

The genus *Thelypteris* (Thelypteridaceae, Polypodiopsida) in the state of Mato Grosso, Brazil – II – Subgenera *Amauropolta* (Kunze) A.R. Sm., *Cyclosorus* (Link) C.V. Morton and *Steiropteris* (C. Chr.) K. Iwats.

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ABSTRACT

The family Thelypteridaceae presents considerable species richness throughout the hillside forests and coastal plains of Brazil, as well as in the forests of its southern plateau. This study was based on material collected in 24 trips to various regions within the state of Mato Grosso, as well as material deposited in the principal Brazilian herbaria and in other herbaria. The genus *Thelypteris*, represented in this study by the subgenera *Amauropolta* (Kunze) A.R. Sm., *Cyclosorus* (Link) Morton and *Steiropteris* (C. Chr.) K. Iwats., comprises 11 species in Mato Grosso and surrounding regions. Keys for identification, descriptions and references to illustrations of diagnostic characters are presented.

Key words: Central-west Brazil, diversity, ferns, taxonomy

Introduction

Thelypteridaceae is one of the fern families that has a subcosmopolitan distribution and great species richness, with approximately 1000 species, of which most occur in tropical and subtropical regions (Ponce 1995, Smith & Cranfill 2002). In Brazil, according to Salino & Almeida (2012), the family has 87 species of which 47 are endemic. In the state of Mato Grosso a total of 24 species in five subgenera of *Thelypteris* and *Macrothelypteris* were documented.

The current work presents the second part of the treatment of Thelypteridaceae species occurring in the state of Mato Grosso, including the species of the genus *Thelypteris* subgenera *Amauropolta* (Kunze) A.R. Sm., *Cyclosorus* (Link) Morton and *Steiropteris* (C. Chr.) K. Iwats. The species of *Thelypteris* subgenera *Goniopteris* and *Meniscium* were presented by Ponce *et al.* (2010).

Material and methods

The methodology used is the same described by Ponce *et al.* (2010) in “The genus *Thelypteris* (Thelypteridaceae, Polypodiopsida) from the state of Mato Grosso, Brazil – I”, where there is a description of the family and genus, as well as a key to the subgenera. The delimitation of species and comments on geographical distribution is based on studies

by Ponce (1987, 1995, 2007) and Salino & Almeida (2012). For the species with many collections, representative samples were chosen and referred to as “Selected Material” (one specimen per municipality), species with few collections are presented as “Material Examined”.

Results and discussion

A. *Thelypteris* subg. *Amauropolta* (Kunze) A.R. Sm. Amer. Fern J. 63:121. 1973

This subgenus is characterized by elliptic lamina with several pairs of basally sub-abrupt and gradually reduced pinnae; free venation, basal veins reaching the margin above the sinus between adjacent segments; reticulate spores; chromosome number $x=29$.

Amauropolta is the subgenus with the greatest diversity within *Thelypteris*, comprising approximately 200 species, mostly in tropical and subtropical America, where as few are found in Africa, Madagascar and the Mascarene Islands (Smith, 1983, 1992). In the Americas, the Andes region holds the greatest diversity. The species of this subgenus generally grow in montane forests, however in the region of Mato Grosso few species of this subgenus are found: two are neotropical *taxa* of wide distribution, usually occurring in low-lying areas and *wetlands* (moist forest enclaves).

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Key to the identification of species of Thelypteris subgen. Amauropelta from the state of Mato Grosso

1. Sori elliptical or linear, without indusia. Plants 30 cm tall. Trichomes uncinatate and short on the rachis and/or abaxial face of lamina *T. gymnosora*
1. Sori circular, with indusia. Plants 40-150(200) cm tall. Trichomes of a different type..... 2
 2. Rhizome suberect or erect. Trichomes acicular-arched or undulate; trichomes glandular, sessile, present only on the abaxial face of the axes or on both faces 3
 3. Segments triangular or linear-triangular, 6-15(18) mm long, subfalcate, with 12-24 pairs of veins; scales very small and sparse, on the abaxial midvein. Rachis glabrous or with trichomes along the adaxial groove. Aerophores present, squamiform to liguliform. Margin strongly revolute, partially covering the sori *T. cheilanthoides*
 3. Segments shortly ovate or triangular, 3-8 mm long, with 4-6(8) pairs of veins; scales absent on the midvein. Rachis totally pubescent to glabrescent. Aerophores absent or poorly developed. Margin plain or reflexed, not covering the sori..... *T. opposita*
 2. Rhizome creeping. Trichomes acicular-setose; trichomes glandular, pedicellate, hyaline or yellowish, on the axes and lamina, denser abaxially *T. mosenii*

1. *Thelypteris cheilanthoides* (Kunze) Proctor, Bull. Inst. Jamaica Sci. Ser., 5: 58. 1953. *Aspidium cheilanthoides* Kunze, Linnaea 22: 578, 1849.

