, 14 November 2009, *T.J. Cadorin* 536 (FURB); Campo Alegre, Fazenda Sequoia, km 107, 26°10'49"S, 49°11'47"W, 28 April 2008, *R.G. Koehler s.n.* (FURB); Corupá, Palmeiras II, 26°27'36"S, 49°24'36"W, 938 m, 24 August 2010, *A. Korte* 4189 (FURB); Dionísio Cerqueira, Linha Peperi, 26°16'47"S, 53°38'25"W, 725 m, 25 May 2009, *A. Stival-Santos* 721 (FURB); Doutor Pedrinho, Ribeirão Rigo, 26°43'48"S, 49°29'58"W, 600 m, 04 May 2010, *S. Dreveck* 2147 (FURB); Florianópolis, Ilha de Santa Catarina, Itacorobi, 14 July 1946, *A. Rohr* 375 (RB); idem, Praia de Jurerê Internacional, 27°27'04"S, 48°30'29"W, 6 m, 14 December 2010, *A. Korte* 5633 (FURB); Garopaba, Morro da Ressacada, 28°04'48"S, 48°41'24"W, 147 m, 28 April 2010, *M. Verdi* 4522 (FURB); Garuva, Alto Quiriri, 26°02'21"S, 48°57'16"W, 1200 m, 05 May 2015, *L.A. Funez* 4351 (FURB); Ibirama, Caminho Moema, 26°59'53"S, 49°35'22"W, 503 m, 07 April 2010, *A. Korte* 2520 (FURB); Indaial, Warnow Alto, 27°00'00"S, 49°13'51"W, 357 m, 14 May 2010, *A. Korte* 3186 (FURB); Itaiópolis, Rio do Bispo, 26°38'25"S, 49°51'38"W, 601 m, 10 June 2010, *A. Korte* 3700 (FURB); Itapoá, Reserva Volta Velha, 27 July 1999, *M. Borgo et al.* 415 (MBM, UPCB); Ituporanga, Alto Rio Bonito, 27°32'24"S, 49°24'38"W, 676 m, 03 December 2009, *A. Korte* 1307 (FURB); Jacinto Machado, Morro São Cristóvão, 28°53'24"S, 49°51'36"W, 380 m, 13 October 2009, *M. Verdi* 2368 (FURB); Jaraguá do Sul, Ano Bom / Braço Esquerdo, 26°22'05"S, 49°08'23"W, 205 m, 01 February 2010, *S. Dreveck* 1697 (FURB); Joinville, Jardim botânico de Joinville; Campus Universitário, 20 June 2008, *T.G. Fendrich* 13 (FURB); José Boiteux, Rio Platê, 26°49'13"S, 49°40'50"W, 394 m, 29 June 2010, *A. Korte* 3947 (FURB); Lages, Passo do Socorro, 700 m, 13 April 1963, *R. Reitz & R.M. Klein* 14834 (HBR, PACA); Lauro Müller, Rio Oratório/Cabo Aéreo, 28°21'00"S, 49°29'58"W, 449 m, 19 February 2010, *M. Verdi* 3671 (FURB); Leoberto Leal, Tigre, 27°21'35"S, 49°13'48"W, 438 m, 17 September 2009, *A. Korte* 217 (FURB); Mirim Doce, Pinhalzinho, 27°10'49"S, 50°07'51"W, 596 m, 27 January 2010, *A. Korte* 3136 (FURB); Monte Carlo, 27°10'48"S, 50°56'24"W, 970 m, 24 May 2011, *A. Korte* 6907 (FURB); Navegantes, Bairro Costa Azul, 26°51'13"S, 48°38'42"W, 8 m, 24 February 2011, *A. Korte* 5789 (FURB); Nova Trento, Valsugana, 27°21'31"S, 49°03'02"W, 307 m, 14 July 2010, *A. Korte* 3991 (FURB); Orleans, Barracão, 28°15'39"S, 49°19'09"W, 314 m, 30 March 2010, *M. Verdi* 4137 (FURB); Palhoça, Campo do Massiambu, 5 m, 19 December 1952, *R. Reitz* 4950 (HBR); Paulo Lopes, Sertão do Campo, 27°52'44"S, 48°45'43"W, 180 m, 01 February 2010, *J.L. Schmitt* 1242 (FURB); Petrolândia, Rio do Jango, 27°32'22"S, 49°40'48"W, 493 m, 30 April 2010, *A. Korte* 3017 (FURB); Ponte Alta, Morro do Funil, 27°16'30"S, 50°07'57"W, 113 m, 25 March 2008, *A.L. de Gasper* 1667 (FURB); Pouso Redondo, Alto Pombinhas, 27°16'14"S, 50°02'30"W, 475 m, 07 May 2010, *A. Korte* 3142 (FURB); Praia Grande, Trilha do Rio do Boi, 29°12'18"S, 50°04'28"W, 330 m, 27 April 2010, *J.L. Schmitt* 2089 (FURB); Presidente Getúlio, Santa Rita, 27°05'25"S, 49°46'14"W, 516 m, 09 April 2010, *A. Korte* 2661 (FURB); Presidente Nereu, Braço do Salão—Fazenda Sabiá, 27°10'53"S,

