

## NOTES ON NEOTROPICAL MALPIGHIACEAE—VII

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This paper continues my long-term effort to treat some of the many undescribed Malpighiaceae of Latin America. Four of these species were cited last year in the Mato Grosso list (Anderson 1998) as “sp. nov. ined.,” and it is particularly desirable to get those taxa described promptly.

**Aspicarpa urens** Lag., Gen. Sp. Pl. 1. 1816. —TYPE: Grown in the Madrid Botanical Garden from seeds from New Spain, surely Mexico. There are five specimens in the general herbarium at MA; of those I here designate as lectotype sheet 265530, which is labeled as *Aspicarpa urens* Lag. in Lagasca’s hand. The correct name for this species is **Aspicarpa hirtella** Rich.

**Banisteriopsis carolina** W. R. Anderson, sp. nov.—TYPE: FRENCH GUIANA. Saül (3°37'N, 53°12'W) and vicinity; logging trail on hill just W of Les Eaux Claires and passing family gravesite, non-flooded moist forest, 250 m, 15 Feb 1998 fl, S. A. Mori, C. A. Gracie, T. McGee, R. Kendrick & K. L. Purzycki 24784 (holotype: MICH!; isotypes: CAY, K! NY! P! US!).

Liana lignosa; lamina foliorum majorum 9.5–13.2 cm longa, 5–7.3 cm lata, supra glabrata, subtus subglabrata, basi biglandulosa, reticulo scalariformi; petiolus 9–15 mm longus; pseudoracemi 1.5–7 cm longi, ex 15–35 floribus constantes; bracteae bracteolaeque 0.7–1 mm longae, 0.3–0.4 mm latae, persistentes; pedunculus plerumque 0.3–1 mm longus; pedicellus 6–7.5 mm longus; sepala utrinque sericea, apice revoluta, glandulis 0.7–0.8 mm longis; petala lutea, glabra, limbo fimbriato vel glanduloso-fimbriato; petalum posticum ungue apice non constricto; antherae glabrae, 3 sepalis anterioribus oppositae connectivo glanduloso tumidoque; stylus anticus ca 2 mm longus, styli postici 2.7–3 mm longi, lyrati.

Liana; stems initially sericeous or subvelutinous with short brown hairs fading to gray, eventually glabrescent. Lamina of larger leaves 9.5–13.2 cm long, 5–7.3 cm wide, elliptical or slightly ovate, obtuse to rounded at base, somewhat falcate distally, abruptly short-acuminate at apex, initially thinly sericeous on both sides, at maturity quite glabrate above and very thinly sericeous below with hairs 0.2–0.4 mm long (apparently glabrate), mostly bearing a pair of bulging glands 1–2 mm in diameter at juncture of lamina and petiole and otherwise eglandular, the lateral veins and scalariform reticulum prominent below, visible above; petiole 9–15 mm long, sericeous or appressed-tomentose to glabrescent in age, eglandular or biglandular at apex; stipules ca 1.5 mm long, triangular, dark, glabrous, stout, borne on stem beside petiole, persistent or abraded in age. Inflorescence minutely brown-velutinous, consisting of a slender axis 15–30 cm long, axillary to a full-sized vegetative leaf and bearing several pairs of much-reduced leaves 12–19 mm long, these eglandular or with only 1 pair of glands at base, each reduced leaf (or at



least the distal ones) subtending a pseudoraceme and the axis terminating in a pseudoraceme; pseudoracemes 1.5–7 cm long, containing 15–35 or more flowers; bracts and bracteoles 0.7–1 mm long, 0.3–0.4 mm wide, narrowly triangular, abaxially tomentose, adaxially glabrous, persistent; peduncle occasionally absent, mostly 0.3–1 mm long; pedicel 6–7.5 mm long, loosely sericeous with light brown or gray hairs. Sepals 2 mm long, 1.5 mm wide, ovate, rounded at apex, revolute in anthesis, abaxially sericeous with stramineous hairs except glabrous toward margin, ciliate on margin, adaxially sparsely sericeous in center, the anterior eglandular, the lateral 4 biglandular with the glands 0.7–0.8 mm long, circular or subcircular, green, borne on free part of sepal. Petals bright yellow, glabrous, the limb fimbriate all around the margin with the divisions glandular, at least proximally, on the posterior 3 petals; lateral petals spreading to reflexed, with the claw 1.5–2 mm long, the limb 5.5–6 mm long, 4–5.5 mm wide, obovate, flat or concave; posterior petal erect, with the claw 2–3 mm long, much wider than in lateral petals, widest at apex, the limb ca 4–5 mm long, 2–2.5 mm wide, narrowly elliptical or rectangular, flat. Stamens glabrous, strongly heteromorphic in both filaments and anthers; filaments connate at base, those opposite 3 anterior sepals and 2 posterior-lateral petals 2–2.4 mm long and stout, those opposite 2 anterior-lateral petals ca 1.3 mm long and stout, those opposite posterior-lateral sepals and posterior petal ca 1.3 mm long and very slender, bent forward between posterior styles; 5 anterior anthers with locules 0.8–1 mm long, those opposite 3 anterior sepals with the connective glandular and much enlarged, exceeding the locules by up to 0.5 mm, the 2 opposite the anterior-lateral petals with the connective not enlarged; 5 posterior anthers 0.5–0.7 mm long, the connective not enlarged. Ovary ca 1 mm high, sericeous; styles slender, terete, glabrous or sericeous at very base, with small capitate stigmas; anterior style ca 2 mm long, bending forward at base and then erect; 2 posterior styles 2.7–3 mm long, lyrate, bending strongly backward at base and then sigmoid-ascending. Fruit unknown.

This species, known only from the type collection, is named in honor of Carol A. Gracie (b. 1941), one of its collectors and one of the moving spirits behind the beautiful "Guide to the Vascular Plants of Central French Guiana."

*Banisteriopsis carolina* belongs in the *B. nummifera* group of Gates (1982), and in that group its closest relative seems to be *Banisteriopsis lyrata* B. Gates, a species known from only a few collections in Bolívar, Venezuela, and Pará and Rondônia, Brazil. The two species are similar in their petals, androecium, and gynoecium; the long, lyrate posterior styles are a notable synapomorphy of the two species. In *B. lyrata* the lamina is densely and persistently metallic-sericeous below and the lateral veins and reticulum are neither prominent below nor scalariform, the lateral branches of the inflorescence are short and bear only 3–4 pairs of flowers, the pedicels are sessile, the calyx glands are 0.8–2 mm long, and the posterior petal has the claw constricted at its apex. One might also compare *B. carolina* to *B. sellowiana* (Adr. Juss.) B. Gates, another member of the same group, in which the reticulum of the lamina is not scalariform, the side branches of the inflorescence bear 3–5 pairs of flowers, the sepals are glabrous, the petals are dentate and eglandular, and the styles are subequal.

***Banisteriopsis mariae*** W. R. Anderson, sp. nov.—TYPE: BRAZIL. Bahia: Mun. Oliveira dos Brejinhos, estrada Canabrava a Chapadão de Cima, próximo ao alto da Serra Geral, campo rupestre, junto a rochas e pequena mata, 16 Mar 1998 fl, G. Hatschbach, M. Hatschbach & E. Barbosa 67809 (holotype: MICH!).



Liana lignosa; lamina foliorum majorum 3.8–5.3 cm longa, 1.8–2.5 cm lata, supra pertinaciter sparsim tomentosa, subtus pertinaciter subsericea pilis 1.3–2.2 mm longis, 2 glandulis stipitatis 0.2–0.3 (–0.4) mm diametro in nervis lateralibus instructa; petiolus 2.5–3 mm longus; bractee bracteolaeque per anthesin  $\pm$  persistentes, demum deciduae; pedicellus 12–16 mm longus; sepala per anthesin  $\pm$  appressa; petala lutea, glabra, limbo plerumque toto circuitu glanduloso-fimbriato; antherae pilosae connectivo loculos non superanti sed abaxialiter tumido praecipue in staminibus sepalis oppositis; styli 1.7–2 mm longi, paralleli, teretes.