Rhizome suberect to erect, scales ovate-lanceolate, chestnut brown, opaque to shiny and glabrous. *Fronde*s polystichous, 0.70-2.5 m long; *stipes* paleaceous to chestnut, 1/6-1/3 the length of the frond, 4-10 mm diam., basal portion squamose, distal portion glabrous. *Lamina* subelliptical, 4-7 pairs of subabruptly reduced basal pinnae, the smaller ones glandulous, 25-40 cm wide, subcoriaceous to coriaceous; *rachis* abaxially with uni- to multicellular trichomes, up to 2 mm long, or glabrescent; *pinnae* sessile, with a linear contour, deeply pinnatifid, 1.5-4 cm wide, abaxial midvein with uni- to multicellular trichomes, acicular or crispate, or glabrescent with a few chestnut scales; *segments* linear-triangular, subfalcate, the basal ones wider, 3-4 mm in width, margin strongly revolute, (8)12-24 pairs of veins (immersed and darkened when dried); adaxial surface glabrous or with a few acicular trichomes, abaxial surface and margin with glandular, sessile, yellow or orange trichomes; aerophores liguliform or squamiform at the base of the pinnae and sometimes also at the base of the ridges of the segments. *Sori* submarginal to submedial, circular, indusia reniform to subatiriod, margin glandular. Illustrations: Ponce (2007: 296).

Comments: *Thelypteris cheilanthoides* occurs from the Caribbean (Greater Antilles) and Mexico to Bolivia and Brazil (Rondônia, Mato Grosso, Distrito Federal, São Paulo, Paraná and Santa Catarina).

Selected material: **BRAZIL. Mato Grosso:** Jaurú, 9/XII/1991, Windisch & Pires 6700 (SI, SJRP). **Rondônia:** Colorado do Oeste, s.d., Neiva 167 (NX).

2. *Thelypteris gymnosora* Ponce, Hoehnea 34: 293. 2007.

Rhizome erect, scales linear-lanceolate, dark chestnut brown, subclathrate and uncinatate-setose. *Fronde*s polysti-

chous, 10-30 cm long; *stipes* chestnut, 1/5-1/4 of the length of the frond, trichomes uncinatate, short, 0.1-0.2 mm long, squamous throughout its length. *Lamina* subelliptical to elliptical, 4-6 cm wide, (1)2-3 pairs of subabruptly reduced basal pinnae, herbaceous; *rachis* scarcely to densely uncinatate-pubescent, with some scales, lacking glandular trichomes; *pinnae* peciolulate with cuneate base, outline longly elliptical, pinnatifid up to 1/3-1/2 to the midvein, 5-8 mm wide, oblique; *segments* oblique or falcate, with 2-4(5) pairs of veins, adaxial surface with setiform, antrorse trichomes along the ridges and veins, abaxial surface with uncinatate, dense trichomes, 0.05-0.2 mm wide; aerophores absent. *Sori* submedial, elliptical to linear, exindusiate. Illustrations: Ponce (2007: 294).

Comments: *Thelypteris gymnosora* occurs in Brazil (Mato Grosso, Minas Gerais, Espírito Santo, São Paulo, Rio de Janeiro, Paraná and Santa Catarina).

Thelypteris gymnosora is a species close to *T. ptarmica* (Kunze ex Mett.) C.F. Reed, but the latter has glabrous laminae or with sparse setiform hairs and subcircular or shortly elliptical sori with spatulate indusia. Another very similar species is *T. aspidioides* (Willd.) R.M. Tryon, which can be distinguished from *T. gymnosora* and *T. ptarmica* due to its linear, subentire to pinnatifid pinnae with an acroscopically auriculate base and chartaceous to subcoriaceous laminae.

Material examined: **BRAZIL. Mato Grosso:** Chapada dos Guimarães, 16/II/1988, Salino 385 (SJRP, UC).

