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FLORA OF PERU

J. FRANCIS MACBRIDE
AND COLLABORATORS

FAMILY COMPOSITAE: PART III

GENUS *MIKANIA* — TRIBE EUPATORIEAE

WALTER C. HOLMES

SIDNEY McDANIEL

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MIKANIA

Mikania Willd., Sp. Pl. 3: 1742. 1803. TYPE: *M. scandens* (L.) Willd. (*Eupatorium scandens* L.). Name and type conserved.

Carelia A. L. Jussieu ex Cav., An. Ci. Nat. 6: 317. 1802 (1803), not *Carelia* G. Pontedera ex Fabricus 1759. TYPE: *C. satireiaefolia* Cav. = *Mikania amara* Willd.

Corynanthelium Kunze, Linnaea 20: 19. 1847. TYPE: *C. moronoa* Kunze.

Moronoa hort. ex Kunze, Linnaea 20: 19. 1847, nom. nud. pro syn.

Morrenia hort. ex Kunze, Linnaea 20: 19. 1847, nom. nud. pro syn. TYPE: *M. odorata* Kunze, nom. nud.

Willoughbya Neck. ex Kunze, Rev. Gen. Pl. 371. 1891. TYPE: *Eupatorium scandens* L. = *Mikania scandens* (L.) Willd.

Willughbaeya Neck., Elem. 1: 82. 1790, nom. nud.

Herbs or woody **perennials**, twining or somewhat shrubby, rarely erect; stems round or hexagonal. **Leaves** opposite, rarely verticillate, usually petiolate, simple, entire, toothed or rarely divided, pinnately or palmately veined. **Inflorescence** paniculate, the ultimate segments spicate, racemose, corymbose, cymose, glomerate, or thyriform. **Heads** homogamous, 4-flowered, rarely 3- or 5-flowered; involucre bracts 4, equal, mostly oblong, with or without a fifth outermost one (exterior bract or bracteole); receptacle small, naked, glabrous; corollas white, pink-purple, green, pale greenish yellow (to reportedly pale yellow in *M. lutescens*), tubular, the tube slender, sometimes slightly enlarged at the base by the enclosed nectary, the throat gradually or suddenly enlarged, turbinate, cylindrical, or campanulate, corolla teeth 5, equal, deltoid or lance-linear, usually shorter than but sometimes exceeding the length of the throat; anthers basally rounded or more rarely emarginate or obscurely subsagittate, the terminal appendage ovate or oblong; style branches elongate, clavellate, or filiform. **Achenes** pentagonal, prismatic or tapering downward; pappus bristles capillary, numerous in 1 or rarely 2 series, slightly scabrid or barbellate, rarely smooth, free or very slightly connate into a narrow ring at the base, white, pale buff, or fulvous.

Mikania (Compositae-Eupatorieae) is well represented in Peru, this present work recognizing 76 species. This number is only exceeded in Brazil, with five times the area of Peru, where Barroso (1959) reports 152 species. The Peruvian species have received no complete taxonomic treatment since the work of Robinson (1922) on the *Mikania* species of northern and western South America. Robinson recognized 37 species, many based upon description alone and numerous others being superfluous synonyms based upon the premise that one species was unlikely to occur in two widely separated areas, i.e., a phytogeographic species concept. Since then most work has consisted of descriptions of

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proposed species, making determinations difficult, if not impossible, without comparison with types. This present paper is intended to provide keys, descriptions, specimen citations, and nomenclatural clarification of all known Peruvian species of *Mikania*.

This work is the result of herbarium and field studies begun in 1973 and is part of a continuing effort to revise the entire genus. Material was available from 20 institutions and we are greatly indebted to the curators of those institutions for the loan of specimens which included types of most of the Peruvian species of *Mikania*. Two herbaria not included in *Index Herbariorum* (ed. 6) are Herbarium Amazonense (AMAZ), Universidad de la Amazonia Peruviana, Iquitos, Perú, and Institute for Botanical Exploration (IBE), Mississippi State, Mississippi.

Mikania is a well-marked genus of mostly perennial twiners with opposite to rarely verticillate leaves. Heads are singularly uniform, each possessing four flowers enclosed by four involucre bracts that are usually subtended by an exterior bract. This uniformity within the heads is not reflected in the disposition of the heads into an inflorescence of a secondary nature (capitulescence) which may be spicate, racemose, thyrsoïd, corymbose (including ternately branching corymbs), or glomerate. In this work *inflorescence* actually refers to capitulescence, which has been standard usage in the genus. The nature of the capitulescence has been the major basis of segregation of the genus into sections. These sections are not followed, due to intergradation, and such division is best postponed pending further studies and a treatment of the entire genus.

Although the genus is probably one of the most easily recognized and most uniform of the Compositae-Eupatorieae, difficulty is often encountered in specific delimitation. Aside from the large number of species and sparsity of current works, this difficulty is due, in large part, to several highly polymorphic species "complexes" that have been discussed by Robinson (1934) and Steyermark (1953). When portions of these "complexes" are examined for a limited area, they may well appear to be good species. Critical study over a wider area, however, shows these species to be connected by intermediates. Normally the major differences encountered concern the type or amount of pubescence and leaf characters (shape, texture, etc.), which, in one example, have been shown to vary on the same plant and are highly unreliable for specific delimitation (see Steyermark, 1953). Among the polymorphic species are *Mikania banisteriae* DC., *M. hookeriana* DC., *M. vitifolia* DC., *M. micrantha* H.B.K. and *M. parviflora* (Aubl.) Karst. Certainly more names will be added to this list in future studies. In these groups, as well as certain others, the species concept followed is similar to that of the treatment by Steyermark (1953) of *M. banisteriae*. For further information on these complexes, refer to the taxonomic treatment.

In construction of the keys, an attempt was made to utilize the most obvious character, mostly macroscopic, that would separate the species, usually leaf characters, type of secondary inflorescence, or head size. Between closely related species, use of a 10× lens was often necessary, particularly for characters of involucre bracts and corollas. In this work, the corolla tube is the unexpanded portion and the throat the expanded portion less the teeth. The peduncles supporting the individual heads are referred to as "pedicels," which is common usage in this genus. Leaf measurements are for the blade only, petiole length is given separately. Heads are measured from the base of the involucre to the tips of the corolla tube. A conscious effort was made to include

key characters with little or no leeway in interpretation; however, this was not always possible. In instances where a character could be interpreted in more than one way, the species involved should key under both leads.

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KEY TO GROUPS

1. Leaves parted or divided to midveinI.
1. Leaves entire, serrate, crenate, etc., but not parted to midvein.
 2. Heads in subspherical somewhat dense glomerulesII.
 2. Heads in spikes, racemes, panicles, or corymbs, but not in dense subspherical glomerules.
 3. Heads in spikes or racemesIII.
 3. Heads in panicles or corymbs.
 4. Heads sessile or nearly so and regularly in groups of 3's at the tips of branchesIV.
 4. Heads pedicellate, not in groups of 3's at tips of branches.
 5. Leaves palmately veinedV.
 5. Leaves pinnately or subpinnately veinedVI.

KEYS TO SPECIES

GROUP I

1. Leaves 2-3-pinnate, leaflets less than 1 cm in diameter25. *M. filicifolia*.
1. Leaves palmately divided; leaflets usually wider than 1 cm69. *M. ternata*.

GROUP II

1. Leaves cordate at base.
 2. Heads in a congested spiciform continuous or more or less interrupted glomerule28. *M. haenkeana*.
 2. Heads in a very dense subspherical glomerule.
 3. Exterior bract ca. 1/2 the length of the involucre, leaves semicoriaceous, leaf bases truncate to at most subcordate15. *M. conglomerata*.
 3. Exterior bract as long as or greater than the length of the involucre, leaves membranous, leaf bases distinctly cordate14. *M. congesta*.
1. Leaves truncate, cuneate, or rounded at base, not at all cordate.

- 4. Heads 5–6 mm long, mature cauline leaves 15 cm or more long (mature cauline leaves absent on many specimens).
 - 5. Leaves distinctly feather veined, inflorescence spicate48. *M. megalophylla*.
 - 5. Leaves subpinnately veined from near the base, inflorescence dense, subspherical15. *M. conglomerata*.
- 4. Heads 8–10 mm long, mature cauline leaves usually less than 15 cm long.
 - 6. Leaves ovate to broadly ovate, involucre bracts distinctly and prominently swollen at the base, glomerule somewhat elongate30. *M. hookeriana*.
 - 6. Leaves lanceolate to narrowly ovate, involucre bracts scarcely swollen at the base, glomerule spherical.
 - 7. Corolla ca. 4 mm long, exterior bract ovate, leaf bases truncate21. *M. desmocephala*.
 - 7. Corolla ca. 6–6.5 mm long, exterior bract linear (not seen in *M. weberbaueri*), leaf bases acute to obtuse.
 - 8. Leaf apices acute to abruptly acuminate, pappus bristles not thickened at tips68. *M. tambillensis*.
 - 8. Leaf apices long attenuate, pappus bristles thickened at tips75. *M. weberbaueri*.

GROUP III

- 1. Leaves verticillate62. *M. simpsonii*.
- 1. Leaves opposite.
 - 2. Leaves clearly palmately veined (at least on mature cauline leaves).
 - 3. Leaf bases distinctly cordate to subcordate.
 - 4. Heads on pedicels ca. 5 mm long19. *M. cuzcoensis*.
 - 4. Heads sessile or nearly so.
 - 5. Leaf margins conspicuously serrate, teeth ca. 1 cm apart56. *M. pendula*.
 - 5. Leaf margins entire.
 - 6. Heads ca. 5 mm long, in rather dense, somewhat elongated glomerules28. *M. haenkeana*.
 - 6. Heads 7–12 mm long, in rather loose elongated spikes.
 - 7. Heads 10–12 mm long72. *M. vargasii*.
 - 7. Heads 7–9 mm long2. *M. aquaria*.
 - 3. Leaf bases truncate or cuneate, but not clearly cordate or subcordate.
 - 8. Leaves deltoid, hastately lobed at the base, base truncate at insertion of petiole52. *M. ochroleuca*.
 - 8. Leaves ovate or elliptic, not hastately lobed at base.
 - 9. Leaves elliptic, less than 4 cm wide76. *M. woytkowskii*.
 - 9. Leaves ovate, 5 cm or more wide.
 - 10. Heads in rather dense, subspherical glomerules, base of involucre bracts swollen30. *M. hookeriana*.
 - 10. Heads in elongated spikes, base of involucre bracts not swollen2. *M. aquaria*.
- 2. Leaves clearly pinnately veined.
 - 11. Upper leaf surfaces scabrous.
 - 12. Heads 8–10 mm long57. *M. psilostachya*.
 - 12. Heads ca. 5 mm long33. *M. infesta*.
 - 11. Upper leaf surfaces not at all scabrous.
 - 13. Heads distinctly pedicellate.
 - 14. Leaves at most 5 cm long, coriaceous, involucre bracts 2.5 mm long54. *M. parvicapitulata*.
 - 14. Leaves 6–15 cm long, thin, involucre bracts 3 mm long20. *M. decora*.
 - 13. Heads sessile or nearly so.
 - 15. Leaf bases cuneate.
 - 16. Leaf apices rounded to blunt67. *M. szyszyłowiczii*.
 - 16. Leaf apices acute to acuminate31. *M. huanucoensis*.
 - 15. Leaf bases obtuse to truncate.
 - 17. Heads in 3's and 5's at the tips of the branchlets65. *M. stuebelii*.
 - 17. Heads not in 3's or 5's at the tips of the branchlets.

18. Mature cauline leaves greater than 25 cm long, heads antrorsely oriented, not perpendicular to branches of inflorescence 48. *M. megalophylla*.
18. Mature cauline leaves less than 20 cm long, heads perpendicular to branchlets or inflorescence.
19. Inflorescence lax, heads remotely spaced on branchlets.
20. Corolla tube 1-1.2 mm long 53. *M. oreopola*.
20. Corolla tube ca. 2 mm long 38. *M. klugii*.
19. Inflorescence dense, heads on branchlets usually less than 5 cm long.
21. Corolla tube ca. 0.5 mm long 36. *M. jelskii*.
21. Corolla tube 1.0 mm long or more.
22. Leaves elliptic-ovate, plant with dark glandular punctations on leaves and branchlets, leaf margins not revolute 26. *M. glandulifera*.
22. Leaves ovate, lacking glandular punctations, leaf margins revolute 42. *M. leiostachya*.

