Moutabea gentryi (Polygalaceae), a New Species of Lianafrom Central America and Colombia

Author: Wendt, Tom

Source: Lundellia, 2000(3) : 6-12

Published By: The Plant Resources Center, The University of Texas at Austin

URL: https://doi.org/10.25224/1097-993X-3.1.6

MOUTABEA GENTRYI (POLYGALACEAE), A NEW SPECIES OF LIANA FROM CENTRAL AMERICA AND COLOMBIA

Tom Wendt

Plant Resources Center, The University of Texas, Austin, Texas 78712

Abstract: The new species **Moutabea gentryi**, known from Costa Rica, Panama, and northwestern Colombia, is the northernmost member of its genus and the only species of *Moutabea* known from Central America. It is related to *M. aculeata* of the western Amazon basin but is distinguished by features of venation, leaf surface texturing, petiole color, and calyx pubescence. Study of the types of *M. aculeata* and *M. longifolia* indicates that the latter is a synonym of the former. Problematic populations and probably undescribed taxa related to *M. aculeata* and *M. gentryi* exist in western South America.

Resumen: La especie nueva *Moutabea gentryi* se conoce de Costa Rica, Panamá, y el noroeste de Colombia, y representa la extensión más septentrional del género y la única especie centroamericana. La especie más emparentada parece ser *M. aculeata* de la parte occidental de la cuenca del río Amazonas, pero las dos especies se distinguen por rasgos de la venación, la microtopografía de la superficie de la hoja, el color del pecíolo, y la pubescencia del cáliz. Un estudio de los tipos de *M. aculeata* y *M. longifolia* indica que éste es sinónimo de aquél. En el oeste de Sudamérica existen poblaciones problemáticas y probables taxones no descritos relacionados con *M. aculeata* y *M. gentryi*.

Keywords: *Moutabea*, Polygalaceae, flora, Costa Rica, Panama, Colombia.

Moutabea (Polygalaceae) is a small genus of Neotropical rain forest lianas, the taxonomy of which has been little studied and remains poorly understood. A brief survey of material of this genus at the U.S. National Herbarium has convinced the author that, while several of the eight legitimate published epithets are probably synonyms, several more undescribed South American species await study and description. In most cases, such work must be done as part of an overall revision of the group, since the identity and circumscription of the described species are in some cases quite unclear, and more collections and especially field observations are needed. However, in preparing treatments of Polygalaceae for Central American floras, it was found that the single species occurring in Central America clearly does not correspond to any published species and thus is here described.

Moutabea gentryi T. Wendt sp. nov. (Fig. 1).

TYPE: PANAMA: [Prov. Panamá]: Pacific slope of the Cordillera de San Blas, headwaters of the Río Piria (Piriati); 9°12′N, 78°16′W, elev. 200–300 m, 28 Feb 1992 (fl), *H. Herrera, J. Mojica & J. Morris 1151* (HOLOTYPE: TEX!; ISOTYPES: CR!, MEXU!, MO!, PMA!).

Species laminis foliorum ramorum fertilum obovatis glabris 9–23 × 3–8.5 cm, venis lateralibus subtus manifestis non impressis plerumque prominentibus, superficiebus ambabus folii in sicco verruculis minutis plerumque ca. 0.1–0.2 mm diam. discretis vel constipatis instructis a congeneribus diversa.

High-climbing LIANA. TWIGS stiff, minutely puberulous (sometimes very sparsely and obscurely so) when young, soon ± glabrate, to 7 mm thick in leaf-bearing portion, the youngest smooth-striate but soon abundantly minutely roughened like leaves, eventually epidermis splitting and aging to a light brown to reddish-grayish-brown exterior; 2 annular GLANDS (extrafloral nectaries) at each node in the stipular position, ca. 0.2