3. *Thelypteris mosenii* (C. Chr.) C.F. Reed, Phytologia 17: 294. 1968. *Dryopteris mosenii* C. Chr., Kongel. Danske Vidensk. Selsk. Skr., Naturvidensk. Math. Afd., ser. 7, 4: 300, f. 27. 1907.

Rhizome creeping, dark, with linear-triangular and pubescent scales. *Fronde*s spaced, monomorphic or subdimorphic, 45-100 cm long; *stipe* brown, darkened at the base, 1/2 of the length of the frond, 2-3 mm diam., with minute

setose trichomes or glabrous, with scales at the base. *Laminae* ovate-elliptic or elliptic, 15-25 cm wide, herbaceous to chartaceous, apex pinnatifid and gradually attenuate, base suddenly and abruptly reduced with (3)4(5) pairs of pinnae; *rachis* adaxial surface with acicular, antrorse trichomes, abaxial surface with acicular and glandular trichomes, pedicellate; *pinnae* linear-triangular, slightly apiculate at the apex, 1.5-2 cm wide, the base (not reduced) reflexed, the mid-length horizontal; *segments* linear, oblique, acute, the proximal ones slightly elongated in the middle pinnae, the adaxial surface with a few antrorse trichomes on the midvein and veins, the abaxial surface lightly to densely glandular, with pedicellate glandular trichomes and short, setose trichomes, veins free, 2(1) the basal ones reaching the margin above the sinus; aerophores absent. *Sori* medial with glandular-pilose indusia. Illustrations: Ponce (2007: 297).

Comments: *Thelypteris mosenii* occurs from the eastern part of Paraguay and in Brazil (Mato Grosso, Distrito Federal, Goiás, Pernambuco, Minas Gerais and São Paulo).

Material examined: **BRAZIL. Mato Grosso:** Campinápolis, 10/X/2000, Pinheiro Neto 28 (NX).

4. *Thelypteris opposita* (Vahl) Ching, Bull. Fan Mem. Inst. Biol., Bot. 10: 253. 1941. *Polypodium oppositum* Vahl, Eclog., Amer. 3: 53. 1807.

Rhizome suberect to erect, scales chestnut brown, ovate-lanceolate and glabrous. *Fronde*s fasciculate, 30-110 cm long; *stipes* light brown to chestnut, ca. 1/10 the total length, scales only at the base, pubescent to glabrescent. *Laminae* narrowly elliptic, chartaceous or subcoriaceous, with 10-20 pairs of gradually reduced basal pinnae; *rachis* light brown, pubescent on the abaxial surface, trichomes crispate 0.3-0.5 mm long, to glabrescent; *pinnae* long triangular in outline, pinnatifid, with slightly rolled edges, 0.5-1.5(1.8) cm wide, the basal ones 1-5 mm long, hastate or auriculiform; midvein glabrous or pubescent; *segments* ovate or triangular, 2-4 mm wide, margin plain, reflexed or curved, with 4-6(8) pairs of veins; adaxial surface glabrous or with sparse setiform trichomes, abaxial surface with unicellular, acicular or crispate trichomes, 0.2-0.4 mm long, and sessile, resinous

and orange glands; aerophores absent. *Sori* circular, medial, *indusia* reniform, with glandular or pubescent-glandular margin. Illustrations: Ponce (2007: 296).

Comments: *Thelypteris opposita* occurs from Mexico and the Caribbean (Greater Antilles) to Bolivia, Paraguay, Brazil (Acre, Rondônia, Mato Grosso, Goiás, Distrito Federal, Mato Grosso do Sul, Minas Gerais, Espírito Santo, São Paulo, Rio de Janeiro, Paraná and Santa Catarina).

Thelypteris opposita is similar to *Thelypteris pachyrhachis* (Kunze ex Mett.) Ching var. *pachyrhachis* (not found in the state of Mato Grosso), which is distinguished by the presence of small scales on the abaxial midvein and well developed aerophores.

Selected Material: **BRAZIL. Mato Grosso:** Nortelândia, s.d., Windisch 8339 (HASU, SI); Nova Xavantina, 08/V/2005, Dary & Florencio s.n. (NX); Santana da Chapada, 1939?, Schaefer s.n. (HB); **Mato Grosso do Sul:** Selvíria, 11/XI/1995, Lucca, Jr. et al. 84 (SI). **Unidentified locality:** Drainage of the upper Rio Araguaia, ca. 78 km S of Xavantina, 16/VI/1966, Irwin et al. 17281 (MO).

