STUDIES OF NEOTROPICAL GOODYERINAE (ORCHIDACEAE) 5

PAUL ORMEROD[1]

Abstract. Continuing studies of neotropical Goodyerinae reveal new distributional records for *Aspidogyne umbraticola* and *Microchilus familiaris*. The synonymy of *Aspidogyne querceticola* is elaborated upon. One new combination, *Aspidogyne clavigera* var. *rhodostachys* is proposed, as well as four new species of *Microchilus*, viz. *M. boyacanus*, *M. callejasii*, *M. quetamensis*, and *M. schneideri*. *Physurus debilis* and *Spiranthes pedicellata* are lectotypified.

Keywords: *Aspidogyne, Microchilus*

This paper is a continuation of previous studies of neotropical Goodyerinae (Ormerod 2005, 2007, 2008, 2009a, b). Currently about 234 species (this paper included) in 4 genera (prior to 2005 about 120 species in 8 genera) may be recognised as occurring in the New World.

Meneguzzo (2012) merged *Ligeophila* Garay and *Platythelys* Garay into *Aspidogyne* Garay. One's first instinct is that such a broadly defined *Aspidogyne* is a conglomeration of three different groups. However the only diagnostic character of *Ligeophila* is its flexible rostellum, a character found in the Peruvian *Aspidogyne misera* (Ormerod) Ormerod.

The genus *Platythelys* seems to possess a distinct floral facies, such as oblong lateral sepals, an oblongoid-ellipsoid to obovoid spur and a stout, shortly stalked to sessile column. In *Aspidogyne* the flowers generally have oblanceolate lateral sepals, a terete to narrowly clavate spur, and a slender, long-stalked column. The two genera however share a few characters too, such as a rounded-concave to cochleate labellum hypochile, and an entire rostellum that either ruptures apically or allows the pollinarium to slough off.

The problems with the above definitions of *Platythelys* and *Aspidogyne* are intermediate taxa such as *Aspidogyne grayumii* Ormerod, *A. roseoalba* (Dressler) Ormerod, and *A. rotundifolia* (Ormerod) Ormerod. These three taxa have relatively shortly stalked columns and oblongoid to obovoid spurs. Furthermore, seemingly deviant taxa such as *A. grandis* (Ormerod) Ormerod, *A. mosaica* Ormerod and *A. vesiculosa* Ormerod show that *Aspidogyne* is quite a diverse genus.

ASPIDOGYNE GARAY

As noted above this genus now includes *Ligeophila* and *Platythelys,* comprising about 71 species distributed from the United States of America to Argentina.

Aspidogyne clavigera (Rchb.f.) Meneguzzo, Orquidario 26, 3: 89, 2012.

Basionym: *Physurus claviger* Rchb.f., Bonplandia 4: 211, 1856. TYPE: "NEW SPAIN" [Costa Rica or Mexico]: without locality, *M. Sesse & J.M. Mocino 4373* (Holotype: W-R, photo seen; Isotypes: AMES, G, MA [photograph seen]).

Synonyms: *Erythrodes clavigera* (Rchb.f.) Ames, Orch. 7: 70, 1922.

Ligeophila clavigera (Rchb.f.) Garay, Bradea 2, 28: 195, 1977.

Distribution: Mexico, Nicaragua, and Costa Rica.

Specimens examined: MEXICO. Chiapas: Municipio de Ocosingo, ca. 2 km NE del Crucero San Javier, 355 m, 26 November 2002, *G. Aguilar M. 4396* (K); ca. 1.2 km to S del Crucero San Javier, 390 m, 9 October 2002, *G. Aguilar M. 3187* (K). NICARAGUA. Greytown, *R. Tate 485 (313)* (K); Chontales,

I wish to thank herbarium and library staff at BM, K and the Harvard University Herbaria (A, AMES, GH) for their help and hospitality during visits. DUKE, E, F, G, GB, MO NY, P, S, SEL, US and Z kindly loaned material for study. Also I wish to extend my gratitude to Leonid Averyanov for sending images of LE material; to Leslie A. Garay for images of types and copies of original literature; and to Dariusz Szlachetko for sending analytical drawings of *Spiranthes pedicellata* in BR. Denis Vaslet generously sent images of *Microchilus familiaris* and *M. hirtellus,* as well as a reprint of his paper on these taxa.

[1] P.O. Box 8210, Cairns 4870, Queensland, Australia; wsandave1@bigpond .com

R. Tate 485 (313) (K). COSTA RICA. Limon: Rio Colorado mouth, N shore, at Barra del Colorado, between the village and Caribbean Sea, 1–5 m, 12 September 1986, *G. Davidse & G. Herrera 30991* (MO); Lugar, Reserva Biológica Hitoy Cecere, 100–250 m, 29 August 1985, *L.D. Gómez & G. Herrera 23654* (MO); 1–3 km N of Bribri, Río Sixaola drainage, 9–10 September 1978, *W. Burger & T. Antonio 11006* (F). Puntarenas: between Agua Bena and San Vito de Jaba, 1200 m, 22 October 1964, *A. Jiménez M. 2474* (F).

Aspidogyne clavigera (Rchb.f.) Meneguzzo var. ***rhodostachys*** (Ormerod) Ormerod, *comb. nov.*

Basionym: *Ligeophila clavigera* (Rchb.f.) Garay var. *rhodostachys* Ormerod, Harvard Pap. Bot. 13, 1: 62, 2008. TYPE: PERU. Madre de Dios: Provincia Manu, Manu Park, Cocha Cashu uplands, 400 m, 18 August 1986, *P. Nuñez 5779* (Holotype: MO).

Distribution: Peru, Colombia, Venezuela, Brazil, Guyana, and Surinam.

Further synonymy (e.g., *Physurus peterianus* Rchb.f.) and collections referrable to this variety are cited in Ormerod (2009b), aside from those specimens already listed with the protologue. This rather robust species (to ca. 80 cm tall) and its variety may be recognised by the rather large (sepals ca. 10 mm long) flowers, slenderly clavate spur about 15 mm long, and shortly clawed, transversely rhombic labellum epichile.

Aspidogyne debilis (Lindl.) Meneguzzo, Orquidario 26, 3: 89, 2012.