Woody climber; stems initially velutinous or subtomentose with a mixture of short V-shaped or twisted hairs and an overlay of scattered, much longer (ca 1.5 mm),  $\pm$  straight and appressed hairs, glabrescent in the second year. Lamina of larger leaves 3.8–5.3 cm long, 1.8–2.5 cm wide, elliptical or slightly ovate, shallowly cordate at base, obtuse, acute, or slightly acuminate at apex, thinly but persistently tomentose above with short, very slender,  $\pm$  twisted hairs (more densely tomentose on the midrib), persistently subsericeous below with the slender hairs 1.3–2.2 mm long, straight or sinuous and appressed to somewhat spreading, white, abundant but not dense enough to hide the lamina, bearing 2 stalked peltate glands 0.2–0.3 (–0.4) mm in diameter on lateral veins between midrib and margin in middle third of abaxial surface, the lateral veins and reticulum prominulous on both sides; petiole 2.5–3 mm long, persistently velutinous, eglandular; stipules ca 0.5 mm long, narrowly triangular, dark, glabrous, borne on stem beside petiole, hidden by hairs and often abraded from older nodes. Inflorescences terminal and axillary, short, compact, paniculate or unbranched, white- or golden-velutinous, with the flowers borne in umbels of 4–6 (–8); bracts and bracteoles 1–1.5 mm long, 0.6–1 mm wide, triangular or ovate, abaxially tomentose, adaxially glabrous, persistent during most of anthesis, deciduous late in anthesis or during maturation of the fruit; pedicel sessile, 12–16 mm long, subvelutinous to subsericeous with white and golden hairs. Sepals 2–2.5 mm long (ca 1 mm beyond glands), 2–2.5 mm wide (the anterior sepal narrower), ovate, acute to slightly obtuse, appressed or incurved in anthesis or slightly revolute at very apex, abaxially densely sericeous with stramineous hairs, adaxially white-sericeous in center, the anterior eglandular, the lateral 4 biglandular with the glands 1.8–2.5 mm long. Petals yellow, glabrous, the limb glandular-fimbriate all around the margin or the teeth eglandular at very apex of outermost petal; lateral petals reflexed, with the claw 1.5–2 mm long, the limb 4–5.5 mm long, 4–5 mm wide, elliptical or orbicular, concave; posterior petal erect, with the claw 3.5 mm long, much wider than in lateral petals, widest at apex, the limb 3.5–4 mm long, 3.5 mm wide, elliptical or orbicular, flat. Filaments ca 2 mm long opposite sepals, ca 1.5 mm long opposite petals, glabrous, nearly straight, connate at base; anthers 1.2–1.5 mm long, loosely pilose on the locules, the connective dark red, no longer than the locules but abaxially swollen, notably so in anthers opposite sepals. Ovary 1–1.3 mm high, sericeous; styles 1.7–2 mm long, erect, parallel, and straight or curved slightly away from posterior petal, glabrous, terete, the stigma capitate. Fruit unknown.

This species is known only from its type. I am happy to name it in honor of Maria Maguidaura Hatschbach, one of the collectors of the type and a “botanist by marriage” who, in recent years, has made a substantial contribution to the collecting efforts of her famous husband. She is a gracious lady who has been unfailingly kind to me and many other visitors.

My efforts to name this plant using the monograph by Gates (1982) have led me to conclude that its closest relative must be *Banisteriopsis laevifolia* (Adr. Juss.)



*B. Gates*, a species that is common west and south of Bahia but not yet reported from that state. The larger laminas in *B. laevifolia* are mostly at least 6.5 cm long and usually much more densely sericeous or appressed-tomentose abaxially, and have larger, sessile abaxial glands; the inflorescence is more open and clearly dichasial; the bracts and bracteoles persist to maturity of the fruit or nearly so; the pedicel is shorter, seldom exceeding 11 mm in flower; the sepals are all notably reflexed at the apex; and the styles are divergent and flattened distally. When the samaras of *B. mariae* are known they may provide additional differences.

***Byrsonima cordifolia*** W. R. Anderson, sp. nov.—TYPE: BRAZIL. Goiás: Mun. Portelândia, rodovia BR-364 Mineiros–Santa Rita do Araguaia, Serra da Urtiga, próximo do Posto Urtigão, 17°22'S, 52°39'W, sandy roadside cerrado, 6 Jul 1996 fl/imm fr, *M. R. Pietrobom-Silva* 3328 (holotype: CTES!).

Arbor 2.5 m alta, ramis tomentosis. Lamina foliorum majorum 2.7–3.4 cm longa, 2.2–2.8 cm lata, cordiformis, basi cordata, apice late obtusa vel rotundata; petiolus 1–2 mm longus, tomentosus; stipulae 1.5–2 mm longae, omnino connatae. Inflorescentia 2–4 cm longa, rufotomentosa vel velutina; bractae 0.8–1.2 mm longae, 1.2–1.5 mm latae, demum deciduae; pedicellus 6–8 mm longus, circinatus in alabastro, decurvatus et demum tortus in fructu. Petala rosea vel rosea et alba. Antherae 1.9–3 mm longae, loculis 1.5–1.9 mm longis, cylindricis, distaliter sericeis, connectivo conoideo, loculos 0.9–1.2 mm superanti et saepe recurvato in 7 antheris anticis, 0.2–0.3 mm superanti in 3 antheris posticis. Ovarium glabrum, loculis omnibus fertilibus.

Tree 2.5 m tall; stems densely and persistently tomentose, the hairs dark brown fading to gray. Leaves strongly appressed; lamina of larger leaves 2.7–3.4 cm long, 2.2–2.8 cm wide, cordiform, cordate at base, flat or slightly revolute at margin, broadly obtuse to rounded at apex, coriaceous, glabrate above at maturity, glabrate below at maturity or  $\pm$  persistently tomentose on and occasionally near the midrib; principal lateral veins 7–9 pairs, the lateral veins and reticulum visible but not raised above, somewhat raised below; petiole 1–2 mm long, densely and persistently tomentose; stipules 1.5–2 mm long, completely and smoothly connate with the pair rounded at apex, abaxially densely tomentose to eventually glabrescent, adaxially glabrous. Inflorescence 2–4 cm long, densely and persistently rufous- or brown-tomentose or velutinous; flowers borne 1 per bract; bracts and bracteoles persistent during anthesis, deciduous during enlargement of fruits; bracts 0.8–1.2 mm long, 1.2–1.5 mm wide, broadly rounded, appressed, abaxially tomentose to glabrescent, adaxially glabrous; peduncle none; bracteoles like bracts but smaller, especially narrower; pedicel 6–8 mm long, with vesture like that of the inflorescence axis, circinate in bud, decurved and eventually twisted in fruit. Sepals dark red, all biglandular, 1.8 mm long beyond glands, 1.8 mm wide, broadly rounded, tomentose at base on both sides and ciliate all around margin but otherwise glabrous, reflexed at the apex in anthesis; glands 1.5–2.5 mm long, white (?). Petals mostly pink (the limb pink in center, white toward margin), probably turning darker pink in age, glabrous; lateral petals strongly recurved in anthesis, the claw 2.5–3 mm long, the limb oblate, 4–4.5 mm long, 5.5 mm wide; posterior petal with the thick claw erect, 3–3.5 mm long, the limb reflexed, ca 3 mm long and 3.5 mm wide, somewhat corrugated. Filaments 2.5–2.7 mm long, straight, nearly or quite distinct, abaxially glabrous, adaxially bearded at base with long straight orangish hairs like those that fill the space between stamens and ovary; anthers 1.9–3 mm



long; locules 1.5–1.9 mm long, rounded at apex, cylindrical, linear, and unwinged,  $\pm$  densely sericeous on sides especially on the distal 2/3; anterior 7 anthers with connective exceeding locules by 0.9–1.2 mm, conoid, erect or distally recurved; posterior 3 anthers with extension of connective only 0.2–0.3 mm long. Ovary 1.3 mm high, glabrous, all 3 locules fertile; styles ca 3.5 mm long. Mature fruit unknown.

This species is known only from the type, which came from southwestern Goiás near the junction of Goiás with Mato Grosso and Mato Grosso do Sul. The name refers to the small heart-shaped leaves. In *Das Pflanzenreich* (1928) this plant would fall in Niedenzu's series *Psilonemis*, all of whose species are easily distinguished from it. In Niedenzu's key, the cordate leaves of *B. cordifolia* would lead one to *B. coccolobifolia* H. B. K. and its relatives, but those have much larger leaves, longer inflorescences, and larger bracts and bracteoles than *B. cordifolia*. The new species may actually be closer to *B. vacciniifolia* Adr. Juss. and its relatives, such as *B. gardneriana* Adr. Juss., but those species have the lamina cuneate at the base, straight appressed leaf hairs, a longer, more open inflorescence, and longer bracts and bracteoles.

**Byrsonima hirsuta** W. R. Anderson, sp. nov.—TYPE: BRAZIL. Pará: Alto Tapajós, Vila Nova, near the Cachoeira do Chacorão [6°35'S, 58°20'30"W], *terra firme*, 18 Jan 1952 fl, J. M. Pires 3956 (holotype: IAN!; isotype: US!).

*Byrsonimae krukoffii* W. R. Anderson affinis sed pilis omnibus basifixis, bracteis marginibus hirsutis aliter glabris iam in alabastro valde reflexis revolutisque persistentibus minimum per anthesin, pedicello 3.5–5 mm longo, sepalis glabris in alabastro appressis, connectivo antherae loculos superanti 0–0.5 mm differt.