49°13'53"W, 533 m, 27 October 2009, *J.L. Schmitt 318* (FURB); Rio dos Cedros, Rio Ada, 26°38'24"S, 49°13'48"W, 459 m, 21 April 2010, *S. Dreveck 2140* (FURB); Rio Fortuna, Rio Indaiá, 28°10'10"S, 49°02'58"W, 229 m, 09 April 2010, *M. Verdi 4315* (FURB); Rodeio, São Pedro, 26°54'37"S, 49°24'41"W, 611 m, 30 March 2010, *A. Korte 2321* (FURB); Salete, Barra Grande, 26°58'41"S, 50°00'15"W, 12 April 2009, *H.F. Uller 125* (FURB); Santa Rosa de Lima, Nova Fátima, 28°04'50"S, 49°08'13"W, 276 m, 05 May 2010, *M. Verdi 4670* (FURB); Santa Terezinha, Imbuial, 26°38'25"S, 49°57'02"W, 626 m, 08 June 2010, *A. Korte 3652* (FURB); Santo Amaro da Imperatriz, Pilões, 200 m, 24 February 1956, *R. Reitz & R.M. Klein 2816* (HBR, PACA); idem, Parque Estadual do Tabuleiro, 27°43'12"S, 48°46'48"W, 612 m, 21 May 2010, *A. Stival-Santos 2828* (FURB); São Bento do Sul, Ano Bom / Braço Esquerdo, 26°22'12"S, 49°13'48"W, 20 m, 29 January 2010, *S. Dreveck 1660* (FURB); São Bonifácio, Santa Maria, 27°59'38"S, 48°57'36"W, 339 m, 30 June 2010, *M. Verdi 5100* (FURB); São Francisco do Sul, Ilha da Rita, 25 m, 23 November 2004, *W.S. Mancinelli 103* (FURB); São João Batista, próximo à SC-411, 27°16'20"S, 48°52'12"W, 119 m, 30 September 2010, *A. Korte 4454* (FURB); Seara, Nova Teotônia, 300–500 m, 04 May 1944, *F. Plaumann 533* (HBR); Siderópolis, Barragem do Rio São Bento, 28°37'12"S, 49°35'24"W, 479 m, 05 November 2009, *M. Verdi 3009* (FURB); Sombrio, 10 m, 25 April 1945, *R. Reitz C1030* (RB); Tijucas, Oliveira, 27°10'49"S, 48°46'47"W, 186 m, 25 September 2014, *M. Mayer 708* (FURB); Timbó, Mundi Central, 26°49'15"S, 49°13'46"W, 268 m, 30 March 2010, *S. Dreveck 2019* (FURB); Treviso, Cirenica, 28°31'45"S, 49°29'50"W, 197 m, 27 January 2010, *M. Verdi 3427* (FURB); Trombudo Central, Rio Kindel, 27°21'36"S, 49°51'36"W, 409 m, 10 March 2011, *A. Korte 271* (FURB); Vidal Ramos, Águas Frias, 27°21'38"S, 49°24'38"W, 895 m, 21 October 2009, *A. Korte 581* (FURB); Vitor Meireles, Serra Cambará, 26°54'35"S, 49°51'47"W, 587 m, 01 June 2010, *A. Korte 3560* (FURB); Witmarsum, Krauer Central, 26°54'37"S, 49°46'14"W, 439 m, 13 April 2010, *A. Korte 2685* (FURB); Xanxerê, Pesqueiro do Meio, 26°49'11"S, 52°28'13"W, 700 m, 24 March 2009, *S. Dreveck 740* (FURB); Unknown municipality: bei São Francisco, 1884–1885, *E. Ule 94* (K); Estrada Itaimbezinho, Serra do Faxinal, 02 December 1989, *R. Wasum et al. s.n.* (MBM 159872). Rio Grande do Sul: Barracão, Rio Uruguai, 02 June 2000, *J. Spanholi s.n.* (ICN 120888); Camaquã, Boa Vista, September 1985, *M. Sobral et al. 4157* (ICN); Cambará do Sul, Itaimbezinho, ca. 950 m, 19 April 1985, *L. Roth 69* (ICN); Caraá, Reserva Indígena Guarani da Varzinha, 02 April 2001, *A.R.Y. Ikuta s.n.* (ICN 123387); Caxias do Sul, 14 July 1959, *A. Backes s.n.* (ICN 30850); Derrubadas, Parque Estadual do Turvo, 15 January 1982, *R.M. Bueno 40* (ICN); Dom Pedro de Alcântara, 26 April 1997, *S. Dalpiaz s.n.* (ICN 115291); Esmeralda, 19 September 1982, *R.M. Bueno s.n.* (ICN 88304); Júlio de Castilhos, *without date*, *D. Boeira s.n.* (PACA 73554); Maquiné, Estação Experimental Fitotécnica de Osório, 10 September 1993, *L. Sevegnani s.n.* (PACA 73968); Mariana Pimentel, 17 April 1982, *R.M. Bueno 16* (ICN); Montenegro, Linha Campestre, 22 April 1948, *A. Sehnm 3323* (MBM, PACA); Morro Reuter, 24 February 1957, *O. Almeida s.n.* (ICN 1604); Pareci Novo, 150 m, 13 October 1945, *A. Sehnm 1344* (PACA); Parobé, sítio de M.L. Porto, 31 March 1982, *R.M. Bueno s.n.* (ICN 67868); Pelotas, Horto Botânico—Instituto Agrônômico do Sul, 11 March 1956, *A. Schultz 3614* (ICN); Porto Alegre, Morro da Extrema, 17 June 1996, *R.M. Senna & C. Kazmirczak s.n.* (ICN 107434); Rio Pardo, Fazenda Soledade, 70 m, 05 February 1903, *F.R. Schoenwald & Deutrich s.n.* (ICN 18339); Santa Cruz do Sul, 1905, *A. Stier s.n.* (Fil. Austr. Exsic. 41) (K); idem, Trombudo, 01 March 1978, *J.L. Waechter 762* (ICN); São Francisco de Paula, Carapina, 21 February 1987, *R. Wasum et al. s.n.* (MBM 114266); São Leopoldo, Quinta São Manoel, *without date*, *J. Dutra 13* (ICN); São Sebastião do Caí, propriedade do Sr. Hugo Leão, 12 April 1959, *A. Backes 230* (ICN); Sapiranga, 18 June 1989, *A. Silva Jr. s.n.* (UPCB); Sapucaia do Sul, Morro Sapucaia, 05 May 1949, *L. Afonso 17* (HBR, ICN); Tramandaí, margens da Lagoa Custódia, 20 January 1963, *O.R. Camargo 3853, 3855* (PACA); Torres, Faxinal, 20 December 1977, *L.R.M. Baptista et al. s.n.* (ICN 35946). Unknown state: *without date*, *W.J. Burchell 152a, 3286* (K); *without date*, *C.F.P. von Martius 372* (FI); *without date*, *F. Sellow s.n.* (K); *without date*, *L. Riedel s.n.* (K); *without date*, *Fox s.n.* (K); *without date*, *G. Gardner 47* (K); 1835, *J.S. Blanchet s.n.* (FI-Webb. 212292).