GROUP IV

1. Corolla teeth greater than or equal to the length of the throat 63. *M. speciosa*.
1. Corolla teeth less than the length of the throat.
2. Leaves lanceolate, ca. 4× or more longer than wide.
3. Plant blackening upon drying, involucre bracts oblong, ca. 8 mm long 66. *M. stygia*.
3. Plant not blackening upon drying, involucre bracts spatulate, ca. 3 mm long. ... 39. *M. lanceolata*.
2. Leaves ovate, oblong, or elliptic, less than 3× longer than wide.
4. Leaf bases conspicuously decurrent upon petiole 27. *M. guaco*.
4. Leaf bases truncate, obtuse or acute to shortly cuneate, but not at all conspicuously decurrent upon the petiole.
5. Inflorescence a panicle 65. *M. stuebelii*.
5. Inflorescence a corymb or heads in a somewhat dense subspherical glomerule.
6. Inflorescence a very dense corymb, appearing as a rather dense subspherical glomerule 68. *M. tambillensis*.
6. Inflorescence a more or less lax corymb.
7. Petioles at most 5-6 mm long.
8. Leaves densely punctate with reddish-orange glands, involucre bracts ca. 6.5 mm long 58. *M. pycnadenia*.
8. Leaves at most puberulent, not punctate with reddish-orange glands, involucre bracts ca. 4.5 mm long 9. *M. brooksii*.
7. Petioles 10 mm or more long.
9. Stem somewhat hexagonal, exterior bract ovate, petiolate, ca. ¼ or less the length of the involucre 29. *M. hexagonocaulis*.
9. Stems terete, exterior bract obovate, somewhat petiolate, ca. ½ or more the length of the involucre 55. *M. parviflora*.

GROUP V

1. Inflorescence paniculate.
2. Leaf bases cordate to hastate.
3. Heads 4-5 mm long, in rather dense somewhat elongate spikes 28. *M. haenkeana*.
3. Heads 7-10 mm long, inflorescence lax, not at all spicate.
4. Corolla throat campanulate, teeth about as long as throat ... 74. *M. vitifolia*.
4. Corolla throat salverform-funnelform, teeth ca. 3× as long as throat 1. *M. angularis*.
2. Leaf bases cuneate to subtruncate.
5. Corolla teeth shorter than throat.

6. Heads sessile, in rather dense somewhat elongated spikes, involucre bracts swollen at base30. *M. hookeriana*.
6. Heads with pedicels 2-6 mm long, in open panicles, involucre bracts not swollen at base71. *M. turbaricola*.
5. Corolla teeth longer than throat.
7. Exterior bract about as long as involucre, branches of inflorescence glabrate34. *M. inornata*.
7. Exterior bract ca. 1/2 as long as involucre, branches of inflorescence crisped-puberulent32. *M. incasina*.
1. Inflorescence corymbose.
8. Leaf bases cuneate, truncate, obtuse, but not distinctly cordate or subcordate.
9. Leaves broadly ovate, greater than 5 cm long.
10. Heads 12-14 mm long17. *M. crassifolia*.
10. Heads 8-9 mm long.
11. Leaves entire43. *M. lindleyana*.
11. Leaves denticulate45. *M. marinii*.
9. Leaves ovate-lanceolate, less than 5 cm long.
12. Leaf bases rounded, exterior bract as long as the involucre, leaves prominently reticulate-areolate51. *M. montana*.
12. Leaf bases acute, exterior bract 1/2 as long as the involucre, leaves not prominently reticulate-areolate12. *M. carnosa*.
8. Leaf bases definitely cordate to subcordate.
13. Stems distinctly hexagonal.
14. Angles of stem riblike, not winged, plants tomentose to tomentulose16. *M. cordifolia*.
14. Angles of stem with narrow subherbaceous wings, plants glabrate to puberulent50. *M. microptera*.
13. Stems terete, quadrangular, multistriate, costate, but not distinctly hexagonal.
15. Leaves less than 1 cm long7. *M. brachyphylla*.
15. Leaves greater than 1 cm long, usually 3 cm or more.
16. Corolla teeth greater than or about equaling the length of the throat.
17. Inflorescence lax, pedicels 5-15 mm long, exterior bract borne well beneath head47. *M. mazanensis*.
17. Inflorescence not lax, pedicels less than 5 mm long, exterior bract borne at summit of pedicel.
18. Leaves triangular, corolla teeth ca. 3x or more as long as throat8. *M. brevifauca*.
18. Leaves broadly ovate, corolla teeth about as long as the throat59. *M. rimachii*.
16. Corolla teeth less than the length of the throat.
19. Heads 4-7 mm long.
20. Plant velutinous, pappus bristles 20-22, smooth23. *M. ecuadorensis*.
20. Plant glabrate to puberulent, not velutinous, pappus bristles 30-35, barbellate49. *M. micrantha*.
19. Heads 10-16 mm long.
21. Leaves 5 cm or less long, triangular, margins dentate, heads 10-11 mm long.
22. Leaves membranous, not glandular, stems not purplish44. *M. lutescens*.
22. Leaves subcoriaceous to somewhat fleshy, glandular, stems purplish73. *M. violaeifolia*.
21. Leaves greater than 5 cm long, margins entire to serrate or dentate, heads 12-16 mm long.
23. Corolla teeth less than 1 mm long3. *M. areolata*.
23. Corolla teeth 1.5 mm or more long.
24. Leaves coarsely dentate, corolla tube ca. 1.5 mm long, throat ca. 6.5 mm long18. *M. cutervensis*.

24. Leaves serrate-crenate, corolla tube and throat about equal in length (ca. 5 mm)13. *M. chimborazensis*.

GROUP VI

1. Inflorescence corymbose.
2. Heads 12–13 mm long, leaves ovate with cordate bases, stems densely puberulent24. *M. featherstonei*.
2. Heads 8–10 mm long, leaves lanceolate with cuneate to obtuse bases, stems glabrous to villous when young.
3. Inflorescence a rather dense corymb, leaf apices long attenuate75. *M. weberbaueri*.
3. Inflorescence an open corymb, leaf apices acuminate5. *M. ascheronii*.
1. Inflorescence paniculate.
4. Corolla throat ca. 2× as long as teeth or tube and throat indistinguishable.
5. Leaves at most ca. 1.5 cm long, margins crenate-serrate, plants densely reddish pubescent4. *M. arthroclada*.
5. Leaves usually 3 cm or more long, margins not crenate-serrate, plant not reddish pubescent.
6. Involucral bracts 5 mm or more long.
7. Leaves coriaceous, margins revolute, often coarsely and irregularly serrate, achenes densely glandular71. *M. turbaricola*.
7. Leaves membranous, margins entire, achenes nonglandular.
8. Leaf bases rounded to truncate, corolla throat campanulate, teeth deltoid35. *M. iquitosensis*.
8. Leaf bases cuneate, corolla throat and tube indistinguishable, teeth lanceolate61. *M. shushunensis*.
6. Involucral bracts 4.5 mm or less long (usually less than 4 mm long).
9. Corolla tube 1 mm or less long, ca. $\frac{1}{4}$ the length of the throat, leaves scabrid above64. *M. stereodes*.
9. Corolla tube longer than 1 mm, ca. $\frac{2}{3}$ the length of the throat, leaves smooth above.
10. Leaf bases acuminate46. *M. mathewsii*.
10. Leaf bases cordate (bracteal leaves subcordate to truncate)22. *M. dudleyi*.
4. Corolla throat ca. the same length as the teeth.
11. Involucral bracts 4–4.5 mm long.
12. Leaves lanceolate, margins prominently callose-denticulate40. *M. lancifolia*.
12. Leaves ovate, elliptic, or lanceolate, margins entire or at most remotely and obscurely callous-denticulate.
13. Involucral bracts glabrate, apices rounded, exterior bract ovate, borne slightly beneath the involucre6. *M. banisteriae*.
13. Involucral bracts pilose-hispid, tawny pilose, tomentose, or villous; apices acute to rounded; exterior bract linear to lanceolate to oblong, borne at the summit of pedicel.
14. Stems somewhat hexagonal60. *M. rugosa*.
14. Stems terete.
15. Stems scabrous70. *M. trachodes*.
15. Stems lanate to tomentose.
16. Heads 9–10 mm long, exterior bract narrowly ovate10. *M. bulbisetifera*.
16. Heads 7–8 mm long, exterior bract linear to oblanceolate11. *M. bullata*.
11. Involucral bracts 3–3.5 mm long.
17. Corolla tube abruptly expanded into a broadly campanulate throat, cauline leaves with cordate bases41. *M. lasiopoda*.
17. Corolla tube gradually expanded into a turbinate throat, cauline leaves with rounded to obtuse bases37. *M. juninensis*.

1. *Mikania angularis* H. & B., Pl. Aeq. 2: 87. 1809. TYPE: Ecuador, Loja, near Gonzanama, *Humboldt & Bonpland* 3434 (P, holotype, not seen, F, photo).

M. laxa DC., Prodr. 5: 200. 1836. TYPE: Peru, Cuchero, *Poeppig* 1218 (G-DC, holotype, not seen, IDC microfiche 800. 822: I. 5; F, photo).

M. armigera Poepp. in Poepp. & Endl., Nov. Gen. Spec. Pl. 3: 52. 1845. TYPE: Peru, Pampayaco, *Poeppig* D (W, holotype, not seen, GH, photo; F, isotype).

Not including *M. salviaefolia* Gardn. considered synonymous with *M. armigera* by Baker in Mart., Fl. Bras. 6(2): 250. 1876.

Somewhat woody twiners; stems terete, glabrate to somewhat rusty-puberulent. Leaves triangular-hastate, to ca. 13 cm long and 13 cm wide, margins entire, apices acute to acuminate, bases subtruncate to cordate, with 2 divergent acute to acuminate basal angles at the sides, surfaces glabrate to somewhat puberulent, 3–5-nerved from the base; petioles 5–8 cm long, slender, puberulent. Inflorescence a panicle, to ca. 30 cm long; branchlets weakly angular, rusty puberulent; pedicels 2–5 mm long, rusty puberulent. Heads 9–10 mm long; exterior bracts ovate-lanceolate, ca. $\frac{1}{3}$ the length of the involucre; involucre bracts oblong, ca. 6 mm long, glabrate, apices rounded; corollas 5–5.5 mm long, white, tube ca. 3.5 mm long, thin, throat abruptly expanded, ca. 0.3 mm long, teeth ovate-oblong, 1.5–1.7 mm long. Achenes ca. 2.7 mm long, grayish brown, angles upwardly scabrid; pappus bristles 30–35, white, ca. 5 mm long, barbellate, thickened at the tips.

Mikania angularis, of Peru, Ecuador, and Colombia, is very similar to *M. vitifolia*, but with corolla teeth 3× or more the length of the throat. *Mikania vitifolia* has corolla teeth about the same length as the throat. Comparison of *M. laxa* with *M. angularis* showed the two to be conspecific (see Holmes & McDaniel, 1979).

CUZCO. Paucartambo: Piuipiui, 720 m, *Vargas* 17793 (US). HUÁNUCO. Huamalies: Monzón River, *Weberbauer* 3640 (GH). JUNÍN. La Merced, Hacienda Schunke, *Macbride* 5290 (F, GH, US).

2. *Mikania aquaria* B. L. Robinson, Contr. Gray Herb. 73: 21. 1924. TYPE: Peru, Junín, La Merced, *Macbride* 5242 (F, holotype).

Robust lianas; stems twisted, costate, hollow, glabrous, internodes to 20 cm or more. Leaves ovate, to 20 cm long and 16 cm wide, margins entire, apices acute, bases cordate, upper surfaces glabrous, 5–7-nerved from the base, lower surfaces pilose; petioles to 7 cm long, glabrous. Inflorescence paniculate, the heads in spikes; ultimate branchlets angled, puberulent. Heads ca. 7 mm long, sessile to shortly pedicellate; exterior bract narrowly ovate, ca. $\frac{1}{2}$ the length of the involucre, glabrate, apices acute; involucre bracts elliptic to oblong, ca. 3.5 mm long, glabrate to sparingly puberulent, 3–5-nerved, apices rounded, bases somewhat expanded and flattened; corollas ca. 4 mm long, white, tube 2–2.5 mm long, slightly enlarged at the base, throat turbinate-subcylindric, 1–1.5 mm long, teeth narrowly triangular, ca. 0.5 mm long. Achenes ca. 3.5 mm long, somewhat glandular, black with white ribs; pappus bristles ca. 35, white, ca. 4 mm long, barbellate, slightly thickened at the tips.