B. *Thelypteris* subg. *Cyclosorus* (Link) Morton, Amer. Fern J. 53: 153. 1963.

The subgenus *Cyclosorus* features plants with triangular or ovate laminae in outline, with or without only 2-3 pairs of slightly reduced basal pinnae, generally reflexed; the basal veins of adjacent segments free confluent or united, reaching the margin of the sinus between adjacent segments or ending next to it; the spores echinate to cristate and the chromosome number $x=36$.

The subgenus *Cyclosorus* is being considered in its broad sense (Smith, 1971, 1992), containing *Cyclosorus sensu stricto*, represented here by the species *Thelypteris interrupta* (Willd.) K. Iwats., which is well differentiated from the others. In addition, it also includes *Thelypteris* subg. *Cyclosoriopsis* K. Iwats. and *Christella* H. Lév. sections *Christella* and *Pelazoneurum* Holttum, with the groups of species of *T. hispidula* (Decne.) C.F. Reed and of *T. grandis* A.R. Sm., respectively. With this delimitation, it is a pantropical subgenus with approximately 20 species in the Neotropics.

Key for identification of the species of *Thelypteris* subgen. *Cyclosorus* of the state of Mato Grosso

1. Rhizome long, creeping, glabrescent to glabrous. Pinnae incised up to 1/2 of the distance to the midvein; with ovate scales on the abaxial midvein. Glandular, sessile trichomes on the abaxial lamina surface and veins *T. interrupta*
1. Rhizome erect or creeping, squamose at least at the apex. Pinnae incised up to 2/3 or more of the distance to the midvein; with scales absent or if present, linear in the margin and on the abaxial midvein. Glandular trichomes absent on the abaxial surface of the *lamina* and veins, or if present, subsessile or pedicellate 2
2. Lamina with basal pinnae not reduced; first pair of veins free 3
3. Pinnae up to 25 cm long, the lower with basal segments parallel to the rachis, at least the acroscopically elongated segment, the following 1-3 pairs lightly reduced or not. Axes glabrous or with a mixture of glandular and acicular-setose trichomes, ca. 0.2-0.3 mm long *T. berroi*

3. Pinnae up to 40 cm long, the lower with 1-3 strongly reduced or obsolete basal segments. Axes with very short, acicular trichomes, 0.1 mm long, glandular trichomes absent *T. grandis* var. *kunzeana*
2. Lamina with 2-3(4) pairs of moderately reduced basal pinnae; first pair of veins connivant or anastomosed, forming or not a veinlet excurrent to the sinus 4
4. Basal veins of adjacent segments anastomosed forming an excurrent veinlet to the sinus of 1-4 mm long 5
5. Abaxial surface of the segments (costa, veins and margin) and indusium with a mixture of short and long trichomes, 0.3-0.5 mm long. Stipes stramineous or light brown and darkened at the base *T. hispidula*
5. Abaxial surface of the segments (costule, veins and lamina) and indusium with uniformly short, acicular trichomes, less than 0.2 mm long. Stipes chestnut brown to purplish brown *T. dentata*
4. Basal veins of adjacent segments connivant or anastomosed, forming or not a short, excurrent veinlet less than 0.5 mm long *T. conspersa*

5. *Thelypteris berroi* (C. Chr.) C.F. Reed, Phytologia 17: 263. 1968. *Dryopteris berroi* C. Chr., Kongel. Dansk Vidensk. Selsk. Skr. 7 Naturvidensk. Math. Afd. 10 (2): 185. 1913.

