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# A New Species and Two New Records of the Fern Genus *Cheilanthes* (Pteridaceae) from Southwestern Brazil

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Abstract.—*Cheilanthes pantanalensis*, a new species from the Brazilian Pantanal is described. A complete morphological description is presented, as well as illustrations and comments on the most similar species. This species is distinguished by its (2-)3-pinnate leaves and by having ultimate segments that are ovate to suborbicular. We also report *Cheilanthes hassleri* and *C. obducta* as new records for Brazil, both from Mato Grosso do Sul.

Key Words.—*Cheilanthes*, Pteridaceae, new species, Pantanal, Brazil

The genus *Cheilanthes* includes about 150 species, most of them occurring in semixeric, rocky places of tropical regions. In the Neotropics, the genus has about 100 species, some 50 of which are found in South America. The semixeric regions of Central Brazil, northern Argentina, Paraguay, and eastern Bolivia are especially important for the diversity of the genus, and contain several endemic species (Ponce *et al.*, in press).

As currently defined, the genus appears to be polyphyletic, but further phylogenetic and monographic studies are needed to better understand the delimitation of natural groups (Smith *et al.*, 2006; Prado *et al.*, 2007; Schuettpelz *et al.*, 2007). The genus can be defined by the scaly rhizomes short- to long-creeping, fronds 1-5-pinnate, hairy and/or scaly, veins free, and by the sori near the margins of the segments that are enrolled and differentiated (Mickel and Smith, 2004).

For the Neotropics, a significant number of species have been treated in regional floras, such as Tryon and Stolze (1989), Rodríguez (1995), Sota (1977), Sota *et al.* (1998), Ponce (1984), and Prado (1992, 2004). An exhaustive checklist for the southern South American species is presented by Ponce *et al.* (2008) in the "Catálogo de las Plantas Vasculares del Cono Sur", with 27 species recorded for this region.

Recent collections from the Brazilian Pantanal and a small portion of the northeastern Chaco region, close to the borders to Paraguay and Bolivia, have provided new information on the diversity and distribution in *Cheilanthes*, revealing a new species and two new records that are here presented.

***Cheilanthes pantanalensis*** E. Assis, Ponce & Labiak, ***sp. nov.*** TYPE.—BRAZIL. **Mato Grosso do Sul:** Corumbá, Serra do Amolar, Morro do Sucuri, 700 m, 18 Oct. 2002, *E. Assis et al. 364* (HOLOTYPE: UPCB; ISOTYPES: COR, SI, SP). **Fig. 1 A-E and Fig. 2 A-B.**

Filix monticola quae in saxis viget. Species haec *C. obductae* Kuhn affinis, sed laminis tripinnatis, segmentis ovatis vel suborbiculatis ab ea recedit.

Rhizomes suberect to short-creeping, 3–6 mm diam., scaly, the scales linear-lanceolate, 2.5–3.5 mm long, concolorous, reddish-brown, with filiform or furcate-filiform apices, margins entire to faintly dentate at the base; fronds monomorphic, 4–22 cm long; stipes 0.5–2.5 cm long, dark brown to atropurpureous, terete, moderately to densely hairy, the hairs articulated, each cell with an elongate acicular appendage, whitish; blades 3-pinnate, lanceolate, 3.5–19.5 cm long, 2–4 cm wide, subcoriaceous, adaxially with scarce, filiform hairs (sometimes glabrescent), abaxially densely hairy, the hairs ca. 5–7 mm long, multicellular, uniseriate, each cell with an elongate acicular appendage that points away from the apex of the hair, the articulations between cells with a "tongue in groove" connection; rachises and costae dark brown, with hairs similar to those on the laminar tissue; pinnae deltate-lanceolate to ellipticallanceolate, 1–2 cm long, 0.3–0.9 cm wide, ascending ca. 70°–80° to the rachises, short-stipitate, apices pinnatifid; pinnules deltate, 1.5–4.5 mm long, 1–2 mm wide, subsessile, apices often trilobate; ultimate segments ovate to suborbicular, 2–4 pairs, contiguous, apices roundish, bases subcordate, subsessile, margins entire; veins free, 2-furcate; sori at the ends of the veinlets, each covered by a slightly enrolled lobule, pauci-sporangiate; sporangia glabrous; spores tetrahedral, shallowly echinate, 32 per sporangium.

Distribution and Habitat.—Known only form the type locality, where it grows on rocks in open places, about 700 meters in elevation.

