

## Novelties of grammitid ferns (Polypodiaceae) from Costa Rica, Panama and Colombia

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**ABSTRACT:** In this paper four species of *Terpsichore* A.R. Sm. are described as new: *T. acrosora*, *T. canescens*, *T. lobulata*, and *T. smithii*. *T. acrosora* is characterized by medium size rhizome scales, long fronds and sori only in the 1/2 apical part of the pinnae. *T. canescens* can be recognized by linear fronds, simple costal hairs, sori joined or approximate between them and densely hairy, the hairs long and whitish. *T. lobulata* is recognized by the absence of rhizome scales, simple and hyaline rachis hairs, and lobulate pinnae. *T. smithii* has long and brown rhizome scales, and sparsely hairy to glabrescent abaxial blade surface, with particularly branched short glandular hairs. *Ctenopteris fabispora* Copel. is transferred to the genus *Terpsichore*. The species *Terpsichore esquiveliana* A. Rojas, *T. inmixta* (Stolze) A.R. Sm., and *T. xanthotrichia* (Klotzsch) A.R. Sm. are reported for the first time from Colombia.

**KEY WORDS:** Grammitid ferns, Polypodiaceae, Pteridophyta, new species, new records, Neotropics.

**RESUMEN:** Se describen cuatro especies nuevas de *Terpsichore* A.R. Sm.: *T. acrosora*, *T. canescens*, *T. lobulata* y *T. smithii*. *T. acrosora* se caracteriza por escamas del rizoma medianas, frondas largas y soros sólo en la mitad apical de las pinnas. *T. canescens* puede reconocerse por frondas lineares, pelos de la costa simples, soros unidos o cercanos entre ellos y densamente pilosos, los pelos largos y blanquecinos. *T. lobulata* se reconoce por la ausencia de escamas en el rizoma, pelos del raquis simples y hialinos y pinnas lobuladas. *T. smithii* tiene escamas del rizoma largas y pardas, con pelos glandulares cortos y ramificados. *Ctenopteris fabispora* Copel. se transfiere al género *Terpsichore*. Las especies *Terpsichore esquiveliana* A. Rojas, *T. inmixta* (Stolze) A.R. Sm. y *T. xanthotrichia* (Klotzsch) A.R. Sm. se registran por primera vez en Colombia.

**PALABRAS CLAVE:** Helechos grammitoides, Polypodiaceae, Pteridophyta, especies nuevas, nuevos registros, región neotropical.

### INTRODUCTION

*Terpsichore* A. R. Sm. is characterized by the author (Smith, 1993) by the combination of the following characters: the presence of usually conspicuous hydathodes that sometimes produce calcareous secretions; reddish to atropurpleous (less often hyaline) setae mostly 1-3 mm along the stipe, rachis, costae, and (sometimes) lamina; nonclathrate, usually castaneous to blackish rhizome scales that are usually setulose along the margins, and free, unbranched, pinnate venation in the segments of pinnae. The genus comprises about 50 species and is primarily neotropical; one

species is known from Africa and offshore islands.

Smith (1993) divided the genus in five groups that could be regarded as natural sections. The *Terpsichore lanigera* group with 16 spp., is characterized by rhizome scales hairy on margins and often surface (or absent in *T. alfarii*); fronds pendent, indeterminate; stipes usually less than 1 cm long, the pinnae reduced nearly to base of frond; blades lacking black clavate fungal fruiting bodies, but with paired or clustered setae (except *T. delicatula* and *T. jamesonioides*); sporangia setose (except *T.*

*delicatula*, *T. jamesonioides*, and *T. spathulata*). Moran (2008) mentioned the last group as a new genus proposed as *Alansmia* (called *Alansmithia* by Kessler, pers. comm.). All species here treated are included in the mentioned group.

***Terpsichore acrosora*** A. Rojas, sp. nov.

TYPE. COSTA RICA. **Limón:** Talamanca, Bratsi, Amubri, Alto Lari, Kivut, quebrada innominada, margen derecha del Río Dapari, 9°24'20"N, 83°05'35"W, 1000 m, 11 Mar 1992, *G. Herrera 5302* (Holotype: CR; Isotypes: INB, MO). Fig. 1.

*A Terpsichori cultrata* (Bory ex Willd.) A.R. Sm. *propinqua, sed squamis rhizomatis longioribus, frondibus longioribus, basi pinnarum valde asymmetricis forte incisive latere acroscopico et decurrentibus latere basiscopico, superficie abaxiali laminae dense pilosa, soris dimidio apicali pinnarum distributis et distributione elevationibus altitudinibus minoribus differt.*

