Novelties in Thelypteris subg. Amauropelta (Thelypteridaceae, Pteridophyta) for Cuba. New taxa and new records

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Abstract

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A new species and two new varieties are described from Cuba: *Thelypteris denudata, T. piedrensis* var. *heterotricha* and *T. scalpturoides* var. *glabriuscula.* New records for Cuba are *T. cheilanthoides, T. linkiana, T. pachyrhachis, T. pteroidea, T. scalaris* and *T. thomsonii.*

Thelypteris denudata C. Sánchez & Caluff, **sp. nov.**
Holotype: Cuba, Prov. Granma, "B. Masó, Parque Nacional Turquino, Sierra Maestra, Pico Suecia, en la cima", 4.7.2003, *Sánchez & Morejón HFC 81246* (HAJB; isotypes: B, BSC, HAJB). – Fig. 1.

Species insignis, differt a caeteris cubensibus hujus subgeneris glabritie foliorum, nam pili eglandulares tantum ad marginem pinnularum nec non in sulco vel facie adaxiali petioli, rachidis, costarum costularumque obvii. A *Thelypteride pteroidea,* quacum foliis bipinnatis congruit, discedit foliis minoribus, erectis nec decumbentibus, lamina basi truncata pinnis diminutis carens et costis squamis destitutis.

Rhizome short-creeping, 5-6 mm in diameter; *scales* basifix, ovate-attenuate, 4-5 × 1-1.5 mm, light brown, shiny, puberulous with simple, 0.1-0.2 mm long trichomes, gradually filiform-acuminate, the base cordate, the margin entire. *Leaves* monomorphic, closely spaced, erect, up to 65 cm long; *petiole* 20.5-31 cm long and 2-3 mm in diameter, brown, shiny, subglabrous, with acicular, 0.2 mm long, light brown trichomes confined to the adaxial groove, and tiny reddish glands barely visible on dry specimens; *blade* ovate, 2-pinnate-lobate or 2-pinnate-pinnatifid, 29-37 × 15-23 cm, coriaceous, dark brown and shiny adaxially, light brown and dull abaxially, pinnatifid at the apex, truncate at the base; *rachis* light brown, shiny, similar to the petiole also regarding the indumentum; *pinnae* in 17-22 pairs, opposite proximally but alternate distally, ovate to narrowly ovate, 7-11.5 × 1.2-3.5 cm, patent at right angles, straight, sessile, articulate, the api-