5. *Telmatoblechnum* Perrie, D.J.Ohlsen & Brownsey in Perrie *et al.* (2014: 755).

Type: *Telmatoblechnum serrulatum* (Rich.) Perrie, D.J.Ohlsen & Brownsey in Perrie *et al.* (2014: 755)

Plants terrestrial, rarely epipetric; *rhizomes* long-creeping, stoloniferous, the scales with a dark central stripe, lanceolate, with entire margins; *fronds* monomorphic or slightly dimorphic, erect; *stipes* dark proximally, stramineous distally, proximally with scales similar to those of rhizomes, shorter than blades; *blades* pinnate, oblong to lanceolate, glabrous, each with a conform terminal pinna, truncate proximally, chartaceous to coriaceous; *rachises* glabrous or with amorphous, hyaline scales; *pinnae* articulate to rachises, sessile, linear to linear-oblong, margins toothed, with brown scales on abaxial costae, eventually deciduous; *veins* free, 1 × –3 × forked, vein tips not enlarged; *sori* usually restricted to the apical pinnae, indusia with erose margins; *spores* with globules or perispore spherules. $x = 36$.

Only one species in the study area, *T. serrulatum*.

Telmatoblechnum serrulatum (Rich.) Perrie, D.J. Ohlsen & Brownsey in Perrie *et al.* (2014: 755). *Blechnum serrulatum* Richard (1792: 114). *Blechnopsis serrulata* (Rich.) Presl (1851: 479). Type:—FRENCH GUIANA. *Without date*, *J.B. LeBlond s.n.* (holotype P00627607 (Herbarium Richard)). Fig. 6.

Blechnum angustatum Schrader (1824: 872). Type:—BRAZIL. Espírito Santo, 1820, *M.A.P. Neuwied s.n.* (holotype BR, photo).

Blechnum calophyllum Langsdorff & Fischer (1810: 20). Type:—BRAZIL. Santa Catarina, insula St. Catharinae, *without date*, *G.H. Langsdorff s.n.* (holotype B-W 20042 -01 0 (B-Willd)).

Blechnum stagninum Raddi (1819: 294). Type:—BRAZIL. Rio de Janeiro, rio Inhumirim, *without date*, *G. Raddi s.n.* (holotype PI, n.v., isotype FI).

Blechnum stieri Rosenstock (1905: 60). *Blechnum serrulatum* var. *stieri* (Rosenst.) Rosenstock (1907: 97). Type:—BRAZIL. Rio Grande do Sul, Santo Amaro, Serra da Cria, 24 November 1904, *A. Stier 229* (holotype not located, isotypes NY 149787, photo, ICN, UC, photo).

Plants terrestrial or very rarely epipetric; *rhizomes* long-creeping, subterranean, non-stoloniferous, the scales tan, each with a dark central stripe, lanceolate, $2.6\text{--}3 \times ca. 0.5$ mm, margins entire; *fronds* monomorphic, 11.5–94 cm long; *stipes* 3–41 cm long, 0.6–3.3 mm diam., stramineous, slightly compressed, the scales at bases similar to those on rhizomes; *blades* $8.4\text{--}53 \times 3\text{--}16$ cm, oblong to lanceolate, chartaceous to coriaceous, pinnate, glabrous, at apices reduced to an apical pinna smaller than lateral ones, truncate at bases; *rachises* glabrous or with amorphous scales typically less than 1 mm long, light, hyaline; *pinnae* 13–30 pairs, $1.5\text{--}16 \times 0.5\text{--}1.5$ cm, sessile, articulate to rachises, linear or linear-oblong, patent or most commonly ascending, margins serrate, apices acute to acuminate, with light tan, ovate-acuminate or deltate scales on the abaxial costa, smaller than those on rhizomes; *veins* free, simple or $1 \times -2 \times$ forked, vein ends not enlarged, terminating at the margins.

Geographical distribution and habitat preference:—Brazil (Amapá, Roraima, Amazonas, Pará, Rondônia, Tocantins [first record], Maranhão, Piauí, Rio Grande do Norte [first record] Paraíba, Pernambuco, Alagoas [first record], Sergipe, Bahia, Mato Grosso, Goiás, Distrito Federal, Mato Grosso do Sul, Minas Gerais, Espírito Santo, Rio de Janeiro, São Paulo, Paraná, Santa Catarina, and Rio Grande do Sul), furthermore USA, Mexico, Guatemala, Belize, Honduras, El Salvador, Nicaragua, Costa Rica, Panama, Greater and Lesser Antilles, Trinidad & Tobago, Guyana, Suriname, French Guiana, Colombia, Venezuela, Ecuador, Peru, Bolivia, Paraguay, and Argentina. This species occurs in open areas, such as grasslands (waterlogged or not) and road margins, generally in poor soils, mostly sandy ones, and less frequently in forested areas. Sometimes the rhizomes are totally submerged. In the study area it occurs from 0–950 m. Specimens grow in tropical Atlantic forests and *Araucaria* forests, seasonal semideciduous forests, in *restingas*, and in the Cerrado domain, being most common in *restingas*. The species is not threatened in Brazil.