Mikania aquaria, endemic to Peru, is well marked by its large ovate leaves with cordate bases and costate, hollow stems. The stems of this species are reported to be water filled.

HUÁNUCO. Vicinity of Tingo María, S of bridge over Río Chinchao on Huánuco-Tingo María Road, *Mathias & Taylor* 5904 (F). JUNÍN. Near La Merced, *Soukup* 2509 (US). LORETO. Boqueron del Padre Abad, along Río Chino, 300 m, *Woytkowski* 34388 (F).

3. *Mikania areolata* Holmes & McDaniel, Phytologia 37: 467. 1977. TYPE: Peru, Amazonas, Cerros Calla Calla, 45 km above Balsas, midway on road to

Leimebamba, 3,100 m, June 19, 1964, *Hutchison & Wright 5754* (F, holotype; MO, isotype).

Lianas; stems terete, costate-sulcate after drying, finely puberulent, especially at the nodes, internodes to 20 cm long, nodes slightly enlarged. **Leaves** ovate, ca. 8 cm long and 6 cm wide, margins entire to somewhat obscurely and remotely serrate, apices acute, bases cordate, upper surfaces puberulent, palmately 5-7-nerved from the base, nerves puberulent, lower surfaces puberulent-pilose, especially on the nerves, lighter than above, all veins exserted, tertiary veins forming areolae; petioles ca. 4 cm long, puberulent, opposite petioles connected by a lacerate, puberulent stipule-like enation. **Inflorescence** corymbose, ca. 6 cm long and 10 cm wide, bracteal leaves similar to cauline, only smaller; branchlets puberulent, branching trichotomously, heads usually disposed in 3's; pedicels 2-5 mm long. **Heads** 12-13 mm long; exterior bracts obovate, 6-7 mm long, somewhat pilose, apices rounded, bases cuneately narrowed into a petiole-like structure, 3-5-nerved, ciliolate, borne at the top of the pedicel; involucre bracts ca. 10 mm long, puberulent, densely so at the tips, greenish, appearing to have lavender tips, apices rounded; corollas ca. 6 mm long, pale greenish-yellow; tube ca. 3.5 mm long; throat campanulate, ca. 2 mm long; teeth deltoid, ca. 0.5 mm long. **Achenes** ca. 4.5 mm long, black, ribs white; pappus bristles 90-100, whitish, ca. 5 mm long, barbellate.

Mikania areolata, known only from the type, superficially resembles *M. cordifolia* in habit, but may be distinguished by its terete rather than hexagonal stems of the latter species. The heads are also considerably larger, 12-14 mm long.

4. *Mikania arthroclada* B. L. Robinson, Contr. Gray Herb. 80: 34. 1928. TYPE: Peru, Cuzco, above Cosnipata, between Tambos Trescruces and Tambamayo, 2,500-2,600 m, May 7, 1912, *Weberbauer 6972* (F, holotype, GH, photo; G, isotype, not seen).

Twining **shrubs**; stems terete, densely fulvous-tomentulose, internodes to 6 cm long, nodes conspicuous, the internodes of branching stems leading to the inflorescence very short, 0.5-0.9 cm long. **Leaves** ovate-oblong, to 2 cm long and 1.5 cm wide, apices acute, margins serrate to vaguely crenate, bases cuneate, upper surfaces glandular-pubescent, pinnately nerved with secondary nerves separating near the base, lower surfaces somewhat glandular-pubescent; petioles 2-5 mm long, puberulent. **Inflorescence** paniculate; branchlets somewhat hexagonal, fulvous-tomentulose; pedicels 1-2 mm long, fulvous-tomentulose. **Heads** 4.5-5 mm long; exterior bracts linear, ca. 1/2 the length of the involucre, borne at the base of the pedicel; involucre bracts oblong, ca. 3.5 mm long, glandular, puberulent, margins ciliolate; corollas ca. 2.5 mm long, white, tube ca. 1 mm long, throat ca. 1 mm long, gradually expanded, teeth deltoid, ca. 0.5 mm long. **Achenes** ca. 2.5 mm long, brownish; pappus bristles ca. 45, white, ca. 3 mm long.

Mikania arthroclada, known only from the type material, is readily identified by its small leaves with coarsely serrate to somewhat crenate margins, dense fulvous-tomentulose indument, short internodes, and very prominent nodes from which the leaves appear to be early deciduous (especially from the lower nodes).

5. *Mikania aschersonii* Hieron., Bot. Jahrb. Syst. 28: 577. 1901. TYPE: Colombia, Cauca, western slope of the Andes of Popayan, *Lehmann 5979* (B, holotype, destroyed; F, isotype). Figure 1.

M. aschersonii var. *indula* B. L. Robinson, Contr. Gray Herb. 77: 47. 1926. TYPE: Peru, Junin, La Merced, Hacienda Schunke, August 27-September 1, 1923, *Macbride 5777* (F, holotype; GH, isotype).

Twining **vines**; stems striate-sulcate, glabrate to villous (when young), internodes to 11 cm or more. **Leaves** ovate-lanceolate, to ca. 10 cm long and 3.5 cm wide, margins entire, apices acuminate, bases cuneate, upper and lower leaf surfaces glabrous, veins exserted;

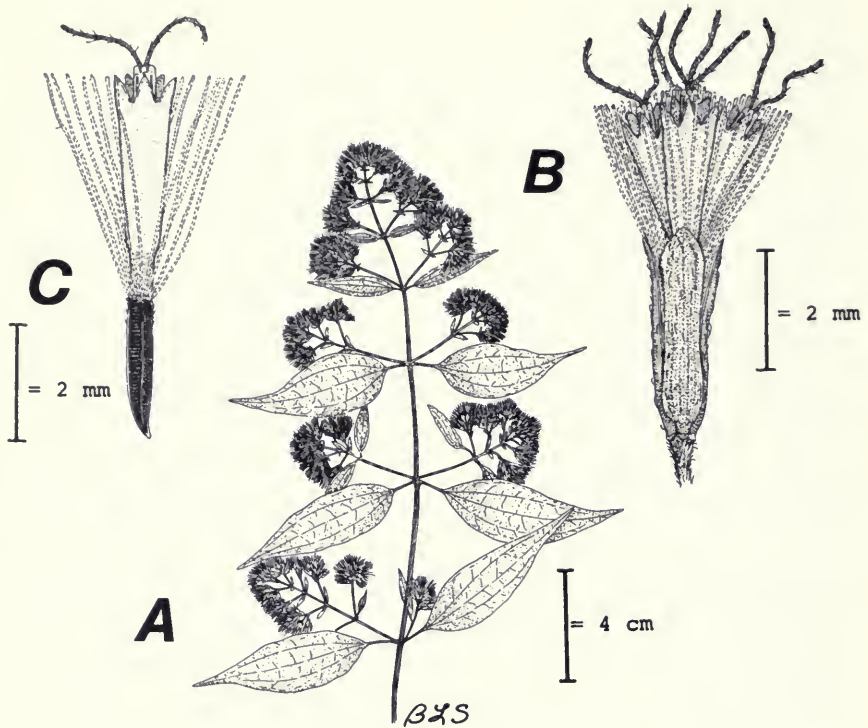


FIG. 1. *Mikania aschersonii* Hieron. A, habit; B, head; C, flower. (After McDaniel & Rimachi 22032 [IBE].)

petioles 0.5–2 cm long, glabrous. **Inflorescence** corymbose; branchlets terete, villous to glandular-pubescent; pedicels 1–2 mm long, glandular-pubescent. **Heads** ca. 8 mm long; exterior bracts elliptic to ovate, ca. 4 mm long, apices acute; involucre bracts oblong, 5–6.5 mm long, glabrate to glandular-pubescent especially toward the acute apex, bases somewhat enlarged or swollen; corollas ca. 4.5 mm long, tube ca. 1 mm long, throat subcylindric ca. 2.9 mm long, teeth triangular, ca. 0.6 mm long. **Achenes** ca. 3 mm long, dark; pappus bristles 50–60, reddish, 4–4.5 mm long, slender, barbellate.

Mikania aschersonii is known from Peru and Colombia. Characters that may be used to identify this species include the oblong involucre bracts with slightly enlarged bases, somewhat in the manner of *M. hookeriana*, and corollas with a very short tube, about 1 mm long, with a subcylindric throat.

CUZCO. Quispicanchis: Entre Inambari y 15 Mil, 500–600 m, Vargas 16519 (US), La Concepción, ca. 10.5 km NE Hacienda Luisiana and Apurímac River, Dudley 10559 (MO, US). HUÁNUCO. SW slope of Río Llula, Pichís watershed on the ascent of Cerros del Sira, Dudley 13102 (US). JUNÍN. Chanchamayo Valley, 1,500 m, Schunke s. n. (F). SAN MARTÍN. Near Moyobamba, 1,100 m, Klug 3679 (F, GH, MO, US), Mariscal Cáceres: Quebrada Luís Sálas 15 km NE Puerto Pizana, 350–370 m, Schunke V. 6649 (MO). DPTO. UNKNOWN: Yanano, 6,000 ft, Macbride 3775 (F, GH, US), Tambo de Vaca, 1,300 ft, Macbride 4906 (F, GH), Huacachi, estación near Muna, 6,500 ft, Macbride 4151 (F, GH, US).

6. *Mikania banisteriae* DC., Prodr. 5: 193. 1836. TYPE: Brasil, 1834, *Poeppig* 135 (G-DC, holotype, not seen, IDC microfiche 800. 819: II.3; F, isotype).
- M. lanuginosa* DC., Prodr. 5: 201. 1836. TYPE: Brasil, São Paulo, *n. miss.* 425 (G-DC, holotype, not seen, IDC microfiche 800. 819: II. 8).
- M. caudata* Benth., Pl. Hartw. 201. 1845. TYPE: Colombia, in sylvis prope Guaduas, Bogotá, *Hartweg* 1112 (K, holotype, not seen).
- M. ruiziana* Poepp. in Poepp. & Endl., Nov. Gen. Sp. Pl. 3: 53. 1845. TYPE: Peru, Cuchero, *Poeppig* 1475 (W, holotype, not seen; B, not seen, F, isotypes).
- M. ruiziana* var. *lehmanniana* Hieron., Bot. Jahrb. Syst. 19: 45. 1894. TYPE: Colombia, near Dolores, Tolima, 1,000–1,800 m, *Lehmann* 7483 (K, holotype, not seen; F, isotype).
- Willoughbya ferruginea* Rusby, Mem. Torrey Bot. Club 6: 58. 1896. TYPE: Bolivia, Guanai-Tipuaní, *Bang* 1419 (NY, holotype; F, US not seen, isotypes).
- W. hirsutissima* Rusby, Mem. Torrey Bot. Club 6: 58. 1896, not *W. hirsutissima* Ktze., Rev. Gen. 1: 372. 1891. TYPE: not located.
- M. antioquiensis* Hieron., Bot. Jahrb. Syst. 28: 580. 1901. TYPE: Colombia, prope Santa Domingo Cancan et Amalfi, 1,500–2,000 m, *Lehmann* 7971 (US, holotype; F, isotype).
- M. ferruginea* (Rusby) Rusby ex Buchtien, Contr. Fl. Boliv. 1: 190. 1910.
- M. hirsutissima* Buchtien, Contr. Fl. Boliv. 1: 190. 1910, not *M. hirsutissima* DC., Prodr. 5: 200. 1836. TYPE: not seen.
- M. macbridei* B. L. Robinson, Contr. Gray Herb. 73: 27. 1924. TYPE: Peru, Junín, La Merced, Hacienda Schunke, 4,000 ft, August 27–September 1, 1923, *Macbride* 5728 (F, holotype; GH, isotype).
- M. antioquiensis* var. *subcuneata* B. L. Robinson, Contr. Gray Herb. 104: 32. 1934. TYPE: Peru, Loreto, Iquitos, trail to San Juan, *Mexia* 6492 (GH, holotype; US, F, NO, PH, isotypes).
- M. almagroi* Cuatr. An. Univ. Madrid 4: 233. 1935. TYPE: Ecuador, San José, *Isern* 368 (MA, holotype, not seen, F, fragm.).
- M. skutchii* Blake, Brittonia 2: 333. 1937. TYPE: Costa Rica, El General, 1,130 m, *Skutch* 2514 (US, holotype).
- M. canaquiensis* Badillo, Bol. Soc. Venez. Ci. Nat. 9: 132. 1944. TYPE: Venezuela, Canaguá, Mérida, *Badillo* 562 (VEN, holotype, not seen).
- M. bergantinensis* Badillo, Bol. Soc. Venez. Ci. Nat. 10: 304. 1946. TYPE: Venezuela, Anzoátequi, Cerro Peonia, *Steyermark* 61540 (VEN, holotype, not seen; F, isotype).
- M. kavanaeyensis* Badillo, l.c. 300. TYPE: Venezuela, Bolívar, Gran Sabana, between Mission of Santa Teresita de Kavanayen NW to Río Karuai, *Steyermark* 59374 (VEN, holotype, not seen; F, isotype).
- M. meridana* Badillo, l.c. 303. TYPE: Venezuela, Mérida, Montaña de San Jacinto, *Steyermark* 56667 (VEN, holotype, not seen; F, isotype).
- M. molinensis* Badillo, l.c. 296. TYPE: Venezuela, Mérida, near El Molino, between Canaguá and Sta. Cruz de Mora, *Badillo* 610 (VEN, holotype, not seen; F, isotype).
- M. oniaensis* Badillo, l.c. 297. TYPE: Venezuela, Mérida, along Río Onia, near Bolero, N of Mesa Bolívar, *Steyermark* 56736 (VEN, holotype, not seen).
- M. ptaretepuensis* Badillo, l.c. 302. TYPE: Venezuela, Bolívar, Ptaretepuí, *Steyermark* 59936 (VEN, holotype, not seen; F, isotype).
- M. banisteriae* DC. f. *lanuginosa* (DC.) *Steyermark*, Fieldiana, Bot. 28: 657. 1953.
- M. banisteriae* f. *lehmanniana* (Hieron.) *Steyermark*, Fieldiana, Bot. 28: 657. 1953.
- M. banisteriae* f. *subglabra* (B. L. Robinson) *Steyermark*, Fieldiana, Bot. 28: 657. 1953.