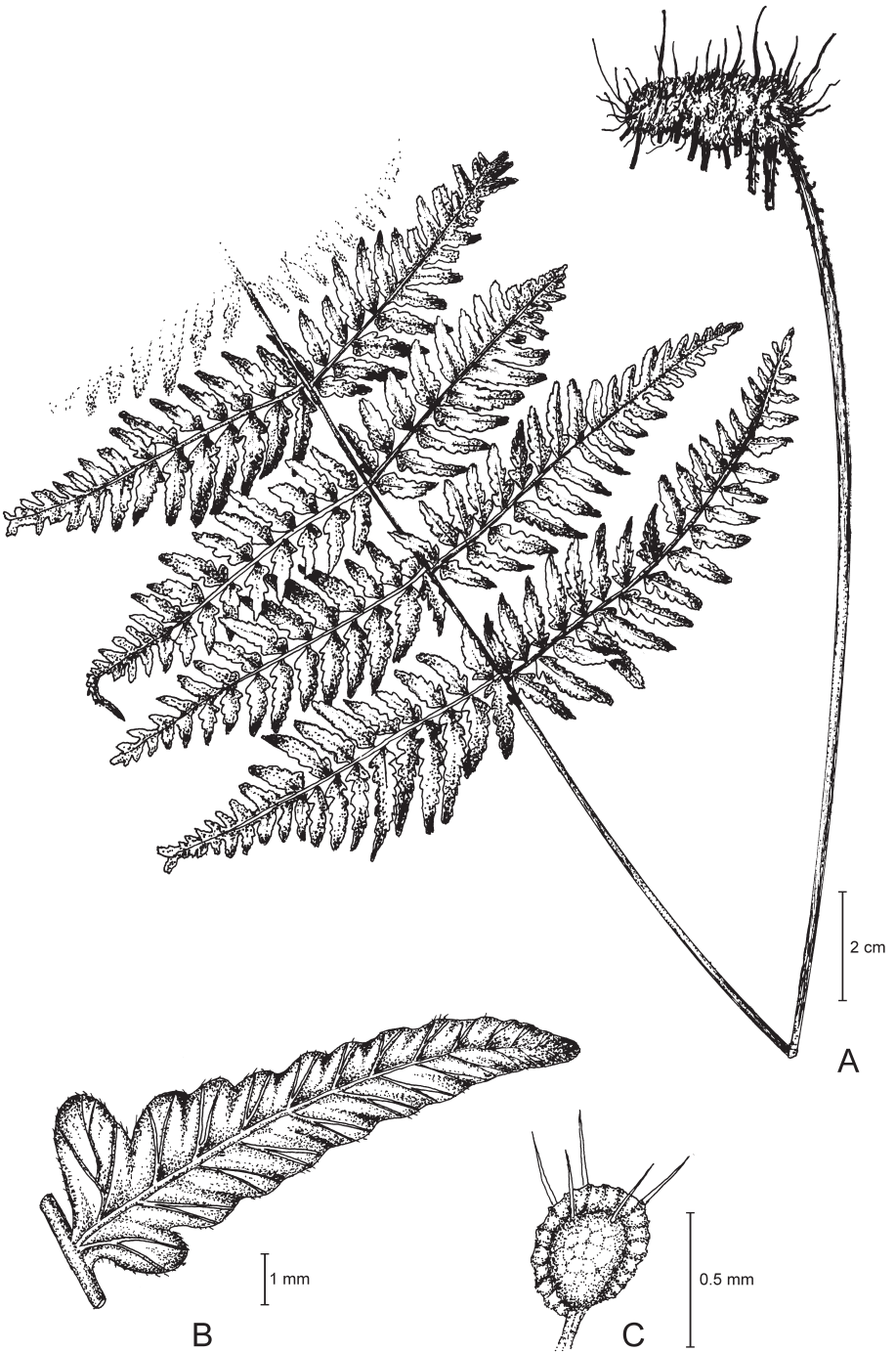

Fig. 1. *Thelypteris denudata* – A: rhizome with proximal portion of a leaf; B: single pinnule; C: sporangium. – Drawings by M. Caluff after *Sánchez & Romano HFC 73693* (BSC).

cal portion pinnatifid, acute, the base truncate; *pinnules* in 12-15 pairs, all opposite or the distal ones alternate, elongate-triangular to triangular-ovate, ascending, subfalcate or falcate, 1-2.5 × 0.2-0.7 cm, sessile, entire, crenulate, lobate or pinnatifid, distantly ciliate with antrorse, deciduous, 0.2 mm long trichomes, subacute, the base in the larger ones slightly auriculate on both sides; *veins* in 9-11 pairs per pinnule, 1-3 times forked, the distal ones simple, slightly raised adaxially, abaxially sunk in the spongy tissue, reaching the margin above the sinus between the lobes; *blade indumentum* of simple, 0.2 mm long trichomes confined to the pinnule margin and the adaxial face of the costae and proximal portion of the costules, blades otherwise glabrous. *Sori* submarginal, round; *indusium* absent; *sporangia* pale, setulose, with up to 5 setae each.

Etymology. – The specific epithet refers to the leaf surface devoid of hairs.

Other specimens seen. – Cuba: Prov. Santiago de Cuba: From Pico Turquino to Pico Suecia, summit of Pico Suecia, Sierra Maestra, cloud forest, wayside, 1734 m, 17.3.1997, *Sánchez & Romano HFC 73693* (HAJB), *73694* (BSC).