Comments: *Telmatoblechnum serrulatum* is similar to *Telmatoblechnum indicum* (Burman 1768: 231) Perrie, D.J. Ohlsen & Brownsey in Perrie *et al.* (2014: 755). According to Chambers & Farrant (2001), they can be separated by the broader pinnae (mainly the sterile ones) which do not taper evenly from the bases to apices in *T. serrulatum*, besides the fact that they are oblong and shortly acute at apices; by the abaxial scales on costa (paler, slightly larger in *T. serrulatum*); by the veins, which are more immersed and less distinct on the abaxial surface in *T. serrulatum*; by the more distinctly colored pinnae with the adaxial surface shiny and often with a dark bronze color in *T. serrulatum*; and finally, by the pinna margins generally more regularly serrulate to denticulate in *T. serrulatum*. In the Neotropics, this is the only genus of Blechnaceae with pinnae articulate to rachis. According to Moran (1995), the pinnae abscise completely in regions with a marked dry season, leaving the rachises naked. This was observed by the senior author also in *restingas*, which are not under a dry climate and do not have a marked dry season.

In the study area, it can be distinguished from all other species of the family with monomorphic fronds by the articulate pinnae, ovate-acuminate or deltate scales on abaxial costae, long-creeping, subterranean rhizomes, and by the serrulate pinna margins.

Additional specimens examined:—BRAZIL. Minas Gerais: Formoso, Parque Nacional Grande Sertão Veredas, $15^{\circ}13'51''S$, $45^{\circ}48'59''W$, ca. 720 m, 17 February 1999, *R.C. Mendonça et al. 3837* (RB); Grão Mogol, próximo da ponte sobre o rio das Mortes, 23 May 1982, *A.M. Giuliatti s.n.* (HRCB 2832, SJRP, SPF 30144); Joaquim Felício, Serra do Cabral, 28 July 1976, *P.H. Davis et al. 2417* (R, UEC). Espírito Santo: Colatina, Patrimônio Rio Doce, 30 November 1943, *J.G. Kuhlmann 6571* (K, RB); Guarapari, Rodovia do Sol, km 25, 17 October 1988, *L. Behar et al. 216* (SJRP); Itaguaçu, Alto Limoeiro, 14 May 1946, *A.C. Brade et al. 18209* (RB); Linhares, Reserva Biológica de Comboios, $19^{\circ}39'12''S$, $39^{\circ}50'13,2''W$, 0 m, 17 May 2008, *A. Salino et al. 13426* (BHCB); Marataízes, 11 March 1972, *L. Krieger s.n.* (CESJ 11890); Santa Teresa, Country Club, 17 April 1984, *W. Boone 54* (MBML); Vitória, Campus de Goiabeiras, 09 February 1986, *L. Behar 34* (CESJ). Rio de Janeiro: Cabo Frio, Restinga do Perú, 17 September 1968, *D. Sucre 3691* (RB); Duque de Caxias, Pavuna, estrada Rio-Petrópolis, km 24, 15 March 1940, *B. Lutz 1614* (R); Itaboraí, Rio