Etymology.—The specific epithet refers to the geographic area where this species was found – the Pantanal.

*Cheilanthes pantanalensis* can be recognized by its (2)3-pinnate blades, densely covered by multicellular and uniseriate hairs on the abaxial surface. The hairs are typical, with each cell bearing an elongate acicular appendage that points away from the apex of the hair, and with the articulations between cells with a "tongue in groove" connection (Fig. 1, D). Its ultimate segments are ovate to suborbicular. This species is most similar to *Cheilanthes obducta* Mett. ex Kuhn, and shares with this species the typical laminar hairs (Fig. 2, E) and shallowly echinate spores (Fig. 2, F). However, *C. obducta* exhibits 2-pinnate blades (Fig. 1, G), with lanceolate to deltate-lanceolate ultimate segments, while in *C. pantanalensis* these are ovate to suborbicular (Fig. 1, H). Its distribution overlaps with that of the two species now reported in Brazil.

Among the other species that occur in the Chaco and the Pantanal regions, *Cheilanthes myriophylla* Desv. and *C. hassleri* (Weath.) Ponce are most similar. They both differ by having true scales on the laminar tissue.

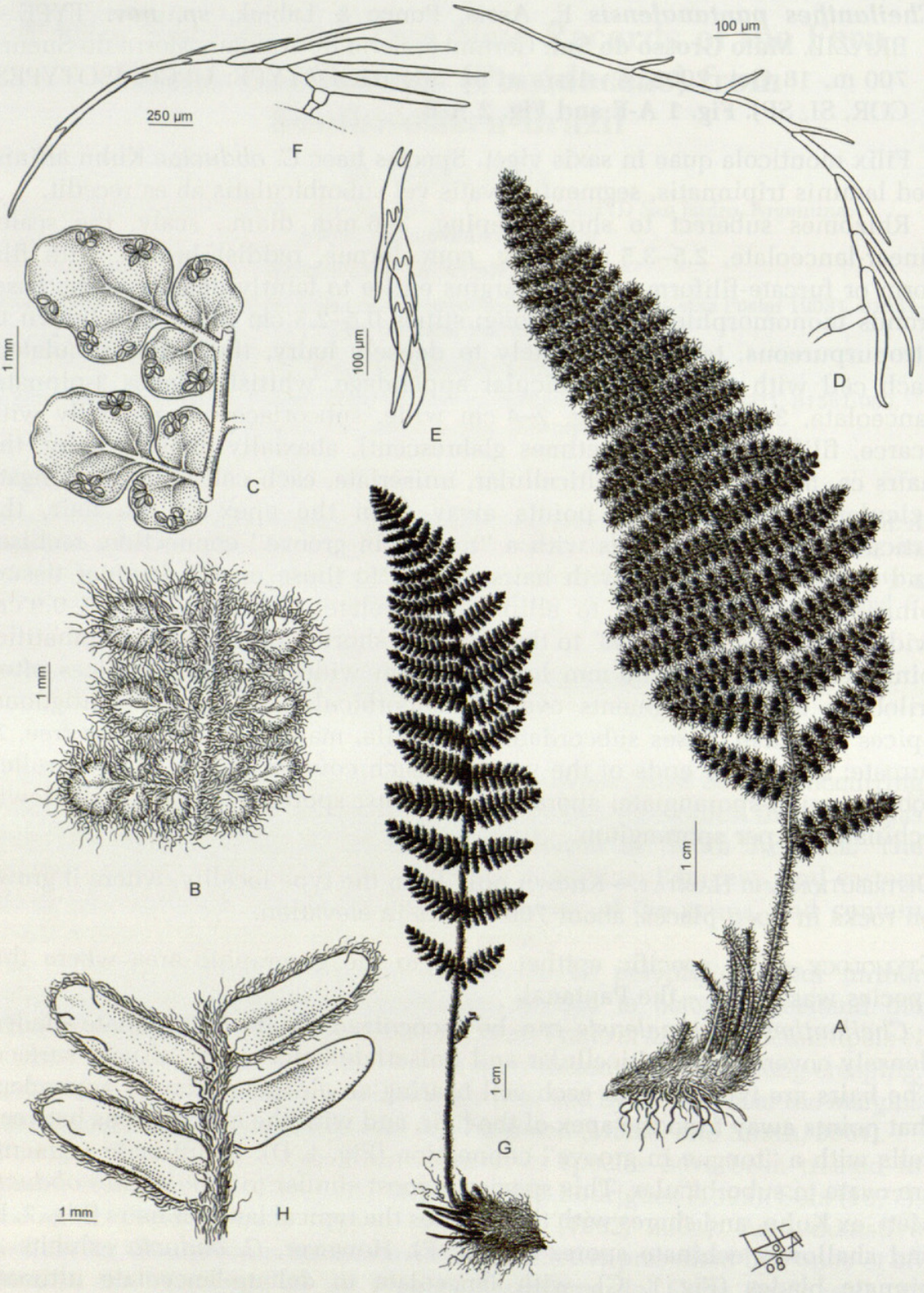


FIG. 1. *Cheilanthes pantanalensis*. **A.** Habit. **B.** Adaxial surface of the ultimate segments. **C.** Segment details, with the hairs removed. **D.** Lamina hairs. **E.** Detail of the "tongue and grove" articulations of the hairs (all from the Isotype). **F.** *Cheilanthes obducta* Mett. ex Kuhn. Trichome from the lamina (from *Venturi 846*, SI). **G.** Habit. **H.** Ultimate segments.

