

Polystichum faucicola M. Kessler & Lehnert (Dryopteridaceae) : a new fern species from Ecuador

Autor(en): **Kessler, Michael / Lehnert, Marcus**

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Polystichum faucicola M. Kessler & Lehnert (Dryopteridaceae), a new fern species from Ecuador

Michael Kessler & Marcus Lehnert

Abstract

KESSLER, M. & M. LEHNERT (2009). *Polystichum faucicola* M. Kessler & Lehnert (Dryopteridaceae), a new fern species from Ecuador. *Candollea* 64: 123-126. In English, English and French abstracts.

Polystichum faucicola M. Kessler & Lehnert, a new species of *Dryopteridaceae*, is described from a single specimen collected at 2520 m in a cloud forest of SE Ecuador. It differs from *Polystichum maximum* M. Kessler & A. R. Sm.

Key-words

DRYOPTERIDACEAE – *Polystichum* – Ecuador – Ferns – Taxonomy

Résumé

KESSLER, M. & M. LEHNERT (2009). *Polystichum faucicola* M. Kessler & Lehnert (Dryopteridaceae), une espèce nouvelle de fougère d'Equateur. *Candollea* 64: 123-126. En anglais, résumés anglais et français.

Polystichum faucicola M. Kessler & Lehnert, une nouvelle espèce de *Dryopteridaceae*, est décrite d'un unique spécimen récolté à 2520 m dans une forêt tropicale de montagne au SE de l'Equateur. Elle diffère de *Polystichum maximum* M. Kessler & A. R. Sm.

Addresses of the authors: MK: Systematic Botany, University of Zürich, Zollikerstrasse 107, CH-8008 Zürich, Switzerland.

ML: Staatliches Museum für Naturkunde Stuttgart, Am Löwentor, Rosenstein 1, 70191 Stuttgart, Germany.

Email (ML): marlehnert@yahoo.com

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The genus *Polystichum* Roth (*Dryopteridaceae*) has about 180-230 species, of which approximately 50 species are found in the mountain regions of tropical America (LU & al., 2007). *Polystichum* is a taxonomically difficult genus, with many similar and variable species, frequent hybridization, and apogamy (KNOBLOCH, 1976; BARRINGTON, 1985; SOLTIS & al., 1990; MULLENNIEX & al., 1999). Taxonomic treatments of *Polystichum* are available for Peru (TRYON & STOLZE, 1991) and Bolivia (KESSLER & al., 2005). For Ecuador, JØRGENSEN & LEÓN-YÁNEZ (1999) list eleven *Polystichum* species, but *P. hartwegii* (Klotzsch) Hieron. has since been found there. During fieldwork in southeastern Ecuador in 2003, one of the two authors (Marcus Lehnert) collected a distinct *Polystichum* in a ravine within mossy cloud forest at 2520 m at Reserva Tapichalaca, Zamora-Chinchi Province. Examination of the specimen revealed that it does not correspond to any species of *Polystichum* currently known from the Andes. We therefore describe the following new species.

Terminology follows LELLINGER (2002). Consequently we use “frond”, “stipe”, and “lamina” instead of “leaf”, “petiole”, and “blade”, respectively, and the main axis of a pinna is called “costa” and not “pinna rachis”.

Polystichum faucicola M. Kessler & Lehnert, **spec. nova**
(Fig. 1A-G)

Typus: ECUADOR, Zamora-Chinchi: Reserva Tapichalaca, study plot B3, near Ventanillas, 04°29'S 79°07'W, 2520 m, 1.XI.2003, *Lehnert 1057* (holo-: UC; iso-: GOET, QCA).

A Polysticho maximo M. Kessler & A.R. Sm. pinnis pro fronde ca. 15 jugis (vs. > 25 jugis), squamis petiolorum valde fimbriatis (vs. marginibus erosis, denticulatis vel parce fimbriatis), squamis costarum rhachidumque uniformibus, furfureis, 0.5-6 × 0.1-1 mm, denticulatis vel ciliatis, et anguste lanceolatis usque linearibus et partim tortuis (vs. squamis dimorphis), superficie sporarum cristata (vs. foveolata et irregulariter aculeata) differt.