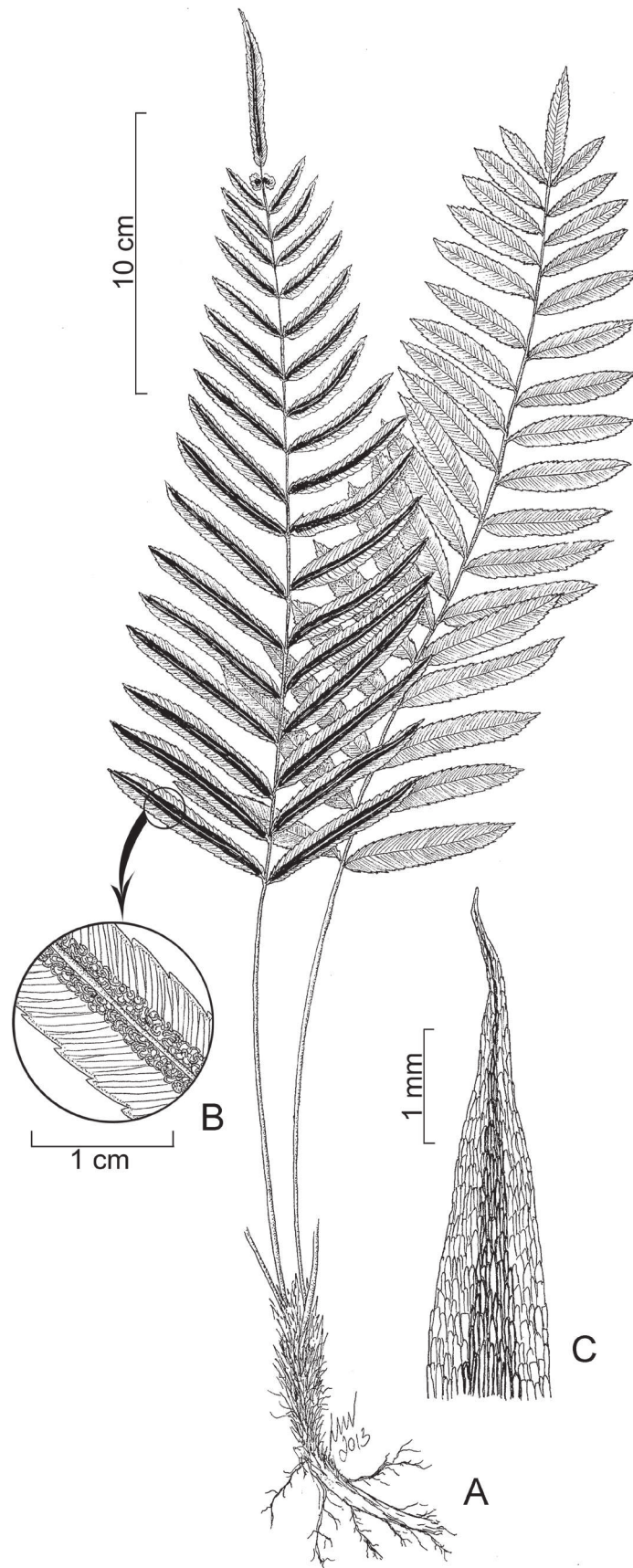


FIGURE 6. *Telmatoblechnum serrulatum*. A. Habit. B. Detail of pinna showing venation and sori. C. Rhizome scale. (From *L. Krieger s.n.*, CESJ 20997).