mm diam. but generally on a more or less raised pad 1–2 mm in diam., in young stems the entire area around the petiole base (including glands and axillary bud) more or less swollen and rugose-warty. AXILLARY BUDS at first very low, rounded, obscure structures enclosed by 2 opposing bracts, these much broader than long, broadly rounded, to 1 mm long, the buds more often slightly expanded into ovoid or spherical structures ca. 2–3 mm long including the spirally arranged lanceolate cataphylls on an unexpanded axis. BRACTS and CATAPHYLLS all minutely puberulent; base and lower portion of elongated vegetative axis with scattered indurate cataphylls giving a subspinose aspect, these mostly 2–3 mm long, lanceolate or lance-ovate, acute, a few often persisting as blunt very short spines. PETIOLE thick, rugulose, green, golden-brown or brown, not becoming prominently dark reddish-brown, on fertile branches 3–9 mm long, 2–3.5(–4) mm thick, slightly flattened but not markedly canaliculate adaxially, at first minutely puberulous but usually soon glabrate. LEAF BLADE obovate to obovate-oblong, often narrowly so, subcoriaceous, on fertile branches mostly 9–23 × 3–8.5 cm (rarely to at least 33 × 12 cm, like sterile-branch leaves), 2.3–3.7 times as long as wide, the base acute to rounded, the apex usually acute or narrowly rounded or with drip-tip; VENATION eucamptodromous or subbrochidodromous, distally brochidodromous, the midvein adaxially slightly raised basally and more or less plane distally, abaxially raised, the lateral veins 9–13(–15) per side, sometimes some obscure, arising at a 40–80 degree angle from midrib, regularly or irregularly lightly impressed to plane above, obvious and plane to raised (never uniformly distinctly impressed) below, scattered intersecondaries usually present, the tertiary venation generally not visible. LEAF SURFACE of very young leaves with very minute scattered puberulence below but soon glabrous (or very scattered hairs persistent on midrib), in mature leaves densely to nearly continuously minutely roughened with punctiform cystolith-like protuberances when dry (these, when separate, ca. 0.1–0.2 mm diam.), abaxially with scattered extrafloral nectaries similar to but generally ca. 1/2 the size of the stipular ones concentrated toward the margin; MARGIN narrow, cartilaginous, not prominently thickened or inrolled. FLUSHING LEAVES bluish. RACEMES single (rarely 2) in axils of present or fallen leaves, the axis 8–40 mm long, minutely puberulous with incurved to ± spreading hairs < 0.1 mm long; BRACTS and BRACTEOLES pale-indurate at least distally, unevenly puberulent on both surfaces with hairs like axis, densely so and often prominently ciliolate distally, the bracts 1.5–3.5 mm long, lanceolate or lance-ovate from an expanded base, the latter with 1(2) pairs of annular glands, several sterile bracts crowded at base and scattered along lowermost axis, the bracteoles 1–2 mm long, bluntly lanceolate or lance-ovate, some with a pair of glands; PEDICELS 1–3 mm long, thick, minutely spreading-puberulous with hairs < 0.05 mm. FLOWERS 14–21 mm long (all floral measurements from rehydrated material), fragrant; FLORAL TUBE and CALYX green to yellow, carnose, the tube 6–9 mm long, ca. 2–4 mm thick (pressed) at midpoint, sparsely puberulous like pedicel; CALYX LOBES abaxially sparsely puberulous like pedicel, distally more densely so and ciliolate, adaxially densely puberulous with similar short hairs and centrally densely strigose with hairs to 0.3 mm long, the upper lobe 7–9 × 3–4.5 mm, ovate with a narrowly rounded tip, usually thick-textured throughout, the lateral (inner) lobes asymmetrically elliptic-oblong to a blunt, rounded, often cymbiform-cucullate apex, 7–9.5 × 2.5–3.5 mm, usually with asymmetrical thinner-textured pale margins, the lower lobes generally with one more like upper lobe and the other more like lateral lobes in shape, size, and texture, 6–9 × 2–4 mm; PETALS white, glabrous, adherent basally to staminal tube, 8–12 mm long, free tips 5–9 × 1.7–3 mm, narrowly oblong or often with a ± differentiated broad basal claw and a distal obliquely narrowly elliptic to ovate blade, apex round-