Plants terrestrial. *Rhizomes* erect, ca. 3.5-4 cm in diameter with stipe bases; rhizome scales reddish brown, opaque, slightly darker proximally and slightly paler marginally, lanceolate, 8-21 × 1.5-2.5 mm, with sparsely ciliate margins. *Fronde* ascending, to ca. 100-125 cm long. *Stipes* ca. 55 cm × 3-4 mm, reddish brown, moderately scaly; stipe scales fimbriate to ciliate, opaque, weakly bicolorous with paler margins and darkened bases, of two types, spreading ones 3-12 × 0.3-2.5 mm, lanceolate to linear-lanceolate with acuminate, partly tortuous apices, reddish brown, appressed ones 1-5 × 0.3-0.8 mm, ovate to broadly lanceolate with acute apices, reddish brown, with stronger color contrast and wider margins than the spreading scales. *Laminae* 45-70 × 30-35 cm, chartaceous, oblong-lanceolate, bipinnate, with ca. 15 pinnae per

side, gradually reduced to pinnatifid apices, without bulbils. *Pinnae* to 16-22 × 4.3-4.5 cm, long-lanceolate, attenuate, each with 15-21 free pinnule pairs plus short pinnatifid apices; pinnae proximally opposite, distally alternate, remote throughout (up to 8 cm) or becoming more approximate distally, the lowermost pinnae about 3/4 the length of the longest pinnae. *Pinnules* to 25 × 14 mm, flat, trapeziform to ovate-elliptic with a distinct acroscopic lobe, bases asymmetrically cuneate, margins denticulate, apices acute, subspinulose; proximal pinnules 2/3-3/4 of the length of the largest pinnules on a given pinna. *Rachises* and *costae* red-brown, moderately scaly; scales of rachises and costae 0.5-6 × 0.1-1 mm, narrowly lanceolate to linear, denticulate to ciliate, partly tortuous, distally often sinuous, reddish brown, opaque; scales of pinnules 0.1-1.5 × 0.5-0.3 mm, linear-lanceolate to filiform, often tortuous, margins denticulate, yellowish to reddish brown, abaxially sparse to moderately dense on the veins, very rarely on the laminae itself, adaxially lacking. *Veins* evident. *Sori* to 20 per pinnule. *Indusia* lacking. *Spores* 42-48 × 35-40 μm, perispore cristate.

Distribution and habitat. – *Polystichum faucicola* is known from a single specimen collected at 2520 m in Ecuador, Prov. Zamora-Chinchi. Despite intensive fieldwork in the general area as well as specific searches for further individuals at the type locality, no further individuals were found. However, this does not mean that the species is genuinely rare, because the steep terrain and the dense vegetation render much of the area inaccessible. The only other species of *Polystichum* in this area, *P. dictyophyllum* C. Chr. and *P. platyphyllum* (Willd.) C. Presl (LEHNERT & al., 2007), also occur in rather low frequency.

Etymology. – The name refers to the habitat in which the plant was found, namely in the shade of a *Chusquea* thicket in a deep gorge (Latin, *fauvicola* = gorge dweller).

Note. – The most conspicuous characters of *P. faucicola* that separate it from any other Ecuadorian species of *Polystichum* are its large, flat pinnules and the widely spaced basal pinnae. These characters are reminiscent of *P. maximum* M. Kessler & A. R. Sm. (KESSLER & al., 2005; KESSLER & SMITH, 2007) from Bolivia, but the two species differ in several aspects. Most noteworthy, the stipe scales of *P. faucicola* have strongly fimbriate margins (abraded in some older scales) whereas those of *P. maximum* have erose, denticulate, or sparsely fimbriate margins. Furthermore, all scales of *P. faucicola* are narrower than the equivalent scales in *P. maximum* and tend to be less translucent. On the costae and rachises, *P. maximum* has two distinct scale types (some scales orange-brown, long-lanceolate, 3-5 × 0.5-1 mm, the margins erose; others deep brown, filiform to lanceolate, 1-8 × 0.05-0.4 mm, margins entire to slightly erose), whereas in *P. faucicola* only one, different type can be found (reddish brown, narrowly lanceolate to linear, partly tortuous, 0.5-6 × 0.1-1 mm, the margins denticulate to ciliate). Macroscopically, *Polystichum*