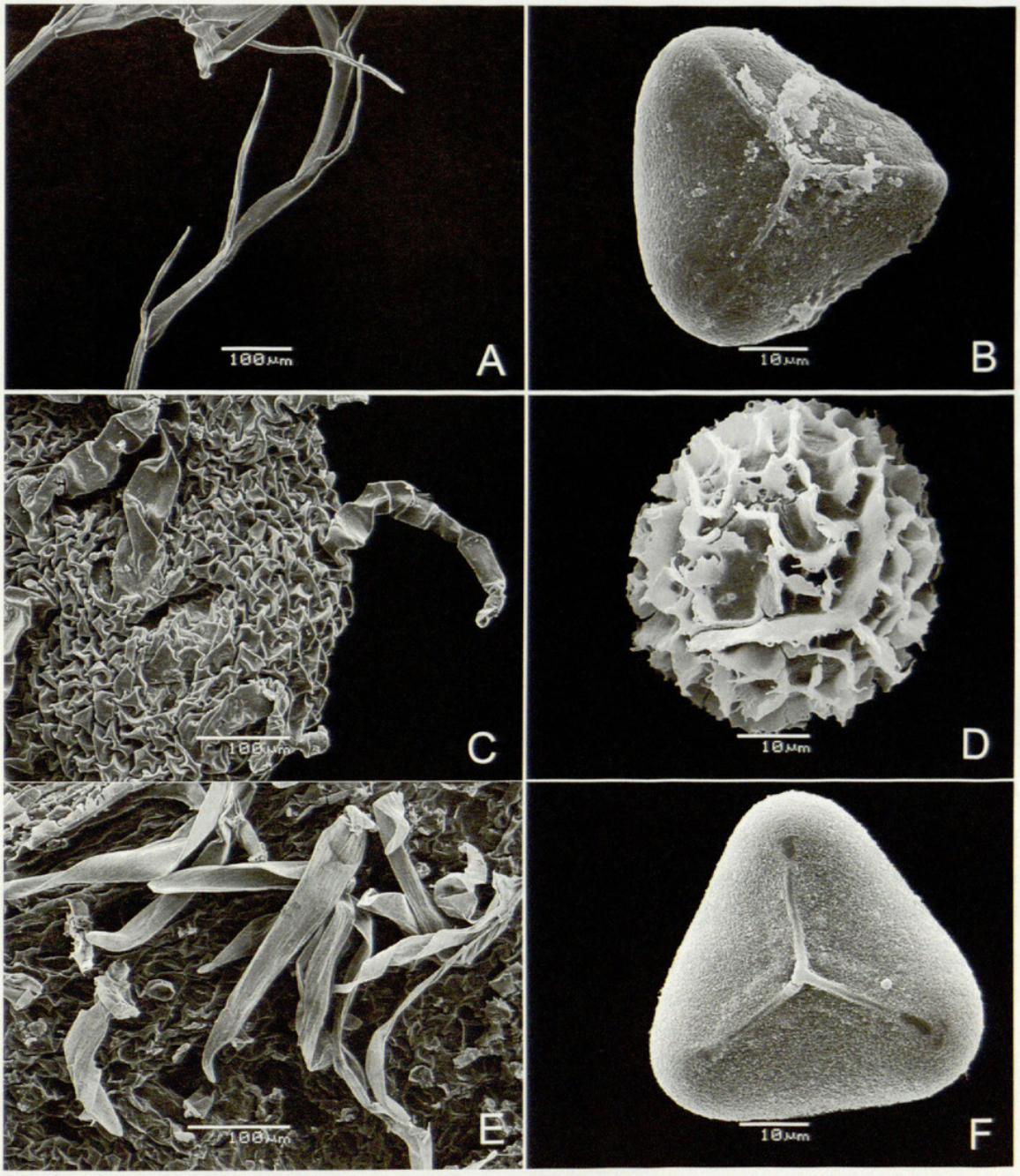


FIG. 2. *Cheilanthes pantanalensis* (from the holotype). **A.** Articulated trichome from the lamina. **B.** Spore. *Cheilanthes hassleri* (Weath.) Ponce. **C.** Non-articulated trichome from the lamina margin. **D.** Spore (from *G.A.Damasceno Jr. et al. 4196*, UPCB). *Cheilanthes obducta* Mett. ex Kuhn. **E.** Articulated trichome from the lamina. **F.** Spore (from *E. Assis & P. Schwartsburd 574*, UPCB).

**New Records:**

*Cheilanthes hassleri* (Weath.) Ponce, Darwiniana 45: 240. 2007.

*Notholaena hassleri* Weath., Lilloa 6: 274, t. 4. 1941. TYPE.—PARAGUAY, "In regione calcarea cursus superioris fluminis Apa", *Hassler 10996* (HOLOTYPE: K!; ISOTYPES: P!, MO, NY!).

DESCRIPTION AND ILLUSTRATION.—Tryon (1956).

DISTRIBUTION AND HABITAT.—Previously known only from Paraguay, and now recorded from the western border of Brazil. This fern grows on calcareous sediments alongside rivers.

SPECIMENS EXAMINED.—BRAZIL. **Mato Grosso do Sul**: Mun. Bonito, Logradouro, Fazenda Remanso, 20°53′38″ S; 56°44′58″ W, 410 m, 12 Dec 2005, *G.A. Damasceno Jr. et al. 4196* (COR, SI).

DISCUSSION.—This rare species can be recognized by its lamina that is densely scaly on the abaxial surface and scarcely hairy on the adaxial surface. The hairs are uniseriate, short-celled, catenate (Fig. 2, C), and whitish or translucent. These features are unique among the other species of *Cheilanthes* in southern South America. Its cristate spores (Fig. 2, D) are typical and can be found in many cheilanthoids ferns.