Rhizome ca. 2 mm in diameter, compact, with scales 1.0-1.5 x ca. 0.5 mm, ovate to lanceolate, brown to dark brown, entire, hairy, the hairs 0.2-0.5 mm long, whitish to gold; fronds 40-100 cm long, pendulous, indeterminate; stipe 0.5-2 cm long, ca. 0.5-0.7 mm in diameter at base, brown, hairy, the hairs 2-3 mm long, simple, gold, dense; blade (2-) 3-4 cm wide, linear to linear-oblongate, broader up the middle part, gradually reduced in both ends, pinnate, the pinnae distant 1-3 mm between them; rachis brown to dark brown, hairy, the hairs 1-2.5 mm long, the shorter simple, whitish, the longer stellate, gold and sometimes with brown base; pinnae (1-) 1.5-2 x 0.4-0.7 cm, ovate to lanceolate, sessile, broadly at the base, decurrent in the basiscopic side, excavate in the acroscopico side, obtuse to rounded at apex; laminar tissue hairy, the hairs abaxially 0.3-1 mm, simple (sometimes stellate in the

costa), hyaline, patent, medium dense, the hairs adaxially 0.5-1.5 mm, simple, gold, medium appressed, the marginal hairs of two types, the shortest ones 0.3-1 mm long, simple to stellate, hyaline to yellowish, the longest ones 1.5-2 mm long, bifid to stellate, gold; hydathodes brown to dark brown, few visible; sori (1-) 2-6 (-8) per pinna, rounded, distributed in the 1/2 apical portion of the pinna; sporangia hairy, the hairs 0.2-0.4 mm long, hyaline, shorter than the sporangia.

DISTRIBUTION. Known only from the Caribbean slopes of Cordillera de Talamanca in Costa Rica and Panama at 600-1100 m.

PARATYPES. COSTA RICA. Las Nubes, sep 1968, *L. Gómez 625* (CR). **Limón:** Cantón de Talamanca, Sukut, siguiendo el sendero entre Sukut y Purisquí, cabeceras de las quebradas Heliotropo y Botcho, 9°23'30"N, 82°57'50"W, 600 m, 10 jul 1989, *G. Herrera 29082* (CR, K, MO). PANAMA. **Chiriquí:** Fortuna Dam project area, slope NW of confluence of Río Hornito and Río Chiriquí, 8°44'N, 82°13'W, 1050-1100 m, 10 Nov 1980, *K. Sytsma & W. Stevens 2232* (CR, MO).

*Terpsichore acrosora* is different from *T. cultrata* in longer (1-1.5 mm long vs. 0.5-1.0 mm) rhizome scales, longer (40-100 cm long vs. 12-45 cm) fronds, conspicuously asymmetric pinnae bases that are strongly cuneate at the acroscopico edge and decurrent at the basiscopic edge (vs. equilateral or nearly so), denser abaxial blade hairs, sori distributed only in the 1/2 apical portion (vs. 3/4) of the pinna and distributed at lower altitudinal elevation (600-1100 m vs. 1150-2000 m). By the asymmetric pinnae bases *T. acrosora* is similar to *T. reclinata* (Brack.) Labiak, but differs in its shorter scales (1.0-1.5 mm vs. 2-3 mm) and brown to dark brown (vs. yellowish) rhizome scales and more dense abaxial blade hairs. Because of the robust plants and pinnae, the new species resembles *Terpsichore*

*fabispora* (Copel.) A. Rojas (here combined), but with shorter (1-1.5 mm long vs. 1.5-3 mm) and simple (vs. stelled) abaxial blade hairs. The new species is also distributed at lower altitudinal elevation [600-1100 m vs. (700-) 1200-2300 (-2800) m].

ETYMOLOGY. The name of the new species refers to its sori distributed in the 1/2 apical portion of the pinna.

***Terpsichore canescens*** A. Rojas, sp. nov.

TYPE. COLOMBIA. **Santander:** Municipio de Charalá, Inspección Virolín, Vereda El Volcán, 1900 m, 30 jun 1983, *J. Torres 2575* (Holotype: COL). Fig. 2.

*A Terpsichori alsophilicola* (H. Christ) A.R. Sm. *similis, sed rhizomate squamoso, pilis marginis pinnarum simplicibus, bifidis vel trifidis, soris connatis vel proximis et dense pilosis, pilis longioribus et pilis sporangiis longioribus differt.*

Epiphytic; rhizome 2-3 mm in diameter, compact, scaly, the scales 1-1.5 x 0.2-0.3 mm, lanceolate, dark brown, entire, medium dense, hairy, the hairs 0.1-0.3 mm long, gold to brown; fronds 27-52 cm long, pendulous, indeterminate; stipe 1-1.5 cm long, ca. 0.2-0.4 mm in diameter at base, brownish, hairy, the hairs 2-3 mm long, simple, gold, medium dense; blade 0.8-1.6 cm broad, linear, sometimes reduced at intervals, pinnate, the pinnae 1-2 mm distant between them, cuneate at both ends; rachis dark brown, hairy, the hairs ca. 2 mm long, brown, simple; pinnae 5-9 x 4-6 mm, deltate to lanceolate, sessile, broadly at the base, excavate in the acroscopic side, decurrent in the basiscopic side, rounded at apex; laminar tissue hairy abaxially, the hairs 1-1.5 mm long, simple, gold, sparse, more dense in the sori, the hairs on adaxial surface similar to abaxial surface, marginal hairs 1.5-2 mm long, simple, bifid or trifid, gold to more commonly brown;

veins simple, alternate; hydathodes not evident; sori 1-4 per pinna (but joined and apparently only one), rounded, in the apical portion of the pinna, densely hairy; sporangia hairy, the hairs ca. 1 mm long, hyaline, longer than the sporangia.