Distribution and habitat. – Known only from two collections made in the same locality, the summit of Pico Suecia in the Pico Turquino region of the Sierra Maestra range, E Cuba, where it grows in cloud forest, in open places along paths, in full sun, at an altitude of 1734 m. Scarce.

Thelypteris denudata has no close relatives among the Cuban species of *T.* subg. *Amauropelta,* of which *T. pteroidea,* first recorded from the island here, is the only other fully 2-pinnate representative. The new species differs from *T. pteroidea* in its smaller size, erect rather than decumbent leaves, the basally truncate leaf blade lacking reduced pinnae, and the absence of scales on the costae. Within the subgenus it is noticeable by the almost complete absence of a leaf indumentum, with eglandular trichomes confined to the pinnule margines and the adaxial groove or face of the petiole, rachis, costa and costules.

Thelypteris piedrensis var. ***heterotricha*** Caluff & C. Sánchez, **var. nov.**
Holotype: Cuba, Prov. Santiago de Cuba, "Gran Piedra, cañada debajo del centro turístico", rainforest, 900 m, 17.11.1994, *Sánchez & al. HFC 71243* (HAJB; isotypes: B, BSC [as *Caluff & al. 3515, 3516*], HAJB). – Fig. 2A-B.

Ab ejusdem speciei varietate typica differt indumento rachidi heteromorpho, pilis 0.1-0.9 mm longis constituto, et lamina praeter costas glabra.

Rhizome ascending to erect; *scales* lanceolate, 3-8 × 0.5-1.3 mm, brown, pubescent, acuminate, base cordate, margin entire or remotely denticulate. *Leaves* monomorphic, fasciculate, erect to arched, up to 79 cm long; *petiole* 6.8-11 cm long and 1-2 mm in diameter, brown, puberulous with acicular, 0.1-0.4 mm long trichomes and scattered scales similar to those of the rhizome; *blade* ovate to ovate-lanceolate, pinnate-pinnatifid, almost 2-pinnate at the base of the largest pinnae, up to 58 × 19 cm, herbaceous to papery, the apex becoming gradually pinnatifid, acute, the base abruptly to gradually narrowed, with up to 6 pairs of pinnae of reduced size; *rachis* brown, puberulous to pubescent with 0.1-0.9 mm long acicular trichomes; *pinnae* in 21-32 pairs, oblong-lanceolate to narrowly ovate in outline, 4.8-10 × 1.9-2.4 cm, patent at right angles, straight, sessile, alternate to nearly opposite, the apex pinnatifid, acute, the base truncate, with the proximal segments larger than the others, the basal basiscopic segment of the largest pinnae with a strongly produced, curved auricle, overlapping the rachis; *segments* oblong to narrowly oblong, ascending, 1.5-2 mm wide, obtuse to acute, entire, ciliate, sometimes revolute, distance from the sinus to the costa 0.1-0.4 mm; *veins* in 7-10 pairs per segment, simple or 1-2 times furcate; *blade indumentum* on both surfaces similar to that of the rachis but confined to the costae, blade otherwise glabrous. *Sori* submarginal, round, sometimes partially concealed by the revolute margin; *indusium* brown, ciliate, with or without sessile resinous glands; *sporangia* glabrous.

Etymology. – Named for the unequal size of the rachis hairs.