*Cheilanthes obducta* Mett. ex Kuhn, Linnaea 36: 83. 1869. TYPE.—BOLIVIA. **La Laguna** (now Padilla): *D'Orbigny 386* (Isotype: P!).

*Notholaena balansae* Baker, J. Bot. n. ser. 7: 301. 1878. TYPE.—PARAGUAY. **Asunción**: Río Paraguay, IV/1874, *Balansa 330* (Holotype: K!; Isotypes: G!, BM!, P!).

DESCRIPTION AND ILLUSTRATION.—Tryon (1956); de la Sota (1977).

DISTRIBUTION AND ECOLOGY.—Venezuela, Colombia, Ecuador, Peru, Paraguay, Argentina, Bolivia; now recorded from Brazil (west border). Epipetric in open and semixeric environments.

SPECIMENS EXAMINED.—BRAZIL. **Mato Grosso do Sul:** Corumbá, Morro Santa Cruz, estrada para a Mineração Corumbaense S.A., 19°24′49,5″ S and 59°22′47″ W, 5 Jul 2005, *E. Assis et al. 574* (UPCB, COR, SI); Ladário, Estrada Parque – Bancada Laterítica, 19°10′02″ S and 57°33′31″ W, 25 Jul 2001, *E. Assis & G. A. Damasceno Jr. 280* (UPCB, COR, SI); Rod. Campo Grande a Aquidauana, km 110, Faz. Ledão, 14 Dec 1976, *G.J. Shepherd et al. 4079* (MBM).

DISCUSSION.—This species can be recognized by its 2-pinnate blades, that are conspicuously hairy abaxially. The hairs are multicellular, uniseriate, with each cell bearing an elongate acicular appendage that points away from the apex of the hair, and the articulations between cells with a "tongue in groove" connection (Figs. 1, F; 2, E).

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