Basionym: *Physurus debilis* Lindl., Gen. Sp. Orch. Pl.: 503, 1840. TYPE: BRAZIL. Without locality ("Brasilia") or date, ex *J.D. Prescott s.n.* (Lectotype here designated: K-L); Minas Gerais, Lumiar, Alto Macahe, drawing by *M. Descourtilz s.n.* (Institut de France, not seen).

Synonyms: *Microchilus debilis* (Lindl.) D. Dietr., Syn. Pl. 5: 166, 1852.

Erythrodes debilis (Lindl.) Ames, Orch. 7: 70, 1922.

Platythelys debilis (Lindl.) Garay, Bradea 2, 28: 197, 1977.

Physurus debilis Lindl. var. *major* Warming, Symb. Fl. Bras. Centr. Part. 30: 858, 1884. TYPE: BRAZIL. Minas Gerais: Lagoa Santa, J.E.B. Warming 107 (Holotype: not seen; drawing W-R 37803).

Physurus macer Hoehne & Schltr., Arch. Bot. Sao Paul 1, 3: 196, 1926. TYPE: BRAZIL. Sao Paulo: Butantan, 27 January 1919, *F.C. Hoehne 3450* (Holotype: SP, not seen; Isotype: AMES).

Distribution: Bolivia; Brazil; Paraguay; Argentina.

Specimens examined: BOLIVIA. Santa Cruz: Velasco Prov., Bahia Toledo (a large wetland complex formed by the divergence of the Río Paragua), 210 m, 10 September 1995, *N. Ritter & P. Foster 2402* (MO); Andres Ibanez Prov., Santa Cruz, across the highway from the international airport, 430 m, 4 June 1995, *N. Ritter & G.E. Crow 2266* (MO). BRAZIL. Without locality ("Brasilia"), *G.H. Langsdorff & L. Riedel 624* (LE, image seen). Rio de Janeiro: KM 47, Rio de Janeiro to Sao Paulo road, 12 July 1952, *E.P. Heringer 2792* (AMES, K); Rio de Janeiro, July 1823, *G.H. Langsdorff s.n.* (LE, image seen); Porto-Estrella, July 1823, *L. Riedel s.n.* (LE, image seen); between Inhomirim and Porto-Estrella, July 1823, *L. Riedel s.n.* (LE, image seen). Minas Gerais: Caldas, 25 August 1873, *C.W.H. Mosen 333* (S); in ditches near Agua-Queto, September 1824, *L. Riedel s.n.* (LE, image seen); without locality, September 1824, *L. Riedel 503* (LE, image seen). PARAGUAY. Central: near Sapucay, August 1913, *E. Hassler 11899* (E, G, K, MO, NY, P, US, Z); Isla Guavira, 12 August 1992, *E. Zardini & P. Aquino 32869* (MO). Rio Cerro to Yarigua, 1914, *R. Chodat s.n.* (G). ARGENTINA. Concepción: Prov. Corrientes, Carambola, 1 September 1982, *T.M. Pedersen 13394* (MO).

Habitat: Very wet or flooded ground, also in "floating fens" ("embalsadas") (*Pedersen 13394*); on floating mats of *Oxycaryum cubense* (*Ritter & Crow 2266*).

Aspidogyne debilis appears to be unique amongst neotropical Goodyerinae in that it has been found growing on floating vegetation (two examples noted by collectors are cited above). It also grows terrestrially like most other species of Goodyerinae. The species is often confused with its close relative *A. schlechteriana* (Hoehne) Meneguzzo but tends to have more ovate (often suborbicular) leaves that are not so sharply pointed, and flowers in which the subquadrate epichile has two low keels.

British merchant John Prescott obtained the lectotype of *Physurus debilis* during his travels

in Russia, presumably from material now kept in Saint Petersburg (Leningrad). There is a possibility that the collection *Langsdorff & Riedel 624* (LE) from "Brasilia" is an isotype of *Physurus debilis*, since the same locality is written on the lectotype. However further studies of the sheets held in LE will be necessary before any specimen can be determined as an isolectotype. The lectotype sheet in K-L also has a collection by George Gardner (no. 5196) mounted on it, this is however referrable to *A. schlechteriana*.

A record of *Physurus debilis* from Colombia by Kraenzlin in 1899 represents *Microchilus constrictus* Ormerod (Ormerod, 2008). Duenas-Gómez & Fernández-Alonso (2007) list *Platythelys debilis* from Colombia citing *Triana 1547* (COL) but this specimen is an isotype of *Microchilus trianae* Ormerod. *Aspidogyne debilis* does not occur in Colombia.

Aspidogyne pedicellata (Cogn.) Meneguzzo, Orquidario 26, 3: 90, 2012.

Basionym: *Spiranthes pedicellata* Cogn., in Martius, Fl. Bras. 3, 4: 210, 1895. TYPE: BRAZIL. Sao Paulo: Retiro de Lagem, near Cajuru, 18 March 1857, *A.F. Regnell ser. 3: 1205* (Lectotype here designated: S; Isolectotype: BR, drawing seen).

Synonyms: *Brachystele pedicellata* (Cogn.) Garay, Bot. Mus. Leafl. Harv. Uni. 28, 4: 304, 1982.

Platythelys pedicellata (Cogn.) Szlach., Fragm. Fl. Geobot., Suppl. 3: 115, 1995.

Wullschlaegelia paranaensis Krzl., Svensk Vet. Akad. Handl. 46, 10: 42, 1911. TYPE: BRAZIL. Parana: Sao Joao, March 1910, *P.K.H. Dusen 9347* (Holotype: S, not seen).

Physurus paranaensis (Krzl.) Schltr., Rep. Sp. Nov. Regni Veg. 16: 329, 1920.

Erythrodes paranaensis (Krzl.) Pabst, in Angely, Fl. Parana 6: 11, 1956.

Platythelys paranaensis (Krzl.) Garay, Bradea 2, 28: 197, 1977.

Distribution: Brazil.

Specimens examined: BRAZIL. Minas Gerais: Serra do Cipó, ca. 145 km N of Belo Horizonte, near KM 120, 1200 m, 14 February 1968, *H.S. Irwin, H. Maxwell & D.C. Wasshausen 20048* (F, US). Paraná: Quatro Barras, Rio Taquari, 24 January 1965, *G. Hatschbach 12339* (F).

This taxon is the only "leafless" (the leaves are reduced to small scales) species of Goodyerinae in the Americas.

