



<https://doi.org/10.11646/phytotaxa.340.2.7>

## ***Sticherus holttumii* (Gleicheniaceae, Polypodiopsida), a new species from Brazil, and the first Brazilian record of *Sticherus brevitomentosus***

LUCAS VIEIRA LIMA<sup>1,\*</sup> & ALEXANDRE SALINO<sup>1</sup>

<sup>1</sup>Universidade Federal de Minas Gerais, Instituto de Ciências Biológicas, Departamento de Botânica, Laboratório de Sistemática Vegetal, Belo Horizonte, Minas Gerais, Brazil.

Author for correspondence: [lucaslima1618@gmail.com](mailto:lucaslima1618@gmail.com)

### **Abstract**

*Sticherus holttumii*, a new species from Brazil, is here described, illustrated, and compared to its most similar species. Additionally, *S. brevitomentosus* is recorded for the first time in Brazil, based on a recent collection from Pico da Neblina National Park. We also provide an identification key to all species of *Sticherus* from the Brazilian Amazon.

**Key words:** Amazonia, Flora of Brazil, ferns, leptosporangiate, Pará State

### **Introduction**

Gleicheniaceae is a pantropical fern family with about 157 species distributed in six genera (PPG I 2016). *Sticherus* Presl (1836: 51) is the largest of these genera. It is pantropical and contains about 95 species, with ca. 55 in tropical America (PPG I 2016, Gonzales & Kessler 2011). Despite a recently published revision for the Neotropics (Gonzales & Kessler 2011), *Sticherus* still needs taxonomic attention, and the knowledge of the Brazilian species is far from complete. Due to a lack of collection efforts, the Northern region of Brazil still represents a gap in the knowledge of fern and lycophyte diversity and distribution in Brazil (Almeida & Salino 2015, Góes-Neto & Pietrobon 2012). Almeida & Salino (2016) pointed out that the lack of taxonomic revisions also contributes to this gap, and represents an impediment to the understanding of the ecological, biogeographical, and evolutionary patterns of ferns in a global context.

While examining collections from the Brazilian Amazon for the preparation of a monograph for the family in Brazil, we found one new species and one new country record. This emphasizes the need for improving collection efforts and taxonomic revisions. Previous to our study, only two species of *Sticherus* were recorded from the Brazilian Amazon, and now two more species are documented. These include the new record *Sticherus brevitomentosus* Østergaard & Øllgaard (2001: 132), *S. holttumii* sp. nov., as well as *S. longipinnatus* (Hooker 1844: 9) Ching (1940: 238) and *S. remotus* (Kaulfuss 1824: 39) Chrysler (1944: 383).

### **Materials & Methods**

Specimens of all four species of *Sticherus* from the Brazilian Amazon mentioned above, including their types, were studied at B, BHCB, BM, K, MG, NY, QCA and RB. The terms used for description follow Lellinger (2002), and the leaf terms of Gleicheniaceae follow Andersen & Øllgaard (1996) with modifications.

### **Taxonomic treatment**

*Sticherus brevitomentosus* Østergaard & Øllgaard (2001: 132). Type:—ECUADOR. Prov. Zamora-Chinchipec, Yangana-Valladolid, km 29, 2580 m, E. Ø. Andersen 10728 (holotype QCA! [photo QCA113182], isotypes AAU, QCNE).

**Distribution:**—Brazil (Amazonas), Ecuador. This species is known from wet montane forest and forest margins between 2000–2700 m.

**Notes:**—*Sticherus brevitomentosus* is morphologically similar to *Sticherus bifidus* (Willdenow 1804: 168) Ching (1940: 282), and differs from it by having only the ultimate branches bearing segments (vs. all branches bearing segments), raised secondary veins (vs. secondary veins at the same level of the laminar tissue), and abaxial surface of segments with less dense indument usually restricted to the sori area (vs. arachnoid scales completely covering the abaxial surface of segments). In Brazil, it is known from a single specimen collected in Amazonas State, and this is the first record from the country.

**Material examined:**—BRAZIL. Amazonas: Santa Isabel do Rio Negro, Parque Nacional do Pico da Neblina, Igarapé Cuiabixi, 0°47'18.0"N, 66°01'15.0"W, 2060 m, 20 September 2012, *R.C. Forzza et al.* 7225 (BHCB, RB).

