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Thelypteris tuxtlensis (Thelypteridaceae), a New Species in Subgenus *Goniopteris* from Los Tuxtlas, Veracruz, Mexico

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ABSTRACT.—We describe and illustrate *Thelypteris tuxtlensis*, a new species in subgenus *Goniopteris* (Thelypteridaceae), from the biogeographic region of Los Tuxtlas, in the state of Veracruz, Mexico. This species appears to be most closely related to *T. hatchii* and *T. biolleyi*.

The genus *Thelypteris* (Thelypteridaceae) is distributed pantropically, and the family, as treated by Smith (1990), comprises about 1000 species, with about 350 in the Neotropics. Distinguishing characters of *Thelypteris* in its broadest sense (all species in the family) include the stipe vasculature of two bundles, acicular hairs on many parts of the fronds, usually bilateral spores with a prominent perispore, and chromosome base numbers from 27 to 36. *Thelypteris s.l.* has been subdivided by pteridologists into about 30 supposedly natural groups variously treated as genera, subgenera, or sections. In Mexico, *Thelypteris s.l.* includes the segregate genera *Amauropelta*, *Goniopteris*, *Meniscium*, *Stegnogramma*, and *Steiropteris* (Mickel and Smith, 2004). With only a few exceptions, subg. *Goniopteris*, with about 100 species, differs from all other subgenera of *Thelypteris* in the presence of forked or stellate hairs on some part of the blade or on the rhizome scales. *Goniopteris* is mainly restricted to low-and middle-elevation rain forests in the New World tropics and subtropics from Florida, the Antilles, and central Mexico to Bolivia and northeastern Argentina and Paraguay. Until now, 24 species have been found in Mexico, including 16 species in the state of Veracruz. Thirteen species of subg. *Goniopteris* are either entirely or preponderantly Mexican; thus, eastern and southern Mexico, along with the Greater Antilles, the Andes, and southern Brazil, can be considered principal centers of diversity within this subgenus.

During the field work for a current research project, T. Krömer and A. Acebey collected five specimens of *Thelypteris* on the slopes of the San Martín

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Tuxtla volcano, located in the northeastern region of Los Tuxtlas, in the state of Veracruz. This material could not be assigned to any known species reported from Mexico, Mesoamerica, or the Antilles.

Thelypteris tuxtlensis T. Krömer, A. Acebey & A. R. Sm., ***sp. nov.*** TYPE.—MEXICO. **Veracruz:** Mpio. San Andrés Tuxtla, ejido Barrio Lerdo, faldas del volcán San Martín Tuxtla, 1000 m, 18°34′N, 95°10′W, 11 Aug 2005, *T. Krömer & A. Acebey 2475* (holotype: MEXU; Isotypes: UC, XAL). **Fig. 1.**

Thelypteridi hatchii affinis, a qua imprimis differt indusiis persistentibus grandioribus, 0.5–1.0 mm diam., et pilis interveniis acicularibus patentibus, vel aliquot furcatis, nec stellatis nec adpressis.

Terrestrial; rhizomes erect or suberect, caudices to 15 × 3 cm; fronds monomorphic, or nearly so; rhizome scales brown, to 7 × 1.5 mm, glabrous or with sparse acicular and furcate hairs to 0.1 mm long; stipes stramineous to brownish, ca. 28–50 cm × 2.5–5.5 mm, puberulous with dense stalked-stellate hairs, ca. 0.1–0.2 mm long; blades dark green, chartaceous, 1 pinnate-pinnatifid, 37–57 × 25–31(–50) cm; buds lacking; pinnae 12–16 lateral pairs and a subsimilar to nearly conform terminal one, 11–16 (–25) × 1.6–3.1 cm, incised ca. 0.4–0.6 the way to costae, sessile or the proximal ones stalked 1–2 mm, proximal 1–3 pairs deflexed and slightly to strongly narrowed towards their bases, also slightly shortened; segments oblique, subfalcate (3.5–)4–6(–7) mm wide, acutish to obtuse at tips, basal 1–3 pairs on proximal pinnae shortened; veins 8–13 pairs per segment, proximal 2 pairs from adjacent segments united below sinuses or connivent with a common vein leading to sinuses; indument abaxially of whitish furcate or stellate hairs mostly 0.1–0.2 mm long on costae and veins, densest along costae, also with some acicular hairs 0.3–0.7 mm, tissue between veins with scattered, mostly acicular hairs 0.1 mm, adaxially the blades similarly hairy but hairs less dense along costae and veins and with longer acicular hairs 0.8–1 mm, rachises with dense furcate or stellate hairs; sori supramedial, with whitish, persistent, round-reniform, marginally setose indusia, hairs mostly acicular, a few furcate, also with a few hairs on indusial surface; sporangia glabrous.