Coarse **lianas**; stems terete, striate, normally villous to densely tomentose, rarely nearly glabrous, internodes to 25 cm or more. **Leaves** narrowly to widely ovate, to ca. 20 cm long and 10 cm wide, apices acute to acuminate, bases cordate to truncate, margins entire to somewhat dentate, upper surfaces villous to tomentose, rarely glabrate, pinnately to subpalmately nerved, lower surfaces lighter than above, villous to tomentose; petioles to ca. 2 cm long, normally villous to tomentose. **Inflorescence** a large panicle; branchlets villous to tomentose to hirtellous; pedicels to ca. 4 mm long, densely pubescent. **Heads** 7–9 mm long; exterior bracts ovate to obovate, ca. the same length as the involucre, glabrate to lightly pubescent with long, straight hairs, normally borne slightly below the involucre; involucral bracts ovate to oblong, 4–5 mm long, the outer pair pubescent with long hairs, the inner pair glabrate, or all nearly glabrate, apices rounded, the inner

surfaces generally pearly white; corollas 4.5–5 mm long, tube ca. 2× the length of the throat, throat broadly campanulate, teeth triangular, about the same length as the throat. Achenes 3–4 mm long; pappus bristles 40–50, white, 5–6 mm long, barbellate, often slightly thickened toward the tips.

Mikania banisteriae is known from Mexico throughout Central America to and including northern South America to Peru, Bolivia, and Brazil. This species, as noted by the extensive synonymy, is highly variable and very widespread. A broad species concept, as applied by Steyermark (1953), is followed in this treatment. The primary differences in the proposed species (synonyms) involve leaf shape and kind and amount of pubescence, which, as Steyermark has shown, may vary on the same plant, and thus are totally unreliable for species delimitation. Reliable characters that can be used to identify this species, regardless of leaf shape and pubescence, include the large paniculate, rather dense inflorescence.

The plants designated as *Mikania rugosa*, *M. bullata*, and *M. trachodes* by Robinson (1920, 1924), although very near *M. banisteriae*, are herein regarded as distinct. For further information see those species in this work or Holmes & McDaniel (1979). Worthy of special mention is *M. macbridei*, which is, according to Robinson (1924), a well-marked species. It appears, upon examination of the type, that this name is based upon a specimen of *M. banisteriae* with all but the younger leaves covered with a fungal mycelium. It is identical in all other respects with that species. For further amplification see Holmes & McDaniel (1979).

AMAZONAS. Bongará: 2–4 km WSW of Pomacocha, 2,200–2,400 m, *Wurdack* 834 (US). ANCASH. Pampayacu, *Kanehira* 250 (US). CUZCO. Convención: El Dorado, 2,900 m, *Vargas* 3509 (F); Paucartambo: Hda. Patria, *Marín* 1723 (F, US), km 123–124, Kosnipata, 3,000 m, *Vargas* 15481 (US). HUÁNUCO. SW slope of Río Llula, Pichís watershed, ascent of Cerros del Sira, 1,290 m, *Wolfe* 12360 (US). JUNÍN. Colonia Perené, 680 m, *Killip & Smith* 25013 (US), 590 m, *Hitchcock* 22129 (GH), La Merced, Hacienda Schunke, 4,000 ft, *Macbride* 5512 (F, GH, US), Pichís Trail, Porvenir, 1,500–1,900 m, *Killip & Smith* 25907 (GH, US), Pichís Trail, Eneras, 1,600–1,900 m, *Killip & Smith* 25626 (F, GH, US), 25774 (US), Quimiri, Chanchamayo Valley, 1,500 m, *Schunke* 26 (F, GH), 475, 476 (both F), San Ramon, 900–1,300 m, *Killip & Smith* 24768 (GH, US), 24894 (F, GH, US). LORETO. Coronel Portillo: Plantación Azul cerca Divisoria, *Ricoult* s. n. (US), Maynas: Dto. Iquitos, Iquitos, ca. 100 m, *Killip & Smith* 27478 (F, GH, US), Iquitos, *Williams* 3632 (F, GH), 1455 (F, GH), Iquitos, 120 m, *Williams* 8094 (F, GH), Iquitos, Puerto Almendro, *Revilla* 1479 (AMAZ, MO), Mishuyacu near Iquitos, 100 m, *Klug* 878 (F, US), Camino a Rumococha, 100–120 m, *Ferreyra* 3370, Río Nanay below Bellavista, trail to Picuruyacu, 170 m, *McDaniel* 16184 (IBE, MO, NATC), trail from Picuru (lower Río Nanay) to Río Mazán, *McDaniel et al.* 21454 (AMAZ, GA, IBE, MO, NATC, US, USM), Quistococha to San Juan, *McDaniel & Persinos* 10706 (IBE, MO), lower Río Nanay, *Williams* 438 (F, GH), Dto. Indiana, Río Manatí, below San Isabel, *McDaniel et al.* 21652 (AMAZ, F, IBE, MO, NATC, NY, RB, US, USM), Loreto: Dto. Nauta, Quebrada de Nauta, *Croat* 17532 (IBE, MO), Requena: Río Tepiche, Santa Elena, *McDaniel & Marcos* 11253 (IBE, MO); Yurac between Divisoria and Pucallpa, 15–20 km from Yurac, *Allard* 22140 (F, US). PUNO. Sandía, 2,600–3,000 m, *Weberbauer* 755 (GH). SAN MARTÍN. Tarapoto, 530–580 m, *McDaniel* 13733 (IBE, MO), Tarapoto, *Spruce*

4079 (F, GH), San Roque, 1,300–1,500 m, *Williams* 7497 (F), alto Río Huallaga, 360–900 m, *Williams* 6602 (F, GH), Zepelacio, near Moyobamba, 1,200–1,600 m, *Klug* 3427 (F, GH, MO, US).

7. *Mikania brachyphylla* Hieron., Bot. Jahrb. Syst. 36: 472. 1905. TYPE: Peru, Cajamarca, near Tambillo (Chanta Cruz), 2,600–2,700 m, *Jelski* 703 (B, holotype, destroyed, GH, photo & fragm.).

Slender herbaceous **twiners**; stems somewhat 4-angled, purplish, glabrate, internodes generally 2 cm long, but sometimes to 10 cm long. **Leaves** triangular-ovate, ca. 10 mm long and 7 mm wide, margins entire to obscurely 2–3-toothed on each side, apices acute to rounded, bases sagittate-cordate, upper surfaces scabrid, palmately 3–5-nerved, lower surfaces appressed-hirtellous, glandular in appearance; petioles to 5 mm long, opposite petioles connate by a stipular ring, with 3–5 ciliated appendages on each side of stem. **Inflorescence** a corymb; branchlets angular-sulcate, puberulent; pedicels ca. 4 mm long, angular, puberulent. **Heads** ca. 9 mm long; exterior bracts ovate, to 2 mm long, puberulent, borne slightly beneath the involucre; involucre bracts oblong, ca. 5 mm long, puberulent, apices obtuse; corollas ca. 5 mm long, yellowish (after drying), tube ca. 2.5 mm long, throat campanulate, 2 mm long, teeth deltoid, ca. 0.5 mm long, glandular. **Achenes** ca. 3 mm long, light olivaceous in color; pappus bristles ca. 75, buff in age, ca. 5 mm long, finely scabrid, thinning toward the tips.

Mikania brachyphylla, known only from the type, is easily recognizable by somewhat quadrangular, purplish stems, corymbose inflorescence, and leaves ca. 1 cm or less long with scabrid upper surfaces.

8. *Mikania brevifauca* Holmes & McDaniel, Phytologia 37: 468. 1977. TYPE: Peru, Cuzco, Convención, Tanamanche to Quellomayo, 3,700 m, July 25, 1944, *Vargas* 4447 (F, holotype).

Twiners; stems terete, striate to weakly costate, villous, soon glabrate to puberulent, internodes to ca. 13 cm long, nodes with stipule-like enations ca. 6 mm wide, lacinate with teeth 2–3 mm long. **Leaves** triangular, ca. 6 cm long and 3.5 cm wide, villous, glandular, apices acuminate, bases cordate, palmately 3–7-nerved, margins dentate to somewhat crenate, lighter below; petioles to ca. 2 cm long, villous; bract leaves similar to cauline, but reduced. **Inflorescence** corymbose, to ca. 9 cm wide and 6 cm long; branchlets terete, villous; pedicels 1–3 mm long, villous. **Heads** ca. 10 mm long; exterior bracts lanceolate to narrowly ovate, ca. 3.5 mm long, pilose to somewhat villous, apices acuminate; involucre bracts linear to lanceolate, densely pilose to villous, apices acuminate; corollas ca. 6 mm long, tube ca. 3.5 mm long, throat scarcely distinguishable from the tube, ca. 0.5 mm long, teeth narrowly triangular, ca. 2.5 mm long. **Achenes** 3–5 mm long, brownish with white ribs, slightly pubescent toward the top (near pappus bristles); pappus bristles ca. 70, white, ca. 5 mm long, weakly barbellate, narrowed toward the apex.

Mikania brevifauca is known only from Cuzco, Peru. Salient diagnostic characters include the triangular leaves with dentate to crenate margins and stipular appendages with lacinate teeth.

CUZCO. Calca: Amparaes, borde de arroyo, 3,350 m, *Chavéz* 3282 (MO).

9. *Mikania brooksii* Holmes & McDaniel, Phytologia 41: 193. 1979. TYPE: Peru, Loreto, Maynas, Dtto. Iquitos, Río Momón, trib. Río Nanay, Santa Rosa, January 3, 1978, *McDaniel*, *Rimachi* & *Brooks* 21387 (IBE, holotype).

Subligneous **lianas**; stems terete, somewhat puberulent-scabrid, sparsely glandular, internodes to ca. 10 cm long. **Leaves** ovate to broadly ovate, to 8 cm long and 5 cm wide, bases obtuse to truncate, apices acute to acuminate, above somewhat scabrid, with whitish pustular hairs, the major nerves crisped-puberulent, pinnately nerved, with 2

pairs of secondary nerves separating within the basal $\frac{1}{3}$ of the leaf, the primary and secondary veins prominent, the others obscure, margins entire, below lighter, puberulent, all veins exerted; petioles 5–6 mm long, tomentulose-puberulent, thickish. **Inflorescence** a panicle of oppositely borne corymbs, ca. 11 cm long and 8 cm in diameter, each corymb ca. 2 cm long and 4 cm in diameter, branching dichotomously; branchlets terete, densely crisped-puberulent, glandular. **Heads** ca. 7 mm long, sessile to very shortly pedicellate, ternately disposed; exterior bracts ovate-obovate to broadly elliptic, 2.5 mm long, somewhat petiolate, apices rounded, irregularly ciliate, the midvein prominent, $\frac{1}{2}$ – $\frac{1}{3}$ the length of the involucre, sparingly glandular; involucre bracts elliptic-oblong, 4–4.5 mm long, apex rounded, somewhat pubescent toward apex and base, 3–5 obscure but visible veins present; corollas violet, ca. 3.5 mm long, tube and throat indistinguishable, teeth deltoid, ca. 0.3 mm long, glandular. **Achenes** (slightly immature) to ca. 3 mm long, greenish; pappus bristles 40–45, white, ca. 3.5 mm long, scabrid, thinner toward the tips.