Guarai, 07 July 1977, *D. Araujo 1800* (PACA); Macaé, próximo a Lagoa de Carapebus, 20 November 1980, *D. Araujo 3587 & N.C. Maciel* (PACA); Magé, canal de drenagem do Rio Guarai, 20 May 1978, *A.G. Pedrini & I. Dias s.n.* (PACA 74161); Maricá, Itaipuaçu, 04 August 1977, *L. Krieger s.n.* (CESJ 14793); Rio de Janeiro, Restinga da Pedra de Itaúna, 16 August 1975, *A.G. Pedrini 261* (RB); Rio das Ostras, 04 April 1971, *L. Krieger s.n.* (CESJ 10392); Silva Jardim, vale do Rio São João, 16 February 1977, *J.P.P. Carauta et al. 2311* (PACA). São Paulo: Cananéia, Ilha do Cardoso, 07 September 1976, *P.H. Davis 60639* (UEC); Caraguatatuba, Jardim Britânia, 17 September 1996, *E.C. Smidt 17* (SJRP); Estrela do Norte, Rodovia SP-425, Fazenda Figueira, ca. 3 km da cidade, ca. 22°28'S, 51°44'W, 25 July 1997, *M.R. Pietrobom-Silva 4049* (SJRP); Euclides da Cunha Paulista, Rodovia SP-613, km 38–39, ca. 1 km do trevo da cidade, córrego Água Branca, ca. 22°33'S, 52°35'W, 26 July 1997, *M.R. Pietrobom-Silva 4075* (SJRP); Iguape, Fazenda Bandeirantes, 25 January 1986, *E.L.M. Catharino 675* (MBM); Itanhaém, loteamento Maramba II, 6 km de Itanhaém em direção a Peruibe, 24°13'51"S, 46°55'20"W, ca. 5–10 m, 19 April 2001, *J.P. Souza et al. 3582* (ESA); Itirapina, Estação Ecológica de Itirapina, 22°10'–22°14'S, 47°51'–47°56'W, ca. 705 m, 10 December 2003, *V.A.O. Dittrich & J.S. Leme 1308* (HRCB); Moji-Guaçu, Reserva Biológica de Moji-Guaçu, 07 June 1989, *E.A. Simabukuro 6* (SJRP, UEC); Mongaguá, Jardim Alice, ca. 24°06'S, 46°37'W, 10 February 1997, *F.P.F. Athayde 66* (SJRP); Presidente Bernardes, rodovia SP-272, Pirapozinho-Mirante do Paranapanema, km 22–26, ca. 22°01'S, 51°34'W, *M.R. Pietrobom-Silva & I. Fernandes 3075* (MBM); São José dos Campos, encosta leste do vale do córrego da Ressaca, 560–590 m, 28 March 1962, *I. Mimura et al. 339* (K); São Paulo, próximo a Interlagos, 19 August 1948, *W. Hoehne 2654* (MBM, SJRP); São Sebastião, Praia da Baleia, Rua Olavo Pazzanesi, 23°46'28"S, 45°39'54"W, ca. 10 m, 23 April 2000, *A. Salino et al. 5381* (ESA); São Vicente, 04 October 1955, *W. Hoehne 4106* (CESJ, SJRP); Sete Barras, Parque Estadual Carlos Botelho, núcleo de Sete Barras, estrada Sete Barras—São Miguel Arcanjo, ca. 24°12'S, 47°55'W, ca. 250 m, 28 September 2002, *V.A.O. Dittrich & T.B. Breier 1241* (HRCB); Teodoro Sampaio, Reserva Florestal do Morro do Diabo, rio Paranapanema, 24–26 February 1986, *P.G. Windisch 4703* (SJRP); Ubatuba, Parque Estadual da Serra do Mar, Núcleo Picinguaba, Praia da Fazenda, 0 m, 03 May 2001, *V.A.O. Dittrich & A. Salino 878* (HRCB). Paraná: Altônia, Rio Paraná, Lagoa dos Padres, 01 March 2003, *C. Kozera 1749* (HRCB); Antonina, Rio Manduira, 10 m, 11 February 1981, *G.G. Hatschbach 43586* (MBM); Curitiba, Solitude, 09 May 1985, *J. Cordeiro 34* (MBM); Douradina, 30 October 1959, *R. Braga & R.B. Lange s.n.