DISTRIBUTION. Known only from the type collection in Colombia at 1900 m.

*Terpsichore canescens* is similar to *T. alsophilicola* in linear blade and simple hairs in the rachis, but differ in scaly (vs. not scaly) rhizome, simple, bifid or trifid (vs. only simple) blade margin hairs, joined or approximate (vs. regularly distributed) and densely (vs. sparsely or not hairy) sori with longer (1-1.5 mm long vs. 0.1-0.3 mm) paraphyses, and longer (ca. 1 mm long vs. 0.3-0.7 mm) sporangial hairs.

ETYMOLOGY. The name of the new species refers to its whitish long hairs in the sori (paraphysis and sporangial hairs).

***Terpsichore lobulata*** A. Rojas, sp. nov.

TYPE. COLOMBIA. **Norte de Santander:** Cordillera Oriental, región del Sararé, Hoya del Río Cubugón, El Indio, 420-480 m, 13-17 Nov 1941, *J. Cuatrecasas 13089* (Holotype: COL). Fig. 3.

*Nova species a Terpsichori alsophilicola* (H. Christ) A.R. Sm. *frondibus lineari-ellipticis, pinnis lobulatis, pilis rhachidis hyalinis ad aurantiacos et sine pilis parvis ramosis; pilis marginis pinnarum simplicibus, bifidis vel trifidis distinguitur.*

Epiphytic; rhizome ca. 2 mm in diameter, compact, without scales; fronds 12-34 cm long, pendulous, indeterminate; stipe 1-2 cm long, ca. 0.2-0.3 mm in diameter at base, black, hairy, the hairs 1-1.5 (-2) mm long, simple, gold to light brown, medium dense; blade 1.4-1.8 cm broad, linear-elliptic, pinnate, the pinnae ca. 1

mm distant between them, cuneate at both ends; rachis atropurpureous to black along it, hairy, the hairs 1-2 mm long, simple, hyaline to gold, medium dense; pinnae 4-9 x 2-4 mm, lanceolate, sessile, lobulate, similar in broad along it, the base decurrent in the basiscopic side, excavate in the acroscopic side, acute at apex; laminar tissue hairy abaxially, the hairs 0.5-1 mm long, simple, hyaline, medium dense, patent to partially leaning, marginal hairs 1-2 mm long, simple, bifid or trifid, commonly brown; veins simple, alternate; hydathodes present, dark brown to blackish; sori 3-5 per pinna, rounded, in the apical portion of the pinna; sporangia hairy, the hairs 0.1-0.3 mm long, shorter than the sporangia.

**DISTRIBUTION.** Known only from the type collection in Colombia at 420-480 m.

The new species differs from *T. alsophilicola* by its linear-elliptic (vs. linear) blades, lobulate (vs. entire) pinnae; hyaline to gold (vs. brown to atropurpureous) rachis hairs and without small branched hairs (vs. with them); simple, bifid or trifid (vs. only simple) blade margin hairs and smaller (0.1-0.3 mm long vs. 0.3-0.7 mm) sporangial hairs.

**ETYMOLOGY.** The name of the new species refers to its lobulate pinnae.

***Terpsichore smithii*** A. Rojas, sp. nov.

**TYPE.** COSTA RICA. **Cartago:** El Guarco, Madre Selva, km 64, Finca Los Lagos, sendero a orillas del río, 9°40'34"N, 83°52'38"W, 2600 m, 21 abr 1999, A. Rojas & L. Pacheco 5090 (Holotype: CR; Isotypes: INB, MO). Fig. 4.

*A Terpsichori cultrata* (Bory ex Willd.) A.R. Sm. *nova species affinis, sed squamis rhizomatis longioribus, pilis superficialibus hyalinis, pilis abaxialibus laminae paucioribus vel absentibus mixis ramosis pilis parvis et habitanti ad elevationes maiores differt.*

Rhizome ca. 2 mm in diameter, compact, with scales 1.5-3.0 x 0.5-1.0 mm, lanceolate, brown, entire, hairy, the hairs 0.2-0.5 mm long, hyaline; fronds 17-50 cm long, pendulous, indeterminate; stipe 0.5-4 (-7) cm long, 0.3-0.6 mm in diameter at base, brown to blackish, hairy, the hairs 0.5-2.5 mm long, gold, simple; blade (1.5-) 2.5-4 cm broad, pinnate, linear-elliptic to linear-lanceolate, broadly downer of medium part, cuneate in both ends; brown to blackish, sparsely to medium dense, the hairs 1-2 mm long, brownish-gold to brown, commonly simple to sometimes stellate, mixed with hairs 0.1-0.4 mm long, branched, yellowish to reddish-brown, glandular; pinnae 0.8-2 x 0.4-0.7 cm, lanceolate to oblong, acroscopic side of the base perpendicular to slightly excavate, basiscopic side of the base slightly excurrent, apically obtuse to acute; abaxial blade hairy, the hairs, 1.5-2.5 mm long, gold to brown, simple, sparse; adaxial blade hairs similar to abaxial hairs, sparse to medium dense; marginal hairs 1-2 mm long, simple or more commonly bifid or trifid, yellowish to brownish; hydathodes present, black, sometimes with whitish secretion; sori 5-13 per pinna, rounded, in the 3/4 apical portion of the pinnae, sometimes with hairs in the sori to 3 mm long; sporangia hairy, the hairs 0.3-0.7 mm long, longer than the sporangia.