LORETO. Maynas: Dtto. Iquitos. Río Momón (trib. Río Nanay), Santa Rosa, 110 m, lowland forest rarely inundated, flowers pink, *Rimachi* 4832 (AMAZ, F, IBE, MO, NATC, US, USM); Río Itaya, trocha de Sanangal, disturbed forest of restinga, 110 m, flowers lavender, *McDaniel & Rimachi* 23286 (AMAZ, F, FSU, IBE, MO, NATC, RB, TEX, US, USM).

10. *Mikania bulbisetifera* Cuatr., Ann. Missouri Bot. Gard. 52: 308. 1965.

TYPE: Peru, Amazonas, Bangará, Jalca zone, along Yambrasbamba-Pomacocha trail between Yanayacu and Pomacocha, 2,300–2,400 m, June 26, 1962, *Wurdack* 1078 (US, holotype; F, isotype).

Vines; stems terete, costate, lanate, internodes to ca. 3.5 cm long. **Leaves** lanceolate, coriaceous, ca. 7 cm long and 2 cm wide, margins subentire, apices acuminate, bases obtuse, upper surfaces scabrid when young, becoming somewhat muricate in age by loss of upper portion of hairs, lower surfaces lanose, lighter than above; petioles to 1.5 cm long, lanose. **Inflorescence** corymbo-paniculate, to ca. 8 cm long and 8 cm wide; branchlets terete, lanose; pedicels 2–5 mm long, lanose. **Heads** 9–10 mm long; exterior bracts narrowly ovate, ca. $\frac{2}{3}$ the length of the involucre, glabrate to sparingly pilose, somewhat irregularly ciliate, apices acute, pilose; involucre bracts ovate-oblong, 5–6 mm long, lightly pilose, apices acute to rounded, tomentulose; corollas ca. 4.5 mm long, white, tube ca. 1.5 mm long, throat campanulate, ca. 1.5 mm long, teeth narrowly triangular to lanceolate, ca. 1.5 mm long. **Achenes** glabrate to sparsely puberulent, ca. 3.2 mm long, grayish-brown, the ribs lighter in color; pappus bristles ca. 30, white, 5–6 mm long, barbellate, thickened at tips.

Mikania bulbisetifera is known only from the type. The lanose pubescence and characters of the heads and inflorescence of this species suggest the highly variable *M. banisteriae*. However, the lanceolate leaves, the narrower exterior bract, and pappus bristles about one-half the number of *M. banisteriae* provide adequate distinction.

11. *Mikania bullata* B. L. Robinson, Contr. Gray Herb. 61: 13. 1920. TYPE:

Peru, Puno, between Tambo Ichubamba and Tambo Yuncacoyo, on the way from Sandía to Chunchumayo, 1,800–2,000 m, June 7, 1920, *Weberbauer* 1085 (B, holotype, destroyed, GH, photo & fragm.).

Climbing shrubs; stems terete, densely covered with tawny spreading to deflexed soon-deciduous tomentum, internodes 5–13 cm long. **Leaves** ovate, to ca. 10 cm long and 6 cm wide, margins obscurely denticulate, apices acute, bases cordate, upper surfaces chartaceo-coriaceous, tawny-pilose, bullate, scabrous, pinnately nerved, lower surfaces tawny-villous, punctate, veins exerted from the surface; petioles to ca. 2.5 cm long, tawny-tomentulose, stout. **Inflorescence** a panicle, dense; branchlets tawny-tomentulose, leafy-bracted; pedicels 2–3 mm long, tawny-tomentulose. **Heads** 7–8 mm long; exterior

bracts linear to oblanceolate, ca. $\frac{1}{2}$ the length of the involucre, densely tawny-pilose, apices acute, borne at the summit of pedicel; involucre bracts oblong, 4–5 mm long, tawny-pilose, the outer darkened and somewhat punctate, apices rounded; corollas ca. 4 mm long, tube ca. 1.5 mm long, throat broadly campanulate, ca. 1.25 mm long, teeth triangular, about as long as throat. **Achenes** 3–3.5 mm long, brownish-olivaceous; pappus bristles 35–40, white, ca. 5 mm long, barbellate, thickened at the tips.

Mikania bullata was previously known only from the type. It is another species exceedingly near *M. banisteriae*. However, it differs in the scabrid nature of the upper leaf surfaces and the linear to oblanceolate exterior bract one-half or more as long as the involucre. *Mikania banisteriae* normally has smooth leaves and an ovate exterior bract about one-half as long as the involucre. The above description in part taken from Robinson (1922).

PUNO. Sandía cerca a San Juan del Oro, valle Tampopata, 2,100–2,200 m, Ferreyra 16685 (MO, USM).

12. ***Mikania carnosa*** Muschler, Bot. Jahrb. Syst. 50: 76. 1913. TYPE: Peru, Ayacucho, Huanta, Yanamonte, 2,700–3,000 m, June 1910, Weberbauer 5645 (B, holotype, destroyed, GH, fragm.; F, isotype).

Twining shrubs; stems terete to somewhat hexagonal, glabrate, internodes to 12 cm long. Leaves obovate to ovate to lanceolate-ovate, to ca. 4 cm long and 2 cm wide, margins entire near base, above serrate, the teeth callous-denticulate, apices rounded to somewhat acute, bases cuneate, upper surfaces glabrate, somewhat 3–5-nerved, lower surfaces puberulent; petioles to ca. 1 cm long. **Inflorescence** a corymb, 2–3 cm in diameter; branchlets angular-winged, glabrate; pedicels to ca. 5 mm long, glabrate. **Heads** ca. 10 mm long; exterior bracts ovate, ca. 4.5 mm long, glabrate, reticulate, apices acute to obtuse, borne at the top of the pedicel; involucre bracts lance-linear, ca. 8 mm long, glabrate, apices attenuate, somewhat irregularly ciliate; corollas ca. 6 mm long, pale yellow, tube ca. 3 mm long, throat ca. 1 mm long, teeth oblong, ca. 2 mm long. **Achenes** ca. 3.5 mm long, grayish; pappus bristles 75–80, yellow-white, ca. 6 mm long, scabrid.

Mikania carnosa, known only from the type, may be readily distinguished by its lanceolate to ovate to obovate leaves with rounded apices and cuneate bases.

13. ***Mikania chimborazensis*** Hieron., Bot. Jahrb. Syst. 29: 15. 1900. TYPE: Ecuador, forest at base of Mt. Chimborazo, Sodiro 767 (B, holotype, destroyed; F, isotype).

Herbaceous to somewhat shrubby climbers; stems terete, striate, soon fistulose and glabrate, internodes to 15 cm long. Leaves ovate, ca. 10 cm long and 8 cm wide, margins serrate-crenate, apices acuminate, bases widely cordate, upper surfaces appressed-puberulent, scabrid, palmately 7-nerved from base, lower surfaces appressed puberulent; 7-nerved; petioles ca. 5 cm long, somewhat puberulent, connected by a lacinate stipule-like ring. **Inflorescence** a 3-parted corymb, ca. 15 cm long and 10 cm wide; branchlets angular, puberulent. **Heads** 16–18 mm long; exterior bracts lance-elliptic, ca. 6–7 mm long, lightly puberulent, often purple-tinged; involucre bracts oblong, ca. 9 mm long, puberulent, purple-tinged, apices rounded, ciliate; corollas 9–11 mm long, purplish, tube and throat about the same length, throat turbinate, teeth triangular, ca. 1.5 mm long. **Achenes** 5–6 mm long, gray-olivaceous; pappus bristles ca. 75 or more, white, often purple-tinged, 10–12 mm long, barbellate.

Mikania chimborazensis of Ecuador, Colombia, and Cajamarca, Peru has heads 16–18 mm long, the largest of any known species of *Mikania* in Peru.

CAJAMARCA. Celendín: canyon of Río Marañon above Balsas, 2,930 m, Hutchison & Wright 5310 (US).

14. **Mikania congesta** DC., Prodr. 5: 197. 1836. TYPE: Puerto Rico, *Bertero s.n.* (G-DC, holotype, not seen, IDC microfiche 800. 820: II.6).

M. sieberiana DC., Prodr. 5: 196. 1836. TYPE: Trinidad, *Sieber 225* (G-DC, holotype, not seen, IDC microfiche 800. 820: II.2, F, photo).

M. parkeriana DC., l.c. 199. TYPE: British Guiana, *Parker s.n.* (G-DC, holotype, not seen, IDC microfiche 800. 821: III.4).

M. variabilis Gardner, Lond. Jour. Bot. 5: 486. 1846. TYPE: Brazil, Alagoas, Piassabisu, *Gardner 1344* (K, holotype, not seen).

M. atriplicifolia Schultz-Bip. ex Miq., Stirp. Surin. Sel. 189. 1850. TYPE: In sylva prope Vredenburgerkreek, *Focke s.n.* (not seen).

M. scandens (L.) Willd. var. *congesta* (DC.) Baker in Mart., Fl. Bras. 6: 249. 1876.

M. scandens (L.) Willd. f. *congesta* (DC.) B. L. Robinson, Contr. Gray Herb. 64: 43. 1922.

Twining or creeping **lianas**; stems striate to sulcate (after drying) to angled, puberulent to pilose, internodes 5–20 cm. Leaves deltoid-ovate to ovate-oblong, 2.5–14 cm long and 2–10 cm wide, margins entire to weakly dentate to undulate, apices acute to attenuate, bases cordate, upper surfaces glabrous to puberulent, 3–5(7)-nerved from the base, lower surfaces puberulent; petioles 1.5–14 cm long, glabrous to puberulent. **Inflorescence** a dense corymbose-subglobose glomerule, ca. 1.5 cm in diameter; branchlets angled, puberulent. **Heads** 4–5 mm long, sessile to very shortly pedicellate; exterior bracts linear to lanceolate, as long as or exceeding the length of the involucre, pilose, apices attenuate; involucral bracts oval to oblong, 3–4 mm long, weakly pilose on the dorsal surface, apices mucronate; corollas ca. 3 mm long, white, glandular, tube ca. 1.5 mm long, throat ca. 1 mm long, teeth deltoid, ca. 0.5 mm long. **Achenes** 1.5–2 mm long, glandular, black; pappus bristles 33–37, white, ca. 3 mm long, barbellate.

Mikania congesta occurs on riverbanks, in swamps, or in other frequently inundated areas, to ca. 300 m elevation from Puerto Rico, the Lesser Antilles, and northern South America to Peru, Bolivia, and Brazil. This species is often confused with or treated as a form or variety of *M. micrantha* H.B.K. because of similar habit and foliage. The dense glomerule of *M. congesta* provides ample distinction from the open corymb of *M. micrantha*.

LORETO. Middle Ucayali, *Tessmann 3303* (NY); Maynas: Río Ampiyacu, Pebas and vicinity, *Plowman et al. 7064* (F), Caballo Cocha on the Amazon, *Williams 2293* (F), Dtto. Indiana: Quebrada de Yanayacu, from mouth to "sacarita," *McDaniel et al. 21434* (AMAZ, F, IBE, MO, NATC, RB, US, USM); Dtto. Iquitos: Río Itaya, *Williams 120* (F), Río Nanay near Iquitos, between Bellavista and Sta. Clotilde, *McDaniel 13580* (FSU, IBE, MO), Río Nanay, Morona Cocha, *Rimachi 3608* (AMAZ, DUKE, F, FSU, GA, IBE, MO, NATC, NY, USM), Mishuyacu, near Iquitos, *Klug 933* (F, NY, US), Boca de Muyui, ca. 3 km W Iquitos, *Croat 17494* (MO); Dtto. Mazán, Gamitanacocha, Río Mazán, *J. M. Schunke 54* (F, NY, UC, US). MADRE DE DIÓS. Cocha Cashu, Río Manú, between Panagua & Tayakome, *Foster 3461* (IBE).