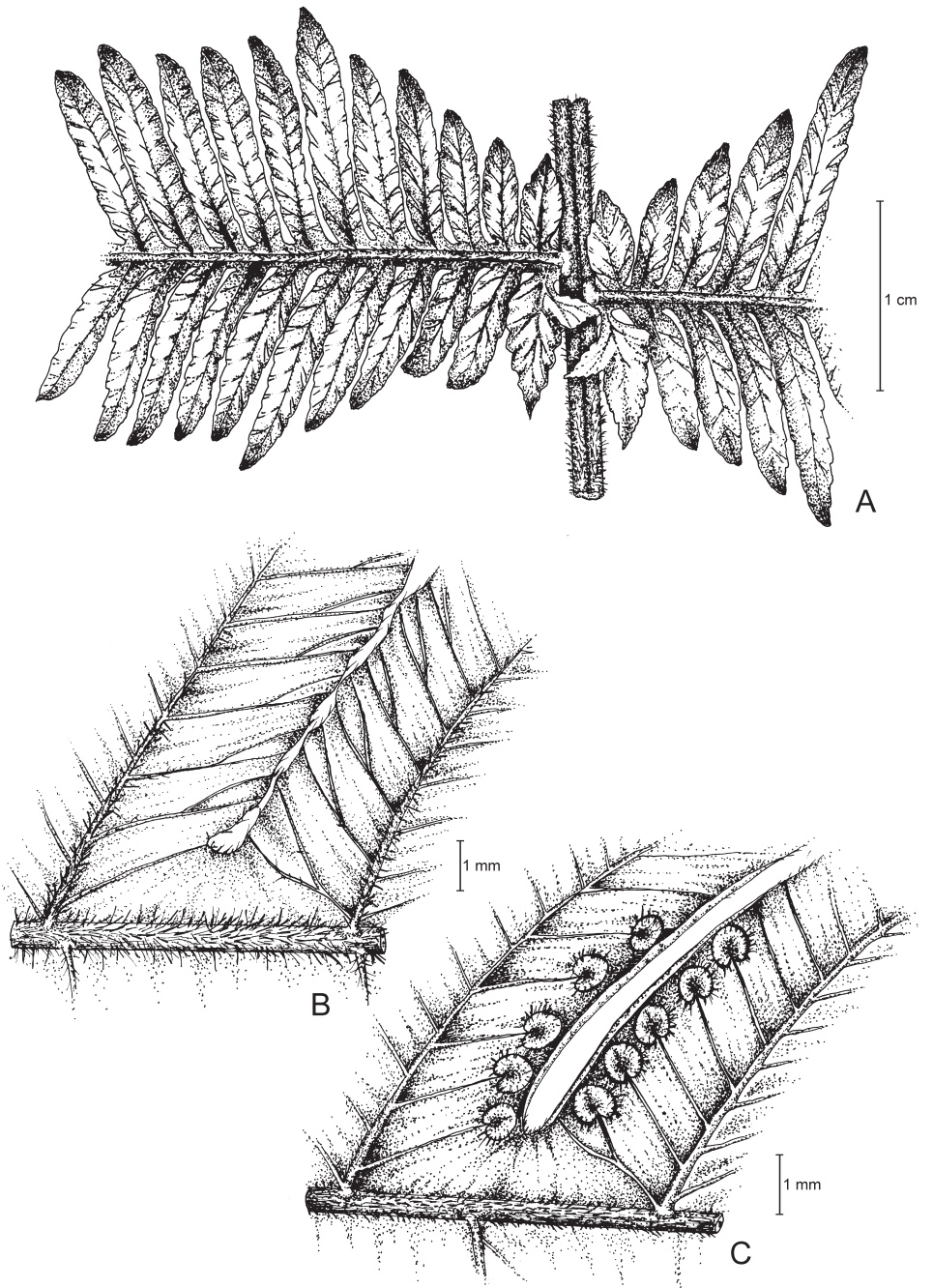

Fig. 2 A-B: *Thelypteris piedrensis* var. *heterotricha* – C: *T. scalpturoides* var. *glabriuscula.* – A: proximal part of two middle pinnae; B-C: portions of two adjacent pinna lobes, showing sinus and venation. – Drawings by M. Caluff, A-B after *Caluff & al. 3515* (BSC), C after *Caluff 4586* (BSC).

Distribution and habitat. – Only known from the type gathering. Endemic to Mt Gran Piedra in E Cuba, where it grows in montane rainforest, close to watercourses, in shade, at (750-)900 m of altitude. Scarce. *Thelypteris piedrensis* var. *piedrensis* is found growing in the same area but in a different habitat: waysides and clearings in pine forest. It is more widespread, having been collected not only in the Sierra Maestra range of E Cuba but also on Hispaniola and Porto Rico.