**DISTRIBUTION.** Known from Cordillera Central, Cordillera de Talamanca and Cordillera de Los Andes in Costa Rica, Panamá and Colombia at (1325-) 2000-3020 m.

**PARATYPES:** COSTA RICA. **Cartago:** Madre Selva, 0.5 km N de la Carretera Interamericana, 2640 m, 7 mar 1986, M. Kappelle 1488 (CR); Parque Nacional Chirripó, Camino Indios, 3000 m, 2 mar 1989, M. Kappelle & M. Monge 4371 (CR), 2600 m, 6 mar 1989, M. Kappelle & M. Monge 5012 (CR); El Guarco, Reserva Forestal Río Macho, Finca Iyoc-Ami, 9°41'35"N, 83°52'03"W, 2840 m, 17 jun 1998, A. Rojas & M. Salazar 4684 (CR, INB, MO). **Cartago-San**

**José:** Cerro de La Muerte, 27 oct 1968, *L. Gómez 666* (CR). **Heredia:** Barva, Parque Nacional Braulio Carrillo, Estación Barva, entre la estación y la Laguna del Barva, 10°07'20"N, 84°06'00"W, 2700-2900 m, 30 may 1997, *A. Rojas 3552* (CR, INB, MO). **Limón:** Cordillera de Talamanca, Atlantic slope, N slope of the unnamed cordillera between the Río Terbi and the Río Siní, 9°12'-13'N, 82°59'W, 2000-2500 m, 14 Sept 1984, *G. Davidse & G. Herrera 29082* (CR, MO); loc. cit., 9°00'-12'N, 82°58'59'W, 2400-2750 m, 13 Sept 1984, *G. Davidse et al. 29013* (CR, MO). **Puntarenas:** Coto Brus, Parque Internacional La Amistad, Cordillera de Talamanca, Valle del Silencio, sector de acampar a Los Jardines, 9°07'15"N, 82°57'55"W, 2500 m, 14 abr 1996, *F. Quesada et al. 1478* (INB, CR). **San José:** Las Vueltas, jul 1969, *L. Gómez 1106* (CR); Escazú, San Antonio, Zona Protectora Cerros de Escazú, camino a Pico Blanco, entre la zona de acampar y la cúspide del cerro, 9°52'35"N, 84°09'05"W, 2100 m, 6 ene 2005, *A. Rojas & C. Frias 6331* (CR); Pérez Zeledón, Parque Nacional Chirripó, Cordillera de Talamanca, sendero al Cerro Chirripó, entre el inicio del bosque y Llano Bonito, 9°27'25"N, 83°32'55"W, 1900-2500 m, 26 jul 1996, *A. Rojas et al. 2819* (CR, INB, MO), entre Llano Bonito y Monte Sin Fe, 9°26'55"N, 83°32'05"W, 2600-2900 m, 26 jul 1996, *A. Rojas et al. 2829* (CR, INB, MO). PANAMA. **Bocas del Toro:** Cordillera de Talamanca, headwaters of the Río Colubre, 6 airline km NW of the peak of Cerro Echandi on the Costa Rican-Panamanian international border, 9°05'N, 82°50'30"W, 2450-2600 m, 2-3 Mar 1984, *G. Davidse et al. 25251* (CR, MO). COLOMBIA. **Antioquia:** Belmira, Vereda La Salazar (parte baja), Quebrada El Diablo, 6°35'57.3"N, 75°39'15.6"W, 2600 m, 20 jun 2002, *W. Rodríguez & M. Arboleda 3450* (JAUM, COL). **Boyacá:** Tota, 2800 m, dic 1951, *S. Yepes 3352* (Holotype: COL). **Huila:** Cordillera Oriental, 7700 ft. [2340 m], 1 Feb 1945, *E. Little 9355* (COL). **Nariño:** Municipio

Barbacoas, Corregimiento Altaquer, Vereda El Barro, Reserva Natural Río Nambí, vertiente occidental andina, 1°18'N, 78°08'W, 1325 m, 4 dic 1993, *J. Betancur et al. 4543* (COL); Carretera La Victoria-Monopamba, km 32, Motilón, 2500 m, 10 Jan 1973, *W. Hamemann & N. Leist 1853* (COL). **Norte de Santander:** Municipio de Herrán, Parque Natural Nacional Tama, Sector Orocué, hacia el Alto del Pesebre, 2650-3020 m, 2 abr 1987, *G. Lozano et al. 5497* (COL). **Putumayo:** Cordillera Portachuelo, al pie del Valle de Sibundoy, 2600 m, 21 Jun 1973, *N. Leist & Möhle 2181* (COL); Valle de Sibundoy, 1°12'N, 76°55'W, 2800 m, 29 dic 1963, *without collector 65* (COL).

