Two new species of Tectaria (Tectariaceae) from Cuba

Authors: Riverón-Giró, Frander Brian, and Sánchez, Carlos

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FRANDER BRIAN RIVERÓN-GIRÓ[1*] & CARLOS SÁNCHEZ[2]

Two new species of *Tectaria* (*Tectariaceae*) from Cuba

Abstract

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Two new species of Cuban *Tectaria* Cav. (*Tectariaceae*) are described: *T. squamosa* Riverón-Giró & C. Sánchez and *T. caluffii* Riverón-Giró & C. Sánchez; both are endemic to E Cuba (provinces of Holguín, Guantánamo and Santiago de Cuba). *Tectaria squamosa* can be distinguished by the presence of abundant scales throughout the petiole and rachis, sometimes also on the costae, and the apical segment having a pair of basal lobes in which the main vein branches from the rachis, not the costa; it is compared with *T. cicutaria* (L.) Copel. *Tectaria caluffii* can be recognized by the presence and position of bulbils (propagules) at all pinnae axils and at the base of the apical segment, and the number and width of the pinnae; it is compared with *T. incisa* Cav. and *T. vivipara* Jermy & T. G. Walker. Images of the type specimens of both new species are provided in addition to information about distribution and ecology.

Additional key words: Caribbean, ferns, Greater Antilles, West Indies

Introduction

Tectaria Cav. is currently included in the fern family *Tectariaceae* on the basis of morphological and molecular data (Smith & al. 2006). More recently it has been treated in subfamily *Tectarioideae* under *Polypodiaceae* s.l. by Christenhusz & Chase (2014). In this paper, we follow the classification of Smith & al. (2006). *Tectaria* is a group of ferns with a pantropical distribution, most developed in SE Asia and the adjacent Pacific islands (Mickel & Smith 2004). Since its inception, the genus has been characterized by taxonomic and nomenclatural problems of its species (Moran 1995). Several studies have contributed to the knowledge of the taxonomy of *Tectaria* in the Neotropics (Underwood 1906; Small 1938; Morton 1966; Vareschi 1969; Proctor 1977, 1985, 1989; Stolze 1981; Smith 1981; Tryon & Tryon 1982; Tryon & Stolze 1991; Moran 1995; Mickel & Smith 2004). These studies notwithstanding, the generic limits within *Tectaria* s.l. are still very much in doubt (Smith & al. 2006).

The number of species worldwide assigned to *Tectaria* ranges between 150 (Tryon & Stolze 1991) and 200 (Mickel & Smith 2004). For the Neotropics it varies, between 43 (Copeland 1947) and 25 (Mickel & Smith 2004). For Cuba, the number of species of *Tectaria* recorded varies from five (Duek 1971) to eight (Sánchez 2007) or 11 (Caluff & al. 2010).

In the present work we provide results based on the study of about 1600 specimens (dried material) and online images from the herbaria BM, BSC, GOET, HAC, HAJB, NY, P and US (herbarium codes following Thiers 2015+), including all the known species for the West Indies. This investigation offers the description of two new species from Cuba based on the study of stem and leaf morphology, the presence of bulbils and their position on the laminae, and characters of indusia, indumentum and venation, as well as geographic distribution and ecology.

1 El Colegio de la Frontera Sur (ECOSUR), Unidad Tapachula. Carretera Antiguo Aeropuerto, km 2.5, AP 36, Tapachula, Chiapas C.P. 30700, México; *e-mail: franderb29@gmail.com (author for correspondence).

2 Jardín Botánico Nacional, carretera "El Rocío", km 3.5, Calabazar, Boyeros, La Habana, Cuba; e-mail: csanchez@fbio.uh.cu

Results and Discussion

Tectaria squamosa Riverón-Giró & C. Sánchez, **sp. nov.** – Fig. 1.