Aspidogyne querceticola (Lindl.) Meneguzzo, Orquidario 26, 3: 90, 2012.

Basionym: *Physurus querceticola* Lindl., Gen. Sp. Orch. Pl.: 505, 1840. TYPE: UNITED STATES OF AMERICA. Louisiana: New Orleans, in oak forest, *R.T. Ingalls s.n.* (Holotype: K-L). Fig. 1.

Synonyms: *Microchilus querceticola* (Lindl.) D. Dietr., Syn. Pl. 5: 167, 1852.

Goodyera querceticola (Lindl.) Chapman, Fl. South. U.S., ed.1: 463, 1860.

Anoectochilus querceticola (Lindl.) W. Rollisson, Gen. Catal., Orch.: 9, 1876–78.

Orchiodes querceticola (Lindl.) Kuntze, Rev. Gen. Pl. 2: 675, 1891 as *"quercilobum"*.

Erythrodes querceticola (Lindl.) Ames, Orch. 5: 29, 1915.

Platythelys querceticola (Lindl.) Garay, Bradea 2, 28: 197, 1977.

Physurus vaginatus W.J. Hook., Icon. Plant. 5: t.449, 1841. TYPE: GUATEMALA. Without locality, *G.U. Skinner s.n.* (Holotype: K; Isotype: K-L).

Erythrodes vaginata (W.J. Hook.) Ames, Orch. 5: 29, 1915.

Platythelys vaginata (W.J. Hook.) Garay, Bradea 2, 28: 198, 1977.

Aspidogyne vaginata (W.J. Hook.) Meneguzzo, Orquidario 26, 3: 91, 2012.

Physurus sagreanus A. Rich., in Sagra, Hist. Nat. Cuba, Bot. 11: 253, 1850. TYPE: CUBA. Without locality, 1836, *M.R. de la Sagra s.n.* (Holotype: P, photo seen; Isotype: W-R, photo seen).

Erythrodes sagreanus (A. Rich.) Ames, Orch. 5: 29, 1915.

Platythelys sagreanus (A. Rich.) Garay, Bradea 2, 28: 197, 1977.

Aspidogyne sagreana (A. Rich.) Meneguzzo, Orquidario 26, 3: 91, 2012.

Physurus maculatus W.J. Hook., Curtis's Bot. Mag. 88: t.5305, 1862. TYPE: ECUADOR. Esmeraldas: without locality, *R. Cross s.n.* (Holotype: lost). Lectotype (Garay 1978): Plate 5305 in Curtis's Bot. Mag. 88, 1862.

Erythrodes maculata (W.J. Hook.) Ames, Orch. 7: 72, 1922.

Platythelys maculata (W.J. Hook.) Garay, Bradea 2, 28: 197, 1977.

Aspidogyne maculata (W.J. Hook.) Meneguzzo, Orquidario 26, 3: 90, 2012.

Physurus commelynifolius Rchb.f., Flora 48: 274, 1865. TYPE: CUBA. Without locality, *C. Wright 3294* (Holotype: W-R, not seen; Isotypes: G, K, NY, S).

Physurus jamaicensis Fawc. & Rendle, J. Bot. (Lond.) 47: 264, 1909. TYPE: JAMAICA. Olive River, near Christiana, 1065 m, 12 October 1901, *W. Harris 10472* (Holotype: BM, photo seen).

Erythrodes jamaicensis (Fawc. & Rendle) Fawc. & Rendle, Fl. Jamaica 1: 29, 1910.

Physurus mayoriana Krzl., Mem. Sci. Nat. Neuschat. 5: 355, 1914. TYPE: COLOMBIA. Antioquia: near Angelopolis, between the La Camelia Coffee Plantation and the Río Amaga, 1200–1400 m, August 1910, *E. Mayor 327* (Holotype: Z, photo and drawing seen).

Erythrodes mayoriana (Krzl.) Ames, Orch. 7: 72, 1922.

Platythelys mayoriana (Krzl.) Garay, Bradea 2, 28: 197, 1977.

Aspidogyne mayoriana (Krzl.) Meneguzzo, Orquidario 26, 3: 90, 2012.

Physurus humidicola Schltr., Rep. Sp. Nov. Regni Veg. 15: 198, 1918. TYPE: GUATEMALA. Chilion, near Mazatenango, August 1867, *G. Bernoulli & R. Cario 477* (Holotype: B, destroyed; Isotypes: BASEL, K).

Physurus trilobulatus Schltr., Rep. Sp. Nov. Regni Veg. 15: 199, 1918. TYPE: GUATEMALA. Huehuetenango: between Santa Cruz Almor and Ixcan, September 1876, *G. Bernoulli & R. Cario 852* (Holotype: B, destroyed; Isotype: BASEL).

Erythrodes trinitatis Ames, Orch. 7: 76, 1922. TYPE: TRINIDAD. St. Anne's, 1888, *W.E. Broadway s.n.* (Holotype: NY, not seen; drawing AMES).

Physurus parviflorus Schltr., Rep. Sp. Nov. Regni Veg. 21: 334, 1925. TYPE: MEXICO. Veracruz: Barranca de Zacuapan, 900 m, December 1922, *C.A. Purpus 71* (Holotype: B, destroyed).

Satyrium latifolium L., Fl. Jam.: 20, 1760 *nom. nud.*

BASIS FOR NAME: JAMAICA. Without locality, *Brown s.n.* (LINN 1055.6) *Platythelys latifolia* Garay & Ormerod, Lindleyana 17, 4: 226, 2002 *nom. nud. Satyrium plantagineum* auct. non L. (June 1759), L., Pl. Jam. Pugillus: 25, November 1759.

Distribution: SE United States of America; Caribbean Islands; Mesoamerica to Ecuador; Venezuela; Trinidad; French Guiana.