Small tree; stems of the current season hirsute, the hairs all alike, (1.5–) 2–2.5 mm long, very slender, straight, basifixed,  $\pm$  strongly spreading, brown; older stems glabrescent to glabrate. Lamina of larger leaves 10.5–17 cm long, 4.5–6.1 cm wide, obovate to nearly elliptical, cuneate and decurrent at base, flat at margin, abruptly short-acuminate at apex, thinly hirsute on both sides to eventually glabrescent (especially above) with hairs all alike, like those of stem but mostly shorter (0.8–1.6 mm long) and most abundant on midrib, the midrib and 8–10 pairs of principal lateral veins prominent on both sides, the  $\pm$  scalariform tertiary veins not or hardly prominent on either side; petiole 10–25 mm long, hirsute like stems; stipules 6.5–8.5 mm long, amplexicaul, abaxially appressed-hirsute with hairs like those of stems, adaxially glabrous, completely and smoothly connate, the pair ca 3 mm wide, tapered distally to an obtuse apex, lineate with many fine parallel veins, deciduous independently of and before the leaf. Inflorescence 4.5–7.5 cm long, densely hirsute/velutinous with the proximal hairs straight like those of stem and almost as long (1–1.5 mm), distally shorter (0.5–1 mm) and often sinuous or somewhat bent, the flowers borne 1 per bract; bracts ca 4–4.5 mm long, 1–1.5 mm wide, narrowly lanceolate to almost linear, strongly reflexed and revolute already in bud, glabrous (or nearly so) on both faces but hirsute on margins, persistent (at least during anthesis); peduncle none; bracteoles like bracts but much shorter, 1.3–2 mm long, 1–1.5 mm wide; pedicel 3.5–5 mm long in flower, velutinous, not or slightly circinate in bud. Sepals all biglandular, ca 1.6 mm long beyond glands, ca 2 mm wide, broadly triangular, rounded at apex and auriculate at sides, appressed in bud, revolute at apex and sides in anthesis, glabrous; glands 1.5–2 mm long. Petals yellow, glabrous, the lateral 4 reflexed in anthesis, with the



claw ca 2.5 mm long, the limb 3.5–5 mm long and 4–5.5 mm wide, oblate; posterior petal erect, the thick claw 2.8 mm long, the limb 2.5 mm long, 2.3 mm wide, corrugated. Filaments 1.5–1.8 mm long, distinct (or connate at very base?), abaxially glabrous, adaxially hirsute at base; anthers 2.4–3.2 mm long, loosely sericeous on connective outside and between locules, the locules linear, 2.4–2.7 mm long, free and rounded or acute at apex, the connective not or hardly exceeding locules on posterior 7 anthers, exceeding locules up to 0.5 mm on anterior 3 anthers, the extension rounded or obtuse, straight or slightly recurved at apex. Ovary conical, 1.5 mm high, densely hirsute with straight basifixed hairs, all 3 locules fertile; styles ca 3.5 mm long, glabrous, bent in the distal third. Fruit unknown.

This interesting plant is known only from the type. It seems to be intermediate between the group of *B. crispa* Adr. Juss. (suggested by its reflexed and revolute bracts) and the group of *B. stipulacea* Adr. Juss. (clearly indicated by its long, lineate stipule-pair that is deciduous before the leaf). The hairs are all basifixed, a rare condition in Malpighiaceae and evidence that its closest relative is probably *B. krukoffii* W. R. Anderson. The two species are easily distinguished; the following couplet summarizes the differences between them that are evident in the material now available to me:

1. Sepals glabrous, appressed in bud; bracts nearly or quite glabrous except for hirsute margins, already strongly reflexed and revolute in bud, persistent at least during anthesis; pedicel 3.5–5 mm long in flower; connective of anthers exceeding locules by 0–0.5 mm. *B. hirsuta*
1. Sepals tomentose on both sides, already spreading or revolute in bud; bracts tomentose or sericeous on both sides, especially abaxially, nearly straight and spreading in bud, sometimes irregularly reflexed in anthesis, deciduous before or during anthesis; pedicel 6–14 mm long in flower; connective of anthers exceeding locules by 0.5–1.4 mm. *B. krukoffii*

**Byrsonima lanulosa** W. R. Anderson, sp. nov.—TYPE: BOLIVIA. Santa Cruz: Velasco Province, Parque Noel Kempff Mercado, 13°53'55"S, 60°48'46"W, 290 m, sabana arbolada, suelo rojizo, arenoso, 12 May 1994 fl/imm fr, *B. Mostacedo et al.* 1720 (holotype: MICH!).

*Byrsonimae basilobae* Adr. Juss. affinis sed laminis foliorum majorum 7–14.5 cm longis et 3.8–7.2 cm latis basi non amplexicaulibus, petiolis 1–3 mm longis, inflorescentia 7–14 cm longa plerumque simplici, pedicellis in alabastro ± circinatis in fructu decurvatis tortisve, et fructibus immaturis siccis 6–7 mm longis, 8–8.5 mm diametro differt.

Shrublet or shrub 0.2–1.5 m tall; stems densely velutinous or tomentose, eventually glabrescent, quite glabrate in age. Leaves decussate or rarely ternate; lamina of larger leaves 7–14.5 cm long, 3.8–7.2 cm wide, elliptical or obovate (or occasionally ovate), cuneate or rounded or shallowly cordate (but hardly amplexicaul) at base, somewhat revolute at margin, obtuse to rounded and often apiculate at apex, initially tomentose above but soon glabrescent except ± persistently tomentose on midrib and sometimes on lateral veins, densely and persistently woolly below with the vesture very tight and ferruginous to somewhat faded in age, the midrib, 6–9 pairs of principal lateral veins, and reticulum prominent below, slightly to moderately raised above; petiole 1–3 mm long, densely tomentose or appressed-tomentose; stipules 4–6 mm long, abaxially densely appressed-tomentose to glabrescent in age, adaxially glabrous, 60–100% connate, the pair usually at least shallowly bidentate at apex, approximately triangular. Inflorescence 7–14 cm long,



densely tomentose, the flowers borne 1 (–2) per bract; bracts and bracteoles deciduous during anthesis or enlargement of fruit or some (especially bracteoles) irregularly persistent; bracts 1.5–5 mm long, 1–2 mm wide, triangular to narrowly lanceolate, spreading and  $\pm$  stiff, abaxially tomentose, adaxially glabrous; peduncle none; bracteoles like bracts but smaller, 0.7–2 mm long, 0.5–1.5 mm wide; pedicel 4–9 mm long, densely tomentose or velutinous, mostly somewhat circinate in bud, decurved or twisted in fruit. Flowers 12–16 mm in diameter. Sepals all biglandular, 1.8–2.5 mm long beyond glands, 1.8–2.5 mm wide, triangular, obtuse to rounded at apex, appressed in bud, appressed or reflexed at apex in anthesis, abaxially densely appressed-tomentose, adaxially glabrous, accrescent in fruit, up to 3.5 mm long and wide; glands 1.3–2.5 mm long. Petals yellow, glabrous, the lateral 4 reflexed in anthesis, with the claw 2.5–3 mm long, the limb 4.5–6.5 mm long and 5.5–7 mm wide, oblate; posterior petal erect, the thick claw 2.5–3 mm long, the limb 3–4 mm long, 4–5.5 mm wide, corrugated. Filaments 1.4–2.2 mm long, distinct or connate up to 0.5 mm, abaxially glabrous, adaxially hirsute at base; anthers 1.7–3 mm long, glabrous or bearing a few straight appressed hairs on connective outside locules or between locules, the locules linear, 1.5–2.7 mm long, rounded or obtuse at apex and not or hardly detached, the connective exceeding locules by 0–0.6 mm, the extension straight and rounded or obtuse. Ovary conical, 1–1.3 mm high, densely brown-tomentose, all 3 locules fertile; styles 2.5–3.5 mm long, glabrous, nearly straight or bent at apex. Immature fruit depressed-globose, 6–7 mm long and 8–8.5 mm in diameter (dried), densely brown-tomentose to glabrescent.

ADDITIONAL SPECIMENS EXAMINED: **Bolivia.** SANTA CRUZ: Velasco Province, Parque Noel Kempff Mercado, Huanchaca 1, 13°53'41"S, 60°48'46"W, 500 m, pampa, Jan fl, *Soto et al.* 470 (MICH). **Brazil.** MATO GROSSO: Pôrto Velho–Cuiabá, Km 788, 13°20'S, 59°50'W, 680 m, campo with trees, Mar fl, *Bamps* 5490 (MICH); MT-170 between Itamarati and Campo Novo do Parecis, 13°58'S, 57°59'W, cerrado, Jan fl, *Dubs* 2049 (MICH); Mun. Reserva do Cabaçal, MT-175, Res. do Cabaçal a Chapada dos Parecis, entre Km 35 e Fazenda Santiago, sandy soil, Oct fl, *Hatschbach* 63917 (MICH).—RONDÔNIA: Campos 4 km from Vilhena, clay soil, 12°45'S, 60°16'W, Oct fl, *Vieira et al.* 618 (INPA, MICH); Fazenda São Francisco de Assis, Km 645 da estrada Vilhena–Pimenta Bueno, 12°45'S, 60°10'W, Nov fl, *Vieira et al.* 954 (MICH); Vilhena, arredores do aeroporto, campo cerrado, Jan fl/imm fr, *M. G. Silva & Pinheiro* 4084 (MICH).

