

Resurrection of the Fern Name *Trachypteris gilliana* (Baker) Svenson Pteridaceae

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ABSTRACT.—*Trachypteris gilliana* was studied with the aim of identifying characteristics for the reconsideration of this taxon. The analysis was based on herbarium material and performed with stereo, light microscope and scanning electron microscope. The results allow us to differentiate *T. gilliana* as an independent entity from *T. pinnata* by its trifold fertile fronds and differences in spore ornamentation. A description of the taxon as well as illustrations of its spores and the type specimen are given.

KEY WORDS.—*Trachypteris*, Pteridaceae, Brazil, diagnostic characters

The genus *Trachypteris* André ex H. Christ is characterized as being terrestrial or rupestral, stems decumbent to erect, with broad, brownish or sometimes pink, nearly concolorous scales, monomorphic or dimorphic fronds, densely covered with scales abaxially, areolate venation without included veinlets, sporangia borne in an exindusiate soral band on and between the veins.

Acrostichum gillianum was described by Baker (1882) based on a specimen from Minas Gerais, Brazil. Svenson (1938) transferred this taxon to the genus *Trachypteris*, and described it as different from *T. pinnata* due to its trifold fronds and opaque scales along the rachis. Tryon and Tryon (1982) recognized three species of *Trachypteris*: two from South America and one from Madagascar. *Trachypteris induta* (Maxon) R. M. Tryon & A. F. Tryon is an endemic of Peru. *Trachypteris pinnata* (Hook. f.) C. Chr. grows in the Andean region from Ecuador and the Galápagos Islands to Northwest Argentina and in Minas Gerais and Bahia in East Brazil. *Trachypteris drakeana* (Jeanp.) C. Chr. occurs only in Madagascar. These same authors mentioned that the very rare *Trachypteris gilliana* is best considered a variety of *T. pinnata* differentiated by the trifold fertile fronds. Tryon and Stolze (1989) indicated that *T. induta* and *T. pinnata* differ in blade architecture and blade dimorphism in *T. pinnata*. The authors also mentioned that geographic varieties of these plants are likely to exist. This suggests the need to further investigate the variation among these taxa.

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Trachypteris induta and *T. pinnata* were treated in catalogs such as those of Lawesson *et al.* (1987) and Jørgensen & León-Yáñez (1999), in floristic works of de la Sota (1977), Tryon and Tryon (1982), Tryon and Stolze (1993), in palynologic works by Tryon and Lugardon (1991), Ramos Giacosa *et al.* (2001), or biogeographic works such as those by Moran and Smith (2001). The aim of this work was to determine if there are diagnostic characters that identify *Trachypteris gilliana* and differentiate it from *T. pinnata*.

MATERIAL AND METHODS

The present study was based on herbarium material from the following institutions (abbreviations according to Holmgren *et al.*, 1990): GH, LIL, LP, NY, PACA, RB and SI. To observe spore characteristics, light microscopy (LM) and scanning electron microscopy (SEM) were utilized. For the LM analysis, spores were acetolyzed (cf. Erdtman, 1960) after treatment with hot 3% sodium carbonate for 2 minutes. For the SEM study, spores were treated with hot 3% sodium carbonate for 2 minutes in order to preserve the perispore (Morbelli, 1980), and then they were washed, dehydrated, suspended in 96% ethanol, transferred to acetate plates and coated with gold. Dimensions of 25 spores were measured for each herbarium sample analyzed. Spore observations were made with an Olympus BH2 light microscope and a JEOL JSMT-100 scanning electron microscope at the Museo de Ciencias Naturales de La Plata.

MATERIAL EXAMINED.—‘PS’ in the following list indicates the reference number of each palynological sample, which is filed in the Cátedra de Palinología, Facultad de Ciencias Naturales y Museo de La Plata, Universidad Nacional de La Plata.

Trachypteris gilliana: BRAZIL: MINAS GERAIS, *Glaziou s/n°* NY 883833 (NY); Janvaria, Serra do Barreiro, 8 km. West of Janvaria, 30-XII-1953, *Mendes Magalhães* 6096 (RB) PS 4132. BAHIA, Jequié, *Senhem 16831* (PACA) PS 4071; Serra de Itiuba, 6 km. East of Itiuba, 500 m., 10°41’S, 39°48’W, 19-II-1974, *Harley 16187* (RB) PS 4133.