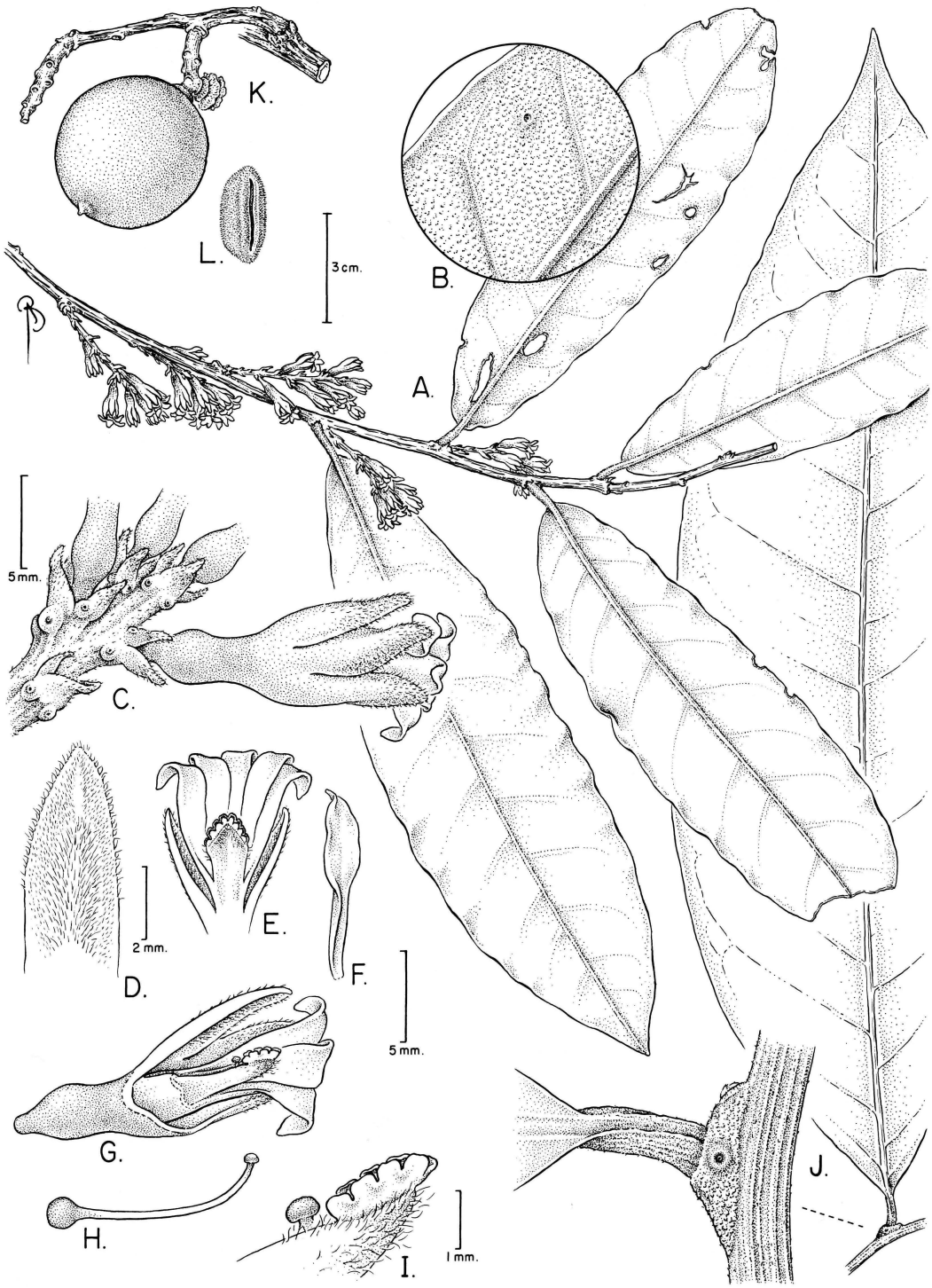

FIG. 1. *Moutabea gentryi*. A. Branchlet with leaves and inflorescences. B. Abaxial leaf surface, showing raised lateral veins, surface texture, and extrafloral nectary. C. Inflorescence axis, showing bracts with extrafloral nectaries, and flower. D. Calyx lobe, adaxial surface. E. Distal portion of flower, splayed open, adaxial view, with adaxial calyx lobe removed. F. Petal. G. Lateral view of

ed or narrowly rounded, abruptly strongly reflexed; STAMINAL TUBE extending ca. 1–2 mm beyond petal attachment and densely pilosulous abaxially in this part; ANTHERS 8, sessile, quadrate, partially coalescent basally, obliquely arranged on tube apex to form a V-shaped structure, the largest (central) ones 0.5–0.8 mm long; OVARY glabrous, ca. 1–1.5 mm long, 4-locular; STYLE glabrous, 7–11 mm long, lightly upwardly curved distally; STIGMA flattened-capitate, included in staminal tube. FRUIT globose, ca. 5 cm diam., yellow to pale orange, glaucous, with abundant fine lenticels; EPICARP crustaceous, ca. 1–2 mm thick when dry; SEEDS 2–2.6 cm long, surrounded by a thin aril; with aril removed, body straight ventrally and broadly rounded dorsally in outline, ca. 1.3 cm thick, surface brown with a very dense mat of hairs > 1 mm long, raphal scar 3/4–4/5 the length of the seed.