Holotype: Cuba, provincia Guantánamo, municipio El Salvador, Yambeque-Monte Rus, zona "La Luisa", bosque semicaducifolio con elementos de pluvisilva y bosque siempreverde sobre carso, 10 Feb 2011, *C. Sánchez & R. Morejón HFC-86815* (HAJB; isotypes: B, BSC).

Description — *Ferns* terrestrial or rupicolous. *Stem* erect, rarely decumbent to ascending, 6.7–22.3 mm in diam., abundantly scaly at apex; *scales* basifixed, dark brown, concolorous, lustrous, lanceolate to triangular, 5.6–12.5 × 0.8–1.8 mm, surface glabrous, base rounded to truncate, margin entire with sparsely and scattered simple 1-celled hairs < 0.1 mm long toward base, apex acute, attenuate. *Leaves* fasciculate, monomorphic, 31.7–118.5 cm long; *petiole* dark brown to stramineous, slightly grooved adaxially, 6.3–45 cm long (mostly 0.5 × lamina length or less, rarely subequal to it), 2.1–5.6 mm in diam., with cylindrical, simple, 1-celled hairs < 0.1 mm long with blunt apex and ctenitoid hairs < 0.2 mm long throughout, more abundant adaxially, amply scaly throughout, scales persistent, similar to those at stem apex, 7–15 × 1–1.5 mm; *lamina* 1-pinnate-pinnatifid (rarely 2-pinnate toward base), ovate-lanceolate, 21.3–83.5 × 7.8–35.8 cm, papyraceous to chartaceous, surface glabrescent, base obtuse to cordate, apex acute and pinnatifid; *costae* and *veins* with 3–7-celled ctenitoid hairs 0.1–0.8 mm long (abaxially longer) on both surfaces and margin, occasionally scaly on costae; *rachis* light brown to stramineous, slightly grooved adaxially, with hairs similar to those on petiole, more abundant at pinnae axils, abundantly scaly throughout, scales persistent and similar to those on petiole, 3–5.5 × 0.4–0.7 mm; *pinnae* 2–8 pairs, opposite to subopposite, subsessile to petiolulate (petiolule 1.5–10.5 mm long), triangular to falcate, 4.8–24.5 × 2.4–7.9 cm, base obtuse to subcordate, margin lobed (lobes acute to rounded, more developed basiscopically), apex acute-attenuate; *apical segment* lanceolate to deltate, 11.5–30.2 × 7.5–24 cm, base cuneate to decurrent, sometimes overlapping with distal pinnae, margin lobed (lobes oblique, rounded to acute, frequently with a pair of basal lobes in which main vein branches from rachis, not costa), apex acute and pinnatifid; *basal pinnae* opposite to subopposite, frequently petiolulate, asymmetric, falcate to deltate, 2.8–20.2 × 2.6–15.5 cm, margin lobed, lobes more developed basiscopically, rarely 1-pinnate at base; *venation* areolate, mostly without free included veinlets. *Sori* orbicular, in 2 open rows between principal secondary veins; *indusia* attached laterally at sinus, persistent to deciduous, conspicuous, light brown, semicircular to almost orbicular, 1–1.8 mm in diam., membranous, surface mostly glabrous, margin subentire, with sparse simple 1-celled hairs or short ctenitoid 2-celled hairs.

Distribution and ecology — *Tectaria squamosa* is endemic to E Cuba in the provinces of Holguín, Guantánamo and Santiago de Cuba. It grows in montane rainforests, gallery forests and the mogotes vegetation complex (karstic hills). Commonly it occurs on damp cliffs, loose substrates rich in humus and in limestone rock cavities at altitudes of 20–650 m.

Etymology — The specific epithet *squamosa*, a Latin adjective meaning "scaly", alludes to the most conspicuous morphological character of this species: namely, the presence of abundant scales throughout the petioles and rachises, and sometimes also on the costae.