Key to the varieties of *Thelypteris piedrensis*

– Rachis trichomes uniform in size, 0.1 mm long; veins and blade tissue abaxially with scattered, 0.1 mm long trichomes, adaxially strigillose . . . . . var. *piedrensis*
– Rachis trichomes of unequal size, 0.1-0.9 mm long; blade glabrous except on the costae. . . . . var. *heterotricha*

Thelypteris scalpturoides var. ***glabriuscula*** C. Sánchez & Caluff, **var. nov.**
Holotype: Cuba, Prov. Holguín, "Moa, Parque Nacional 'Alejandro de Humboldt', Meseta del Toldo a 3 km al norte del campamento minero (pasando por la montaña 'la Pelúa')", 800-900 m, 31.3.1999, *Sánchez & Risco HFC 77885* (HAJB; isotypes: B, BSC). – Fig. 2C.

Ab ejusdem speciei varietate typica differt pilis rachidis ad summum 0.4 mm (nec ad 0.8 mm) longis, lamina foliorum supra glabra vel parce (nec abunde) striguloso-pilosa, subtus subglabra (nec pubescente).

Rhizome ascending to erect; *scales* linear-lanceolate, 7-8 × 0.8-1 mm, brown, shiny, pubescent, acute, base truncate, margin entire. *Leaves* monomorphic, fasciculate, erect, up to 66 cm long; *petiole* 3-16 cm long and 1.5-2 mm in diameter, light brown, pubescent with acicular, 0.1-0.3 mm long trichomes and with scattered scales similar to those of the rhizome; *blade* ovate to oblong-ovate, pinnate-pinnatifid, 29-50 × 7-15 cm, papery, the apex becoming gradually pinnatifid, acute, the base abruptly narrowed, with up to 9 pairs of pinnae of reduced size; *rachis* light brown, pubescent with 0.1-0.2(-0.4) mm long trichomes; *pinnae* in 20-40 pairs, in outline linear-lanceolate from a wide base 5-8 × 0.8-1.3 cm, patent at right angles to ascending, straight to falcate, sessile, alternate to nearly opposite, the apex pinnatifid, acute, the base truncate, with the proximal segments larger than the others, the basal basiscopic segment in the largest pinnae with a curved auricle sometimes overlapping the rachis; *segments* deltoid-oblong, slightly ascending, 2.5-3 mm wide, truncate or obliquely acute, the margin entire, ciliate, sometimes revolute, distance from the sinus to the costa 0.5-1 mm; *veins* in 5-7 pairs per segment, simple or furcate; *blade indumentum* abaxially of 0.1-0.4 long trichomes on the costae and scarce, 0.2-0.3 mm long trichomes, otherwise absent, adaxially the blade surface glabrous or strigose. *Sori* submarginal, round; *indusium* ciliate with robust and delicate trichomes; *sporangia* glabrous.

Etymology. – Named for its subglabrous leaf blade.

Distribution and habitat. – Endemic to E Cuba, Prov. Holguín, Guantánamo and Santiago de Cuba, where it grows in montane rainforest, sometimes on ultramafic soils, close to watercourses, in shade, at 340-900 m of altitude. Locally frequent. In contrast, *Thelypteris scalpturoides* var. *scalpturoides* is widespread in Cuba from Pinar del Río Province in the west to Guantánamo Province in the east, and is also found on Hispaniola. The Jamaican endemic that had been described as *Dryopteris scalpturoides* var. *jamaicensis* C. Chr. is now considered to constitute a different species, *T. nockiana* (Jenman) Proctor.