Select specimens examined: UNITED STATES OF AMERICA. Louisiana: West Feliciana Parish, ca. 1.6 km W of Plettenberg Post Office, 22 August 1938, *D.S. & H.B. Correll 10474* (DUKE, US). Florida: Lafayette County, 5.6 km SW of Cooks Hammock, Britt Creek floodplain, ca. 1.2 km N of junction with Kettle Creek, 22 July 2002, *J.R. Abbott 17366* (SEL); Dade County, Everglades, Royal Palm Hammock, 26 January 1909, *J.K. Small & J.J. Carter s.n.* (G, GB). BAHAMAS. Andros, Long Bay Cays section, near Deep Creek, Pineland, 20–22 January 1910, *J.K. Small & J.J. Carter 8567* (US). CUBA. Pinar del Rio: Cayajabos, near Artimisa, November 1902, *O. Ames s.n.* (K). DOMINICAN REPUBLIC. Barattona: Parodis, 50 m, October 1910, *P.M.D. Fuertes 522* (G). GUADELOUPE. Baptistau, 18 March 1939, *A. Questal 2017* (US). MARTINIQUE. Without locality, 1879, *P. Duss 673A* (US). MONTSERRAT. Near Roehrs, 610 m, 13 February 1907, *J.A. Shafer 690* (NY). MEXICO. Tamaulipas: Sierra de Tamaulipas, Los Cerritos, above Guadelupe Victoria, Laguna del Sapo, W of Las Yucas, 21 July 1957, *R.L. Dressler 1948* (AMES). Jalisco: Quimixto, trail to San Pedro el Tuito, 60 m, 2 December 1926, *Y. Mexia 1232* (AMES, US). Nayarit: near Yago, N of Tepic, 300 m, 2 December 1935, *K.E. Oestlund 5133* (AMES, US). Veracruz: Barranca de Zacuapan, December 1916, *C.A. Purpus 7817* (AMES, US). Chiapas: Rio Salinas, 8 February 1964, *C.L. Lundell 17826* (F). GUATEMALA. Alta Verapaz, Pansamala, 1160 m, August 1886, *H. von Tuerckheim 398 (= J.D. Smith 1015)* (K, US); Quezaltenango, Colomba, 790 m, 29 September 1934, *A.F. Skutch 1350* (K). BELIZE. Cayo district, Caves Branch, 200 m, 4 February 1980, *B.R. Adams 228* (K). HONDURAS. Atlantida, Lancetilla Valley, near Tela, 600 m, 6 December 1927 to 20 March 1928, *P.C. Standley 52649* (US). EL SALVADOR. Guazapa, 1200 m, 7 September 1975, *H. Horchner 510* (AMES). NICARAGUA. Chontales, 1867–1868, *R. Tate 463 (163)* (K). COSTA RICA. San Jose: Braulio Carillo National Park, 1600–1625 m, 20 September 1990, *S. Ingram & K. Ferrell 535*

(F). COLOMBIA. Antioquia: Medellin, Tulio Ospina Experimental Station, 6 September 1936, *W.A. Archer 1628* (US). ECUADOR. Guayas: Teresita, 3 km W of Bucay, 270 m, 5–7 July 1923, *A.S. Hitchcock 20519* (US). Los Rios: Rio Palenque Biological Station, 150–220 m, 30 June 1990, *C.H. Dodson 6015* (MO, SEL).

I have compared specimens from throughout the range of this orchid and cannot find characters that would break it up into species (Figure 1 compares floral parts of plants from Florida and Ecuador). There do seem to be some distinct populations or races which are probably maintained by either apomixis or a form of self-fertilization. For example one can observe a type form (Louisiana, C & N Florida) and a Caribbean form (Caribbean Islands, S Florida) (see Brown, 2002). None of these plants has maculated leaves. However in Mesoamerica and South America forms with maculated leaves may be observed. Plain leaved plants are also found throughout the range of the latter. A plain leaved plant collected from the Mexican State of Tamaulipas (a State that borders Texas, U.S.A.) is an interesting isolated record and gives credence to the possibility that the species might occur in Texas. Thus as here defined *A. querceticola* can have plain or maculated leaves, flowers with an obovoid spur, a hypochile in which the sides are angled towards the base of the epichile, and a transversely elliptic, trilobulate epichile.

Some nomenclatural investigation is required into the synonymy of *A. querceticola*. The name *Goodyera querceticola* was first coined by Lindley in 1839 (Bot. Reg. 25, misc. 20 sub *Cheirostylis parvifolia* Lindl.), but he supplied no description. The combination *Anoectochilus querceticola* I have accredited to Rollisson in 1876–1878 but there is likely an earlier transfer. I am uncertain about the status of the citation *Anoectochilus querceticola* Veitch ex R. Hogg, Gard. Year Book: 64, 1862 since I have not seen the publication.

The collector of the Jamaican specimen that is the basis for the name *Satyrium latifolium* is simply cited as Brown. It is unknown if this is Patrick Browne who also collected in Jamaica prior to 1759.

Aspidogyne umbraticola (Garay) Meneguzzo, Orquidario 26, 3: 90, 2012.

Basionym: *Ligeophila umbraticola* Garay, Bradea 2, 28: 195, 1977. TYPE: COLOMBIA. Amazonas: Trapecio Amazónico, Loretoyacu River, 100 m, September to November 1944, *R.E. Schultes 6084* (Holotype: AMES).

Synonym: *Erythrodes umbraticola* (Garay) P. Ortiz, Orquid. Colomb. ed. 2: 266, 1995.

Distribution: Colombia; Peru; Bolivia.

Specimens examined: PERU. Loreto: Río Yuveneto, a tributary of the Río Putumayo, Secoya Indian's territory, old meander lake of the Río Yuveneto, 500 m S of the left hand river bank, upstream of Bellavista Village, 8 January 1978, *S. Barrier 301* (P). BOLIVIA. Pando, Madre de Dios, Jatata, 130 m, 26 July 1992, *R. Rueda 932* (MO).

The specimens from Bolivia and Peru appear to represent new records for those countries. *Aspidogyne umbraticola* will probably also be found in Amazonian Brazil and Ecuador.

Microchulus Presl

This is a genus of about 135 species (including new taxa described herein). During work for the Flora of Ecuador project I found that *M. crassibasis* Ormerod is conspecific with the earlier *M. oroensis* (Dodson) Ormerod, and that *M. integrus* Ormerod does not have an entire labellum and is conspecific with *M. ecuadorensis* (Garay) Ormerod. However two new Ecuadorian species have been identified and these will be described in author's treatment of the Goodyerinae for the Flora of Ecuador. The new taxa described here all come from Colombia, a country from which I expect several more novelties remain to be described.

Microchilus boyacanus Ormerod, *sp. nov.*

TYPE: COLOMBIA. Boyacá: without locality, *A.E. Lawrance 324* (Holotype: AMES). Fig. 2.