Delimitation — This species is characterized by the presence of abundant scales throughout the petioles and rachises and sometimes the costae. Also, the indusia are attached laterally and are mostly persistent, conspicuous, semicircular to almost orbicular, with the margin subentire but very sparsely hairy. The surface of the lamina is essentially glabrous. An unusual character is the apical segment having a pair of basal lobes in which the main vein branches from the rachis, not the costa.

Tectaria squamosa resembles *T. cicutaria* (L.) Copel. by the presence of 1-pinnate-pinnatifid laminae. *Tectaria cicutaria* was cited for Cuba by Duek (1971) and Proctor (1985, 1989). However, after exhaustive revision of specimens placed a priori under the "*T. cicutaria*" group we came to the conclusion that these specimens do not fit the diagnostic characters reported for *T. cicutaria* by Proctor (1985, 1989). These characters include tissue and vascular parts glandular-puberulous on both surfaces (vs tissue essentially glabrous in *T. squamosa*) and the presence of the very small, inconspicuous indusia (often apparently absent), these semicircular with an erose-fimbriate margin (vs indusia semicircular to almost orbicular, persistent to deciduous, margin subentire, with scarce simple 1-celled hairs or ctenitoid 2-celled hairs in *T. squamosa*). In addition, neither descriptions in regional treatments nor the protologue of *T. cicutaria* and its synonyms mention the presence of abundant persistent scales on the petiole and rachis. Furthermore, we have not found this character on the herbarium specimens of authentic *T. cicutaria*. The new species is distinct from *T. cicutaria* by the densely scaly leaf axes.

Additional specimens examined — Cuba: [unlocalized], Loma del Jagüey, 600 m, Mar 1889, *H. Eggers 4905* (P 00644764, P 00644765, P 00644766).

Provincia Holguín: La Melba, Valle de Jiguaní en la zona de la reservación natural, 3 Jan 1969, *J. Bisse & H. Lippold HFC-11721* (HAJB) [the acronym before collection number, for Cuban collectors, represents a serial numeration, see Regalado Gabancho & al. 2010]; PN Alejandro de Humboldt, Camino de los Lirios a la Melba, cañadas que salen o desembocan al Jiguaní, 29

Fig. 1. *Tectaria squamosa* – holotype specimen at HAJB.

Jan 2001, *C. Sánchez HFC-78609, HFC-78617* (HAJB); PN Alejandro de Humboldt, Holguín, Moa, El Peñón, La Tabla, 6 Feb 2001, *C. Sánchez & al. HFC-78891, HFC-78892* (HAJB); PN Alejandro de Humboldt, Farallones de Moa, entre el mogote de la derecha y los restantes hasta Quebracho (Sumidero), 27 Mar 1999, *C. Sánchez & L. del Risco HFC-77766* (HAJB); Márgenes río Jaguaní, Arroyo Bueno, Moa, Holguín, 200 m, en paredones húmedos, bosque de galería, 18 Sep 1997, *Caluff MGC-4989* (BSC); Alrededores arroyo Palmares, La Melba, Moa, Holguín, 160 m, en rocas húmedas, pluvisilva submontana, 19 Sep 1997, *Caluff MGC-5085* (BSC); Arroyo la Aurora, Reserva Jaguaní, Moa, Holguín, 250 m, en taludes y paredones rocosos, bosque de galería, 14 Feb 2004, *Caluff MGC-5978* (BSC); Márgenes río Jaguaní, cerca de Los Lirios, Moa Holguín, 60 m, bosque de galería, 15 Feb 2004, *Caluff MGC-6014*(*A–B*) (BSC).