Other specimens seen. – CUBA: PROV. HOLGUÍN: Mine Merceditas, Jaragua river, Moa, 25.9.1997, *Caluff 4586* (BSC); Alto de la Melba, Moa, rainforest on ultramafic soil, 26.9.1997, *Caluff 4589-4592* (BSC); Sagua de Tánamo, Reserva Cupeyal del Norte between Guardaparques and Majayara Arriba, 600-800 m, 23.11.1997, *Sánchez HFC 75008* (HAJB); Sagua de Tánamo, Reserva Cupeyal del Norte, Pinalito and Mola areas from the park scouts' camp, 24.11.1997, *Sánchez HFC 75070* (HAJB); Moa, Reserva Cupeyal del Norte, Mangüeyes, 5 km to the park scouts' camp, 700-800 m, 28.11.1997, *Sánchez HFC 75219-75220* (HAJB); Moa, Reserva Cupeyal del Norte, riverside of

the Jucaral (tributary of Toa river), toward Monte Fresco, 7 km to the park scouts' camp, 300-400 m 27.11.1997, *Sánchez HFC 75198* (HAJB); Moa, Reserva Cupeyal del Norte, near the Jucaral (tributary of Toa river) from the park scouts' camp, 25.11.1997, *Sánchez HFC 75161-75162* (HAJB). — Prov. Santiago de Cuba: Gran Piedra, on cliffs between the cottages and the restaurant, 1100 m, 25.5.2004 *Caluff 4933* (BSC). — Prov. Guantánamo: Headwater of the Toa river, Cupeyal del Norte, gallery forest, on mossy rocks, 500 m, 27.8.1986, *Caluff & Fagilde 2115A-B* (BSC); ibid., in montane rainforest and gallery forest on mossy rocks, 400-600 m, 28.8.1986, *Caluff & Fagilde 2176* (BSC); Baracoa, ultramafic hills E of La Mina river, 4 km from Dos Bocas, 340-400 m, SE slope, 8.5.1998, *Sánchez HFC 77214-77216* (HAJB); Yateras, Palenque, Cuchillas del Toa, Cayo Fortuna, Toa river, near Cayo Fortuna River, 25.3. 1972, *Lippold HFC 21705* (HAJB); Yateras, Palenque, Cuchillas del Toa, serpentine thicket of Yarey hill, 26.3.1972, *Bisse & al. HFC 22181* (HAJB, JE); Imías, Sierra de Imías, W slope of Majagua Hueca hill, 600 m, 16.4.1984, *Bisse & al. HFC 53190* (HAJB, JE); Yumurí river, Baracoa, cliffs and ravines, 13.1. 1956, *Alain & Morton 5083* (HAJB); Treinta Pinos, Corojo, 1000 m, in open places, 29.3.1915, *Ekman 5188* (HAJB).

Key to the varieties of *Thelypteris scalpturoides*

– Rachis trichomes tiny, 0.1-0.2(-0.4) mm long; leaf blade abaxially subglabrous, adaxially glabrous or sparsely strigulose . . . . . var. *glabriuscula*
– Rachis trichomes of unequal size, some up to 0.8 mm long; leaf blade pubescent abaxially, densely strigose adaxially . . . . . var. *scalpturoides*

New records for Cuba

Thelypteris cheilanthoides (Kunze) Proctor

Specimens seen. – Prov. Granma: Nuevo Mundo river, La Bayamesa, gallery forest, 1000 m, *Caluff 2359A-B* (BSC).

Previously known from México, Central America, northern South America, Jamaica and Hispaniola (Proctor 1985, 1989, Smith 1995). In E Cuba, in the Sierra Maestra, it grows in gallery forest, with filtered sun, at 1000 m of altitude. Scarce, known from a single gathering.

Thelypteris linkiana (C. Presl) R. M. Tryon

Specimen seen. – Prov. Granma: Buey Arriba to Pino del Agua Arriba, in a shaded gorge, 900 m, 16.3.1987, *Caluff 2324* (BSC).

Previously known from S México, Central America, northern South America, Puerto Rico and the Lesser Antilles (Proctor 1985, 1989, Smith 1995). In E Cuba, in the Sierra Maestra, it grows in secondary forest, close to a watercourses, with filtered sun, at 900 m of altitude. Scarce, known from a single specimen.