***Sticherus holttumii*** L.V. Lima & Salino, *sp. nov.* (Fig. 1)

*Sticherus holttumii* is most similar to *Sticherus nudus* (Moritz in Reichenbach 1859: 28) Nakai (1950: 23) and *Sticherus pteridellus* (Christ 1906: 284) Copeland (1947: 28), in having hyaline to stramineous scales on the midribs and secondary veins only. It differs from both mainly by having all axes bearing segments (vs. segments restricted to the ultimate branches), and bud scales lanceolate (vs. bud scales ovate).

**Type:**—BRAZIL. Pará: Monte Alegre, Trilha para Cachoeira da Prata no Igarapé do Ambrósio, Mata de Galeria, 1°26'11.5"S, 54°32'40"W, 302 m, 09 December 2015, *T.E. Almeida et al.* 4174 (holotype BHCB, isotype HSTM).

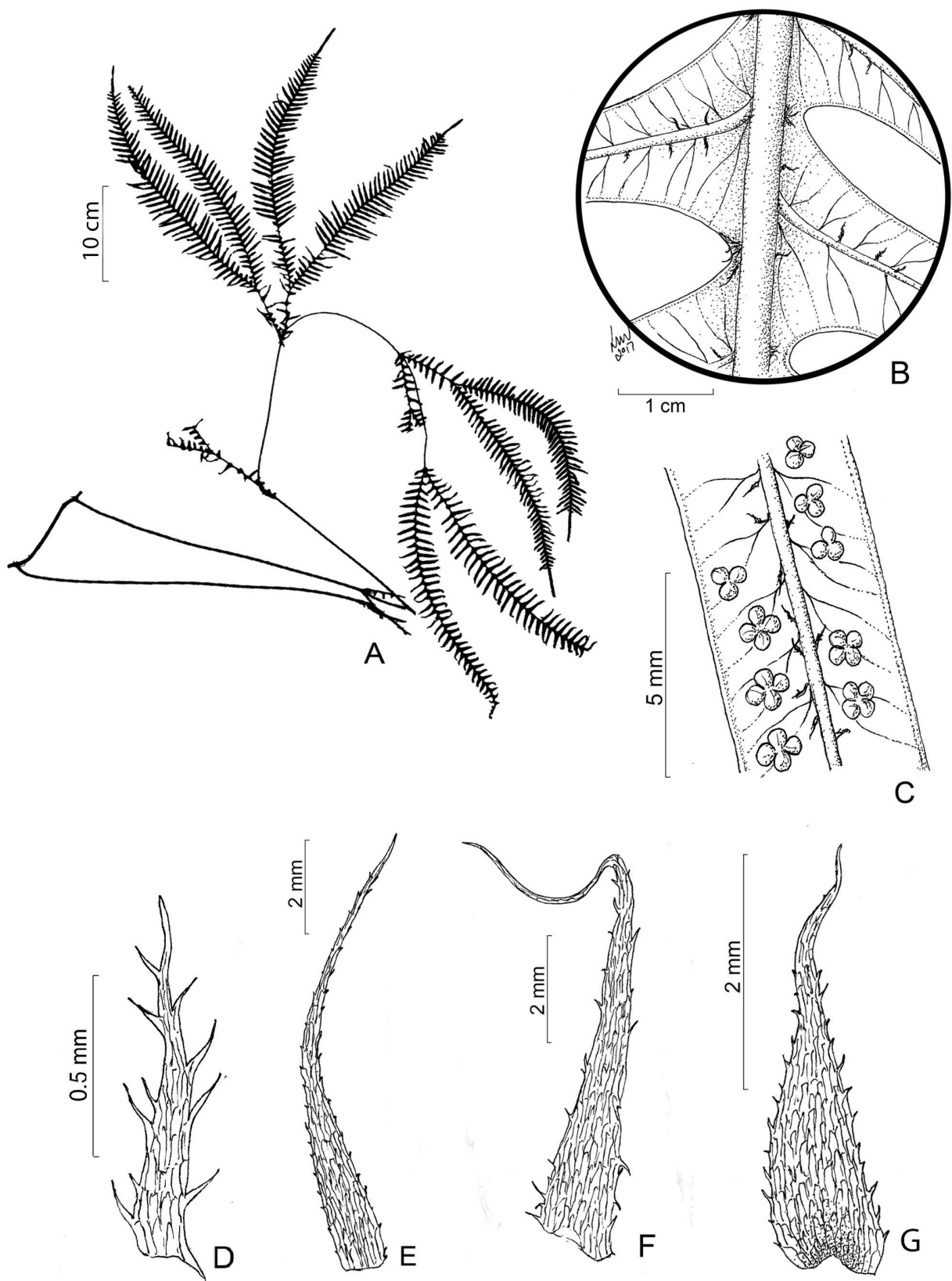
Plants terrestrial. Stems long-creeping, 2.2–3 mm diam., rugose, sparsely to densely covered with caducous, brown, rigid, linear-lanceolate scales, these 2.8–3.8 mm long, with margins dentate, apices attenuate to filiform, bases truncate or occasionally cordate. Fronds up to 1 m long, occasionally longer, petiole glabrous, 2 mm diam. Laminae up to 3 times forked, often with trifid, small pseudostipules restricted to the first branches. Buds covered with narrowly triangular brown scales, these 1.5–2.5 mm long, with margins dentate, occasionally ciliate, apices filiform, bases truncate. Ultimate branches elliptic, 20–22 × 2.5–4.5 cm, with apices pinnatifid or caudate, bases slightly reduced, with up to 3 reduced segments, rachises abaxially brown, with sparse brown scales, these 0.4–0.7 mm long, margins setose, apices attenuate and occasionally darkened, bases truncate, adaxially glabrous. Segments linear, ascendant, 1.3–2.6 × 0.15–0.24 cm, present on all axes, midribs with linear scales, these with margins setose, secondary veins with arachnoid and stellate scales, these with margins plane to slightly revolute, adaxial surface glabrous. Sori medial. Paraphyses present, hyaline. Spores monoletic.