Provincia Guantánamo: Loma Silla de Baracoa, en roca caliza, pluvisilva, 8 Aug 1975, *A. Álvarez & al. HFC-27153* (HAJB) [= *SV-30865* (HAC)]; Parte alta del Yunque de Baracoa, 17 Apr 1986, *I. Arias & al. HFC-58909* (HAJB); Yunque de Baracoa, cima, Apr 1970, *J. Bisse HFC-17099* (HAJB [2 sheets]); Palenque, Cuchillas del Toa, pluvisilva en la orilla del río Toa, cerca de Cayo Fortuna, 31 Mar 1972, *J. Bisse & R. Berazaín HFC-22552* (HAJB [2 sheets]); Felicidad de Yateras, Camino de Guayabal a Monte Cristo, 10 May 1983, *I. Arias & al. HFC-49188* (HAJB [2 sheets]); Cabezadas del río Jojo, Sierra de Imías, cerca de los Lechugos, 15 Feb 1979, *J. Bisse & al. HFC-39361* (HAJB [3 sheets]); Subida por la falda noreste, cima del Yunque de Baracoa, 28 Feb 1979, *J. Bisse & al. HFC-40120* (HAJB [3 sheets]); Yunque de Baracoa, cima, Feb 1980, *J. Bisse & E. Köhler HFC-5122* [4 sheets], *HFC-5153* (HAJB); San Antonio de los Indios, 6 Nov 1968, *J. Bisse & H. Lippold HFC-9920* (HAJB); Felicidad de Yateras, en el camino de Los Hoyos, 15 May 1980, *A. Álvarez & al. HFC-43314* (HAJB [2 sheets]); Cuchillas de Baracoa, Arroyón Ladera Oeste, bosque, 30 Apr 1998, *Unknown HFC-76931* (HAJB); Entre Arroyo del Infierno (o Seltu fino) y Arroyón, Falda Oeste de la Meseta de la Faldiguera, 1 May 1998, *Unknown HFC-76986* (HAJB); Lomas de Yambeque, Monte Rus, sobre humus en diente de perro, 19 Aug 1983, *M. García HFC-51678* (HAJB [2 sheets]); Sierra del Capiro, Cerro del Capiro, 26 Apr 1986, *E. Genes & al. HFC-59291* (HAJB); Monteverde, Guantánamo, montes y cafetales, Oriente, 2200 pies, 30 Dec 1960, *M. López Figueiras UO-2584* (HAC, HAJB); PN Alejandro de Humboldt, Guantánamo, Baracoa, Vega de Taco Bay o el Recreo, 0–20 m, 17 Jan 2002, *C. Sánchez & al. HFC-79062*, *HFC-79084* (HAJB); PN Alejandro de Humboldt, Guantánamo, Baracoa, Yunque de Baracoa, subida y cima, 22 Jan 2002, *C. Sánchez & al. HFC-79408* (HAJB); PN Alejandro de Humboldt, Cayo Fortuna, 25 Mar 1999, *C. Sánchez & L. del Risco HFC-77634* (HAJB); Yunque de Baracoa, 18 Jan 2010, *C. Sánchez & al. HFC-86081* (HAJB); SE de la Loma del Junco a 3 km al SE de Dos Bocas, hasta la ladera de la Loma el Junco, Planicie a la Perdida, 560 m, 8 May 1998, *C. Sánchez HFC-77171* (HAJB); Pinares y cañadas al norte del Yunque de Baracoa, Oriente, 13 Jan 1960, *Hno. Alain & al. SV-7627* (HAC); Oriente, en los pinares, al N del Yunque de Baracoa, c. 250 m, 13 Jan 1960, *Hno. Alain & J. Acuña LS-7627A* (HAC); Loma Silla de Baracoa, Guantánamo, c. 450 m, roca