ADDITIONAL SPECIMENS EXAMINED: COSTA RICA: **Alejuela:** Along road between Cañas (Guanacaste) and Upala, near Río Zapote, 1.8–2.7 km S of Río Canalete, ca. 100 m, 25 June 1976 (fr), *T. Croat 36358* (MO, US); **Heredia:** Finca La Selva OTS Field Station, on Río Puerto Viejo just E of its junction with Río Sarapiquí, ca. 100 m, 21–22 Apr 1983 (immature fr), *I. Chacón 725* (DUKE, MO); La Selva, ca. 100 m, 22 Feb 1981 (fl), *J. Folsom 9095* (DUKE); La Selva, ca. 100 m, 22 Mar 1981 (immature fr), *J. Folsom 9454* (DUKE); La Selva, 100 m, 5 Jan 1993 (sterile), *A. Gentry & R. Ortiz 78516* (MO, TEX); La Selva, ca. 100 m, 7 May 1980 (fl), *B. Hammel 8615* (DUKE, MO); La Selva, ca. 100 m, 22 Jul 1980 (immature fr), *B. Hammel 9305* (DUKE); La Selva, ca. 100 m, 23 May 1982 (fl buds), *B. Hammel 12449* (DUKE); La Selva, ca. 100 m, 13 Oct 1981 (immature fr), *D. Smith 364* (DUKE); **Limón:** Refugio Barra del Colorado, between Río Chirripocito and Río Sardina, 10°38′N, 83°45′W, 12 m, 21 April 1990 (sterile), *M. Grayum 9817* (MO); Cerro Coronel, E of Laguna Danto, 10°41′N, 83°38′W, 20–100 m, 16 Mar 1987 (sterile), *W. D. Stevens et al. 24902* (MO); **Puntarenas:** Ridge before Rancho Quemado, near Rincón, Osa Peninsula, 8°42′N, 83°33′W, 300 m, 11 Jan 1993 (sterile), *A. Gentry et al. 78651* (MO, TEX); Golfito National Refuge, both slopes of Fila Gamba and along crest of same, to ca. 0.7 km N of Golfito/Villa Briceño road, 8°40.5′N, 83°12′W, 160–260 m, 11 Dec 1988 (fl buds), *M. Grayum & G. Herrera 9192* (MO); Golfo Dulce Forest Reserve, road between Rancho Quemado and Drake, 8°43′N, 83°36′W, 350 m, 12 Apr 1992 (sterile), *B. Hammel & N. Zamora 18478* (MO); Corcovado National Park, Sirena, Pavo trail, 8°27–30′N, 83°33–38′W, 0–150 m, 17 Feb 1988 (immature fr), *C. Kernan 161* (CR); Corcovado National Park, Pavo Forest, 8°27′N, 83°33′W, 0 m, 3 June 1988 (immature fr), *C. Kernan 568* (MO, TEX); same locality, 100 m, 29 Jun 1988 (immature fr), *C. Kernan 645* (MO). **PANAMA: Coclé:** Bismarck, 2000–3000 feet, 5–19 Mar 1908 (fl), *R. Williams 565* (NY); **Darién:** Above Cana on trail to top of ridge of Pirre Massif, 7°45′N, 77°45′W, 1100–1350 m, 3 May 1990 (immature fr), *G. McPherson 15030* (MO, TEX). **COLOMBIA: Antioquia:** Mpio. Mutatá, margen izquierda del Río Mutatá, 180–200 m, 2 May 1987 (fr), *R. Fonnegra et al. 2088* (MO).

Moutabea gentryi is known from scattered localities from northern Costa Rica through Panama to northwestern Colombia (Fig. 2), on both the Atlantic and Pacific slopes in primary rain forest from near sea level up to about 350 meters elevation, or to as high as 1100 m or more in Panama. The northernmost localities are quite close to Nicaragua, where the new species is to be expected in the extreme southeast. It has been collected with flowers in February through May (flower buds in December), immature fruits February through October, and mature fruits in May and June.