PARATYPES.—MEXICO. **Veracruz:** Mpio. San Andrés Tuxtla, ejido 1° de Mayo, faldas del volcán San Martín Tuxtla, 920 m, 18°33′N, 95°13′ W, 2 May 2005, *Krömer & Acebey 2063* (MEXU, UC); ejido Morelos, faldas del volcán San Martín Tuxtla, camino hacia la cruz, 1000 m, 18°33′N, 95°12′W, 4 May 2005, *Krömer & Acebey 2113* (MEXU, UC); faldas del volcán San Martín Tuxtla, arriba de la cruz, 1010 m, 18°33′N, 95°12′ W, 5 May 2005, *Krömer, Acebey & Velasco Sinaca 2135* (MEXU, UC); ejido Emiliano Zapata, terracería del ejido Ruiz Cortínez hacia El Diamante, faldas del volcán San Martín Tuxtla, 1100 m, 18°33′N, 95°09′W, 23 Jul 2005, *Krömer, Acebey & Pérez Peña 2320* (MEXU, UC, XAL).

Thelypteris tuxtlensis appears most closely related to *T. hatchii* A. R. Sm., known from southern Mexico, Guatemala, Honduras, and Costa Rica. The

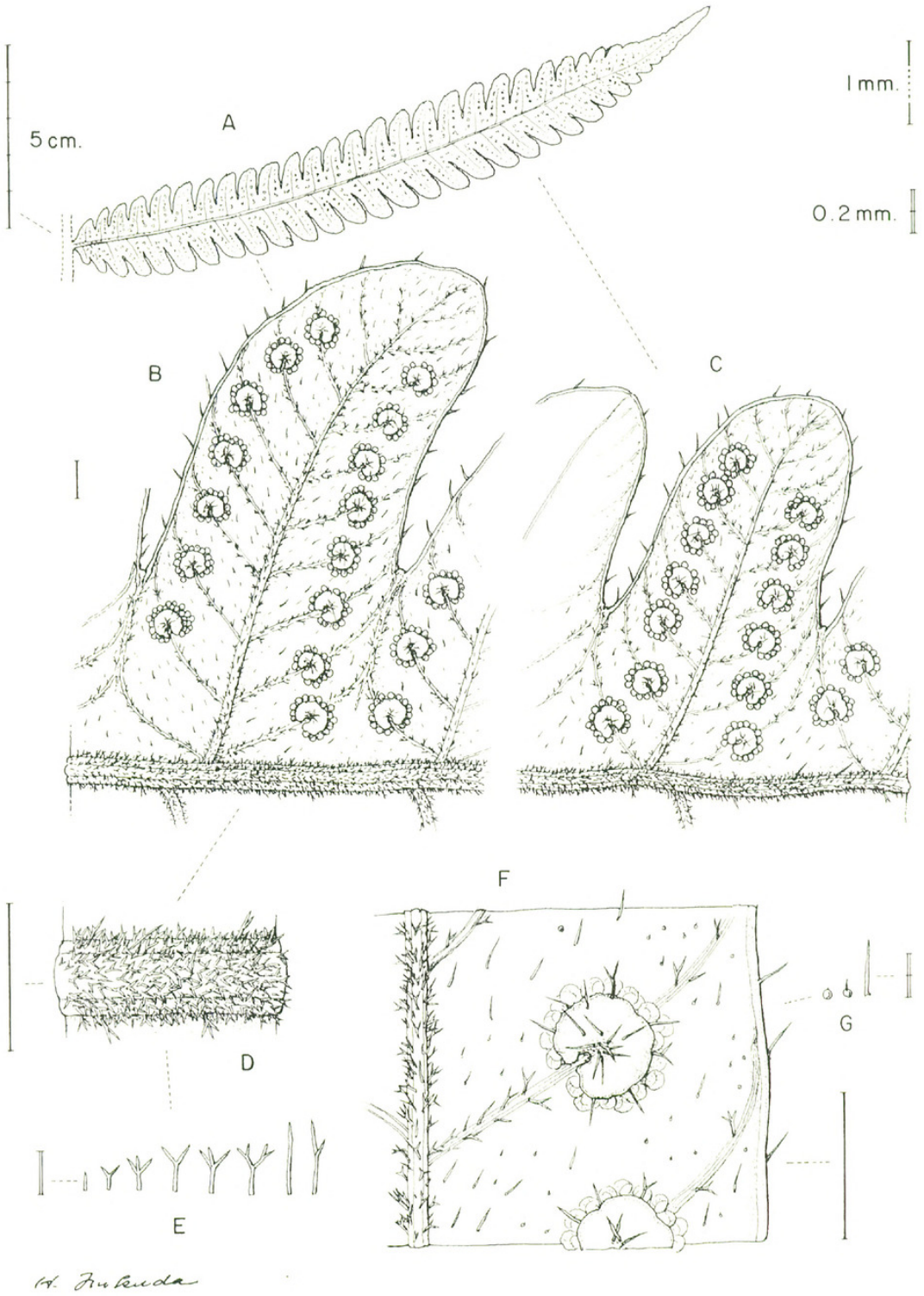

FIG. 1. *Thelypteris tuxtlensis*. **A.** Pinna, third from base of blade. **B.** Detail of abaxial surface, showing venation (anastomosing veins below sinuses), sori, and indument. **C.** Detail of abaxial surface, showing venation (veins connivent near the sinus), sori, and indument. **D.** Costa, detail showing stellate and furcate hairs. **E.** Simple, stellate, and furcate hairs, abaxial surface of costa. **F.** Detail of sori, showing indusial hairs (simple and a few furcate) and indument between veins, of simple hairs and a few pustules. **G.** Laminar pustules, some with reduced hairs (all from *Krömer & Acebey 2063*, UC).

latter species differs in having smaller indusia and appressed, sessile, stellate hairs on both sides of the laminae between the veins (such hairs lacking between the veins in *T. tuxtlensis*). Another similar species is *T. biolleyi* (Christ) Proctor, which bears sessile, stellate hairs on the laminae between veins (both sides of blade), as well as erect, anchor-shaped hairs on the costae and costules abaxially. The persistent indusia in *T. tuxtlensis* are larger than in any other species of subg. *Goniopteris* in Mexico except *T. paucipinnata* (Donn. Sm. & C. F. Reed) and *T. schaffneri* (Fée) C. F. Reed, both relatively narrow endemics in eastern and southern Mexico (the distribution