caliza, pluvisilva, 8 Aug 1975, *L. González & al. SV-30865* (HAC) [= *HFC-27153* (HAJB)]; La Prenda, Jul 1921, *Hno. Hioram NSC-2172* (HAC); La Prenda Oriente, Jul 1923, *Hno. Hioram NSC-9469* (HAC); Las Ninfas, 28 Dec 1917, *Hno. Hioram NSC-1480* (HAC); La Prenda, 20 Jul 1921, *Hno. Hioram & Hno. Maurel NSC-4685* (HAC); Guantánamo, Or. La Prenda, Jul 1923, *Hno. Hioram HACRoig-7111* (HAC); La Virginia, Yateras, Guantánamo, 100 ft, 1919, *C. T. Ramsden LS s.n.* (HAC); in Cuba orientali, 1859, *C. Wright SV-833A* (HAC); in Cuba orientali, 1856–1857, *C. Wright 833* (GOET); prope villam Monte Verde, dictam, Cuba orientali, Jan–Jul 1859, 1865 *C. Wright 833* (GOET, P 00644742); Yunque de Baracoa, 450 m, entre rocas a la subida, complejo de vegetación de mogotes, 17 Dec 1985, *Caluff MGC-1803* (BSC); Cañadas entre Vía Mulata y Río Barbudo, Viento Frío, Baracoa, 250–550 m, entre rocas y humus, bosque de galería, 6 Apr 1988, *Caluff & A. Motito MGC-2755* (BSC); Farallones de Achotal, Sabaneta, Carretera de Guantánamo-Sagua, en rocas, complejo de vegetación de mogotes, 24 Jan 1994, *Caluff & J. Reyes MGC-3524* (BSC); En paredones rocosos, márgenes Río Barbudo, Viento Frío, Sierra del Purial, Guantánamo, 500 m, bosque de galería, 19 Feb 1992, *Caluff & Shelton MGC-3112* (BSC); Cañadas detrás del médico de la familia, Sierra del Purial, Viento Frío, 600 m, bosque de galería, 29 Apr 1992, *Caluff & Shelton MGC-3213* (BSC); En paredones rocosos. Cañada detrás de la cocina de la granja Viento Frío, Guantánamo, 500 m, bosque de galería, 21 Apr 1992, *Caluff & Shelton MGC-3176* (BSC); Cañadas entre Viento Frío y Limbazo, Vía Mulata, 600 m, bosque de galería, 14 Apr 1992, *Caluff & Shelton MGC-3257* (BSC); Subida del Yunque de Baracoa, Guantánamo, 300 m, en calizas, complejo de vegetación de mogotes, 23 May 2005, *Caluff & Shelton MGC-5381(A–C)* (BSC); Arroyo la Ermita, base del Yunque de Baracoa, Guantánamo, 300 m, bosque de galería, 23 May 2000, *Caluff & Shelton MGC-5383*(*A–C*) (BSC); Yunque de Baracoa, 500 m, vegetación de mogotes, 22 May 2000, *Caluff & Shelton MGC-5428, MGC-5431* (BSC); Río Quibiján, cerca de Viento Frío Arriba, Sierra de Purial, Guantánamo, 320 m, en taludes y paredones, bosque de galería, 8 Jun 2004, *Caluff & Shelton MGC-6150(A–C)* (BSC); Yambeque-Monte Rouge, 22 Aug 1981, *Fagilde MGC-393(A–B)* (BSC); Mt. Liban, 1844, *J. Linden 1894* (P 00644755); Mt. Liban, 4000 ft, 1843–1844, *J. Linden 1894* (P 00644756); Mt. Liban, Jul 1844, *J. Linden 1894* (P 00644757, P 00644758).