15. **Mikania conglomerata** Holmes & McDaniel, Phytologia 37: 469. 1977.

TYPE: Peru, Huánuco, Pachitea, Honoria, Bosque Nacional de Iparia, a lo largo del Pachitea cerca del campamiento Miel de Abeja, October 24, 1967, *Schunke V. 2249* (US, holotype; F, isotype).

Lianas; stems terete, striate, with white, sessile glands, internodes to 30 cm long. Leaves broadly ovate, somewhat coriaceous, to ca. 22 cm long and 15 cm wide, margins entire, revolute, apices caudate, bases truncate to subcordate, upper surfaces glabrate, subpinnately 5–7-nerved from near the base, tertiary veins prominent, transverse, lower surfaces glabrate, veins exerted from the surface; petioles to 5 cm long, sulcate. **Inflorescence** a panicle; heads sessile, arranged in a very dense subspherical glomerule to ca. 2 cm in diameter; branchlets angular-flattened, puberulent. **Heads** ca. 6 mm. long;

exterior bracts elliptic-oblong, ca. 1.5 mm long, puberulent; involucre bracts elliptic-oblong, ca. 4 mm long, puberulent, apices rounded, ciliate; corollas ca. 4 mm long, white, scarcely fragrant, tube ca. 1.5 mm long, throat narrowly campanulate, ca. 2 mm long, teeth deltoid, ca. 0.5 mm long. Achenes ca. 2 mm long (immature); pappus bristles ca. 35, white, ca. 4 mm long, barbellate, slightly thickened at the tips.

Mikania conglomerata, known only from the type, is characterized by its large (up to 22 cm long), somewhat coriaceous leaves with caudate apices.

16. *Mikania cordifolia* (L. f.) Willd., Sp. Pl. 3: 1746. 1803.

Cacalia cordifolia L. f., Suppl. Pl. 351. 1781. TYPE: Colombia, *Mutis 1818* (LINN, holotype not seen, IDC microfiche 117. 555: I.7; US, isotype).

Mikania mollis H.B.K., Nov. Gen. Sp. Pl. 4: 105. ed. fol. 1818. TYPE: Peru, Guanacabamba River, *Humboldt & Bonpland* (P, holotype).

M. suaveolens H.B.K., Nov. Gen. Sp. Pl. 4: 106. ed. fol. 1818. TYPE: Colombia, near Guaruma, *Humboldt & Bonpland* (P, holotype).

M. poeppigii Spreng., Syst. Veg. 3: 422. 1826. TYPE: Cuba, *Poeppig* (P, holotype, not seen; W, isotype, not seen).

M. cissampelina DC., Prodr. 5: 195. 1836. TYPE: Santo Domingo (G-DC, holotype, not seen).

M. gonoclada DC., Prodr. 5: 199. 1836. TYPE: Mexico, Tampico, Tamaulipas, *Berlandier 137* (G-DC, holotype, not seen, IDC microfiche 800. 821: II.4).

M. convolvulacea DC., Prodr. 5: 199. 1836. TYPE: Santo Domingo (G-DC, holotype, not seen, IDC microfiche 800. 819: III.7). (See Robinson, Contr. Gray Herb. 104: 70. 1934.)

M. surinamensis Miq., Stirp. Sur. Select. 188. 1850. TYPE: Surinam, prope plantationem La Rencontre, *Focke* (U, holotype, not seen).

M. hostmanii Miq., Stirp. Sur. Select. 189. 1850. TYPE: Surinam, *Hostmann 717* (K, holotype).

M. scandens (L.) Willd. var. *rhodotricha* Baker in Mart., Fl. Bras. 6: 250. 1876. TYPE: Brazil, Rio de Janeiro, Serra dos Orgaos, *Gardner 60* (K, holotype).

Eupatorium marquesianum Gomez de la Maza, Dicc. Bot. Nom. Vulgares Cubanos & Puerto-Riqueños 54. 1889. TYPE: not seen.

Willoughbya cordifolia (L.f.) Kuntze, Rev. Gen. Pl. 1: 372. 1891.

Mikania vellosiana B. Rodr., Hort. Flum. 276. 1895. TYPE: not seen.

Willoughbaeya halei Small, Fl. S.E.U.S. 1170. 1903. TYPE: United States, Louisiana, *Hale* (GH, holotype?).

Mikania yapasensis B. L. Robinson, Contr. Gray Herb. 104: 48. 1934. TYPE: Peru, Junín, Pichís Trail, Yapas, 1,350–1,600 m, June 28–29, 1929, *Killip & Smith 25493* (GH, holotype).

Herbaceous to semiwoody **twiners**; stems hexagonal, gray-tomentulose or tomentose, usually spirally twisted, internodes 5–20 cm long. Leaves ovate, 5–10 cm long and 3–8 cm wide, margins subentire to undulate-dentate, apices acute to acuminate, bases cordate with a wide and open sinus, upper surfaces densely pilose to tomentose, pale green, 3–5-nerved from the base, lower surfaces densely pilose to tomentose, lighter than above; petioles 2–5.5 cm long, veins appearing slightly decurrent upon petiole, densely pilose to tomentose, opposite petioles connected by a transverse ridge with a small lacinate stipule-like appendage. **Inflorescence** a compound corymb, terminal and lateral, ca. 6 cm long and 7 cm wide; branchlets hexagonal, densely pilose to tomentose; pedicels 0.5–3 mm long, hexagonal, pilose to tomentose. **Heads** 7–10 mm long; exterior bracts linear to narrowly lanceolate, 4–5 mm long, densely pilose, apices acuminate; involucre bracts elliptic to narrowly ovate, 6–8 mm long, substramineous, apices acute to slightly rounded; corollas 3.5–5 mm long, white, tube 1.5–2 mm long, throat 1–1.5 mm long, glabrous, teeth linear, slightly exceeding the length of the throat, recurved when dry. Achenes 3–4 mm long, glabrous to pubescent, lightly glandular, brown; pappus bristles white, ca. 60, thinning toward the tips, barbellate.

Mikania cordifolia is a very widespread species occurring from Gulf coastal United States (Louisiana, Mississippi, and Florida) throughout the wet tropical Americas to Argentina. This species is easily recognized by the prominently

hexagonal stems normally tomentulose to tomentose, the compound corymbose inflorescence, and corolla teeth about the same length as or slightly longer than the throat, the teeth usually reflexed or crisped in the dried state.

AYACUCHO. Aina, between Huanta and Río Apurímac, 750–1,000 m, *Killip & Smith 22736* (US). CUZCO. Convención, valley of Río Vilcanota at mouth of Río Sambray, 1,000 m, *Mexia 8042* (MO, NY, TEX, UC, US). HUÁNUCO. Huánuco, Tingo María, valley of Río Huallaga, trocha a la Cueva de las Pavas, 700–800 m, *Ferreyra 4244* (MO, US, USM), Río Huallaga Cañon, below Río Santo Domingo, ca. 4,000 ft, *Macbride 4199* (US). JUNÍN; Quempiri, Río Ene, 460–480 m, *Ferreyra 16381* (US), Colonia Perené, 680 m, *Killip & Smith 24991* (US) and 25239 (US), Tarma, entre La Merced y Quimiri, valle de Canchamayo, 800–900 m, *Ferreyra 3682* (US). LORETO. Ucayali: Contamana, near road to Oriente, 160 m, *McDaniel 14041* (IBE). MADRE DE DÍOS. Manú: Hacienda S. Antonio, *Vargas 14664* (US), Río Acré, *Ule 9884* (L). SAN MARTÍN. Silcayo, cerca a Tarapoto, *Ferreyra 7768* (US), Lamas: arriba de San José de Sisa, selva tropical, 500–550 m, *Ferreyra 7917* (MO, USM).

17. *Mikania crassifolia* Hieron., Bot. Jahrb. Syst. 36: 471. 1905. TYPE: Peru, Cajamarca, Tambillo, October 30, 1878, *Jelski 696* (B, holotype, destroyed; MO, US, isotypes).

Somewhat shrubby **twiners**; stems terete, papillate-scabrid, internodes to 30 cm or more long. Leaves ovate, to ca. 14 cm long and 9 cm wide, slightly fleshy, margins entire or with a few inconspicuous teeth, apices acuminate, bases rounded, somewhat cuneate upon the petiole at the point of insertion, subpinnately 5–7-nerved from near the base; petioles to ca. 4 cm long, opposite petioles connected by stipule-like enations of ca. 1.5 cm long and 0.6 cm wide, subtire to dentate. **Inflorescence** a rather dense corymb, to ca. 3 cm in diameter; pedicels 2–3 mm long, puberulent. **Heads** ca. 13 cm long; exterior bracts lance-linear, 6–8 mm long, apices acute, borne at the top of pedicel; involucre bracts oblong, 8–9 mm long, glandular, apex narrowed to an obtuse point, somewhat ciliate and purplish in color, prominently nerved; corollas ca. 8 mm long, dark violet, tube 3–4 mm long, gradually enlarged into a funnelform throat, throat 2 mm long, teeth triangular, ca. 2 mm long. **Achenes** ca. 5.5 mm long, olivaceous, hispid on the angles; pappus bristles ca. 120 or more, white, ca. 8 mm long, barbellate.

Mikania crassifolia, known only from the type, is characterized by its somewhat fleshy leaves, heads ca. 13 mm long, and corolla reported to be deep purple in color.

18. *Mikania cutervensis* Hieron., Bot. Jahrb. Syst. 36: 473. 1905. TYPE: Peru, between Chota and Cutervo, June 1879, *Jelski 795* (B, holotype, destroyed).

Kanimia cutervensis (Hieron.) Hieron., Bot. Jahrb. Syst. 40: 394. 1908.

Suffrutescent (?) twining **lianas**; stems subangular, sparingly villose, at length terete, glabrous, greenish, internodes to ca. 16 cm long. Leaves subtriangular to cordate-ovate, 6 cm long and 5 cm wide, apices acute-acuminate, margins coarsely dentate, the teeth semisubcircular-triangular, mucronate, ca. 4 mm long and 3–7 mm apart, above glabrate, the nerves sparingly pubescent, 5–7-nerved from the base, below villous, especially on the nerves; petioles to 4 cm long, often provided at the base with subulate, stipule-like enations ca. 2 mm long. **Inflorescence** corymbose. **Heads** ca. 12 mm or more long, sessile to subsessile; exterior bracts lanceolate, acute, glabrous, ca. 7 mm long, 3-nerved, greenish- to whitish-purple, margins ciliate; involucre bracts lanceolate, ca. 12 mm long, acute, scarios, greenish-stramineous, 3-nerved; corollas purple, ca. 8 mm long, glabrous, the tube ca. 1.5 mm long, throat infundibuliform, ca. 4.5 mm long, teeth lanceolate, ca. 2 mm long. **Achenes** (immature) ca. 5 mm long, glabrous; pappus bristles ca. 100–105, reddish, ca. 8.5 mm long, apices not thickened.

The above description was drawn from that of Hieronymus. The species appears to be characterized by its more or less triangular leaves with coarsely dentate margins.

The specimen listed below, although very immature, is cited with this species because it appears to agree in essentials.

HUÁNUCO. Cajan, Huallaga, *Weberbauer 4036* (F, fragm.).

19. *Mikania cuzcoensis* Holmes & McDaniel, *Phytologia* 35: 329. 1977. TYPE: Peru, Cuzco, Quispicanchis, entre Inambari y 15 Mil, 500–650 m, September 3, 1965, *Vargas 16521* (US, holotype).

Somewhat shrubby or procumbent **lianas**; stems terete, costate (after drying), glabrous, internodes to ca. 20 cm long. **Leaves** ovate, 6–10 cm long and 5–8 cm wide, margins entire, apices acute to attenuate, bases cordate, upper surfaces glabrous, 5–7-nerved from the base, pale green, lower surfaces with dark globular sessile glands, lighter than above; petioles 3–8 cm long, thin, puberulent. **Inflorescence** a racemously disposed panicle, ca. 15 cm long and 15 cm wide; branchlets slightly angular, puberulent; pedicels ca. 5 mm long, puberulent. **Heads** 5–6 mm long; exterior bracts linear, 2–2.5 mm long, borne at the summit of the pedicel; involucre bracts oblong, ca. 4 mm long, glabrate, apices obtuse, bases slightly narrowed, the center portion of each of the inner bracts extended into a small knoblike protuberance; corollas funnelform to slightly campanulate, ca. 2.5–3 mm long, tube 1.2–1.5 mm long, throat 0.5–0.8 mm long, teeth triangular, ca. 0.7 mm long. **Achenes** ca. 2.5 mm long, glabrous, dark brown; pappus bristles 35–40, white, ca. 4 mm long, barbellate, slightly thickened toward the tips.