When I described *Byrsonima affinis* W. R. Anderson (Anderson, 1982), I included a distribution map for that species and its nearest relative, *B. basiloba* Adr. Juss. *Byrsonima basiloba* is common in western Bahia, Minas Gerais, Goiás, and the Distrito Federal, but I also mapped two atypical populations from western Mato Grosso and adjacent Rondônia. With the accumulation of more collections and further study, I have decided that the western populations deserve recognition as a distinct species, to which I am giving the epithet *lanulosa* in reference to the very tightly woolly leaves. *Byrsonima lanulosa* resembles *B. basiloba* in its stature and subsessile leaves and in the vesture of the lamina, but *B. basiloba* differs in the following characters: its lamina is often larger, both longer and wider, it is sessile, and its base is shallowly lobed and amplexicaul; its inflorescence is much longer and compound, i.e., the proximal cincinni usually have 2–several flowers developing; its pedicel is usually straight or nearly so in bud and fruit; and the fruits are much larger, often 17 mm or more in diameter.

This species was cited as "*Byrsonima* sp. nov. ined. no. 1" in the Mato Grosso checklist (Anderson, 1998, p. 180).



**Byrsonima riparia** W. R. Anderson, sp. nov.—TYPE: BOLIVIA. Santa Cruz: Prov. Velasco, Estancia Flor de Oro, 3 km SE of the buildings, inundated forest along first oxbow lake upstream and on W side of Río Iténez (= Río Guaporé), 13°34'S, 60°59'W, 190 m, 28 Jun 1991 fl, *M. Nee 41518* (holotype: MICH!; isotypes (not seen): G, K, LPB, MO, NY, SP, USZ). Fig. 1.

Frutex vel arbor 2–14 m alta, ramis glabris. Lamina foliorum majorum 8.5–13.5 (–18) cm longa, 3.5–6.5 (–7.5) cm lata, elliptica vel parum ovata, basi cuneata, apice obtusa vel abrupte breviacuminata; petiolus 7–20 mm longus; stipulae 1.8–3.5 (–4.5) mm longae, 1/2–omnino connatae. Bracteeae 1.5–3 mm longae, 0.8–1.8 mm latae, persistentes vel irregulariter deciduae; pedunculus 0–1 mm longus; pedicellus 7–10 mm longus, circinatus in alabastro, decurvatus vel tortus in fructu. Sepala abaxialiter sericea vel tomentosa, adaxialiter glabra. Petala alba, alba et rosea, vel rosea. Antherae 2.5–4 mm longae, loculis 2.4–3.5 mm longis, cylindricis, sericeis, connectivo loculos usque ad 1 mm superanti et saepe recurvato in 7 antheris anticis, 0–0.2 mm superanti in 3 antheris posticis. Ovarium glabrum, loculis omnibus fertilibus. Fructus ruber, 11–13 mm longus et 8–10 mm diametro (siccus).

Shrub or tree 2–14 m tall; stems glabrous except hispid in axil of stipules. Lamina of larger leaves 8.5–13.5 (–18) cm long, 3.5–6.5 (–7.5) cm wide, elliptical or slightly ovate, cuneate and often somewhat decurrent at base, flat at margin, acute to obtuse or abruptly very shortly acuminate at apex, quite glabrate at maturity or with scattered straight appressed hairs persistent especially on midrib; principal lateral veins 8–12 pairs, very fine and distinguished only with difficulty from lesser lateral veins, the lateral veins and reticulum visible on both sides but only slightly raised; petiole 7–20 mm long, glabrate at maturity or bearing scattered straight appressed hairs; stipules 1.8–3.5 (–4.5) mm long, 1/2 to completely connate with the pair sulcate to smooth and ovate or triangular, obtuse at apex, initially sericeous abaxially and on margin but often glabrate in age, adaxially glabrous. Inflorescence 6–17 cm long,  $\pm$  persistently sericeous to tomentose with the hairs often progressively looser and more spreading from base to apex, originally reddish or ferrugineous but sometimes fading to white in age; flowers borne 1 (–2) per bract; bracts and bracteoles persistent in fruit or irregularly deciduous during anthesis or enlargement of fruits; bracts 1.5–3 mm long, 0.8–1.8 mm wide, lanceolate or ovate, spreading and distally usually reflexed or revolute, abaxially thinly sericeous, adaxially glabrous; peduncle none or up to 1 mm long; bracteoles like bracts but smaller, especially narrower; pedicel 7–10 mm long, tomentose or occasionally subsericeous, circinate or twisted in bud, decurved or twisted in fruit. Sepals green, all biglandular, 1.5–2.5 mm long beyond glands, 2–2.5 mm wide, broadly rounded, abaxially sericeous or tomentose, ciliate all around margin, adaxially glabrous, reflexed distally in anthesis, accrescent in fruit, up to 3 mm long and 4.5 mm wide; glands 2–3 mm long, white. Petals described as white, white with pink, or pale pink, glabrous; lateral petals strongly recurved in anthesis, the claw 2.7–3.5 mm long, the limb oblate, 5–6.5 mm long, 7–9 mm wide; posterior petal with the thick claw erect, 3.5–5 mm long, the limb erect to reflexed, 3.5–4.5 mm long and 4–5.5 mm wide, smooth to corrugated. Filaments 2–2.5 mm long, straight, connate only at very base, abaxially glabrous, adaxially densely red-hirsute on proximal half; anthers 2.5–4 mm long; locules 2.4–3.5 mm long, rounded and often detached at apex, cylindrical, linear, unwinged, sericeous on sides and between locules for most of their length; connective extended (0–) 0.1–1 mm





FIG. 1. *Byrsonima riparia*. a) flowering branch,  $\times 0.5$ ; b) stipules,  $\times 2.5$ ; c) flower,  $\times 2.5$ ; d) posterior petal,  $\times 2.5$ ; e) stamens, anterior (left) and posterior (right),  $\times 5$ ; f) gynoecium,  $\times 5$ ; g) old flower with bracts and bracteoles falling,  $\times 2.5$ ; h) fruiting branch with many bracts and bracteoles persistent,  $\times 0.5$ ; i) fruit,  $\times 2.5$ . Drawn by Karin Douthit; a–g from *Prance* 6849; h–i from *Sidney [Fonseca]* 1299.



beyond locules, the extension 0–0.2 long on posterior 3 anthers, longer on anterior 7, rounded or tapered, straight or the longer ones recurved. Ovary 1–1.5 mm high, glabrous, all 3 locules fertile; styles 5–6 mm long, bent near apex. Fruit red, ovoid, 11–13 mm long and 8–10 mm in diameter (dried), glabrous, shallowly excavated at base.

ADDITIONAL SPECIMENS EXAMINED: **Bolivia.** SANTA CRUZ, Velasco Province: Reserva Ecológica El Refugio, ca 14°39'–46'S, 61°00'–10'W, *Foster* 83, 150, 291, *Carrión & Ayala* 353, *Guillén* 1374, 2038, 2199, 3246, 3407, 3711, *Killeen* 6906 (all MICH); Parque Nacional Noel Kempff Mercado, Lago Caiman, 13°35'39"S, 60°54'45"W, *Garviza & Fuentes* 300 (MICH); carretera al Chore, entre Arroyo Las Londras y Arroyo El Tigre, 14°24'18"S, 61°08'40"W, *Peña-Chocarro* 185 (MICH); margen del Río Iténez (Guaporé), 20 km N del Serranía de Huanchaca, 13°33'S, 61°00'W, *Peña* 186 (F, MICH). **Brazil.** MATO GROSSO: Parque Nacional do Xingú, Rio Tutuarí, *Coelho s.n.* [INPA 15868] (INPA); Mun. São Félix do Araguaia, Rio Araguaia, 11°35'S, 50°45'W, *Cid Ferreira* 6378 (K, MICH); 30 km ao sul do acampamento da Expedição inglesa, *Sidney [Fonseca]* 1299 (UB); Serra do Roncador, Rio Sete Setembro 3 km from Garapu, *Prance* 59236 (MICH, NY); Rio Suiazinha, ca 290 km N of Xavantina, *Santos & Souza* R1745 (E, K, NY).—RONDÔNIA: Rio Guaporé, Bahia do Meio, *Black & Cordeiro* 52-15014 (IAN); Rio Pacaás Novos, *Prance* 6849 (INPA, MICH, NY).

This species grows in seasonally inundated habitats, either forests or pampas, along or near rivers, usually at elevations of 150–220 m. The epithet *riparia* refers to this riverine habitat; it is somewhat unusual for a *Byrsonima* to grow in places that are subject to prolonged inundation, most species preferring drier, better-drained situations. It has been collected with flowers from May to August and with fruits in May, July, September, October, and January.

This is the species that I designated "*Byrsonima* sp. nov. ined. no. 2" in the Mato Grosso checklist (Anderson, 1998, p. 180).