Table 1. Morphological characters useful for distinguishing *Tectaria caluffii* from the two most similar taxa in the Neotropics. The data for *T. incisa* f. *vivipara* and *T. vivipara* are taken from Morton (1966) and Jermy & Walker (1985).

	Tectaria caluffii	***Tectaria incisa* f. *vivipara***	***Tectaria vivipara***
Number of pinnae	(1 or)2 or 3(or 4)	4–10	6–8(–12)
Medial pinnae width [cm]	6.1–8.4	4–5	2.2–2.5
Position of bulbils	axils of basal, medial and distal pinnae, base of apical segment	axils of medial and distal pinnae (not at apical segment)	axils of medial and distal pinnae (not at apical segment)

Tectaria caluffii Riverón-Giró & C. Sánchez, **sp. nov.** – Fig. 2.

Holotype: Cuba, provincia Guantánamo, municipio Baracoa, Yunque de Baracoa, subida y alrededores, 540 m, en dolinas muy húmedas, abundante, complejo de vegetación de mogotes, 18 Jan 2010, *C. Sánchez, F. Riverón, W. Toirac & J. Díaz Romero HFC-86042* (HAJB; isotypes: B, BSC, HAC, HAJB).

Description — *Ferns* terrestrial. *Stem* robust, erect, 15.5– 40.7 mm in diam., scaly at apex; *scales* basifixed, dark brown, concolorous, triangular-attenuate, 6–13.5 × 1.5–2 mm, surface glabrous, base truncate to rounded, margin entire, apex acute, attenuate. *Leaves* fasciculate, monomorphic, (61.3–)118–170.5 cm long; *petiole* dark brown throughout, slightly grooved adaxially, (21.6–)60.8–93.3 cm long (mostly equal to lamina length, sometimes 1.5 × to rarely 2 × lamina length), 2.6–7.8 mm in diam., with cylindrical simple 1-celled hairs < 0.1 mm long with blunt apex and 2- or 3-celled ctenitoid hairs < 0.2 mm long throughout, abundant adaxially on grooves, scaly towards base, scales persistent, similar to those at stem apex, 10–13.5 × 1.8–2 mm; *lamina* 1-pinnate, ovate to ovate-oblong or pentagonal, 35–65.1 × 27.6–60.4 cm, chartaceous, proliferous, surface mostly glabrous, base obtuse to cordate, apex acute to acuminate; *costae* and *veins* with simple 1-celled hairs < 0.1 mm long on both surfaces, abundant adaxially, sometimes with ctenitoid 2- or 3-celled hairs < 0.2 mm long, all appressed; *rachis* dark brown with ctenitoid hairs similar to those on petiole; *pinnae* (1 or)2 or 3(or 4) pairs, oblong-lanceolate, 18.6–31.8 × 6.1–8.4 cm, medial pinnae widest, opposite to subopposite, subsessile to petiolulate (petiolules 1.4–23.5 mm long), axillary bulbils present adaxially, these growing indistinctly on fertile or vegetative mature leaves, base decurrent, margin subentire to slightly lobed, apex acute-attenuate; *apical segment* deltate, 28.4–42.8 × 16.1–38.4 cm, base decurrent, with bulbils, apex acute-attenuate; *basal pinnae* opposite, petiolulate, asymmetric, deltate to falcate, (10.2–)22.6–30.2 × (6.2–)10.5–15.4 cm, margin lobed, with a basiscopic lobe more developed, with proliferous buds at base; *venation* areolate, with free included veinlets. *Sori* orbicular to reniform, in 2 open rows between principal secondary veins; *indusia* attached laterally at sinus, persistent to deciduous, dark brown when dry, reddish brown when fresh, orbicular, occasionally reniform, 1–2.5 mm in diam., membranous, surface mostly glabrous, margin erose, with triangular projections.

Distribution and ecology — *Tectaria caluffii* is endemic to E Cuba (provinces Holguín, Guantánamo and Santiago de Cuba,). It grows in montane rainforests, gallery forests, and the mogotes vegetation complex (karstic hills). Commonly, it occurs in damp sinkholes, growing on abundant humus and in cavities in limestone rocks at altitudes of 160–900 m.

Eponymy — The specific epithet honours Manuel García Caluff, outstanding Cuban botanist who has dedicated his life to the study of ferns, and has contributed with the description of many families and species of this group in Cuba. Besides, he is one of the first collectors who suggested that this taxon could be a new species.