The new species is different from *Terpsichore cultrata* by its longer (1.5-3.0 mm long vs. 0.5-1.0 mm) rhizome scales with hialyne (vs. reddish brown) surface hairs, sparser or absent abaxial blade surface hairs mixed with branched (vs. claviform) small hairs, and distributed at relative higher altitudinal elevation [(1325-) 2000-3020 vs. 1150-2000 m)].

ETYMOLOGY. This species is dedicated to the Pteridologist Alan Reid Smith, who is making important contributions to the neotropical ferns.

#### NEW COMBINATION

*Terpsichore fabispora* (Copel.) A. Rojas, comb. nov. *Ctenopteris fabispora* Copel., Philipp. J. Sci. 84(4): 457. 1955 [1956].

TYPE. Panama, Chiriquí, between Alto de Las Palmas and the top of Cerro Horqueta, Mar 1911, 2100-2268 m, *W. Maxon 5479* (US!).

The specimens of this species have been identified in the herbaria as *Terpsichore lanigera* (Desv.) A.R. Sm. and accepted with this name in regional treatments, for example in Smith & Moran (1995); however, *T. lanigera* is absent in Costa Rica and Panama and probably also in the Caribbean Islands.

*Terpsichore fabispora* is different from *T. lanigera* in its shorter (1.5-3 mm long vs. 3-5 mm) rhizome scales, shorter [0.2-0.5 (-1.0) mm long vs. (0.5-) 1-2 mm) abaxial blade hairs, shorter (0.2-0.3 mm vs. 0.4-1 mm) sporangial setae and is distributed at lower elevations [(700-) 1200-2300 (-2800) m vs. (2700-) 3000-4000 m].

DISTRIBUTION. Known only from Costa Rica and Panama at (700-) 1300-2300 (-2800) m.

#### NEW RECORDS

*Terpsichore esquiveliana* A. Rojas, Rev. Biol. Trop. 49: 448-450. 2001.

TYPE. Costa Rica, Cartago, Paraíso, Parque Nacional Tapantí, sendero Los Palmitos (o T6), 9°44'00"N, 83°46'05"W, 1400-1600 m, 3 Sept 1997, A. Rojas 3785 (Holotype: INB; Isotypes: CR, MO, UC).

DISTRIBUTION. Costa Rica and **Colombia**.

MATERIAL OF NEW DISTRIBUTION.

COLOMBIA. **Putumayo:** 59 km W de El Pepino, puente de carretera sobre valle principal, ca. 2280 m, 22 nov 1972, W. Hageman & N. Leist 1555 (COL).

*Terpsichore inmixta* (Stolze) A.R. Sm., Novon 3: 487. 1993. *Grammitis inmixta* Stolze, Fieldiana Bot., n.s. 32: 115. 1993.

TYPE. Peru, Cuzco, La Convención, Vilcabamba Dist., Ruina Idma-Huasi, 3658 m, jul 1993, C. Bues 2103 (MO!).

DISTRIBUTION. **Colombia**, Ecuador, and Peru.

MATERIAL OF NEW DISTRIBUTION.

COLOMBIA. **Boyacá:** Cordillera Oriental, Sierra Nevada del Cocuy, alrededores de Salto de Correlitos, E of Laguna San Paulino, ca. 4000 m, 14 Apr 1959, H. Barclay & P. Juajibioy 7361 (COL). **Cauca:** Cordillera

Central, Parque Nacional del Puracé, vertiente oriental, al oriente de Peña Amarilla, entre las fuentes de las quebradas Honda y Estanquillo, 3500 m, 17 jul 1976, R. Jaramillo & T. Hammen 5172 (COL), R. Jaramillo & T. Hammen 5173 (COL); Cordillera Central, Parque Nacional del Puracé, camino del Pilimbalá al volcán del Puracé, 3700 m, 19 jul 1976, R. Jaramillo & T. Hammen 5213 (COL), R. Jaramillo & T. Hammen 5214 (COL).

*Terpsichore xanthotrichia* (Klotzsch) A.R. Sm., Novon 3: 488. 1993. *Polypodium xanthotrichium* Klotzsch, Linnaea 20: 376. 1847.

SINTYPE. Guyana, R. Schomburgk 1172 (B). SINTYPE. Venezuela, Mérida, Mérida, Moritz 250 (B).

DISTRIBUTION. **Colombia**, Venezuela, and Guyana.

MATERIAL OF NEW DISTRIBUTION.

COLOMBIA. **Magdalena:** Sierra Nevada de Santa Marta, Alto Río Buritaca, transecto Buritaca, 2300 m, 28 jul 1977, R. Jaramillo et al. 341a (COL).