Trachypteris pinnata: ARGENTINA: PROV. SALTA: Dpto. Orán, Río Bermejo, 25-III-1940, *Ragonese y Covas s/n°* (LIL 37811) PS 3786; PROV. TUCUMÁN: Dpto. Capital, 31-X-1920, *Venturi 1020* (SI) PS 3787; PROV. JUJUY: Dpto. San Pedro, *Legname et al. 5367* (LIL) PS 3788. ECUADOR: ISLAS GALÁPAGOS, Isla Santa Cruz, 24-VI-1964, *Wiggins 1836* (GH) PS 3988; IGUANA COVE, Albermarle Island, 30-XII-1898, *Snodgrass & Heller 17* (GH) PS 3987. PERU: DPTO. CUZCO, Prov. Convención, Rosario mayo, 950 m., *Vargas 22343* (GH) PS 3989.

RESULTS AND DISCUSSION

The results of our analyses identified differences between the two taxa under study in the grade of the fertile frond division, ornamentation and spore diameter (Table 1). No differences were found regarding rachis indument in both species, as mentioned by Svenson (1938). Based on these results it is

TABLE 1. Characteristics to differentiate *Trachypteris pinnata* from *T. gilliana*.

Characteristics	<i>Trachypteris pinnata</i>	<i>Trachypteris gilliana</i>
Fertile fronds	Pinnate	Trifid
Spore ornamentation	Cristate	Ridged part. retic. + verruc. dist. Microreticulate + verrucae prox.
equatorial diameter	39–58 μm	29–41 μm
polar diameter	26–53 μm	31–40 μm

proposed here to reconsider *Trachypteris gilliana* as an independent taxon from *T. pinnata*.

Trachypteris pinnata has been cited in Brazil for Minas Gerais and Bahia States. Since all the material from Brazil analyzed in this work corresponds to *T. gilliana*, *T. pinnata* is excluded from Brazil and its distribution would be the Galápagos Islands and the Andean region from Ecuador to Argentina. This species grows in mesic areas, rocky woods and forests from 50 to 1000 m in the Galápagos Islands and from 500 to 2000 m in the Andes.

Trachypteris gilliana (Baker) Svenson, Bull. Torrey Bot. Club 65: 328. 1938.

Acrostichum gillianum Baker, J. Bot. 11: 310. 1882. TYPE.—BRAZIL: MINAS GERAIS, Arassuahy, *Glaziou 13341* (holotype K, isotypes LP!, NY, P, US, photo holotype K!, photos isotypes NY!, P!, US!). **Fig. 1, Fig. 2**

Plants terrestrial or rupestral. Stem decumbent to erect, small, with scales. Fronds dimorphic, the sterile ones in a rosette, sessile, entire, oblanceolate, the base cuneate, the apex obtuse, 4.5–7 cm long and 1.5–2 cm wide, slightly scaly on the upper surface, densely scaly abaxially, the scales tan, ovate to ovate-lanceolate with dentate-fimbriate margins; veins anastomosing without included veinlets. Fertile fronds, erect; stipe 13.5–24 cm long, with tan scales similar to those of the laminae; laminae trifid, each pinna 1.5–9 cm long and 0.3–0.6 cm wide, slightly scaly adaxially, densely scaly abaxially. Sporangia borne from the costa to the margin, acrostichoid sorus, without indusium. Spores trilete, triangular to globose in polar view, the proximal face convex on the equatorial view and hemispheric on the distal face; equatorial diameter 29–41 μm and the polar diameter 31–40 μm ; laesurae 14–22 μm long and reach the equator; perispore ridged with partially fused ridges forming an incomplete reticulum and scattered verrucae distally, proximal face microreticulate with scattered verrucae.

DISTRIBUTION.—Brazil, found only in the states of Minas Gerais and Bahia, growing in caatinga vegetation.