Mikania cuzcoensis, endemic to Peru, is characterized by the large racemously disposed panicle with heads loosely arranged on pedicels ca. 5 mm long.

CUZCO. Quispicanchis, entre Mashiche y Tuanssan, 510 m, *Vargas 16450* (US). HUÁNUCO. Tulumayo, cerca Tingo María, Carretera Huánuco-Pucallpa, 700–800 m, *Ferreya 2159* (US, USM).

20. *Mikania decora* Poepp. in Poepp. & Endl., *Nov. Gen. Sp. Pl.* 3: 53. 1845. TYPE: Peru, Ancash, Pampayaco, woods around Cuchero, *Poeppig 1645* (W, holotype, F, photo). Figure 2.

Willoughbya bangii Rusby, *Mem. Torrey Bot. Club* 3: 53. 1893. TYPE: Bolivia, La Paz, Yungas, *Bang 523* (NY, holotype; GH, isotype).

Mikania tarapotensis B. L. Robinson, *Contr. Gray Herb.* 61: 21. 1920. TYPE: Peru, San Martín, mountains along River Mayo, near Tarapoto, *Spruce 4822* (GH, holotype, F, photo & fragm.).

M. decora var. *heteroneura* B. L. Robinson, *Contr. Gray Herb.* 73: 23. 1924. TYPE: Peru, Villacabamba, hacienda on Río Chinchao, 610 m, July 17–26, 1923, *Macbride 5167* (F, holotype; GH, isotype).

Twining **lianas** or **shrubs**; stems terete, costate, fistulose, at first puberulent, soon glabrate, internodes to 12 cm long. **Leaves** ovate-oblong, 6–15 cm long and 7 cm wide, margins entire, apices acuminate, bases rounded, upper surfaces glabrous, glandular, 5–7-nerved from near the base, lower surfaces puberulent, glandular, nerves exserted; petioles ca. 1–1.5 cm long, puberulent. **Inflorescence** paniculate, lax, ultimate branchlets disposed in racemes; branchlets puberulent; pedicels 3–5 mm long, filiform, puberulent. **Heads** 4–5 mm long; exterior bracts subulate, ca. 1.5 mm long, puberulent, borne at the base of the pedicel; involucre bracts oblong, 3–3.5 mm long, glabrate, striate, apices obtuse, puberulent; corollas 2.4–2.5 mm long, whitish green, tube ca. 1 mm long, glandular, throat semicampanulate, ca. 1 mm long, teeth triangular, ca. 0.5 mm long. **Achenes** ca. 1.5 mm long, brownish; pappus bristles ca. 40, pinkish white, ca. 3 mm long, barbellate.

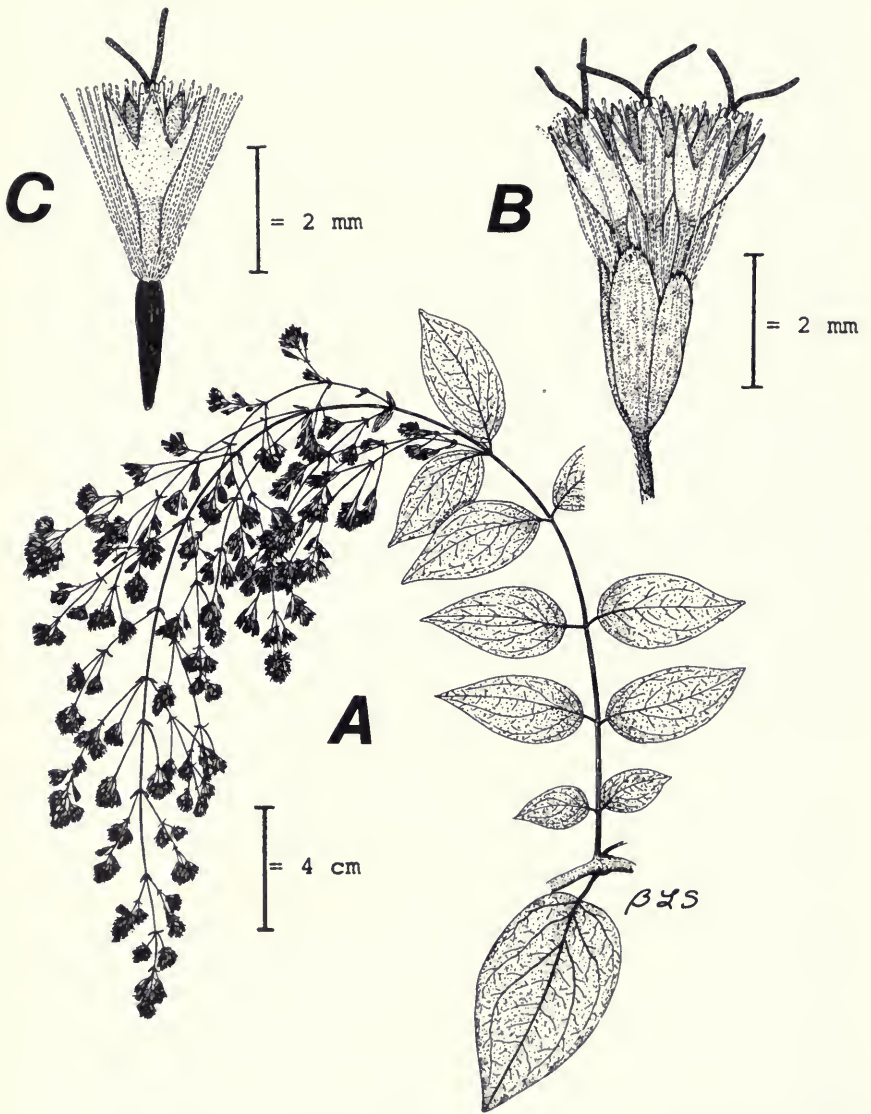


FIG. 2. *Mikania decora* Poep. A, habit; B, head; C, flower. (After McDaniel & Rimachi 22033 [IBE].)

Mikania decora occurs to ca. 3,000 m elevation in Peru and Bolivia. The lax racemose inflorescence with heads borne on slender pedicels 3–5 mm long characterizes this species.

AMAZONAS. Bongará: 2–4 km WSW of Pomacocha, 2,200–2,400 m, *Wurdack* 839 (US). CAJAMARCA. Jaén: Valley of the River Tabaconas, 1,200 m, *Weberbauer* 6254 (F, GH, US). CUZCO. Villacabamba: Hacienda on Río Chinchao, *Macbride* 5191 (F, GH). HUÁNUCO. Carpish, carretera Huánuco-Tingo María, 2,800–2,900 m, *Ferreyra* 2393 (MO, US, USM). JUNÍN. Schunke Hacienda, above San Ramon, 1,300–1,700 m, *C. Schunke* A2 (US). SAN MARTÍN. Tarapoto, carretera Tarapoto-Yurimaguas, km 12–15, ca. 2,250 ft, *McDaniel & Rimachi* 22033 (AMAZ, F, FSU, GA, IBE, MO, NATC, NY, US, USM), *Zepelacio*, near Moyobamba, 1,200–1,600 m, *Klug* 3531 (F, GH, MO, US), 3533 (F, GH, MO), and 3655 (GH, MO).

21. *Mikania desmocephala* B. L. Robinson, *Contr. Gray Herb.* 64: 7. 1922. TYPE: Bolivia, near Yungas, 1,220 m, *Rusby* 1740 (NY, holotype).

M. desmocephala var. *peruviana* B. L. Robinson, *Contr. Gray Herb.* 77:50. 1926. TYPE: Peru, Junín, La Merced, Hacienda Schunke, 1,220 m, *Macbride* 5776 (F, holotype).

Twining vines; stems terete, costate, densely pinkish-puberulent, internodes to ca. 12 cm long. Leaves narrowly ovate, to ca. 11 cm long and 5 cm wide, margins entire, revolute, apices attenuate, bases rounded, upper surfaces lightly scabrid, 5-nerved from near the base, lower surfaces glabrate, glandular; petioles 2–3 cm long, scabrid. Inflorescence paniculate, heads disposed in dense hemispherical glomerules ca. 1.5 cm in diameter; branchlets densely puberulent. Heads sessile, 7–8 mm long; exterior bracts obovate, ca. $\frac{1}{3}$ – $\frac{1}{2}$ the length of the involucre, puberulent, apices acute; involucre bracts oblong, ca. 5.5 mm long, sparsely pilose, apices rounded, bases slightly swollen; corollas ca. 4 mm long, tube ca. 2 mm long, throat campanulate, 1.3–1.5 mm long, teeth deltoid, less than $\frac{1}{2}$ the length of the throat. Achenes ca. 3 mm long, black, ribs white; pappus bristles 40–45, white, 3.5–4 mm long barbellate.

Mikania desmocephala of Peru and Bolivia may be distinguished from the similar *M. hookeriana* by its narrower leaves with revolute margins.

CUZCO. La Convención, almost to Camp 3 from Camp 2½, ca. 1,700 m, *Dudley* 10446 (MO, US, USM). JUNÍN. Pichís Trail, Dos de Mayo, 1,700–1,900 m, *Killip & Smith* 25800 & 25824 (both at GH, US). LORETO. Coronel Portillo: Divisoria, entre Tingo María y Pucallpa, 1,600–1,700 m, *Ferreyra* 4157 (MO, US, USM).

22. *Mikania dudleyi* Holmes & McDaniel, *Phytologia* 45: 297. 1980. TYPE: Peru, Cuzco, La Convención, exposed steep ridge at top of old landslide below Camp 5, ca. 2,800 m, July 9, 1968, *Dudley* 10913 (US, holotype).

Subligneous lianas; stems terete, costate-striate, glabrate, internodes to 18 cm long. Leaves ovate-oblong, coriaceous, dark green, glossy, to 13 cm long and 6 cm wide, margins entire to remotely and obscurely denticulate, apices attenuate, bases narrowly cordate (bracteal leaves subcordate to truncate), upper surfaces glabrate to puberulent, glandular, subpinnately nerved from near the base, with 2 pairs of secondary nerves separating within 1 cm of the base thence arching toward the apex, tertiary veins exserted; petioles to 2.5 cm long, thickish. Inflorescence a panicle, to ca. 12 cm long and 7 cm in diameter; branchlets terete, crisped-puberulent; pedicels ca. 1 mm long, terete. Heads 5–6 mm long; exterior bracts linear-lanceolate, ca. 1.5 mm long, puberulent, borne at the base of the pedicel; involucre bracts linear to elliptic-oblong, ca. 4 mm long, puberulent, apices somewhat acute, densely puberulent-pilose; corollas violet, ca. 3.5 mm long, glandular, tube ca. 1.3 mm long, throat campanulate, ca. 1.6 mm long, teeth broadly triangular, ca.

0.6 mm long, glandular, puberulent. **Achenes** ca. 1.5 mm long (immature), brownish; pappus bristles ca. 30, white, ca. 4.5 mm long, barbellate, thickened at the tips.

Mikania dudleyi, known only from the type, is characterized by its ovate leaves with narrowly cordate bases.

23. ***Mikania ecuadorensis*** Holmes & McDaniel, *Phytologia* 31: 274. 1975. TYPE: Ecuador, Guayas, *Camp E-3563* (MICH, holotype; BR, NY, RB, isotypes).

Twining herbs; stems 4-6 angled (after drying), lightly to moderately villous with sordid-white, jointed hairs, internodes 10-15 cm long. **Leaves** ovate, 2-5 cm long and 1.5-4 cm wide, margins entire to crenate-undulate, apices acute to acuminate, bases cordate, the sinus wide, upper surfaces pilose, lower surfaces velutinous with sordid-white hairs, 3-7-nerved from the base; petioles 1-5 cm long, densely pubescent. **Inflorescence** a rounded to flat-topped corymb, sometimes rather dense, 1-3 cm long and 1-6 cm wide; branchlets with villous hairs; pedicels ca. 1-3 mm long. **Heads** 4-4.5 mm long; exterior bracts linear to lanceolate, ca. 2.5 mm long, apices slightly erose to acuminate, outer surfaces pilose; involucrel bracts lanceolate, 3-4 mm long, apices acute to acuminate, pilose, obscurely 1-3-nerved; corollas 2-2.5 mm long, white with globular glands toward the summit, tube ca. 1-1.3 mm long, gradually expanding into the throat, teeth broadly triangular, ca. 0.5 mm long. **Achenes** ca. 1.5 mm long, glandular, brownish; pappus bristles ca. 22, 1.5 mm long, white, thick, nonbarbellate.