of *T. paucipinnata* extends into Guatemala and Belize). From *T. schaffneri*, *T. tuxtlensis* differs in having sessile or short-stalked pinnae, 12–16 lateral pinna pairs (vs. 3–7 pairs), fewer pairs of veins per segment (8–13 vs. 15–18 pairs), a less distinct terminal pinna, and abaxially in having abundant furcate or stellate hairs on costae, costules, and veins (hairs mostly acicular in *T. schaffneri*). From *T. paucipinnata*, *T. tuxtlensis* differs in the greater number of pinna pairs, the lack of buds on the rachis, the much more pubescent blades (virtually glabrous in *T. paucipinnata*), the non-verrucose blades, the supramedial (vs. submarginal) sori, and the glabrous indusia.

Thelypteris tuxtlensis is endemic to the biogeographic region of Los Tuxtlas, in the state of Veracruz, Mexico. This species is a locally common terrestrial herb in the shady understory of the lower montane forest of the San Martín Tuxtla volcano between 920–1360 m, where it co-occurs with other ferns, such as *Asplenium auriculatum* Sw., *A. cuspidatum* Lam., *Dennstaedtia bipinnata* (Cav.) Maxon, and *Pteris orizabae* M. Martens & Galeotti. In this area, the forest in general is mostly undisturbed and somewhat protected as part of the core zone of the "Reserva de la Biosfera Los Tuxtlas"; thus, we believe that the populations of *T. tuxtlensis* do not suffer severe anthropogenic pressures. However, the additional discovery of three new fern records (*Hymenophyllum lanatum* Fée, *Selaginella guatemalensis* Baker, and *Trichomanes ovale* (E. Fourn.) Wess. Boer) for the state of Veracruz at the same general locality demonstrates that more inventories are needed since plant diversity in Los Tuxtlas is still threatened by the transformation of primary forest into pastures and plantations.

Acknowledgments

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Literature Cited

Mickel, J. T. and A. R. Smith. 2004. The pteridophytes of Mexico. Mem. New York Bot. Gard. 88:1–1054.

Smith, A. R. 1990. Thelypteridaceae. Pp. 263–272 in K. Kubitzki, ed. *The families and genera of vascular plants. Vol. 1. Pteridophytes and gymnosperms.* K. U. Kramer and P. S. Green, vol. eds. Springer-Verlag, Berlin.