The epithet of the new species honors Alwyn H. Gentry (1945–1993), probably the top Neotropical field botanist of our time and a great fan of lianas, who collected the new species at least twice (sterile, of course).

All previously described species of *Moutabea* are characterized either by coriaceous leaves that are smaller (the largest ≤

←

flower with near portions of calyx and corolla removed. H. Gynoecium. I. Distal portion of staminal tube, anthers, and stigma. J. Large leaf from vegetative shoot, with detail of node. K. Fruit. L. Seed with aril removed. (A–I, from the type; J, *Grayum 9817*; K, L, *Croat 36358*). Illustration by Bobbi Angell.

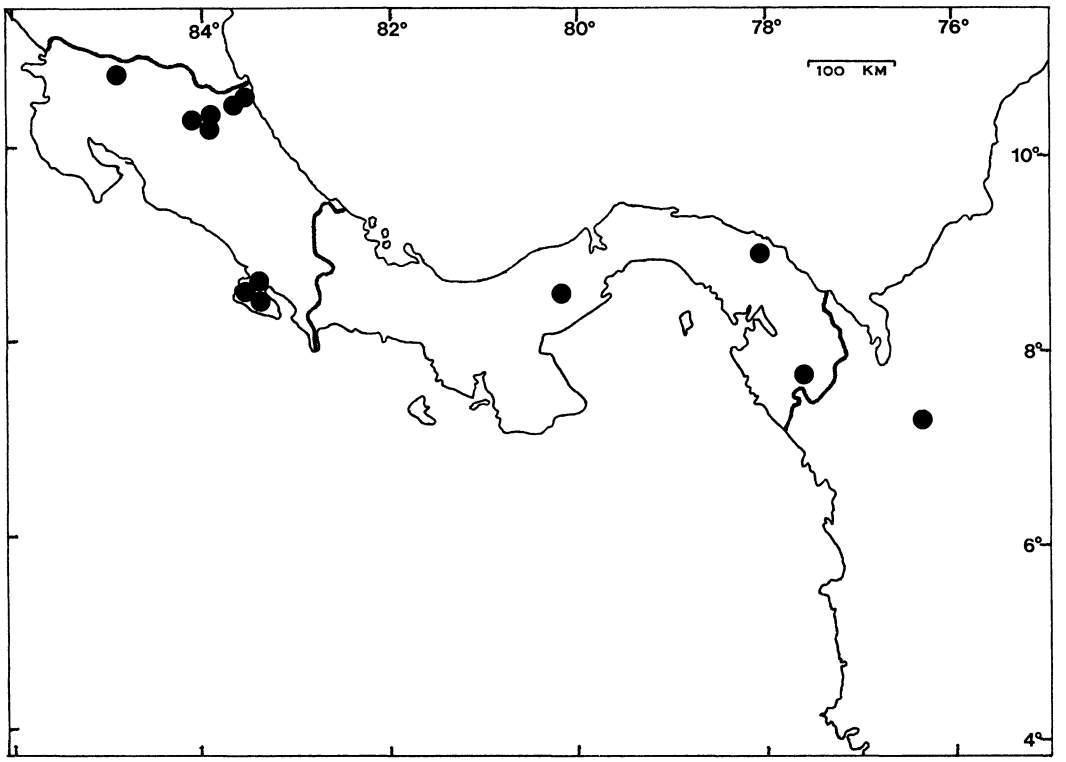

FIG. 2. Known distribution of *Moutabea gentryi* (black circles): Costa Rica, Panama, and Colombia.

10 cm long) or very thick-textured (the lateral veins immersed and not discernible), or by lateral veins abaxially distinctly and uniformly impressed (at least when dry). In *M. gentryi*, in contrast, the subcoriaceous or thinner leaves are relatively large (longest leaves of a specimen always over 12 cm, usually much longer, very few ≤ 10 cm long), and the obvious lateral veins are plane to usually somewhat raised beneath. The leaves of *M. gentryi* also have a distinctive surface sculpturing, both surfaces being covered with abundant minute tubercles which resemble punctate cystoliths; these are either spaced and distinct (and then quite obvious under magnification) or very crowded and forming a continuous roughening. In addition, the leaves of most species of *Moutabea* have distinctive very dark, red-brown to nearly black petioles (when dry), while those of *M. gentryi* range from greenish to golden-brown or brown but are never uniformly dark reddish-brown.