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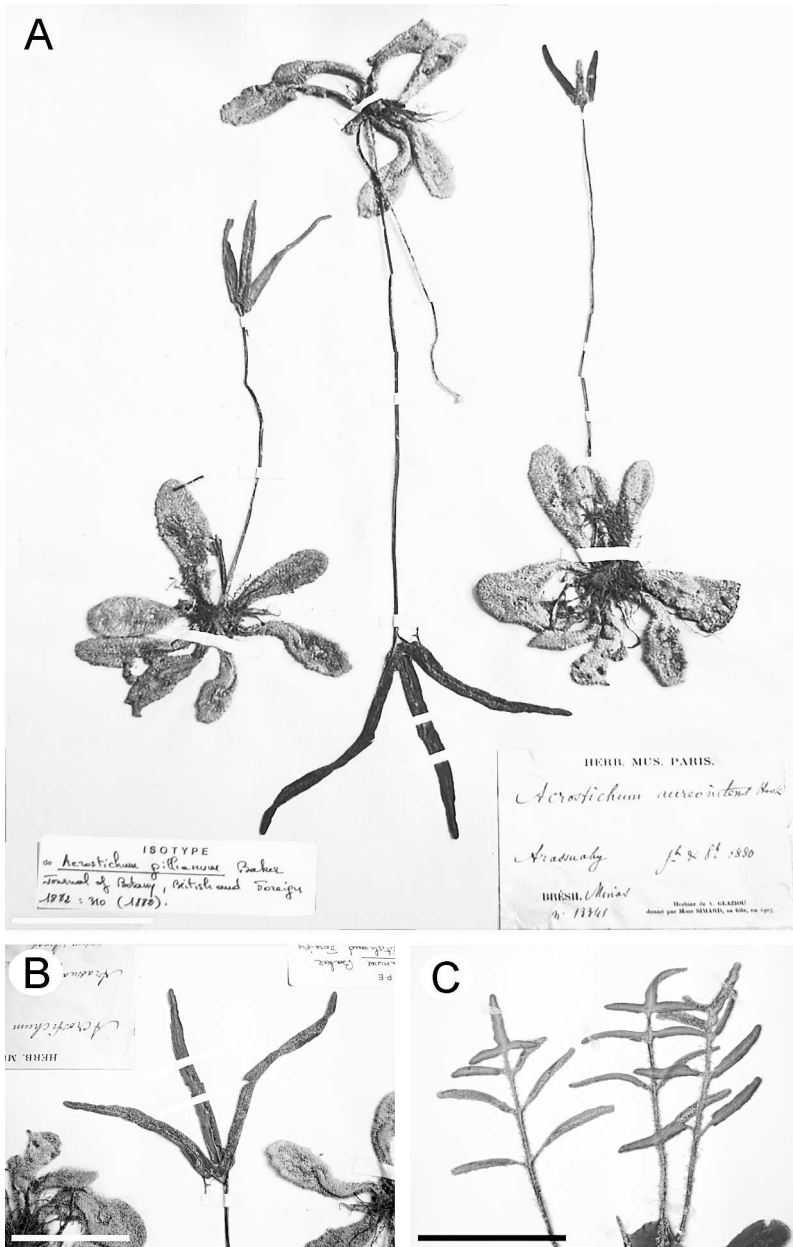


FIG. 1. A–B. *Trachypteris gilliana*. A. Isotype of *Trachypteris gilliana*. B. Detail of trifid laminae of the fertile frond (A–B. Glaziou 13341, LP). C. *Trachypteris pinnata*. Pinnate laminae of the fertile frond (van der Werff 1274, GH). Scale bars: 5 cm.