Affinis M. campanulatus Ormerod *sed sepalis dorsalis angustioribus (1.4 vs. 2.0 mm) et columna brevioribus (2.3–2.6 vs. 2.8–3.5 mm) differt.*

Erect herb. Rhizome creeping, apical quarter ascendant, terete, rooting at nodes, 12.5 cm long, 0.15–0.40 cm thick; internodes 1.5–3.0 cm long. Stem terete, 5 leaved, 12 cm long, 0.3–0.4 cm thick; internodes 1.8–3.3 cm long. Leaves narrowly elliptic to obovate-elliptic,

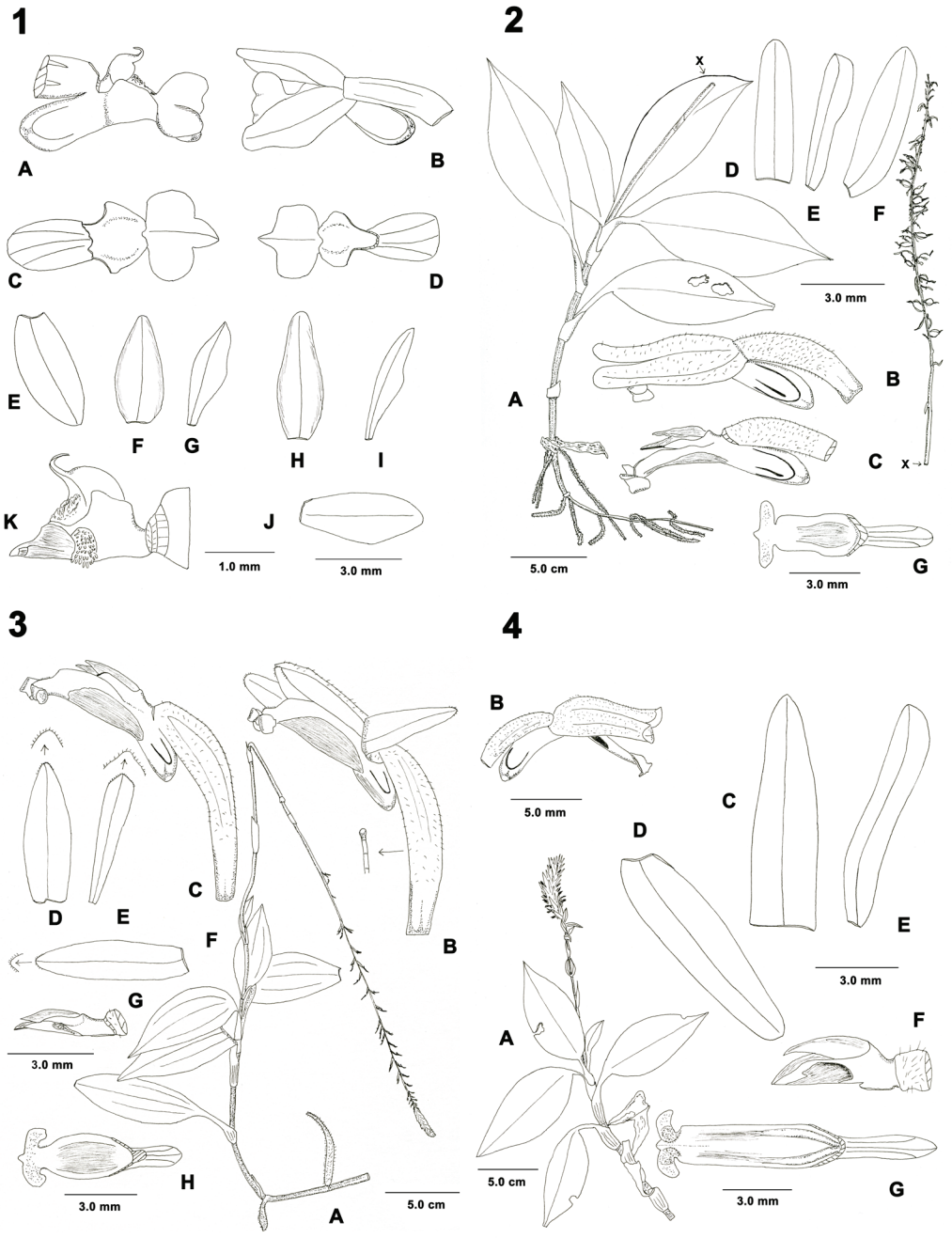

FIGURE 1. *Aspidogyne querceticola* (Lindl.) Meneguzzo. **A**, flower minus tepals; **B**, flower; **C–D**, labella; **E**, **J**, lateral sepals; **F**, **H**, dorsal sepals; **G**, **I**, petals; **K**, column. A, C, E, F–G, K drawn from *Abbott 17366* (SEL), B, D, H–J from *Dodson 6015* (SEL). FIGURE 2. *Microchilus boyacanus* Ormerod. **A**, plant; **B**, flower; **C**, flower minus tepals; **D**, dorsal sepal; **E**, petal; **F**, lateral sepal; **G**, labellum and spur. Drawn from holotype. FIGURE 3. *Microchilus callejasii* Ormerod. **A**, plant; **B**, flower; **C**, flower minus tepals; **D**, dorsal sepal; **E**, petal; **F**, lateral sepal; **G**, column; **H**, labellum and spur. Drawn from holotype. FIGURE 4. *Microchilus quetamensis* Ormerod. **A**, plant; **B**, flower; **C**, dorsal sepal; **D**, lateral sepal; **E,** petal; **F**, column; **G**, labellum and spur. Drawn from holotype.

subacuminate, 8.9–11.7 cm long, 3.95–4.70 cm wide; petiole and sheath 3.2–4.5 cm long. Inflorescence pubescent, 45 cm long; peduncle 23.3 cm long; sheathing bracts 6, 1.1–3.2 cm long; rachis subdensely many flowered, 21.7 cm long; floral bracts ovate-lanceolate, acute, to 8.5 mm long, 1.5–2.0 mm wide. Pedicellate ovary subcylindric, pubescent, 5.5 mm long. Flowers externally pubescent, color unknown. Dorsal sepal oblong-lanceolate, obtuse, 4.5 mm long, 1.4 mm wide. Lateral sepals obliquely oblong, obtuse, 5 mm long, 1.4 mm wide. Petals ligulate-oblanceolate, subacute, 4.4 mm long, 0.95 mm wide. Labellum spurred, trilobed, joined to column for ca. 1 mm; spur oblongoid, obtuse, ca. 2.8 mm long; hypochile rectangular-subpandurate, somewhat fleshy in basal half, ca. 2.9 mm long, 1.75 mm wide basally, 1.4 mm wide medially, 1.5 mm wide subapically, 0.8 mm wide apically; epichile transversely oblong-ligulate, papillose-pubescent, 0.8–0.9 mm long, 2.8 mm wide; lobules oblong, obtuse, 0.6–0.7 mm wide. Column 2.3 mm long to tips of brachia, 2.6 mm long to tips of pollinia.