One collection (*Prance* 6849) has substantially larger leaves than the others seen (up to 18 cm long and 7.5 cm wide), which makes it look rather different, but in all other characters it resembles the other collections cited, and its site of collection is well within the range of the species, so I am considering it an aberrant representative of the species unworthy of taxonomic recognition.

Its white/pink petals and sericeous anthers with elongated connectives place *Byrsonima riparia* in series *Psilonemis* (Niedenzu, 1928). Among the other species in that group, the one it resembles most closely is perhaps *B. alvimii* W. R. Anderson, a tree of the forests of eastern Bahia, Brazil. That differs from *B. riparia* in having longer stipules, sepals that are densely hairy on both sides, pedunculate cincinni of 1–3 flowers, longer and wider bracts and bracteoles, much less hairy anther locules, and even the anther opposite the posterior petal with the connective extended at least 0.4 mm beyond the locules. *Byrsonima riparia* also resembles *B. coccolobifolia* H. B. K., which is common in savannahs throughout much of South America. Aside from the obvious ecological difference, *B. coccolobifolia* is immediately separable from *B. riparia* by its leaves, which are wider relative to their length, rounded or subcordate at the base, and sessile or subsessile, with the petiole up to 2 mm long. It also has shorter stipules and adaxially sericeous sepals.

***Heteropterys guianensis*** W. R. Anderson, sp. nov.—TYPE: GUYANA. Potaro-Siparuni Region: Pakaraima Mountains, upper Ireng River, 1–2 km upstream from Kurutuik Falls, 5°10'N, 60°13'W, 800 m, riverine forest of Dicymbe, Eperua, Inga, and bank vegetation, 23 Oct 1994 fl, *T. W. Henkel* 6047 (holotype: MICH!).



*Heteropterygis dichromocalycis* affinis, sed lamina foliorum 5–6.5 cm longa, 2–2.8 cm lata, et subtus mox fere glabrata, petiolo 5–7 mm longo, sepalis tantum margine albotomentosis, ungue petali postici quam unguibus petalorum lateralium longiore, filamentis 2–2.8 mm longis, et stylis 2.2–2.5 mm longis differt.

Woody vine, climbing to 4 m; stems tightly and persistently brown-sericeous, eventually glabrescent. Lamina of larger leaves 5–6.5 cm long, 2–2.8 cm wide, elliptical, somewhat falcate, cuneate to somewhat decurrent at base, long-acuminate at apex, probably initially sericeous but very soon quite glabrate above and nearly so below, with sparse short brown or yellowish appressed hairs especially on the abaxial midrib to quite glabrate in age, mostly eglandular in proximal 2/3 but often bearing 1–3 tiny impressed glands in a submarginal row in distal third of abaxial surface, the lateral veins and reticulum prominulous on both sides, slightly more so below than above; petiole 5–7 mm long, sericeous to eventually glabrescent, eglandular; stipules perhaps represented by minute rudiments ca 0.1 mm long on stem beside petiole. Inflorescences terminal and axillary, 1.5–3.5 cm long excluding floriferous peduncles and pedicels, shorter than the subtending leaves, densely and persistently brown-sericeous, paniculate with the flowers borne ultimately in umbels of 4 (–6); floriferous bracts 1–2.5 mm long, 0.7–0.8 mm wide, elliptical, rounded at apex, eglandular, abaxially densely sericeous, adaxially sparsely sericeous, persistent as far as known; peduncle 2–3.5 mm long; bracteoles like the bracts or slightly smaller, somewhat spreading and involute, borne at apex of peduncle; pedicel 3.5–5 mm long, appressed-tomentose with hairs lighter brown than on inflorescence axes. Sepals 2.5–3 mm long (1.5–1.8 mm beyond glands), 1.1–1.5 mm wide, narrowly elliptical, obtuse to rounded at apex, completely concealing petals in enlarging bud, revolute in anthesis, abaxially densely appressed-tomentose with ferrugineous hairs, white-tomentose on margin, adaxially thinly tomentose, the anterior eglandular or occasionally bearing 1 gland, the lateral 4 mostly biglandular with the glands 1.2–1.4 mm long. Petals yellow, mostly abaxially sparsely sericeous or tomentose in the center and otherwise glabrous, the claw 2–2.5 mm long (slightly longer and notably thicker in posterior petal than in lateral petals), the limb 2.2–2.8 mm long, 2–2.8 mm wide, elliptical to rotund, erose or coarsely dentate, eglandular. Stamens glabrous; filaments 2–2.8 mm long, straight and slender, longer opposite sepals than opposite petals, basally connate; anthers 0.5–0.9 mm long, the connective uniformly dark red or yellow at very apex. Ovary 0.8 mm high, sericeous; styles 2.2–2.5 mm long, nearly straight, divergent to reflexed in age, glabrous except for the sericeous base, laterally flattened distally and dorsally rounded, truncate, or bluntly short-apiculate at apex. Fruits unknown.

This species, which is known only from the type, is assignable to the large and difficult subgenus *Parabanisteria* (C. V. Morton) C. V. Morton. Within that group, it shares with relatively few other species the distinction of having the flowers borne in umbels of 4–6, and among the species with that inflorescence it most resembles *Heteropterys dichromocalyx* W. R. Anderson, which is known only from its type, collected in Amazonas, Brazil, on the southern slopes of the Pico da Neblina. The two species are readily distinguished because *H. dichromocalyx* has much larger leaves—the lamina is 11–12 cm long and 5–7 cm wide, and the petiole is 8–10 mm long—and the lamina is thinly but persistently sericeous below. In all the characters of their inflorescences they are similar, as are their flowers in most respects. The sepals of *H. dichromocalyx* have white hairs over the distal part of the abaxial surface, not just around the margin; the claw of its posterior petal is shorter than that of the lateral petals; its filaments are 2.6–3.4 mm long; and its



styles are 2.7–3 mm long. Except, perhaps, for the sepal hairs, the differences in the flowers are not very impressive and might all disappear when more material is available. However, the differences in leaf size and vesture are substantial and suggest that these populations both deserve recognition as species, always subject, of course, to re-evaluation when they are better known. The type of *H. dichromocalyx* came from an especially inaccessible area, and it may be a long time before that plant is collected again.

***Heteropterys hatschbachii*** W. R. Anderson, sp. nov.—TYPE: BRAZIL. Mato Grosso do Sul: Mun. Rio Verde do Mato Grosso, Salto das Sete Quedas on Rio Verde, ca 15 km SW of Rio Verde [ca 18°55'S, 54°55'W], shrubby vegetation on sandstone rocks, with sandy soil, 8 Feb 1975 fl/fr, W. R. Anderson 11257 (holotype: MBM!; isotypes: MICH! NY). Fig. 2.

*Heteropterygis mathewsanae* Adr. Juss. affinis, sed habito arborescenti, foliis appressis, lamina foliorum majorum 4–8.5 cm longa et 2.3–4.7 cm lata, petiolo 2–4 mm longo, et samara 21–26 mm longa differt.

Shrub or bushy tree 1.5–4 m tall; stems initially densely and tightly brown-sericeous, glabrescent to glabrate in age. Leaves opposite, appressed; lamina of larger leaves 4–8.5 cm long, 2.3–4.7 cm wide, ovate or elliptical, rounded or subcordate at base, flat at margin, abruptly short-acuminate, acute, obtuse, to rounded at apex, initially densely sericeous on both sides with very short strongly appressed brown hairs turning white in age, eventually glabrescent but with some vesture usually persistent especially proximally on midrib, eglandular or with a row of small abaxial glands parallel to but set in from the margin, the 6–8 pairs of principal lateral veins and intricate reticulum prominent abaxially, not or hardly visible adaxially; petiole 2–4 mm long, densely and persistently sericeous or eventually glabrescent, bearing 2 glands at or below middle  $\pm$  sunk in pits; stipules absent or minute, up to 0.3 mm long, borne on stem beside base of petiole. Inflorescence a densely and persistently brown-sericeous panicle, with the flowers borne ultimately in elongated pseudoracemes (1.3–) 2–9 cm long and containing 8–40 flowers; bracts 1.5–3 mm long, 0.6–1 mm wide, lanceolate, eglandular or bearing 2 tiny glands on margin near middle, abaxially sericeous, adaxially very sparsely sericeous or glabrous, persistent during anthesis and below maturing fruits, persistent or irregularly deciduous at nodes from which pedicels have fallen; peduncle none; bracteoles like bracts but smaller (1–1.6 mm long, 0.4–0.5 mm wide) and eglandular; pedicel 3–4.5 mm long. Sepals 2.5–2.7 mm long, 1–1.7 mm wide, ovate or elliptical, acute, revolute in anthesis, abaxially brown-sericeous, adaxially glabrous, all eglandular or some with rudimentary glands or the lateral 4 biglandular, the glands when well developed 1.1–1.4 mm long. Petals yellow, abaxially loosely sericeous in center and sometimes pilose on margin, erose or denticulate, eglandular; lateral 4 petals spreading or reflexed, the claw 2–2.5 mm long, the limb 2.5–3.5 mm long, 2–3 mm wide; posterior petal erect (?) or spreading, the claw 1.8–2 mm long, the limb 2.5 mm long, 1.7–2.2 mm wide. Stamens glabrous; filaments 1.5–2.5 mm long, longer opposite sepals than opposite petals, all straight and slender, connate at base; anthers 0.9–1.2 mm long, the connective red to black. Ovary 0.7–0.9 mm high, sericeous; styles 2–2.8 mm long, erect and straight or the posterior 2 somewhat divergent from base and then erect, the posterior 2 rotated so that all 3 stigmas face toward posterior petal, glabrous or sericeous near base, dorsally short-hooked at apex, the hook 0.1–0.2 mm long. Samara 21–26 mm long;