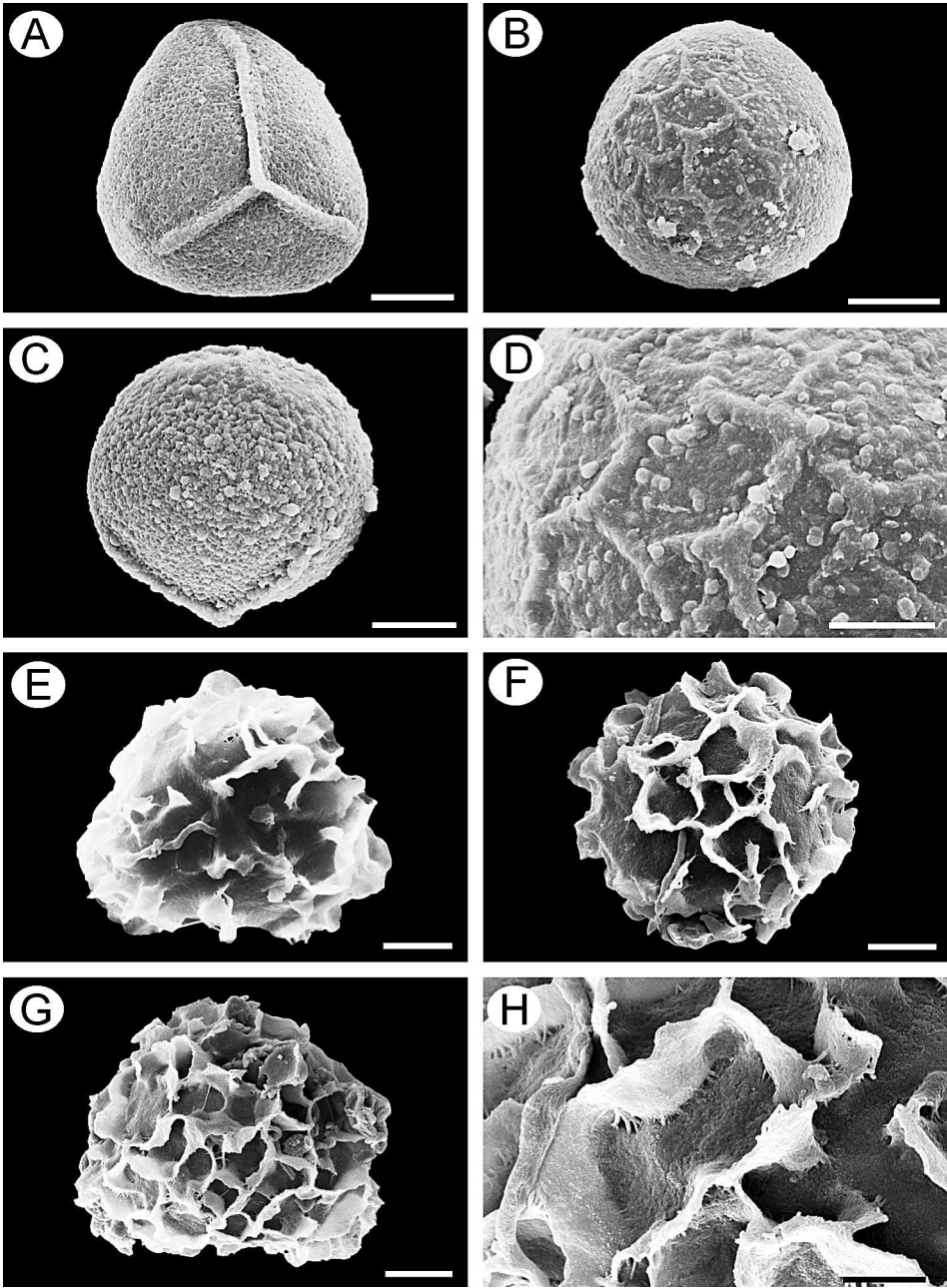


FIG. 2. *Trachypteris gilliana* and *T. pinnata* spores as seen with SEM. A–D. *T. gilliana*. A. Proximal view of a spore with a triangular to globose outline, perispore microreticulate. B. Distal view. The perispore is ridged. Some ridges are fused forming an incomplete reticulate. C. Equatorial view, proximal face convex and the distal face hemispheric. D. Detail of the distal surface, the ridges are fused leaving wide, polygonal luminae. The background has small verrucae. E–H. *T.*

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pinnata. **E.** Proximal view of a spore with a triangular to globose outline. **F.** Distal view of a cristate spore. **G.** Equatorial view, proximal face convex and the distal face hemispheric. **H.** Detail of the cristate perispore. Scale bars: **A–C, E–G:** 10 μ m; **D, H:** 5 μ m.