Delimitation — This species can be identified by the presence and position of the bulbils, the number of pinnae, its width and its indusial characteristics. Among the Cuban species of *Tectaria*, *T. caluffii* shares some features with *T. incisa* Cav., such as the growth form of the stem (erect) and the pinnae form (oblong-lanceolate). Nevertheless, it can be distinguished easily from this species by the number of pinnae pairs (2–4 in *T. caluffii* versus 6–8 in *T. incisa*) the presence of bulbils (absent in *T. incisa* f. *incisa*, the only taxon of the species occurring in Cuba) and indusia with triangular projections on margin (versus indusia entire in *T. incisa* (Morton 1966)). *T. caluffii* also shares features with *T. incisa* f. *vivipara* (Jenman) C. V. Morton and *T. vivipara* Jermy & T. G. Walker, among them the growth form of the stem, the pinnae form and the presence of propagules. These taxa have been reported from the Neotropics but not from Cuba, and the new Cuban species can be distinguished from them by pinna number, the width of middle pinnae, and by the position and distribution of the bulbils on lamina (Table 1). There are other features that can be useful to differentiate the Cuban species, such as the presence of bulbils indistinctly on both fertile and vegetative leaves, whereas in *T. incisa* f. *vivipara* they are more common on vegetative leaves (Mickel & Smith 2004). On the other hand, the presence of hairs on the costae abaxially is a distinctive trait of

Fig. 2. *Tectaria caluffii* – holotype specimen at HAJB.

T. vivipara (Mickel & Smith 2004), whereas they are mostly absent in *T. caluffii.*

Additional specimens examined — Cuba: Provincia Holguín: PN Alejandro de Humboldt, Poblado La Melba, Arroyo Bueno/Arroyo Facistor afluente del río Jiguaní, 5 Feb 2001, *C. Sánchez & al. HFC-78835, HFC-78836, HFC-78873, HFC-78878* (HAJB); Arroyo Facistor, Arroyo Bueno, La Melba, Moa, Holguín, 160 m, bosque de galería, 20 Feb 2004, *Caluff & Shelton MGC-6077(A–B)* (BSC).
Provincia Guantánamo: PN Alejandro de Humboldt, Guantánamo, Baracoa, Yunque de Baracoa, subida y cima, 22 Jan 2002, *C. Sánchez & al. HFC-79377, HFC-79378, HFC-79427, HFC-79429, HFC-79430, HFC-79446* (HAJB); Cañada de la presita, Viento Frío, Guantánamo, Sierra del Purial, 500 m, bosque de galería, 17 Apr 1992, *Caluff & Shelton MGC-3193* (BSC, HAC, HAJB); Yunque de Baracoa, Guantánamo, 500 m, en dolinas muy húmedas, abundante, complejo de vegetación de mogotes, 17 Dec 1985, *Caluff MGC-1487(A–B)* (BSC); Cañada entre Río Barbudo y Vía Mulata, Viento Frío, Baracoa, 300–400 m, entre piedras y humus, bosque de galería, 6 Apr 1988, *Caluff & A. Motito MGC-2750, MGC-2751* (BSC); Cañada de la presita, Viento Frío, 500 m, bosque de galería, 17 Apr 1992, *Caluff & Shelton MGC-3190(A–B)* (BSC); Cañada de la presita, Viento Frío Abajo, comenzando la carretera, Sierra del Purial, Guantánamo, 500 m, en grandes rocas húmedas y musgosas, bosque de galería, 17 Apr 1992, *Caluff & Shelton MGC-3195* (BSC); Yunque de Baracoa, 500 m, en dolinas, complejo de vegetación de mogotes, 22 May 2000, *Caluff & Shelton MGC-5425(A–B)* (BSC); Márgenes río La Pulga, Sierra del Purial, 500 m, bosque de galería, 4 Jun 2004, *Caluff & Shelton MGC-6128(A–C), MGC-6129(A–B)* (BSC).
Provincia Santiago de Cuba: Loma San Juan: cañada abismo, Aug 1938, *Hno. Clemente NSC-2409* (HAC).

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