Thelypteris pachyrhachis (Kunze ex Mett.) Ching

Specimens seen. – Prov. Granma: Sierra Maestra, Buey Arriba, Alto del Escudero, 20.5.1988, *Álvarez & al. HFC 64803, 64812, 64814A-D* (B, HAJB, JE); Sierra Maestra, Guisa, La Bayamesa, ravine near El Nueve camp, 19.4.2004, *Sánchez & al. HFC 82132* (HAJB); B. Masó to Buey Arriba, Parque Nacional Turquino, between El Cojo camp and El Hombrito, 8.7.2003, *Sánchez & Morejón HFC 81455* (HAJB); Guisa, El Gigante mountain and nearby hills, 13.7. 2003, *Sánchez & Morejón HFC 81498* (HAJB); B. Masó, from the Aguada de Joaquín camp to the ravine of "Las Viejas" (tributary of Palma Mocha river), near Cruce de Lima, 23.2.1998, *Sánchez & al. HFC 75925* (HAJB); ibid., 15.3.1997, *Sánchez & Romano HFC 73604, 73592* (HAJB); headwaters of river #26, La Bayamesa, gallery forest, 1470 m, 20.3.1987, *Caluff 2418A-B* (BSC, HAJB), *2428A-C* (BSC); in the 120 Zone, Buey Arriba, 12.5.1988, *Álvarez & al. HFC 64179* (B, BSC, HAJB, JE).

Previously known from Central America, northern South America, Jamaica and Hispaniola (Proctor 1985, Smith 1995). In E Cuba, in the Sierra Maestra, it grows in rainforest, close to watercourses, with filtered sun, at 1000-1400 m of altitude. Scarce.

Thelypteris thomsonii (Jenman) Proctor

Specimens seen. – Prov. Granma: Headwaters of river #26, La Bayamesa, gallery forest, 1470 m, 20.3.1987, *Caluff 2427A-B* (BSC).

Previously known from S Mexico to Panama, Colombia to Perú, Jamaica and Hispaniola (Proctor 1985, Smith 1992, 1995). In E Cuba, in the Sierra Maestra, it grows in montane rainforest, close to watercourses, with filtered sun, at 1470 m of altitude. Scarce, known from a single gathering.

Thelypteris pteroidea (Klotzsch) R. M. Tryon

Specimens seen. – Prov. Granma: Buey Arriba, Alto del Escudero, Sierra maestra, 20.5.1988, *Álvarez & al. HFC 64804A-B* (B, HAJB, JE). — Prov. Santiago de Cuba: Sierra Maestra, summit of Pico Cuba, montane rainforest, in a gorge, 1700 m, 25.11.1981, *Caluff 307A-E* (BSC).

Previously known from Colombia, Venezuela to Perú and on Hispaniola (Smith 1992). In E Cuba, in the Sierra Maestra, it grows in rainforest, usually in clearings and on waysides, with filtered sun, at 1300-1750 m of altitude. Scarce.

Thelypteris scalaris (Klotzsch) R. M. Tryon

Specimens seen. – Prov. Sancti Spíritus: Mogote Mi Retiro, El Mirador hill, surroundings of the rest house of the Ministry of Agriculture, 400-500 m, 16.2.1997, *Sánchez & Cuesta HFC 74283, 74290, 74292A-B-74294* (HAJB). — Prov. Guantánamo: Alto de La Gurbia, Viento Frío, Sierra del Purial, on the wayside by a pine forest, one individual, 860 m, 6.6.2004, *Caluff & Shelton 4928* (BSC); Viento Frío Arriba, Sierra del Purial, way to Quiibiján river, on the wayside, in full sun, one population, 335-450 m, 8.6.2004, *Caluff & Shelton 4929* (BSC).

Previously known from S México, Central America and northern South America (Smith 1995). In Central and E Cuba it grows in "mogote vegetation", pine forests and submontane rainforest, in full or filtered sun, at 400-650 m of altitude. Scarce. The two Cuban populations differ in their ecology and habit, those of Central Cuba being calciphilous, with erect leaves, and those of E Cuba acidiphilous, with soft, arched leaves; in other morphological characters plants of both populations match well.

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