**Distribution and habitat:**—*Sticherus holttumii* is known from Pará and Minas Gerais states, in the north and southeast of Brazil respectively, where it grows in gallery forests in Cerrado and Amazonian domains, between 300–900m. This peculiar distribution pattern is also known from *Blechnum heringeri* Brade (1966: 87). The type of this species is from Paracatu, Minas Gerais, as well as one of the paratypes of *S. holttumii*. Dittrich *et al.* (2015) mentioned the record of *Blechnum heringeri* from Pará state, as a disjunct population. It seems that the gallery forests act like a corridor of dispersal for this species. However, more collections are necessary to test this hypothesis.

**Etymology:**—The epithet is a tribute to Richard Eric Holttum (1895–1990), for his considerable contribution to the knowledge of ferns and lycophytes, especially Gleicheniaceae.

**Additional specimens examined (paratypes):**—BRAZIL. Minas Gerais: Paracatu, Reserva do Acangaú, 17°08'59"S, 47°04'42.3"W, 665 m, 03 March 2006, *A. Salino et al.* 10716 (BHCB); Minas Gerais: Grão Mogol, entre a BR 251 e a cidade de Grão Mogol, Cachoeira Vêu das Noivas, na Serra de Grão Mogol, Cadeia do Espinhaço, 16°35'43.6"S, 42°57'17.3"W, 875 m, 15 March 2007, *A. Salino et al.* 11798 (BHCB).

**Notes:**—*Sticherus holttumii* is morphologically related to *Sticherus nudus* (Colombia and Venezuela) and *Sticherus pteridellus* (Costa Rica, Guatemala, and Nicaragua) by having hyaline or stramineous scales on segment midribs and secondary veins. *Sticherus holttumii* differs from both by bearing segments on all axes, while the others usually have segments restricted to the ultimate branches, and by the hyaline paraphyses of the sori. The bud scales of *S. holttumii* are lanceolate, while in *S. nudus* and *S. pteridellus* they are ovate. The margins of the rhizome scales of *S. holttumii* are dentate, while in *S. nudus* they are setose and in *S. pteridellus* entire. Regarding the Brazilian species of the genus, *S. holttumii* is morphologically similar to *Sticherus gracilis* (Martius 1834: 107) Copeland (1947: 27), with which it shares lanceolate bud scales, caudate apices, and segment sizes. *Sticherus holttumii* differs from it mainly by the presence of scales on the abaxial surface of segments, while *S. gracilis* is completely glabrous.



**FIGURE 1.** *Sticherus holttumii*. A. Habit. B. Abaxial surface of rachis. C. Abaxial surface of segment. D. Rachis scale. E-F. Rhizome scale, showing the morphological variation. G. Bud scale.

## Key to the Brazilian Amazon species of *Sticherus*

1. Plants with remote segments, separated by at least once or twice their width ..... *Sticherus remotus*
- Plants with close segments, contiguous ..... 2
2. Abaxial surface of the segments with anchor-shaped scales ..... *Sticherus longipinnatus*
- Abaxial surface of the segments with arachnoid, stellate or lanceolate scales ..... 3
3. Segments restricted to the ultimate branches ..... *Sticherus brevitomentosus*
- Segments present on all axes ..... *Sticherus holttumii*

## Acknowledgements

We thank Luiz Menini Neto for the botanical illustration, Thaís Elias Almeida and Vinícius Antonio de Oliveira Dittrich for the English review and comments. The first author thanks FAPEMIG for the Master's degree scholarship, and the second author thanks CNPq for the research grant (proc. 306868/2014-8).