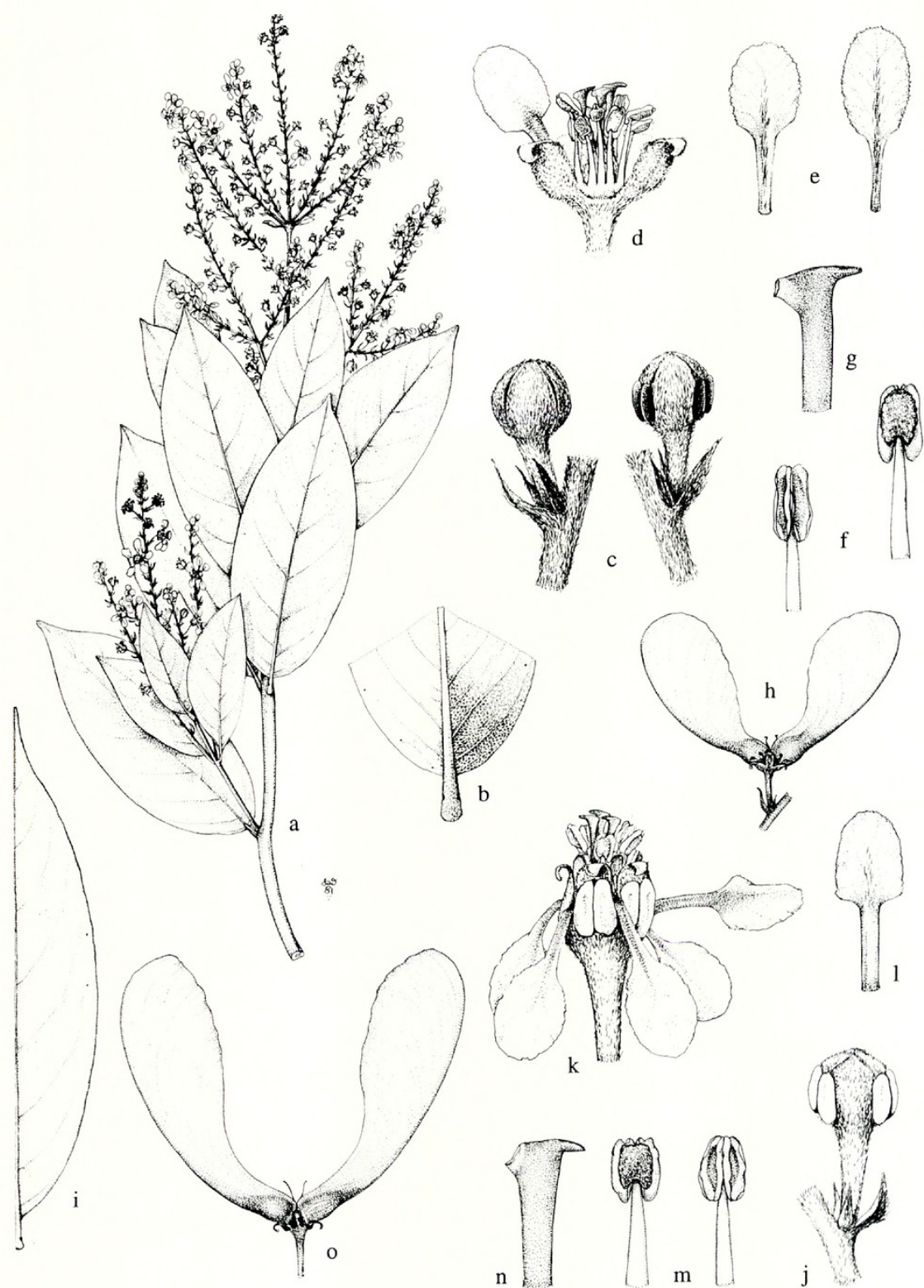


FIG. 2. *Heteropterys hatschbachii* and *H. mathewsana*. a–h, *H. hatschbachii*: a) flowering branch,  $\times 0.5$ ; b) base of leaf, abaxial view, to show glands on petiole, tiny glands on lamina, and fine reticulum,  $\times 1.5$ ; c) flower buds, with and without glands on lateral sepals,  $\times 5$ ; d) flower, side view, with all petals removed except the posterior and with 1 lateral sepal cut away,  $\times 5$ ; e) petals, abaxial view to show hairs, posterior petal to left, lateral petal to right,  $\times 5$ ; f) anthers, adaxial view to left, abaxial view to right,  $\times 10$ ; g) distal portion of style,  $\times 20$ ; h) fruit with 2 samaras developed,  $\times 1$ . i–o, *H. mathewsana*: i) leaf, abaxial view,  $\times 0.5$ ; j) flower bud,  $\times 5$ ; k) flower, side view with posterior petal to right,  $\times 5$ ; l) posterior petal, abaxial view,  $\times 5$ ; m) anthers, abaxial view to left, adaxial view to right,  $\times 10$ ; n) distal portion of style,  $\times 20$ ; o) fruit with 2 samaras developed,  $\times 1$ . Drawn by Karin Douthit; a–h from Anderson 11257 except gland-bearing bud in c, from Hatschbach 37651; i–n from Ribeiro & Pinheiro 1189; o from Ribeiro & Pinheiro 1188.



dorsal wing 17–22 mm long, 9–11 mm wide, the abaxial edge curved gradually upward; nut 4–6 mm long, 3–4 mm high, ovoid.

ADDITIONAL SPECIMENS EXAMINED: **Brazil.** MATO GROSSO: Mun. Chapada dos Guimarães, Portão do Inferno, on rocky slopes, Nov fl, *Hatschbach* 37549 (MICH); Mun. Chapada dos Guimarães, Rio Cachoeirinha, cerrado on rocky soil, Nov fl, *Hatschbach* 37651 (MBM, MICH).

This species is named for my old friend Gert Hatschbach (b. 1923), whose love of plants and inexhaustible energy have enabled him to make marvelous contributions to taxonomic botany in Brazil. Vegetatively, *Heteropterys hatschbachii* suggests *H. fruticosa* W. R. Anderson, another species of subgenus *Parabanisteria* with a shrubby habit and small, short-petioled, appressed leaves. However, it is probably actually most closely related to *H. mathewsana* Adr. Juss. Both species have elongated, many-flowered pseudoracemes, sessile pedicels (the latter a very rare condition in the subgenus), and small petals that are abaxially sericeous in the center. They are easily distinguished, because *H. mathewsana* is a woody vine, its leaves are spreading and have a longer petiole and lamina, and its samara is much longer. See Figure 2 for a comparison of the two species.

As often happens in *Heteropterys* subgenus *Parabanisteria*, some plants of this species have the sepals completely eglandular and others have the four lateral sepals biglandular. In this case, both conditions occur in the type collection, as well as flowers with rudimentary glands; this is a good demonstration of why I assign no taxonomic significance to the presence or absence of calyx glands in this group.

In the Mato Grosso checklist (Anderson, 1998, p. 182) I cited this species as “*Heteropterys* sp. nov. ined. no. 2.”

***Heteropterys marginata*** W. R. Anderson, sp. nov.—TYPE: BRAZIL. Mato Grosso: Mun. St. Antonio de Leverger, Highway St. Antonio de Leverger—Barão de Melgaço at Km 46, 16°05'S, 55°50'W, 130–160 m, campo de murundus, 16 Sep 1991 fl, *M. Schessl* 2266 (holotype: MICH!).

*Heteropterygis grandiflorae* Adr. Juss. affinis, sed pseudoracemis 1–2 (–2.5) cm longis ex 4–8 (–10) floribus constantibus, sepalis abaxialiter ferrugineo-tomentosis margine albo-tomentosis, et petalis margine non profunde erosis posterioribus pilosis differt.