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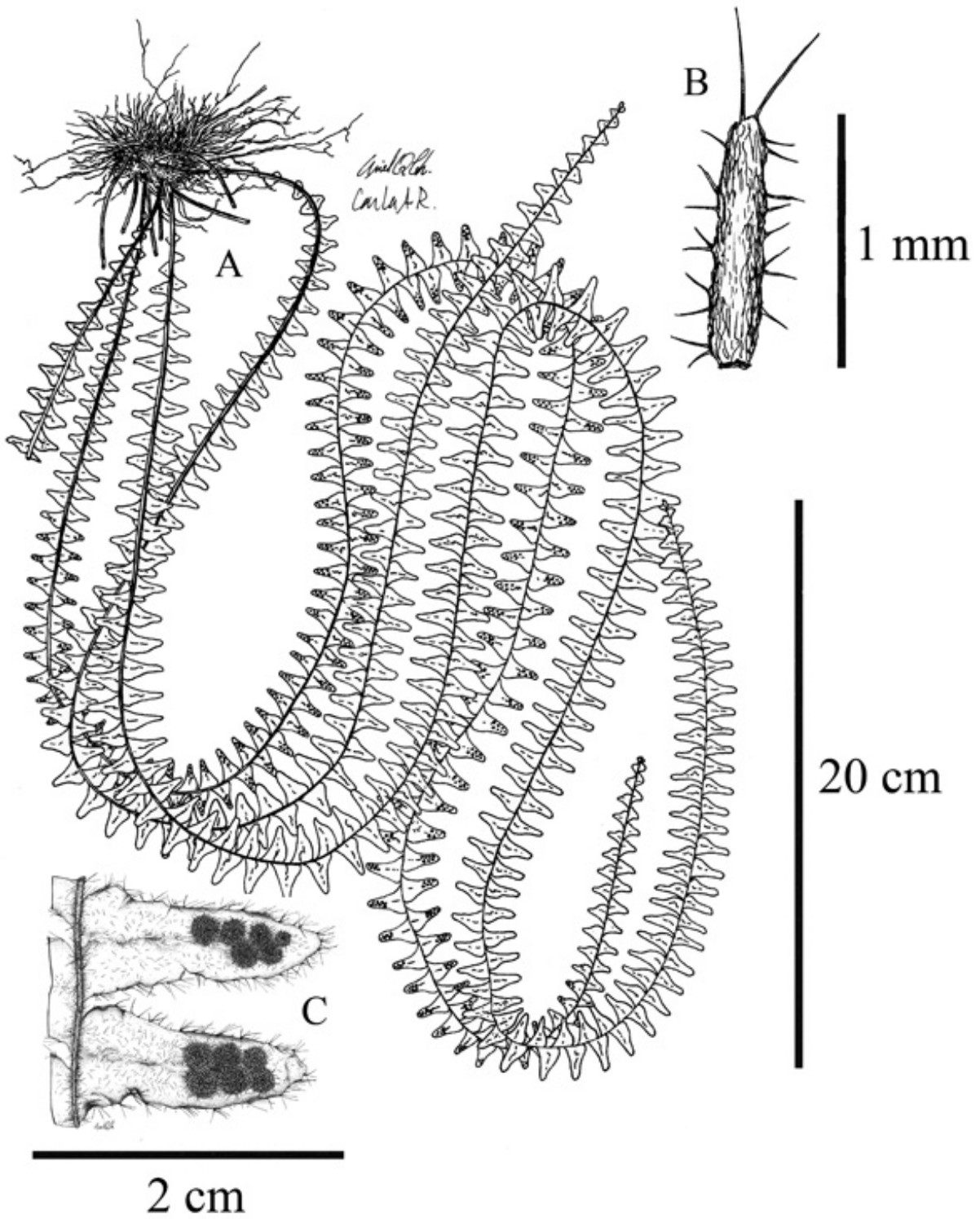


Figure 1. *Terpsichore acroloba* (G. Herrera 5302, CR). A. Habit. B. Rhizome scale. C. Blade detail.