Distribution: Colombia.

Etymology: Named after the place of origin, Boyaca State, Colombia.

This species is probably related to the Venezuelan and Guyanese *M. campanulatus* Ormerod but differs from it in having a narrower (1.4 vs. 2.0 mm) dorsal sepal, narrower (0.6–0.7 vs. 1.0–1.2 mm) epichile lobules and a shorter (2.3–2.6 vs. 2.8–3.5 mm) column.

Microchilus callejasii Ormerod, *sp. nov.*

TYPE: COLOMBIA. Antioquia: Municipio Sonsón, via Sonsón to La Soledad, 1.1 km on the main road, toward Manzanares, 2800 m, 8 April 1988, *R. Callejas, J.L. Luteyn & J. Betancur 6357* (Holotype: GH). Fig. 3.

Affinis M. dolichostachys (Schltr.) Ormerod *sed epichilo labello latioribus (2.60 vs. 2.25 mm) et hypochilo latioribus (2 vs. 1 mm) differt.*

Occasional, shade loving, terrestrial herb. *Rhizome* creeping, terete, rooting at nodes, fragment ca. 6.5 cm long, 0.25–0.45 cm thick; internodes to 3.5 cm long. *Stem* erect, terete, 5 leaved (with 1–2 leaves displaced on peduncle), lowest internode occasionally rooting, 11.5–19.5 cm long, 0.20–0.45 cm thick; internodes 1.5–4.0 cm long. *Leaves* obliquely oblong to ovate-lanceolate, subacuminate, 5.2–8.2 cm long, 2.1–2.9 cm wide; petiole and sheath 1.0–2.9 cm long. *Inflorescence* pubescent, 37.5–43.4 cm long; peduncle 22.3–25.5 cm long; sheathing bracts lax, 4–5, lowest one subfoliaceous (to 2.80 × 0.85 cm, to 1.2 cm wide), rest 1.0–2.2 cm long; rachis laxly to sublaxly many flowered, 15.2–17.9 cm long; floral bracts ovate-lanceolate, acute, to 7.5 mm long, 3 mm wide. *Pedicellate ovary* clavate, pubescent, ca. 6.5 mm long. *Flowers* white, externally pubescent. *Dorsal sepal* oblong-lanceolate, obtuse, apex minutely ciliate, 4.4 mm long, 1.6 mm wide. *Lateral sepals* obliquely oblong-lanceolate, obtuse, apex minutely ciliate, 4.9 mm long, 1.25 mm wide. *Petals* ligulate-oblanceolate, subacute, apex minutely ciliate, 4.3 mm long, 0.93 mm wide. *Labellum* spurred, trilobed, joined to column ca. 1.5 mm; spur oblongoid, obtuse, 1.5 mm long, 0.9 mm wide laterally; hypochile elliptic, ca. 3 mm long, 2 mm wide, apical constricted area ca. 0.5 mm long, 0.9 mm wide; epichile minutely papillose-pubescent, 0.8 mm long, 2.6 mm wide, lobules oblong, falcate, truncate to obtuse, ca. 1 mm long, 0.6 mm wide. *Column* slender, ca. 2.8 mm long (to tip of anther cap).

Distribution: Colombia.

Eponymy: Named after Ricardo Callejas Posada, significant contributor to the flora of Colombia (especially Antioquia) and co-collector of the type.

This species appears to be a close relative of its Colombian congener *M. dolichostachys* (Schltr.) Ormerod but differs from it in having flowers with a wider (2.60 vs. 2.25 mm) epichile with falcate (not straight) lobules, and a wider (2 vs. 1 mm) hypochile.

Microchilus familiaris Ormerod, Harvard Pap. Bot. 14, 2: 121, 2009.

TYPE: CUBA. Oriente: Sierra Maestra, Río Oro, 600 m, 28 March 1915, *E.L. Ekman 5103* (Holotype: S).

Distribution: Cuba, Dominica, Dominican Republic, Guadeloupe, Haiti, Martinique, Montserrat, Puerto Rico, Saint Lucia, and Saint Vincent.

Specimens examined: CUBA. Oriente: Serra de Nipe, Loma Mensura, 7 April 1941, *Brother Leon 19932* (AMES). DOMINICA. Roseau Valley, near hot springs, 27 May to 2 June 1950, *R.A. Howard 11745* (AMES); Carib Reserve, along Carib trail from Salybia to Concorde Valley (Roseau Track), 1 May 1940, *W.H. & B.T. Hodge 3233* (AMES); Lisdara, 455 m, 27 March 1940, *W.H. Hodge 2363 p.p.*

(AMES, GH); South Chiltern Estate, between Pointe Michel and Soufriere Bay, 455 m, 13 May 1965, *W.R. Ernst 1317* (GH). HAITI. Riviere Glace, 670 m, September 1945, *J.T. Curtis 32 p.p.* (AMES). JAMAICA. Portland Parish, Lawrence Bottom, 90 m, flowered at Mona, 7 April 1941, *C.D. Adams 9399* (AMES). MONTSERRAT. W slope, Soufriere Hills, between Gages Upper Soufriere and Spring Ghaut, 1.5 km from Plymouth, Parish St. Anthony, 150 m, 15 April 1976, *B.R. Adams M3* (A). PUERTO RICO. Isabella, Bo. Planas, Guajataca Reserva Forestal, Vereda Juan Pérez, 24 April 1996, *M. Nir 50* (GH). SAINT LUCIA. Slopes of Gros Piton, 22 April to 18 May 1950, *R.A. Howard 11500 p.p.* (A); Savanne Edmund District, SE of Piton Troumassee, 550–610 m, 22–23 April 1958, *G. Proctor 17701* (AMES); Quilesse, 455 m, 14 April 1958, *G. Proctor 17651* (AMES); Quilesse, en route to Piton St. Esprit, 22 April to 18 May 1950, *R.A. Howard 11620* (A, AMES); Fond Sr. Jacques, 610 m, January 1970, *B.M. Sturrock 670* (A). SAINT VINCENT. Charlotte Parish, Perseverance, 12 April 1962, *G.R. Cooley 8623* (GH).