Shrub 1.8–2.5 m tall, much branched, forming dense thickets; stems initially densely rufous-sericeous with some hairs spreading, soon glabrate. Leaves opposite or subopposite or occasionally whorled; lamina 4.5–9 cm long, 2–4.9 cm wide, elliptical or somewhat obovate, rounded or broadly cuneate at base, rounded or emarginate at apex, initially densely sericeous on both sides with the hairs short, straight, appressed or somewhat spreading, glabrate at maturity or sparsely sericeous below, especially on midrib, with 3–7 small abaxial glands in a row well within margin, the lateral veins and reticulum about as prominent above as below; petiole 3–4 mm long, initially sericeous but glabrate at maturity, eglandular; stipules not found. Inflorescences borne mostly on leafless branches, apparently developing after the fall of previous season's leaves and before the emergence of new leaves, densely and persistently sericeous or appressed-tomentose with reddish brown hairs, paniculate with the flowers borne ultimately in pseudoracemes 1–2 (–2.5) cm long and containing 4–8 (–10) flowers; floriferous bracts and bracteoles 1–1.5 mm



long, elliptical, eglandular or (especially the bracteoles) with 1 tiny marginal gland on each side, persistent, at least during anthesis; peduncle 1–3.5 mm long; pedicel 4.5–6 mm long, with lighter brown hairs. Sepals 3–3.5 mm long (2 mm beyond glands), 1.5–2 mm wide, narrowly ovate, completely concealing petals in enlarging bud, revolute in anthesis, abaxially tomentose with ferrugineous hairs, white-tomentose on margin, adaxially glabrous, the anterior eglandular or bearing 1 small gland, the lateral 4 biglandular with the glands 1.5–1.9 mm long. Petals yellow, glabrous except the posterior 1–3 white-pilose on the margin, the claw 4 mm long, the limb 6–9 mm long, 7.5–10 mm wide, ovate, shallowly erose, eglandular. Filaments 2–3 mm long, straight and slender, longer opposite sepals than opposite petals, basally connate; anthers 1.1–1.2 mm long, the locules pilose at base and apex, the connective proximally reddish, distally yellow. Ovary 1.5 mm high, sericeous; styles 2.2 mm long, the anterior straight, the posterior 2 somewhat arcuate and slightly turned toward posterior petal, glabrous or sericeous at very base, laterally flattened distally and dorsally truncate or bluntly apiculate at apex. Fruits unknown.

ADDITIONAL SPECIMENS EXAMINED: **Brazil**. Mato Grosso: Type locality, Sep fl, *Schessl* 2274 (MICH); Mun. Poconé, Faz. Ipiranga 10 km S of Poconé, seasonally inundated floodplains near the Bento Gomes river, Sep fl, *Schessl* 190992-1-6 (MICH).

This species is another member of subgenus *Parabanisteria*, in which it is closest to *Heteropterys grandiflora* Adr. Juss. *Heteropterys marginata* is readily distinguished from that species by the densely white-tomentose margin of the sepals, contrasting dramatically with the ferrugineous hairs covering the abaxial surface. It also differs in having the petals only shallowly erose, and the limb of at least the posterior petal white-pilose on the margin. The epithet *marginata* refers to these characters of the sepals and petals.

I designated this plant "*Heteropterys* sp. nov. ined. no. 1" in the Mato Grosso checklist (Anderson, 1998, p. 182).

**Mascagnia anderssonii** W. R. Anderson, sp. nov.—TYPE: ECUADOR. Loja: 3 km from Malacatos on road to Vilcabamba, 1850 m, dry scrub, 3 Feb 1985 fl, *G. Harling & L. Andersson* 21477 (holotype: GB!, isotype: US!).

Liana lignosa. Lamina foliorum majorum 3–11 cm longa, 1.5–5.2 cm lata, adaxialiter mox glabrata, abaxialiter dense et pertinaciter argenteo-sericea, margine utrinque (0–) 1 (–2) glandulis parvis instructa; petiolus 3–11 mm longus. Inflorescentia panícula brevis, floribus in umbellis 4 (–6)-floris; pedunculus 1–2.5 mm longus; pedicellus 6–11 mm longus (–13 mm in fructu). Petala lutea, abaxialiter sericea. Antherae 0.8–1.2 mm longae, connectivo rubro vel nigro. Styli 1.4–2.4 mm longi, apice dorsaliter brevi-apiculati. Samara alis lateralibus inter se liberis, sericeis vel glabrescentibus, 5.5–11 mm latis altisque, ala dorsali (2–) 3–7 mm lata, 5–10 mm alta.

Woody vine; stems initially sericeous, eventually glabrescent. Lamina of larger leaves 3–11 cm long, 1.5–5.2 cm wide, elliptical or ovate, cuneate to almost rounded at base, acuminate, acute, obtuse, to rounded and sometimes emarginate at apex, initially sericeous above but soon glabrate, densely and persistently sericeous below with the tightly appressed hairs giving the leaf a silvery metallic sheen, bearing (0–) 1 (–2) small glands on margin near base; petiole 3–11 mm long,  $\pm$  persistently



sericeous, eglandular or bearing 2 small glands at apex or slightly below; stipules 0.3–0.7 mm long, triangular, interpetiolar. Inflorescence a short, dense, axillary or terminal panicle with the flowers ultimately borne in umbels of 4 (–6), sericeous throughout; bracts 0.7–2 mm long, narrowly triangular or elliptical, appressed, eglandular, abaxially sericeous to glabrescent, adaxially glabrous, persistent; peduncle 1–2.5 mm long; bracteoles like the bracts but shorter, 0.4–1 mm long, borne at apex of peduncle; pedicel 6–11 mm long (–13 mm in fruit). Sepals leaving the outer petal exposed during enlargement of bud, 1.5–2 mm long, 1–2 mm wide, appressed or slightly revolute around margin in anthesis, rounded at apex, abaxially densely sericeous except glabrous and membranous near margin, adaxially glabrous, all eglandular or the anterior eglandular and the lateral 4 biglandular with the glands 0.9–1.5 mm long. Petals yellow, very densely sericeous abaxially on claw and limb except near margin; 4 lateral petals spreading, the claw 1–2 mm long, the limb 3–4.5 mm long, 3–3.5 mm wide,  $\pm$  concave, subentire or denticulate; posterior petal  $\pm$  erect, the claw 1.8–2 mm long, the limb 2.5–2.8 mm long, 2–2.5 mm wide, flat, short-fimbriate with the divisions sometimes thickened. Filaments 1.9–2.8 mm long, longest opposite anterior sepal, thickest opposite anterior sepal and all 5 petals, abaxially glabrous or (usually) sparsely sericeous, adaxially glabrous, nearly straight, 1/4–1/2 connate; anthers 0.8–1.2 mm long, the connective red to black. Ovary 1.2 mm high, sericeous, especially distally; styles 1.4–2.4 mm long, subequal with the anterior usually slightly longer or slightly shorter than the posterior 2, glabrous, straight or slightly bowed, dorsally short-apiculate at apex. Samara tomentose on nut, sericeous to glabrescent on wings, butterfly-shaped with 2 discrete lateral wings and a well-developed dorsal wing, and without additional outgrowths between lateral and dorsal wings; wings erose or coarsely and irregularly dentate; lateral wings 5.5–11 mm wide (measured from nut to farthest margin) and high (measured at right angles to width), roughly square or rectangular or trapezoidal; dorsal wing (2–) 3–7 mm wide (measured from nut to farthest margin) and 5–10 mm high (measured at approximately right angles to width), rectangular or triangular with the apex of the triangle tilted toward apex of nut; ventral areole 3–3.5 mm high, 0.6–1.2 mm wide, linear to elliptical.

ADDITIONAL SPECIMENS EXAMINED: **Ecuador.** GUAYAS: Guayaquil Cantón: Cerro Azul, forest, Sep fr, *Asplund* 17589 (S); Hacienda Barcelona, 12 km from Guayaquil on road to Salinas-Playas, tropical deciduous forest, May fl, *Gilmartin* 712 (US) and Jul fr, *Gilmartin* 750 (US); Cerro Blanco, Km 15 carretera a Salinas, 2°10'S, 79°58'W, 300 m, bosque seco tropical, Aug fr, *Rubio et al.* 1924 (MICH); Cerro Azul, Km 13, carretera a Salinas, 2°10'S, 79°58'W, 300 m, bosque seco tropical, May fr, *Tipaz et al.* 868 (MICH).—LOJA: Mollococha, ca 10 km W of Vilcabamba, 1600 m, dry scrub, Feb fl, *Harling & Andersson* 21767 (GB, MICH); Hac. Comunidades, S. Vilcabamba, 1600 m, dry slopes, May fr, *Sparre* 16076 (S). **Peru.** LAMBAYEQUE: Km 28 E of Olmos, Mesones–Muro Highway between Olmos and Jaen, 1150–1200 m, Jan fl, *Hutchison & Wright* 3466 (F).—PIURA: Huancabamba, La Beatita, 1300 m, laderas junto a monte perenne, Apr fl, *Llatas Quiroz* 1854 (F, MICH).

I am happy to name this species in honor of Dr. Lennart Andersson (b. 1948), student of New World Marantaceae and Musaceae and the flora of Ecuador, and one of the collectors of the type.

The populations included here under this name fall into two groups. Those from low elevations (up to 300 m) near Guayaquil have relatively large leaves (8–11  $\times$  4–5.2 cm) that are often acuminate. The populations from higher elevations (1150–1850 m) in Loja, Piura, and Lambayeque have smaller leaves (up to 6.5  $\times$  3.2 cm) that are mostly obtuse to rounded at the apex. In all other characters they are similar, and they all occupy dry habitats. I suspect that thorough collection



will show a cline in leaf size and shape from low to high elevations, so at least for now I am treating all this variation as one species.