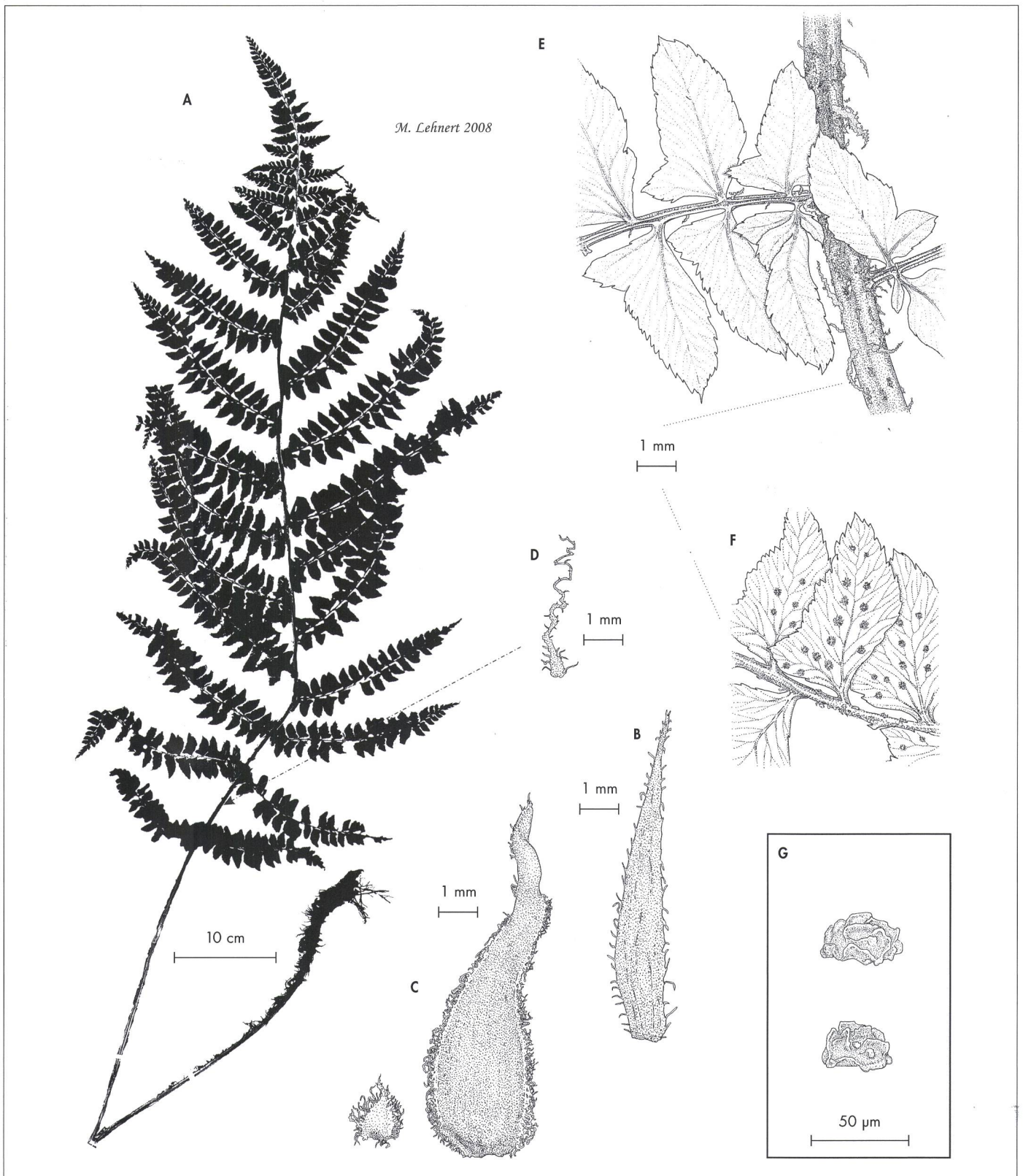


Fig. 1. – *Polystichum faucicola* M. Kessler & Lehnert. **A.** Habit; reconstructed from mounted specimen at UC, pinnae on the right complemented with GOET material; **B.** Rhizome scale; **C.** Stipe scales; **D.** Rachis scale; **E.** Proximal pinnules of medial pinna, adaxially; **F.** Medial pinnules of medial pinna, abaxially, with sori; **G.** Spores, lateral view.

[**B-G:** Lehnert 1057, GOET] [Drawing: M. Lehnert]

faucicola has fewer pinnae (ca. 15 vs. > 25 pinna pairs per frond) that are more widely spaced (up to 8 cm) than in *P. maximum* (4 cm). The proximal pinnae of *P. faucicola* are patent, but those of *P. maximum* are typically reflexed. The spores of *P. faucicola* fall within the same size range as that of *P. maximum* (45-50 µm), but whereas the spore surface of *P. maximum* is foveolate and irregularly aculeate, that of *P. faucicola* has cristae up to 8 µm tall. The spores of both species are larger than those of related species and KESSLER & al. (2005) interpreted this as a possible sign of polyploidy in *P. maximum*.

Polystichum faucicola differs from *P. dictyophyllum* C. Chr. and *P. platyphyllum* (Willd.) C. Presl, the other two species of found in its native habitat, by its larger size and by lacking the elongate 1-pinnate apices of the other two species.

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