The above collections are in addition to those cited in the protologue. Feldmann (2011) and Vaslet & Feldmann (2012) provide photographs of the habitat and close-up images of the flowers of *M. familiaris* and its ally *M. hirtellus* (Sw.) D. Dietr.

Microchilus quetamensis Ormerod, *sp. nov.*

TYPE: COLOMBIA. Cundinamarca: Municipio de Quetame, Corregimiento o Vereda de Guayabetal, 1550 m, 15 December 1947, *M. Schneider 415* (Holotype: AMES; Isotypes: AMES, 3 sheets). Fig. 4.

Affinis M. libanoensis Ormerod *sed lobulis epichilo ovato-falcatis (non recto-ellipticis), hypochilo bicarinatis (non ecarinatis) et columna longioribus (3.9 vs. 3.0 mm) differt.*

Terrestrial *herb*. *Rhizome* creeping, terete, rooting at nodes, occasionally bearing one leaf, 12–35 cm long, 0.2–0.7 cm thick; internodes 1.0–5.5 cm long. *Stem* erect, terete, 5–9 leaved, at least 13 cm long, 0.45–0.85 cm thick; internodes 2.2–5.0 cm long. *Leaves* obliquely elliptic, subacuminate, 6.5–14.2 cm long, 2.85–5.95 cm wide; petiole and sheath 2.1–4.0 cm long. Inflorescence pubescent, 20.7 cm long; peduncle 12.2 cm long; sheathing bracts lax, 4–5, lowest one subfoliaceous (to 3.4 × 1.3 cm, petiole and sheath 2.8 cm long), 1.5–3.4 cm long; rachis densely flowered, 8.5 cm long; floral bracts somewhat sheath-like at first, to 22 mm long, upper 'normal' bracts broadly ovate, subacuminate, to 15 mm long, 6 mm wide. *Pedicellate ovary* subcylindric, densely pubescent, ca. 6.2 mm long. *Flowers* brownish green, externally pubescent. *Dorsal sepal* lanceolate, obtuse, 7.4 mm long, 2.1 mm wide. *Lateral sepals* obliquely oblong-lanceolate, obtuse, 7.5–7.6 mm long, 1.95–2.00 mm wide. *Petals* obliquely ligulate, subacute, 7.4 mm long, 1.5 mm wide. Labellum spurred, trilobed, joined to column for 1.5 mm; spur clavate-oblongoid, subacute, 4 mm long, 1.4 mm wide laterally, ca. 1 mm wide dorsally; hypochile rectangular, basal half with two thick keels that meet basally in a V, 5.3–5.4 mm long, 1.9 mm wide basally, 1.6 mm wide apically; epichile ca. 1 mm long, 2.6 mm wide, lobules ovate, obtuse to subacute, weakly falcate, papillose-pubescent, ca. 1 mm long, 0.7 mm wide basally, narrowing to ca. 0.4 mm wide subapically. *Column* stout, ca. 3.9 mm long.

Distribution: Colombia.

Habitat: Shadowy, rather moist wood, 1550 m.

Etymology: Named after the type locality, Municipio de Quetame.

This species appears to be a close relative of its Colombian congener *M. libanoensis* Ormerod but differs from it in having flowers with ovate, weakly falcate (vs. straight, elliptic, obtuse) epichile lobules, a thickly bicarinate (vs. ecarinate) hypochile and a longer (3.9 vs. 3.0 mm) column.

Microchilus schneideri Ormerod, *sp. nov.*

TYPE: COLOMBIA. Cundinamarca: Municipio de Quetame, Corregimiento o Vereda de Guayabetal, Finca La Teresita, 1650 m, 15 December 1948, *M. Schneider 430* (Holotype: AMES). Fig. 5.

Species nova subsimilis M. kuduyariensis Ormerod *sed epichilo angustioribus (3.7 vs. 6.0 mm), calcar ellipsoideis (vs. anguste oblongoideis) et columna brevioribus (2.6 vs. 3.0 mm) differt.*

Terrestrial *herb*. *Rhizome* creeping, terete, rooting at nodes, 4.3–4.5 cm long, 0.30–0.45 cm thick; internodes 0.45–1.15 cm long. *Stem* erect, terete, laxly 4–6 leaved, 4.9–9.0 cm long, 0.30–0.45 cm thick; internodes 0.9–1.9 cm long. *Leaves* lanceolate to ovate-lanceolate, acute,