* (MBM 238269); Foz do Iguaçu, área prioritária de Itaipu, 06 July 1989, *A. Botelho 1186* (MBM); Guaraqueçaba, Paruquara, 5 m, 05 May 1992, *J.T. Motta 2427* (MBM); Guaratuba, 05 December 1964, *L.T.D. Dombrowski et al. 1138* (PACA); Matinhos, Praia do Mendanha, 3–5 m, 16 August 1959, *G.G. Hatschbach 6211* (HBR, MBM); Morretes, Anhaia, 22 January 1974, *G.G. Hatschbach 33707* (MBM, PACA); Paranaguá, Balneário Ipanema, 3–5 m, 22 February 1993, *J. Cordeiro 1003* (MBM); Pontal do Paraná, Pontal do Sul, condomínio Village, ca. 25°36'S, 48°24'W, 31 December 2000, *F.P.F. Athayde 841* (SJRP). Santa Catarina: Antônio Carlos, 02 February 1944, *R. Reitz H304* (RB); Araquari, Ilha dos Barcos, 26°20'08"S, 48°42'58"W, 3 m, 21 April 2001, *L. Sevegnani s.n.* (FURB); Araranguá, Morro dos Conventos, 26 January 1964, *O.R. Camargo 3959* (PACA); idem, 28°53'25"S, 49°19'15"W, 8 m, 07 December 2010, *A. Korte 5470* (FURB); Balneário Barra do Sul, Canal do Linguado, 26°21'55"S, 48°39'52"W, 30 March 2007, *A.L. de Gasper 166* (FURB); Biguaçu, Instituto Itaúna de Educação Ambiental, 27°27'00"S, 48°41'24"W, 66 m, 16 June 2010, *A. Stival-Santos 3012* (FURB); Blumenau, A.D. Hering, 26°54'11"S, 49°07'09"W, 135 m, 21 April 2010, *T.A. Beckhauser 129* (FURB); Brusque, Boteas, 20 October 2005, *L.M. Ceolin s.n.* (FURB); Camboriú, Rio do Meio, 27°00'01"S, 48°41'27"W, 47 m, 11 November 2010, *A. Korte 4947* (FURB); Florianópolis, Ilha de Santa Catarina, Pântano do Sul, 2 m, 22 June 1965, *R.M. Klein et al. 6040* (HBR, PACA); idem, 27°41'06"S, 48°31'29"W, 3 m, 28 July 2015, *L.A. Funez 4457* (FURB); Garuva, Rio Saí Guaçu, Ponte do Quinze, 16 January 2002, *J.M. Silva 3514* (FURB); Itajaí, Escalvado, 20 m, 20 April 1946, *R. Reitz C1582* (RB); Itapema, Canto da Praia, 27°05'22"S, 48°35'58"W, 60 m, 03 May 2010, *A. Stival-Santos 2656* (FURB); Itapoá, Rio Saí-Guaçu, comunidade Quinze, 26°00'36"S, 48°41'24"W, 7 m, 16 September 2009, *S. Dreveck 1045* (FURB); Jaraguá do Sul, Parque da Malwee, 26°30'12"S, 49°07'42"W, 59 m, 20 May 2012, *L.A. Funez 487* (FURB); Joinville, Lagoa Saguacu 26°16'49"S, 48°46'50"W, 4 m, 23 November 2010, *A. Korte 5054* (FURB); Navegantes, 26°50'02"S, 48°38'33"W, 9 m, 14 July 2012, *L.A. Funez 684* (FURB); Nova Trento, Valsugana, 27°21'31"S, 49°03'02"W, 307 m, 14 July 2010, *A. Korte 3992* (FURB); Palhoça, Campo do Massiambu, 5 m, 18 December 1952, *R. Reitz 4960* (HBR); idem, Parque Estadual do Tabuleiro—Guarda do Embaú, 27°54'17"S, 48°35'58"W, 15 m, 02 December 2010, *A. Korte 5311* (FURB); Porto Belo, 27°08'58"S, 48°36'07"W, 3 m, 16 September 2009, *A.L. de Gasper 2347* (FURB); Santo Amaro da Imperatriz, Rio da Nova Descoberta, 27°48'36"S, 48°46'51"W, 558 m, 20 October 2010, *A. Korte 4701* (FURB); São Francisco do Sul, Parque Estadual do Acaraí—Praia do Ervino, 26°20'58"S, 48°33'48"W, 5 m, 29 November 2010, *A. Korte 5213* (FURB); Tijucas, Rua Zulmira Gomes s/n—Nova Descoberta, 27°15'48"S, 48°44'49"W, 12 m, 04 May 2012, *A.L. Tomazi s.n.* (FURB); Rio Grande do Sul: Arroio do Sal, Balneário Rondinha Velha, 21 July 1991, *I. Fernandes s.n.* (ICN 98812); Capão da Canoa, Estrada do Pontal, vicinal junto à Fazenda Pontal,