## References

- Almeida, T.E. & Salino, A. (2015) Thirteen new records of ferns from Brazil. *Biodiversity Data Journal* 3: e4421.  
<https://doi.org/10.3897/BDJ.3.e4421>
- Almeida, T.E. & Salino, A. (2016) State of the art and perspectives on neotropical fern and lycophyte systematics. *Journal of Systematics and Evolution* 54: 679–690  
<https://doi.org/10.1111/jse.12223>
- Andersen, E.O. & Øllgaard, B. (1996) A note on some morphological terms of the leaf in the Gleicheniaceae. *American Fern Journal* 86: 52–57.  
<https://doi.org/10.2307/1547368>
- Brade, A.C. (1966) *Blechnum (Blechnidium) heringerii*. *Sellowia* 18: 87–90.
- Ching, R.C. (1940) On the genus *Gleichenia* Smith. *Sunyatsenia* 5: 269–289.
- Christ, H. (1906) Primitiae florum costaricensis. *Bulletin de l'Herbier Boissier sér. 2* 6: 279–288.
- Chrysler, M.A. (1944) The vascular texture of the leaf of *Gleichenia*. II. The petiolar bundle. *American Journal of Botany* 31: 483–491.  
<https://doi.org/10.1002/j.1537-2197.1944.tb08061.x>
- Copeland, E.B. (1947) Genera filicum. The genera of ferns. *Annales Cryptogamici et Phytopathologici* 5: 1–247.
- Dittrich, V.A.O., Salino, A. & Monteiro, R. (2015) The *Blechnum occidentale* (Blechnaceae, Polypodiopsida) species group in southern and southeastern Brazil. *Phytotaxa* 231: 201–229.  
<https://doi.org/10.11646/phytotaxa.231.3.1>
- Góes-Neto, L.A.A. & Pietrobon, M.R. (2012) New records of ferns to Brazilian Amazonia. *Rodriguésia* 63: 1151–1155.  
<https://doi.org/10.1590/S2175-78602012000400026>
- Gonzales, J. & Kessler, M. (2011) A synopsis of the Neotropical species of *Sticherus* (Gleicheniaceae), with descriptions of nine new species. *Phytotaxa* 31: 1–54.  
<https://doi.org/10.11646/phytotaxa.31.1.1>
- Hooker, W.J. (1844) *Species Filicum* 1. W. Pamplin, London.
- Kaulfuss, G.F. (1824) *Enumeratio Filicum quas im Itinere Circa Terram Legit Cl. Adalbertus de Chamisso Adiectis in Omnia Harum Plantarum Genera Permultasque Species non Satis Cognitas vel Novas Animadversionibus [...] Cum Tabulis Aeneis Duabis*. Cnobloch, Leipzig.
- Lellinger, D.B. (2002) A Modern Multilingual Glossary for Taxonomic Pteridology. *Pteridologia* 3: 1–263.  
<https://doi.org/10.5962/bhl.title.124209>
- Martius, H. (1834) *Icones Plantarum Cryptogamicarum*. Munich.
- Nakai, T. (1950) A new classification of Gleicheniales. *Bulletin of the National Science Museum* 29: 1–71.
- Østergaard A., E. & Øllgaard, B. (2001) Gleicheniaceae. In: Harling, G. & Anderson, L. (Eds.) *Flora of Ecuador Vol. 66*. Trelleborg, Sweden, pp. 107–169.
- PPG I. (2016) A community-derived classification for extant lycophytes and ferns. *Journal of Systematics and Evolution* 54: 563–603.  
<https://doi.org/10.1111/jse.12229>
- Presl, C. (1836) *Tentamen Pteridographiae*. T. Haase, Prague.
- Reichardt, H.W. (1859) Über die Gefässbündel-Vertheilung im Stamme und Stipes der Farne. Ein Beitrag zur anatomischen und

systematischen Kenntniss dieser Familie. *Akademie der Wissenschaften in Wien, Mathematisch-Naturwissenschaftliche Klasse, Denkschriften* 17: 21–48, plates 1–3.

Willdenow, C.L. (1804) *Mertensia*, ett nytt flägte af Ormbunkarne. *Kongl. Vetenskaps Academiens Nya Handlingar ser. 2* 25: 163–170.