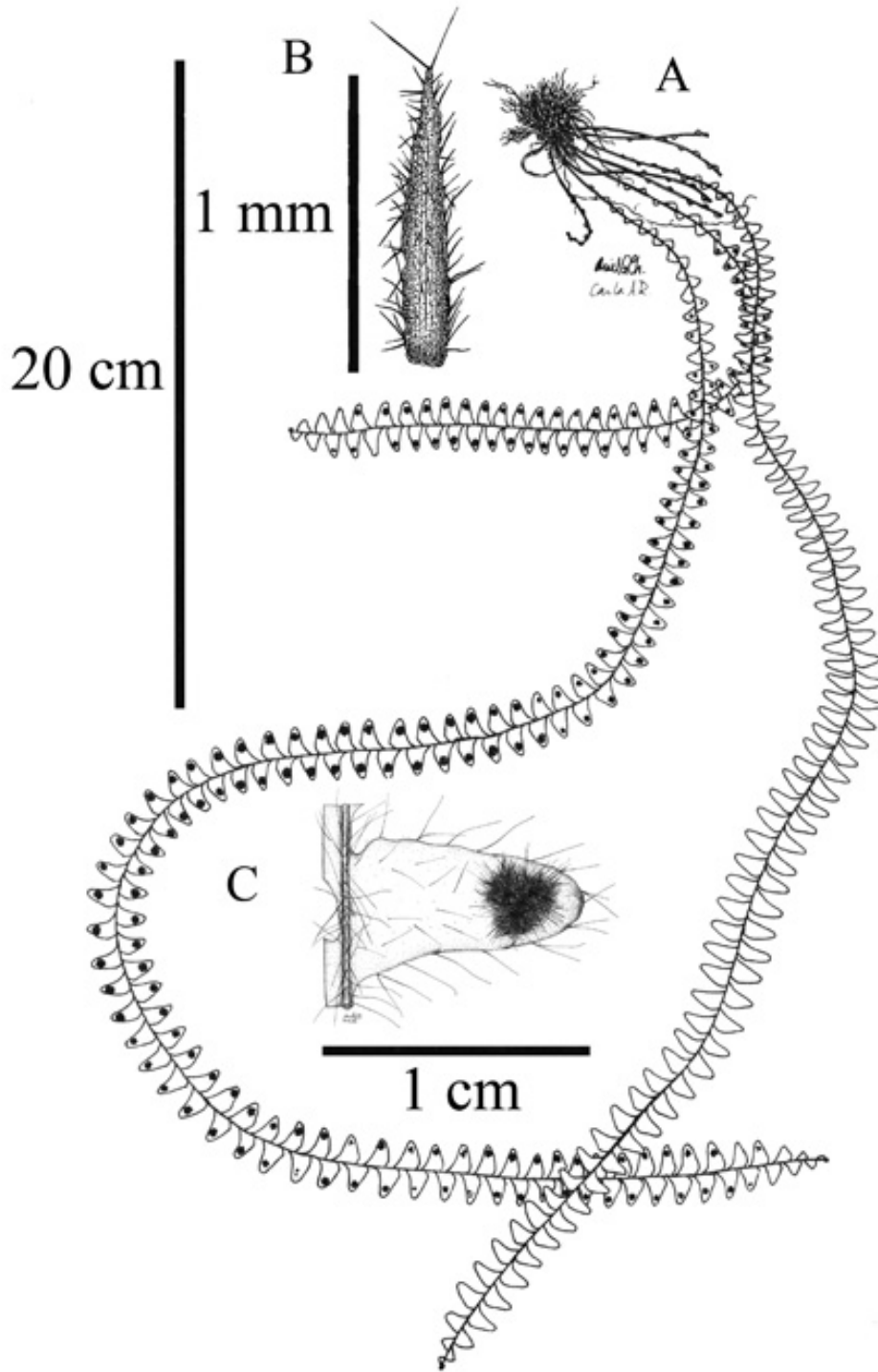


Figure 2. *Terpsichore canescens* (J. Torres 2575, COL). A. Habit. B. Rhizome scale. C. Blade detail.