Rhizome creeping, squamous at the apex; scales chestnut brown, triangular-lanceolate, glabrous or with sparse simple and glandular trichomes. *Fronde* monomorphic, subremote, 0.50-1.1(1.3) m long; *stipe* straw-colored, 1/3-1/2 of the total length of the frond, glabrous, glandular-pilose or glandular, squamous and darkened at the base. *Laminae* triangular or sub-triangular, apex gradually pinnatifid, papyraceous to chartaceous; *rachis* stramineous, glandular or glandular-pubescent; *pinnae* medial and apical linear-triangular, basal linear-elliptic, sessile, apex acute or attenuate, the basal pair slightly reduced or not, sometimes reflexed, 3-25 cm long; costa glabrous or glandular-pubescent, trichomes acicular, setose, 0.2-0.3 mm long, and glandular trichomes unicellular, capitate, subsessile or pedicellate, hyaline, sometimes with chestnut brown scales, pubescent, scarce and small on the abaxial midvein; *segments* falcate or subfalcate, apex acute, margin entire, plain or slightly revolute, 9-15 free veins, with the basicopic vein not reaching the margin of the sinus or connivant below the sinus, with membranous apophyses in the sinus, basal segments parallel to the rachis, at least the acroscopic segment elongated, and in large plants, crenate-serrate, the following 1-3 pairs lightly reduced or not, adaxial surface with sparse setiform trichomes, margins pubescent, abaxial surface and veins glabrous or sparsely glandular-pubescent, if present, trichomes, acicular, setose, less than 0.2 mm long. *Sori* circular, submarginal; indusium orbicular-reniform, glabrous or glandular and sparsely pilose; *sporangia* glabrous. Illustrations: Ponce (2007: 305).

Comments: *Thelypteris berroi* occurs in Paraguay, Uruguay, northeastern and coastal Argentina and Brazil (Bahia, Mato Grosso, Distrito Federal, Mato Grosso do Sul, Goiás, Minas Gerais, São Paulo, Santa Catarina).

Selected Material: **BRAZIL. Mato Grosso:** Nova Xavantina, 5/XII/2004, Athayde Filho 1659 (NX); 07/IX/2003, Aquino & Silva 9 (NX); 08/X/2000, Kunz & Milani 18 (NX); 14/

XI/2004, Castro & Neves 9 (NX); 15/X/2000, Webber & Albino 4 (NX); 25/XI/2000, Athayde 786 (NX).

6. *Thelypteris conspersa* (Schrad.) A.R. Sm., Univ. Calif. Publ. Bot. 59: 60. 1971. *Nephrodium conspersum* Schrad., Gött. Gel. Anz. 1824: 869. 1824.

Rhizome creeping, with scales at the apex, triangular-lanceolate to subulate, stramineous, densely pubescent on the adaxial face or pubescent only on the margin. *Fronde* monomorphic or subdimorphic, polystichous, 0.70-1.50 m long; *stipe* stramineous to light brown, 1/3 of the total length of the frond, pilose, squamous at the base; *lamina* elliptical, 15-35 cm long, chartaceous to coriaceous; *rachis* densely glandular-pubescent; *pinnae* linear-triangular, apex acute or attenuate, with 2-4 moderately reduced basal pairs, with the basal segments acroscopically elongated and lobed, midvein glandular-pubescent; *segments* linear-triangular, acute, with 7-14 pairs of veins, the basal pair connivant or anastomosing, forming a short, less than 0.5 mm long, excurrent vein, which reaches the margin below the sinus, both surfaces with acicular trichomes, and the abaxial surface with glandular, capitate, hyaline and/or yellow trichomes. *Sori* circular, medial, indusia reniform, glandular or glandular-pilose; *sporangia* with a glandular, unicellular trichome on the pedicel. Illustrations: Ponce (2007: 308).

Comments: *Thelypteris conspersa* occurs in Panama, Colombia, Venezuela, Ecuador, Peru, Bolivia, Paraguay, Uruguay, northern and coastal Argentina and Brazil (Pernambuco, Bahia, Mato Grosso, Goiás, Distrito Federal, Mato Grosso do Sul, Minas Gerais, Espírito Santo, São Paulo, Rio de Janeiro, Parana, Santa Catarina and Rio Grande do Sul).

Selected Material: **BRAZIL. Mato Grosso:** Brasnorte, s.d., Windisch 8474 (SI); Cáceres, 10/VI/1988, 468 Saline (SI); Canarana, 14/X/1990, Windisch 5867 (HB, SI, SJRP); Cuiabá, 18/VII/1991, Windisch & Oliveira 6528 (SI); Itaúba, 16/VII/1991; Windisch & Oliveira 6456 (SJRP); Jaurú, 9/XII/1991, Windisch & Pires 6696 (SJRP); Nortelândia, s.d., Windisch 8325 (SI, SJRP); Nova Xavantina, 31/VII/1967,

Ratter & Ramos 238 (MO); Novo São Joaquim, 24/X/1992, Windisch 7272a (SI, HB); São Félix do Araguaia, 10/II/1991, Windisch 5982 (HB, MO, SJRP); Vila Bela da Santíssima Trindade, 29/XII/1994, Windisch *et al.* 7889 (HB, SI).