ca. 29°46'32"S, 50°08'48"W, 26 August 2001, *F.P.F. Athayde & C.R. Lehn 1050* (SJRP); Capela de Santana, Estação Azevedo, 06 May 1949, *B. Rambo 41409* (RB); General Câmara, Santo Amaro do Sul, Cerro da Cria, 150 m, 19 August 1904, *F.R. Schoenwald & Deutrich s.n.* (ICN 18345); Montenegro, Morro do Cabrito, 255 m, 29 November 1988, *I. Fernandes 444* (ICN); Pelotas, Horto Botânico, Instituto Agrônômico do Sul, 29 December 1958, *G.L. Brauner 30, 34* (PACA); Rio Grande, Estação Ecológica do Taim, 16 July 1986, *J.L. Waechter 2193* (ICN); Salvador do Sul, 600 m, 04 May 1947, *A. Sehnem 2783* (MBM, PACA); Santa Cruz do Sul, Pinheiral, 70 m, 18 July 1903, *F.R. Schoenwald s.n. & Deutrich* (ICN); São Leopoldo, Quinta São Manoel, *s.d.*, *J. Dutra 16* (ICN); Sapucaia do Sul, Morro Sapucaia, 290 m, 26 April 1987, *I. Fernandes 336* (ICN); Torres, Itapeva, 05 November 1958, *A. Schultz 1964* (ICN); Viamão, Itapuã, Lagoa Negra, 04 April 1981, *R.M. Bueno 7* (ICN). Tocantins: Darcinópolis, córrego Xupé, 24 November 2009, *G. Pereira-Silva et al. 14763* (CESJ, CEN—photo). Rio Grande do Norte: Baía Formosa, Praia do Sagi, 01 November 2007, *R.C. Oliveira et al. 1990* (EAC—photo, UFRN—photo). Alagoas: Maragogi, a 8 km da divisa AL/PE, 23 November 1982, *R.P. Lyra-Lemos 749* (EAC—photo).

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