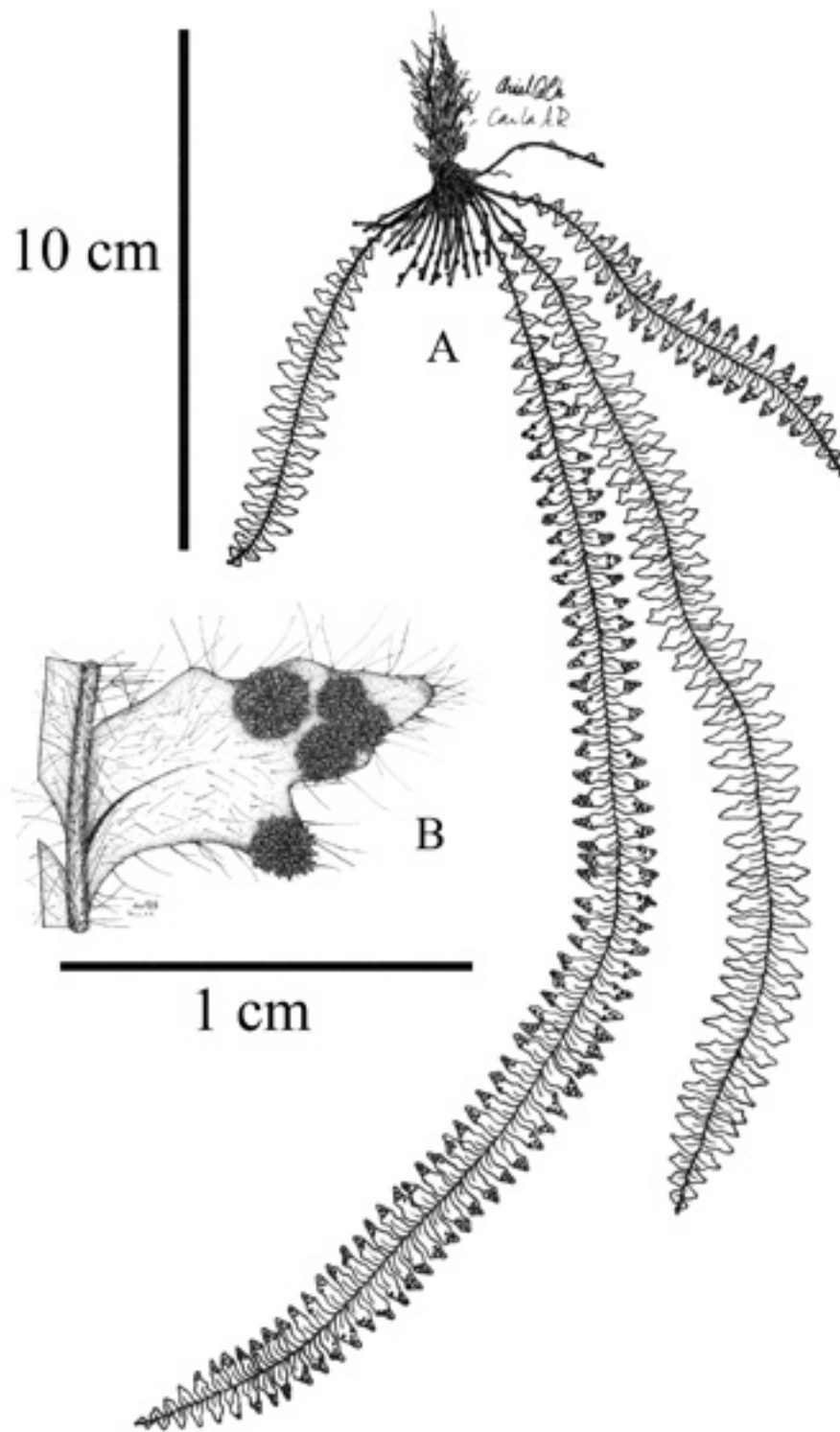


Figure 3. *Terpsichore lobulata* (J. Cuatrecasas 13089, COL). A. Habit. B. Blade detail.

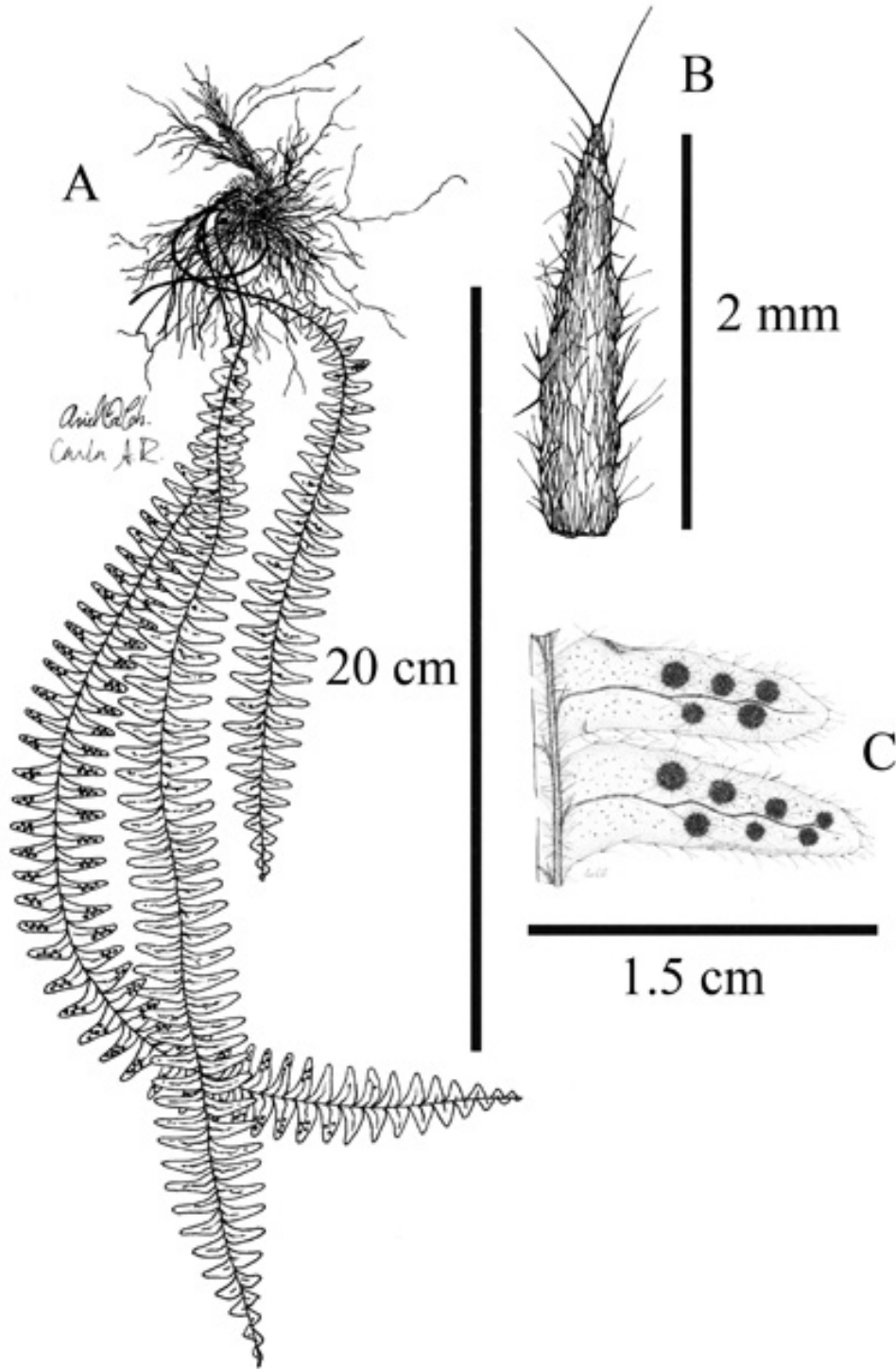


Figure 4. *Terpsichore smithii* (A. Rojas & L. Pacheco 5090, CR). A. Habit. B. Rhizome scale. C. Blade detail.