7. *Thelypteris dentata* (Forssk.) E.P.St. John, Amer. Fern J. 26: 44. 1936. *Polypodium dentatum* Forssk., Flora Aegypti-arab. 185.1775.

Rhizome low and long, creeping, with chestnut-brown scales, linear or triangular-lanceolate, setose. *Fronds* subdimorphic, polystichous, 0.50-1.50 m long; *stipe* chestnut to purplish-brown, 1/3-1/2 of the total length of the frond, squamose at the base, densely pubescent or glabrescent; *lamina* sub-triangular or elliptical, 15-30 cm wide, chartaceous to subcoriaceous; *rachis* densely pubescent; *pinnae* linear-triangular, apex acuminate, with 2-4 basally reduced pairs, basal segments acroscopically elongated or elongated-lobed, midvein densely pubescent, with trichomes of uniform length, smaller than 0.2 mm; *segments* linear-triangular, oblique, with 6-10 pairs of veins, the basal pair united at an obtuse angle forming an excurrent vein to the sinus, 2.5-4 mm long, adaxial surface with acicular trichomes on the veinlets and veins, abaxial surface with evenly short acicular trichomes on the veins and lamina, 0.1-0.2 mm long. *Sori* circular, medial, with reniform indusia, uniform and densely pilose, trichomes very short similar to those of the lamina; *sporangia* with a glandular trichome on the pedicel. *Spores* chestnut-brown, crested. Illustrations: Ponce (2007: 308).

Comments: *Thelypteris dentata* originates from the Palearctic (Africa, Asia), in America it occurs from the Southeast of the United States to Chile, Paraguay, Uruguay, Argentina and Brazil (Rondônia, Paraíba, Pernambuco, Bahia, Alagoas, Mato Grosso, Goiás, Distrito Federal, Mato Grosso do Sul, Minas Gerais, Espírito Santo, São Paulo, Rio de Janeiro, Parana, Santa Catarina and Rio Grande do Sul).

Selected Material: **BRAZIL. Mato Grosso:** Alto Taquari, 21/II/1996, Pietrobon da Silva *et al.* 3004 (HB); Chapada dos Guimarães, 19/II/1988, Salino 423 (SJRP); Juscimeira, 04/X/1996, Windisch 8294 (HASU, SI); Nova Xavantina, 09/IX/2000, Almeida & Gonçalves 11 (NX). **Mato Grosso do Sul:** Selvíria, 10/X/1992, Rodrigues Jr. & Silva 254 (SJRP). **Rondônia.** Colorado do Oeste, 17/I/2007, Neiva 355 (NX).

8. *Thelypteris grandis* A.R. Sm. var. *kunzeana* (C. Chr.) A.R. Sm., Univ. Calif. Publ. Bot. 59: 99. 1971. *Dryopteris oligophylla* Maxon var. *kunzeana* C. Chr., Kongel. Danske Vidensk. Selsk. Skr. 7 Naturvidensk. Math. Afd. 10 (2): 189. 1913.

Rhizome creeping, scales linear-triangular, pubescent. *Fronds* subremote, 1.5-2 m long; *stipe* stramineous, 1/2 of the total length of the frond, pubescent to glabrescent, squa-

mose and darkened at the base; *lamina* subtriangular, apex pinnatifid, abruptly reduced, similar to a lateral pinna, coriaceous, dark greyish-green when dry; *rachis* stramineous, pubescent; *pinnae* elliptical-linear, apices long-attenuated, to 40 cm long by 1.5-3(3.5) cm wide, sessile or with a petiole 1-2 mm long, the lower pair not or only slightly reduced, adaxial midvein with very short, setiform trichomes or glabrous, abaxial midvein minutely pubescent, trichomes ca. 0.1 mm long, with miniature scales, 0.4-1.4 mm long, inconspicuous, pubescent; *segments* linear-triangular, falcate, acute, entire margins slightly revolute, the first, second and sometimes third pair reduced or obsolete, with 10-22 pairs of veins, the basal pair connivent to the sinus, apophyses membranous in the sinus, adaxial surface glabrous, sometimes scabrous, abaxial surface pubescent on the veinlets, veins and margins, trichomes simple, setiform, 0.08-0.15 mm long. *Sori* submarginal; indusia orbicular-reniform, glabrous or with sparse setiform trichomes; *sporangia* glabrous. Illustrations: Ponce (2007: 309).