Moutabea gentryi is the only species of the genus known from Central America; material of this species has previously been referred to (or as having affinities to) *M. longifolia* Poepp. & Endl. or *M. aculeata* (Ruiz & Pav.) Poepp. & Endl. (e.g., Lewis & Herrera-MacBryde 1969; Wilbur et al. 1994; in herb.) These latter two species have also been considered to be the only two species of the genus that occur in large parts of the western Amazon basin; for instance, Pool (1993), Vásquez Martínez (1997), and Jørgensen & León-Yánez (1999) all list only these two species for the floras of Peru, the Iquitos area of Peru, and Ecuador, respectively, although in the two latter works one or the other of the names is applied tentatively. Examination of type material of each of these two names shows clearly that the

lateral veins are abaxially impressed in both, and thus neither name is applicable to the new taxon. The type of *Acosta aculeata* Ruiz & Pav. (the basionym of *M. aculeata*), collected in central Huánuco, Peru (Ruiz & Pavón, 1798), and housed at MA (phototype, MO!), consists of only three leaves. The Madrid specimen was examined by Dr. Javier Fuertes of that institution and found to have impressed veins beneath and to lack the typical leaf surface sculpturing of *M. gentryi*; a minute loose leaf fragment donated by MA for deposit at TEX shows this clearly. The type of *M. longifolia* (*Poeppig 2506,* holotype W!, isotype NY!), from near Tefé along the Amazon in western Brazil, agrees with the type of *M. aculeata* in these characters, and in addition includes flowers in which the strigillosity of the adaxial sepal lobe surface is far less dense than that characteristic of *M. gentryi.* The type specimens of *M. aculeata* and *M. longifolia* are very similar to each other in general size and shape of the leaves.

Vásquez Martínez (1997) presents a key for the Iquitos area of Peru in which *Moutabea longifolia* and *M. aculeata* are distinguished by leaf shape, surface sculpturing, and venation. Although I agree with him that at least two species are present in the area (see below), examination of types leads me to the conclusion that *M. longifolia* should be considered a synonym of *M. aculeata,* and that the one or more other species in the area is unnamed.

Among described species, *Moutabea aculeata* (including *M. longifolia*) appears to be the species most closely related to *M. gentryi.* The two form a complex characterized by relatively large (> 10 cm), subcoriaceous or thinner leaves that do not dry yellowish, by discernible lateral veins that are usually either impressed or raised on one or both leaf surfaces, and by solitary inflorescences with axes and calyces usually finely puberulent. *Moutabea aculeata* can generally be easily distinguished from *M. gentryi* by its abaxially impressed lateral veins, the different leaf surface texture, dark reddish petioles, and the much lighter strigillosity of the adaxial sepal lobe surfaces. As opposed to the abundant minute tubercles that characterize the leaf surface of *M. gentryi,* as described above, the leaf surfaces of *M. aculeata* present (under magnification) a very finely rugulose to pitted aspect when dry. In both species, however, leaves vary considerably in size, form, and texture, presumably due to differences in exposure, position on the plant, etc. The characteristic abaxially raised veins and surface texture of *M. gentryi* are always well developed in larger, generally thinner leaves of either fertile or sterile branchlets, while the veins may appear plane adaxially in some smaller (less than 14 cm), thicker leaves. In *M. aculeata,* the lateral veins are never raised even in the largest, thinnest leaves, and these veins are definitely if finely impressed in smaller leaves.

Moutabea aculeata is widespread in the western Amazon basin from Colombia, Ecuador, and Peru eastward into Brazil and perhaps Bolivia. The exact circumscription of this species is not, however, clear, as is true for almost all species of the genus. Considerable variation in leaf shape and texture, pubescence of various structures, and other features may indicate that more than one taxon is involved. The situation is further complicated by two series of collections apparently related to *M. gentryi* and *M. aculeata* but not clearly referable to either. The perhaps more problematical series comprises specimens from Amazonian Colombia, Ecuador and Peru with leaves uniformly 4–5 times as long as wide, a leaf form rather common in *M. aculeata* but rare at best in *M. gentryi.* The leaf surface texture and venation are similar to those of *M. gentryi.* The petioles vary from greenish to dark red-brown, and the flowers, where known, are distinctly less densely puberulent than in typical *M. gentryi.* The relationship of this material to *M. gentryi, M. aculeata,* and the populations discussed below awaits further collections and study, but *M. gentryi* seems the most appropriate name for these populations at present. Represen-

tative specimens include *Reynel et al. 5269* (MO) from Madre de Dios and *Revilla 1340* (MO) from Loreto in Peru; *Gudiño 295* (MO) from Pastaza and *Cerón & Gallo 5025* (MO) from Napo in Ecuador; and *Alvarez et al. 664* (NY) from Amazonas, Colombia.