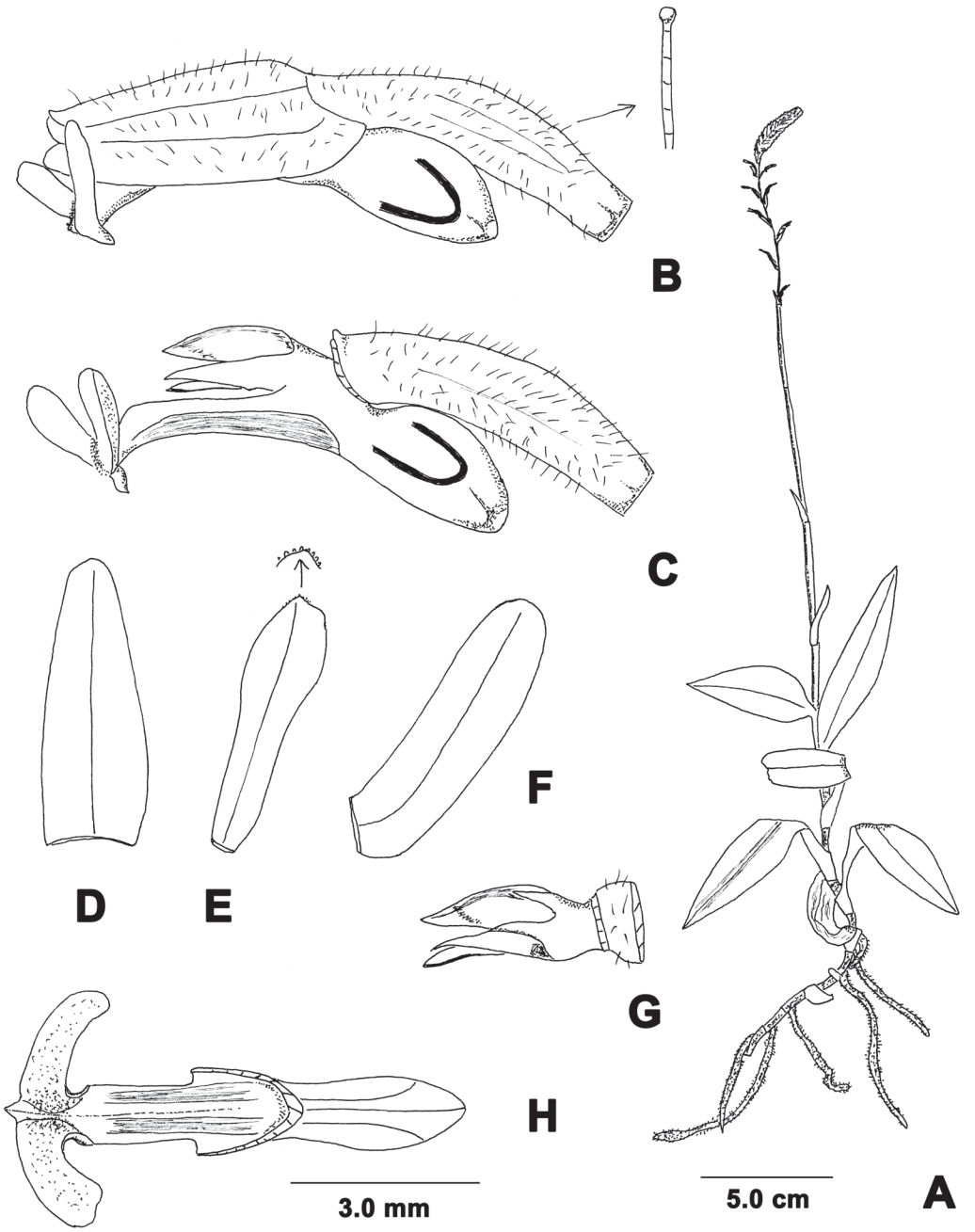

FIGURE 5. *Microchilus schneideri* Ormerod. **A**, plant; **B**, flower; **C**, flower minus tepals; **D**, dorsal sepal; **E,** petal; **F**, lateral sepal; **G**, column; **H**, labellum and spur. Drawn from holotype.

possibly with a whitish centre stripe, 5–7 cm long, 1.30–1.95 cm wide; petiole and sheath 1.6–2.2 cm long. *Inflorescence* pubescent, 19.0–25.5 cm long; peduncle 13–17 cm long; sheathing bracts lax, 3, 1.85–2.20 cm long; rachis laxly flowered, 6.0–8.5 cm long; floral bracts broadly lanceolate, acute, 8–9 mm long, 3 mm wide. *Pedicellate ovary* clavate to subterete-fusiform, pubescent, 5.0–7.5 mm long. *Flower* color unknown, laxly pubescent externally. *Dorsal sepal* oblong-lanceolate, obtuse, 4 mm long, 1.7 mm wide. *Lateral sepals* obliquely oblong, obtuse, to 4.8 mm long basally, 4.0–4.2 mm long medially, 1.2 mm wide. *Petals* obliquely ligulate-oblanceolate, subacute-obtuse, apical margin minutely papillose, 3.95 mm long, 1.1 mm wide. *Labellum* spurred, trilobed, joined to column and ovary for 2 mm; spur ellipsoid, obtuse, 2.5 mm long, 1.4 mm wide laterally; hypochile rectangular, 2 mm long, 1 mm wide; epichile transversely ligulate, minutely papillose-pubescent, more so centrally, 0.9 mm long, 3.7 mm wide, lobules rectangular, weakly falcate, obtuse to truncate, ca. 1.70 mm long, 0.75 mm wide. Column 2.6 mm long.

Distribution: Colombia.

Habitat: Shadowy wood, 1650 m.

Eponymy: Named after Martin Schneider, collector of the type.

This species is a member of the *M. arietinus* (Rchb.f. & Warming) Ormerod complex, a rare group in Colombia. It is perhaps most similar to *M. kuduyariensis* Ormerod from the lowlands of Amazonian Colombia but differs from that in having flowers with a narrower (3.7 vs. 6.0 mm) epichile, a broader, ellipsoid (vs. narrower, narrowly oblongoid) spur and a shorter (2.6 vs. 3.0 mm) column.

Literature Cited

Brown, P.M. 2002. Wild Orchids of Florida. University Press of Florida, U.S.A.

Dueñas-Gomez, H.C. and J.L. Fernández-Alonso. 2007. Sinopsis de la Subfamilia Spiranthoideae (Orchidaceae) en Colombia, Parte I. Revista Acad. Colomb. Cienc. Exact., Fisic. & Nat. 31, 118: 5–27.

Feldmann, P. 2011. Orchidees Sauvages des Antilles. PLB Editions, France.

Meneguzzo, T. E. C. 2012. Mudanças nomenclaturais em Goodyerinae do Novo Mundo (Orchidaceae). Orquidário 26, 3: 86–91.

Ormerod, P. 2005. Studies of Neotropical Goodyerinae (Orchidaceae). Harvard Pap. Bot. 9, 2: 391–423.

———. 2007. Studies of Neotropical Goodyerinae (Orchidaceae) 2. Harvard Pap. Bot. 11, 2: 145–177.

———. 2008. Studies of Neotropical Goodyerinae (Orchidaceae) 3. Harvard Pap. Bot. 13, 1: 55–87.

———. 2009 a. Notulae Goodyerinae (IV). Taiwania 54, 1: 45–51.

———. 2009 b. Studies of Neotropical Goodyerinae (Orchidaceae) 4. Harvard Pap. Bot. 14, 2: 111–128.

Vaslet, D. and P. Feldmann. 2012. Quand un *Microchilus* en cache un autre: *Microchilus hirtellus* (Sw.) D. Dietr. (*Goodyerinae*), nouvelle espece pour la flore de Guadeloupe, Dominique, Montserrat et Saint-Vincent (Petites Antilles). L'Orchidophile 192: 17–27.