Comments: *Thelypteris grandis* var. *kunzeana* occurs from Ecuador to Bolivia, Argentina, Paraguay and Brazil (Mato Grosso, Goiás, Mato Grosso do Sul, Minas Gerais and São Paulo).

Material examined: **BRAZIL. Mato Grosso:** Cáceres, 2/XI/1987, Salino 188a (SJRP).

9. *Thelypteris hispidula* (Decne.) C.F. Reed, Phytologia 17 (4): 283. 1968. *Aspidium hispidulum* Decne., Nouv. Ann. Mus. Hist. Nat. 3: 346. 1834.

Rhizome erect or creeping, with ovate or triangular-lanceolate scales, dark brown or stramineous, pubescent in the margin and sometimes also on the adaxial surface. *Fronds* monomorphic, polystichous, 0.40-1.20 m long; *stipe* stramineous or light brown, darkened at the base, 1/3-1/2 of the total length of the frond, pilose and with scales at the base; *lamina* elliptical, gradually reduced at the base, 10-30 cm wide, papyraceous to chartaceous; *rachis* glandular-pubescent; *pinnae* linear-triangular, apex acute or attenuated, with 2-4 reduced, proximal pairs, sometimes with basal segments acroscopically elongated-crenate, midvein glandular-pubescent; *segments* linear-triangular, oblique, acute or obtuse, with 6-10 pairs of veins, the basal pair united, forming a vein excurrent to the sinus, 1-3 mm long, adaxial surface pubescent on the veinlets, veins and margin, abaxial surface fully glandular-pubescent, trichomes acicular and capitate, hyaline, 0.2-0.5 mm long, not uniform. *Sori* circular, medial, indusia reniform with dense hairs of different lengths, rarely glabrous; *sporangia* with a unicellular, capitate trichome on the pedicel. Illustrations: Ponce (2007: 308).

Comments: *Thelypteris hispidula* is a pantropical species (Africa, Asia, Oceania), in America it occurs from the

Southeast of the United States, Mexico and the Caribbean to Bolivia, Paraguay, Argentina, Uruguay and Brazil (Amapá, Rondônia, Pará, Amazonas, Maranhão, Paraíba, Pernambuco, Bahia, Alagoas, Goiás, Distrito Federal, Minas Gerais, Espírito Santo, São Paulo, Rio de Janeiro, Paraná, Santa Catarina and Rio Grande do Sul).

Selected Material: **BRAZIL. Mato Grosso:** Água Boa, 23/X/1992, Windisch *et al.* 7160 (HB, SI); Chapada dos Guimarães, 14/II/1988, Salino 348 (SJRP); Guarantá do Norte, 16/VII/1995, Soares 42 (HB); Matupá, s.d., Windisch 8961 (SI); Nova Xavantina, 28/X/2005, Athayde Filho *et al.* 1708 (NX); **Rondônia:** Colorado do Oeste, 12/I/2005, Neiva 48 (NX).

10. *Thelypteris interrupta* (Willd.) K. Iwats., Jap. J. Bot. 38: 314. 1963. Icon.: Smith, 1971: 55. *Pteris interrupta* Willd., Phytographia 1: 13. 1794.

Rhizome widely creeping, often branched, black, glabrescent to glabrous. *Fronde*s spaced, 0.70-1.40 m long; *stipes* light brown, 0.5-0.6 times the total length of the frond, glabrous; *lamina* pinnate or subpinnatifid, triangular, widely triangular or linear in outline, chartaceous to coriaceous; *rachis* with acicular trichomes on the adaxial surface; *pinnae* linear-subelliptical, apex acute, base subcuneate, briefly petiolulate, 1-2 cm wide, 1/3-1/2 incised, sparsely pubescent to glabrescent on the adaxial midvein; *segments* triangular-elliptical, apex rounded, margin entire, 3.5-6 mm wide, with 7-14 pairs of veins, the basal pair united, forming an excurrent vein to the sinus, the following pair connivant to the sinus, sometimes with membranous apophyses at the sinus, adaxial surface glabrous, sometimes with a pubescent margin, abaxial surface with yellowish, unicellular, sessile, subspherical, glandular trichomes, with ovate scales on the costa, costule and veins. *Sori* circular, medial or subcostal, confluent when mature; indusia orbicular-reniform or sub-rectangular, pilose or glabrous; *sporangia* with 1-3 glandular 3-celled trichomes on the pedicel. Illustrations: Ponce (2007: 311).