A small second series of interesting collections comprises specimens from the central and southwestern Amazon basin in Brazil westward to Peru (Loreto). The leaves are similar to broader, thinner-textured leaf forms of *M. gentryi*, with the venation prominently raised (often even adaxially). Flowers, where known (Brazilian collections only), present sepal lobes sparsely puberulent to glabrous adaxially, and the petioles are distinctly dark reddish. While on vegetative grounds this material could only be referred to *M. gentryi* among the described species, further study will probably reveal it to represent an undescribed taxon. Representative specimens include *Silva 362* (NY) from Rondônia, Brazil; *Krukoff 7106* (MO, NY) and *Freitas et al. 428* (NY) from Amazonas, Brazil; and *Gentry et al. 22477* (MO) from Loreto, Peru.

The only other published name which could possibly have applied to the new taxon (although improbable on geographical grounds) is the little used name *M. angustifolia* Huber, based on a type from the Amazon delta of northeastern Brazil. The original description (Huber, 1902) and a photograph of the holotype (NY!) indicate that the name probably refers to a member of the *aculeata-gentryi* complex. The holotype (*Guedes 2217*) is housed at MG in Belém (no isotypes are known) and was kindly studied by Dr. Ricardo de S. Secco, curator of that herbarium. The veins are abaxially impressed and the calyx lobes are adaxially glabrous, clearly eliminating this as a possible name for the Central American populations. Whether this name is synonymous with the generally more western *M. aculeata* awaits further study.

ACKNOWLEDGMENTS

I thank Javier Fuertes for checking details of the type of *Acosta aculeata* at MA, and Mauricio Velayos, conservator of MA, for permission for the small detached fragment of leaf of the type to be donated to TEX; Ricardo de S. Secco, curator of MG, for checking details of the holotype of *Moutabea angustifolia*; Fernand Jacquemoud (G), Alan Lievens (MO), Roy Vickery (BM), and Bruno Wallnöfer (W) for searching for relevant material at their institutions, and Doug Stevens for searching for types at P; Jeany and Gerrit Davidse (MO) for literature; the curators of DUKE, G, MO, NY, US, and W for the loan of specimens; and Bobbi Angell for the fine illustration. The late John Wurdack unfailingly provided encouragement and valuable advice and references on South American Polygalaceae during my visits to US.

LITERATURE CITED

Huber, J. 1902. Materiaes para a flora Amazônica. V. Plantas vasculares colligidas ou observadas na região dos Furos de Breves em 1900 e 1901. Bol. Mus. Paraense Hist. Nat. Ethnogr. 3: 400–446.

Jørgensen, P. M., & S. León-Yánez (eds.) *Catalogue of the Vascular Plants of Ecuador.* Monogr. Syst. Bot. Missouri Bot. Gard. 75.

Lewis, W. H., & O. Herrera-MacBride. 1969. Flora of Panama: Polygalaceae. Ann. Missouri Bot. Gard. 56: 9–28.

Pool, A. 1993. Polygalaceae. Pp. 979–985 in *Catalogue of the Flowering Plants and Gymnosperms of Peru,* by L. Brako & J. L. Zarucchi. Monogr. Syst. Bot. Missouri Bot. Gard. 45.

Ruiz, H., & J. A. Pavón. 1798. *Flora peruviana, et chilensis. Vol. 1.* Madrid: de Sancha.

Vásquez Martínez, R. 1997. *Flórula de la Reservas Biológicas de Iquitos, Perú.* Monogr. Syst. Bot. Missouri Bot. Gard. 63.

Wilbur, R. L., and collaborators. 1994. Appendix 3. Vascular Plants: An Interim Checklist. Pp. 351–378 in *La Selva: Ecology and Natural History of a Neotropical Rain Forest,* eds. L. A. McDade, K. S. Bawa, H. A. Hespenheide & G. S. Hartshorn. Chicago: University of Chicago Press.