*Mascagnia anderssonii* belongs to a group of species in which the oldest names are *M. sinemariensis* (Aubl.) Griseb. and *M. chlorocarpa* (Adr. Juss.) Griseb. The group is defined by having the glands on the lamina (if any) strictly marginal, the petals yellow and abaxially densely sericeous, and the samara butterfly-shaped (i.e., with two quite distinct lateral wings). Within that group, there are two previously described species that have the lamina abaxially more or less densely and persistently sericeous, *M. dukei* Cuatrec. & Croat and *M. chasei* W. R. Anderson. *Mascagnia dukei* was described from a collection from wet forest in Panama and is still known only from its type, which bears fruits; *M. chasei* is a species of dry thickets and woodlands in Bahia, Brazil. Both *M. dukei* and *M. chasei* are immediately distinguished from *M. anderssonii* by the samara, which lacks a dorsal wing in those two species; there may be a tiny apical-dorsal crest ca 1 mm high and wide in *M. dukei*, but nothing like the well-developed wing of *M. anderssonii*. *Mascagnia chasei* differs further in having its flowers borne in an unbranched pseudoraceme with the 2–5 pairs of flowers separated by internodes; the abaxial vestiture of the lamina is looser and often less dense; the pedicel is only 3.5–5 mm long; and the connective of the anthers is brownish, not red to black as in *M. anderssonii*. *Mascagnia dukei* shows the following additional differences from *M. anderssonii*: its pedicel is sessile or subsessile (with the peduncle rarely up to 0.5 mm long); the lamina lacks glands on the margin; the styles bear a well-developed dorsal hook at the apex; the lateral wings of the samara are higher, 15 mm or more; and the wings of the immature samara are more tomentose than sericeous. There is also the difference in habitats, *M. dukei* being a plant of wet forests. *Mascagnia dukei* has relatively large leaves, like those of the large-leaved populations of *M. anderssonii* from Guayas, while *M. chasei* has smaller leaves very like those of the higher-elevation populations of *M. anderssonii*.

Populations of *Mascagnia anderssonii* with glandular and eglandular sepals occur at both low and high elevations. As in other groups, I accord no taxonomic importance to that character, but for the record I should state that in this case the type has all the sepals eglandular.

**Mezia beckii** W. R. Anderson, sp. nov.—TYPE: BOLIVIA. Pando: Prov. Manuripi, trocha entre el campamento Bay y Curichón, monte alto, 18 Oct 1989 fl/fr, S. G. Beck 19513 (holotype MICH!).

*Meziae araujoi* Nied. affinis sed bracteis caducis et bracteola exteriori 1 glandula abaxiali excentrica instructa differt.

Woody vine; stems initially dark-brown-sericeous, eventually glabrescent. Lamina of leaves (only 2 seen) 20–23 cm long, 9.3–10.3 cm wide, elliptical or slightly obovate, cuneate at base, flat and hardly thickened at margin, abruptly short-acuminate at apex with the acumen 8 mm long, glabrate at maturity or bearing a few dark brown hairs abaxially near base, abaxially bearing 1 large gland at base on each side of midrib, sunk in crypts, and a single row of small impressed glands in a distal row several mm inside margin, the reticulum and 4–5 pairs of lateral veins visible but only moderately raised above, prominent below; petiole (only 1 seen intact) 26 mm long, glabrate at maturity, eglandular; stipules not seen, presumably borne on the interpetiolar ridge. Inflorescence open with spreading branches, appressed-tomentose with dark brown hairs to patchily glabrescent, the flowers



ultimately borne in 4-flowered umbels; stalk of the lateral umbels 5–14 mm long, bearing 1 pair of caducous sterile bracts at very base or up to 3 mm above base, well below middle; floriferous bracts (only 1 seen) 4.3 mm long, obovate and broadly rounded at apex, conduplicate, eglandular, abaxially densely appressed-tomentose with brown hairs, adaxially glabrous, caducous; peduncle 11–18 mm long in flower, thickened and elongated in fruit, brown-tomentose; bracteoles 5–7.5 mm long, the outer bearing 1 protuberant circular or elliptical gland 0.5–1 mm long abaxially at base near one margin, the inner eglandular, both abaxially densely subsericeous or appressed-tomentose with the hairs brown, adaxially glabrous, broadly rounded and often emarginate at apex, the midrib not raised abaxially, persistent at least in immature fruit; pedicel ca 1 mm long in flower, ca 2 mm long in immature fruit, hirsute with the hairs appressed. Sepals 4.5–5.5 mm long beyond glands, 2–2.5 mm wide, spatulate, spreading or reflexed in anthesis, strongly revolute along sides, abaxially densely brown-tomentose, adaxially glabrous, the anterior eglandular, the lateral 4 biglandular with the glands 2.3–2.5 mm long, completely connate, the pair 1.8–2.3 mm wide, obovate or quadrate. Petals yellow, abaxially loosely white-tomentose in center; lateral petals with the claw 2–3 mm long, the limb 7–11 mm long, 6–9 mm wide, significantly larger in anterior pair than in posterior pair, orbicular or obovate, crumpled, erose, eglandular; posterior petal (probably not full-sized) with the claw 1.6 mm long, thick, constricted at apex, the limb 6 mm long, 4.7 mm wide, obovate, dentate or short-fimbriate, eglandular. Filaments connate only in the basal 0.6 mm, tomentose distally, erect and straight or (especially opposite lateral sepals) bent toward center of flower, strongly heteromorphic, 2–4 mm long, shortest opposite posterior petal, then progressively longer opposite anterior-lateral petals, lateral sepals, and posterior-lateral petals, longest opposite anterior sepal; anthers 1.5–2 mm long, white-tomentose at base, with the connective adaxially dark red its whole length and abaxially dark red proximally and yellow distally, heteromorphic, those opposite sepals more abundantly tomentose than those opposite petals and having the connective widened so as to displace the locules laterally. Ovary 1.5 mm high, tomentose; styles 3–3.5 mm long, sericeous at base, nearly terete, pedaliform at apex (i.e., with a short, broad abaxial extension resembling from above the sole of a shoe); anterior style nearly erect or inclined slightly toward posterior petal and often somewhat sigmoid; posterior styles lyrate or sigmoid, bent outward in proximal third, then bent inward, and distally bent outward, with the stigmas twisted toward posterior petal. Samara approximately circular, 65–77 mm wide and high, appressed-tomentose on the nut, thinly sericeous on the wings; lateral wing 25–35 mm wide, continuous at base, deeply incised at apex to where both lobes fuse with proximal 5–10 mm of central dorsal wing, membranous, nearly flat except near nut, entire or repand at margin; central dorsal wing 7–15 mm wide, 23–25 mm high, semicircular or somewhat repand, apparently nearly flat; dorsal wing connected to lateral wing on both sides by 5–7 winglets at right angles to those wings and fused with them, each winglet 10–12 × 7–8 mm, the winglets often interconnected by a short winglet parallel to dorsal wing; nut outside lateral wing bearing 8–10 ribs on each side radiating from ventral areole, some ribs developing into winglets up to 13 × 5 mm, these adnate to underside of lateral wing and sometimes also connate basally with each other to produce a crest or winglet parallel to the lateral wing; the ventral areole of the nut 11–12 mm high, 4 mm wide, narrowly ovate, bordered by 2 ribs that usually remain on samara.



This interesting species is named in honor of Stephan G. Beck (b. 1944), in recognition of his many years of work in Bolivian floristics and ecology. It is known only from the type, the only specimen of *Mezia* that I have seen from Bolivia, although *M. mariposa* is known from Rondônia, Brazil, on the border with Bolivia.

*Mezia beckii* belongs to a group of species in which the posterior styles are lyrate; the other species in that group are *M. angelica* W. R. Anderson, *M. araujoi* Nied., and *M. mariposa* W. R. Anderson (for the distribution of those three species, see p. 80 of Anderson, 1997). In most characters *M. beckii* resembles *M. araujoi*, a species of southeastern Brazil (Espírito Santo, Rio de Janeiro, and eastern Minas Gerais), and if this collection had come from that area I might have given it that name without careful study. However, such study reveals that in *Beck 19513* the bracts are caducous and the outer bracteole has one large eccentric gland at the abaxial base, the latter peculiarity being shared only with *M. mariposa*, which is widespread in the Amazon valley. In other important characters *M. mariposa* is quite different from *M. beckii*, e.g., its petals are glabrous, the anthers opposite the petals are nearly or quite glabrous, and the butterfly-shaped samara has two distinct lateral wings and lacks winglets between the dorsal and lateral wings or outside the lateral wings. *Mezia beckii* seems to represent an intriguing link between the nearly-identical but geographically disjunct species *M. araujoi* and the geographically contiguous but morphologically distinct species *M. mariposa*.

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