Comments: *Thelypteris interrupta* is pantropical (Africa, Asia, Oceania), on the American continent it occurs from Florida (United States), Mexico and the Caribbean to Bolivia, Paraguay, Argentina, Uruguay and Brazil (Amapá, Amazonas, Maranhão, Ceará, Paraíba, Pernambuco, Bahia, Alagoas, Mato Grosso, Goiás, Distrito Federal, Mato Grosso do Sul, Minas Gerais, Espírito Santo, São Paulo, Rio de Janeiro, Parana, Santa Catarina and Rio Grande do Sul).

Selected Material: **BRAZIL. Mato Grosso:** Cáceres, 6/XII/1989, Windisch 5608 (SJRP); Nova Xavantina, 30/V/2003, Dias *et al.*, s.n. (NX); Querência, 16/VI/2006, Brito & Kotwitz VB002 (NX).

E. *Thelypteris* subg. *Steiropteris* (C. Chr.) K. Iwats. Mem. Coll. Sci. Kyoto Imp. Univ. ser. B, Biol. 31: 31. 1964

The subgenus *Steiropteris* is characterized by having slightly reduced or normal proximal pinnae, usually with a central keel between the adjacent segments and the basal pair of veins free and reaching the margin above the sinus between adjacent segments; conspicuous aerophores and cristate or winged spores.

Neotropical subgenus with 21 species that are distributed from southern Mexico and the Caribbean to Bolivia, Paraguay and Brazil. The closest group is *Goniopteris* (Smith 1980; 1992).

11. *Thelypteris leprieurii* (Hook.) R.M. Tryon, Rhodora 69: 6. 1967.

Rhizome suberect to creeping, with chestnut-brown and lanceolate scales. *Fronde*s subdimorphic, ca. 1 m long; *stipe* light brown, 1/3 of the total length of the frond, pubescent to glabrescent; *lamina* ovate-triangular, chartaceous, apex pinnatifid; *rachis* densely pubescent, trichomes setose, 0.1-0.2 mm long, mixed with acicular and septate trichomes, 0.5-2 mm long; *pinnae* triangular, gradually narrowing towards the apex, acuminate, 10-13 × 1.5-2.3 cm, deeply pinnatifid, the proximal ones with basal segments reduced, the basal pair reflexed; *segments* oblique, acute, with a pubescent, excurrent keel from the midvein to the sinus between adjacent segments, with a pair of basal veins reaching the margin above the sinus, adaxial surface glabrous, abaxial surface pubescent on the midvein; aerophores elongated at the base of the pinnae. *Sori* medial, with indusia pilose, glandular or glabrous. Illustrations: Ponce (2007: 332).

Comments: occurs from Central America to Bolivia, Paraguay and Brazil.

This species presents three varieties that differ by the types of trichomes on the rachis, costa and indusia (Smith, 1980); only two of the three varieties occur in Mato Grosso.

a) *Thelypteris leprieurii* (Hook.) R.M. Tryon var. *leprieurii* Rhodora 69: 6. 1967. *Nephrodium leprieurii* Hook., Sp. fil. 4: 106. 1862.

Axes with unicellular, acicular and setiform trichomes of different lengths (ca. 0.2 mm long); sori medial or subcostal; indusia acicular-pilose.

Comments: *Thelypteris leprieurii* var. *leprieurii* occurs from Panama, the Guyanas, Trinidad, Venezuela, Colombia to Bolivia and Brazil (Roraima, Amazonas, Pernambuco, Mato Grosso, Goiás, Distrito Federal, Minas Gerais and São Paulo).

Material examined: **BRAZIL, Mato Grosso:** Colider, 15/I/1988, Salino 318 (SJR).

b) *Thelypteris leprieurii* (Hook.) R.M. Tryon var. *glandifera* A.R. Sm., Univ. Calif. Publ. Bot. 76: 25. 1980.

Indusia with glandular, sessile trichomes.

Comments: *Thelypteris leprieurii* var. *glandifera* occurs in Peru, Bolivia and Brazil (Goiás, Mato Grosso and São Paulo)

Material examined: **BRAZIL, Mato Grosso:** Santa Ana of Chapadão, 1902, Malme 2108 (S-102633 image).

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