Mikania ecuadorensis has been found only in the lower coastal plain of Ecuador and nearby Peru. It has affinities with both *M. micrantha* and *M. congesta* but can be distinguished by its thick pappus of about 22 bristles rather than a thin, barbellate pappus of about 35 bristles in the other two species.

PIURA. Piura, *Townsend 791* (F); Talara, *Haught 83* (GH, US).

24. ***Mikania featherstonei*** B. L. Robinson, *Contr. Gray Herb.* 68: 38. 1923. TYPE: Peru, Huánuco, Pueblo, 3 mi below Ambo, September 19, 1922, *Macbride & Featherstone 2428* (F, holotype).

Twining vines; stems terete, older stems sulcate, rusty puberulent, internodes to ca. 11 cm long. **Leaves** ovate, somewhat coriaceous, to ca. 14 cm long and 9 cm wide, margins entire to irregularly and coarsely serrate to revolute, apices acute to acuminate, bases cordate, bracteal leaves with obtuse to truncate to somewhat cuneate bases, upper surfaces rugose, scabrid, subpinnately to pinnately 5-7-nerved, lower surfaces hispid to somewhat scabrid, nerves prominent; petioles to ca. 4 cm long, hispid to scabrid, sulcate. **Inflorescence** a corymb, to ca. 5 cm long and 10 cm wide; branchlets angled to flattened, rusty hispid to scabrid. **Heads** 12-13 mm long, sessile to shortly pedicellate (to ca. 3 mm); exterior bracts linear, to ca. 4 mm long, somewhat hispid, borne at base of head; involucrel bracts elliptic-oblong, 8-9 mm long, outer pair hispid to scabrid intermixed with puberulent hairs, the inner glabrate to lightly puberulent, the apices rounded, puberulent; corollas salverform, ca. 6 mm long, greenish-white, tube ca. 4.5 mm long, throat ca. 0.2 mm long, teeth deltoid, ca. 1.3 mm long; anthers purple. **Achenes** ca. 5 mm long, black; pappus bristles ca. 75, carneous, ca. 6 mm long, barbellate.

Mikania featherstonei is a well-marked species known only from the type. It may be distinguished by its rusty puberulent stems and ovate, pinnately veined leaves with scabrid upper surfaces.

25. ***Mikania filicifolia*** B. L. Robinson, *Contr. Gray Herb.* 61: 14. 1920. TYPE: Peru, Cuzco, Machu Picchu, ca. 2,100 m, *Cook & Gilbert 853* (US, holotype).

Trailing vines; stems sulcate-costate, purplish-brown, puberulent at first, soon glabrate, internodes to ca. 10 cm long. **Leaves** 2-3-pinnately divided, 3-4 cm long and 2-3 cm wide, leaflets ovate-orbicular, ca. 5 mm in diameter, entire, obtuse at apex, terminal leaflet lanceolate, attenuate at tip, petiolulate, surfaces glabrate to puberulent; petiole to

ca. 1.5 cm long, puberulent. **Inflorescence** a trifold corymb, ca. 7 cm in diameter; branchlets somewhat angular, puberulent; pedicels 1–5 mm long, puberulent. **Heads** 8–9 mm long; exterior bracts narrowly ovate to obovate, ca. $\frac{1}{2}$ the length of the involucre, glabrate, apices acute-attenuate, borne slightly beneath the head; involucre bracts lance-linear, ca. 7 mm long, glabrate, apices attenuate, bases slightly tumid; corollas ca. 5 mm long, glandular, tube ca. 2.5 mm long, throat ca. 1.0 mm long, teeth linear, ca. 1.5 mm long. **Achenes** tan, ca. 2.5 mm long, lightly glandular at the summit, ribs white; pappus bristles ca. 40, white, 4–5 mm long, finely scabrid.

Mikania filicifolia is a very striking species known only from the type. The delicate, pinnately dissected, fernlike foliage easily separates this species from the only other species of this genus in Peru known to have divided leaves, *M. ternata*, which has palmately divided leaves.

26. *Mikania glandulifera* Holmes & McDaniel, *Phytologia* 37: 470. 1977. TYPE: Peru, Huánuco, Pachitea, Honoria, Bosque Nacional de Iparia, Río Pachitea ca. del campamento Miel de Abeja, January 6, 1967, *Schunke V. 1487* (US, holotype; F, IBE, isotypes).

Lianas; stems terete, striate-costate, glabrate, with dark glandular punctations (especially near nodes), internodes to ca. 16 cm long. **Leaves** elliptic-ovate, membranous, to ca. 13 cm long and 6 cm wide, margins entire, apices attenuate-caudate, bases truncate to obtuse, upper surfaces glabrate, with dark glandular punctations near midvein, pinnately veined, lower surfaces with dark glandular punctations; petioles to ca. 3 cm long, with dark glands. **Inflorescence** a panicle, the ultimate segments spicately arranged; branchlets angular, puberulent, with somewhat stalked dark glands. **Heads** sessile, ca. 6 mm long; exterior bracts lance-elliptic, to ca. 1.5 mm long, apices acute, often with dark glands; involucre bracts elliptic-oblong, ca. 5 mm long, glabrate, with a few dark glands, apices rounded, densely pilose, bases somewhat swollen; corollas ca. 3 mm long, white, tube ca. 1.5 mm long, throat ca. 0.8 mm long, turbinate, teeth lanceolate, ca. 0.7 mm long. **Achenes** ca. 2 mm long, brownish; pappus bristles 35–40, white, ca. 3.5 mm long, scabrid.

Mikania glandulifera is characterized by the strictly spicately disposed heads and elliptic-oblong membranous leaves.

27. *Mikania guaco* H. & B., *Pl. Aeq.* 2: 84. 1809. TYPE: Colombia, Magdalena River between Mahates & Angostura, *Humboldt & Bonpland 1447* (P, holotype, not seen). Figure 3.

Mikania attenuata DC., *Prodr.* 5: 195. 1836. TYPE: Peru, "montibus Huanacocensis," Haenke (G-DC, holotype, not seen, IDC microfiche 800. 820: 1.1, GH, photo).

M. brachiata Poepp. in Poepp. & Endl., *Nov. Gen. Sp. Pl.* 3: 53. 1845. TYPE: Peru, in forests at Tocache, *Poeppig 2041* (W, holotype, not seen, F, photo & fragm.).

M. cuneata Schultz-Bip., *Bonplandia* 4: 54. 1856. (*nomen nudum*). TYPE: Peru, San Govan, *Lechler 2477* (F, isotype).

M. amara var. *guaco* (H. & B.) Baker in Mart., *Fl. Bras.* 6: 237. 1876.

Willoughbya guaco (H. & B.) Kuntze, *Rev. Gen.* 1: 372. 1891.

M. olivacea Klatt, *Bull. Soc. Roy. Bot. Belg.* 31: 195. 1892 (1893). TYPE: Costa Rica, forests of Buenos Aires, 2,300 m, *Pittier 4433* (BR, holotype; GH, isotype).

Lianas; stems terete, pithy to hollow, glabrous, internodes to 20 cm or more long. **Leaves** ovate-oval, thin, to 20 cm or more long and 12 cm or more wide, margins entire to somewhat denticulate, apices attenuate, bases acuminate and prominently decurrent upon the petiole, upper surfaces puberulent to sometimes scabrid, subpinnately 5–7 (9)-nerved from near the base, lower surfaces glabrate; petioles to 5 cm long, thin. **Inflorescence** a corymb, the ultimate segments rather dense, to ca. 6 cm long and 12 cm wide; branchlets angled, puberulent. **Heads** sessile to shortly pedicellate, disposed in groups of 3's, 8–10 mm long; exterior bracts subulate to linear, 0.5–2 mm long, puberulent; involucre bracts oblong, 4–6 mm long, puberulent, especially toward the rounded apices; corollas ca. 5 mm long, white to lilac to brownish, tube ca. 2 mm long, throat 2.4

mm long, teeth deltoid, ca. 0.6 mm long, style branches prominently hirsute. **Achenes** ca. 3 mm long, blackish; pappus bristles ca. 60, buff (in age), 4–4.5 mm long, barbellate, thinner toward the tips.

Mikania guaco is a very well-known and widespread species that occurs from southern Mexico throughout Central America to northern South America (to Brazil, Bolivia, and Peru). It is readily characterized by the ovate-oval leaves with bases prominently cuneately decurrent upon the petiole.

AMAZONAS. Bagua, near Campamento Stte. Montenegro, 450 m, *Wurdack* 1840 (F, GH, US). AYACUCHO. Aina between Haunta and Río Apurímac, 750–1,000 m, *Killip & Smith* 22793 (GH, US). CUZCO. Quispicanchis: María Patai, Cadena, 1,100 m, *Vargas* 11677 (US). HUÁNUCO. Huamalies, Monzón, *Weberbauer* 3442 (GH), Huánuco: downriver from Tingo María, 7,000 ft, *Belshaw* 3104 (F, GH, MO, US), Fundo Honolulu, cerca a Tingo María, carretera Huánuco-Tingo María, 600–700 m, *Ferreya* 2258 (MO, US, USM), Huánuco: Tingo María, shore of Río Monzón, *Asplund* 12974 (F), Pozuzo, 800–900 m, *Weberbauer* 34376 (F, MO), Divisoria, cerca a Chinchono, entre Tingo María y Pucallpa, 1,500–1,600 m, *Ferreya* 4314 (US) and 4292 (MO, US, USM). LORETO. Maynas: Florida, Río Putumayo, at mouth of Río Zubineta, 180 m, *Klug* 2172 (F, GH, MO), Río Yahuayacu, Río Ampiyacu, Pebas, *Revilla* 713 (MO), Río Ampiyacu, Pebas and vicinity, *Plouman et al.* 7268 (F), Dtto. Alto Nanay, Río Nanay just below mouth of Quebrada Anguilla, *McDaniel et al.* 21503 (AMAZ, F, FSU, GA, IBE, MO, NATC, NY, RB, US, USM), Dtto. Iquitos, Quebrada de Aucaya, trocha de Nuevo Union, *McDaniel & Rimachi* 17171 (IBE, NATC), along Río Amazonas S of Iquitos, *Croat* 19307 (GH, IBE), Iquitos, ca. 100 m, *Killip & Smith* 27386 (F, GH, US), Iquitos, San Juan, 120 m, *Williams* 3721 (F, GH), Iquitos, 120 m, *Williams* 8197 (F, GH), 5 m S of Iquitos, *Croat* 18144 (IBE), lower Río Nanay, *Williams* 542 (F), Río Nanay near Iquitos, between Bellavista & Sta. Clotilde, 110 m, *McDaniel* 13576 (IBE, MO), La Carretera de Momoncillo near Río Momón, *McDaniel & Rimachi* 17007 (IBE); Ucayali: Contamana, near road to Oriente, 160–180 m, *McDaniel* 14057 (IBE). MADRE DE DÍOS. Cocha Cashú, forest in vicinity of ox-bow lake of Río Manú, between Panagua & Tayakome, *Foster et al.* 3488 (IBE). SAN MARTÍN. Zepelacio, near Moyobamba, 1,200–1,600 m, *Klug* 3412 (US), Mariscal Cáceres: Tocache Nuevo, Quebrada Luís Sálas (5 km NE Puerto Rizana), *Schunke* V. 6584 (IBE, MO), Mariscal Cáceres: Tocache Nuevo, Fundo Jeroglífico, 400 m, *Schunke* V. 8282 (MO).

28. *Mikania haenkeana* DC., Prodr. 5: 196. 1836. TYPE: "in montanis Peruviae," 1790, *Haenke* 142 (G-DC, holotype, not seen, IDC microfiche 800. 820: I.7; F, isotype).

M. pellucidivenia Hieron., Bot. Jahrb. Syst. 36: 474. 1905. TYPE: Peru, near Tambillo, *Jelski* 600 & 642 (both B, destroyed).

M. monzonensis Hieron., Bot. Jahrb. Syst. 40: 391. 1908. TYPE: Peru, Huamalies, *Weberbauer* 3430 (B, holotype, destroyed, GH, photo; F, isotype).

Herbaceous **twiners**; stems terete, glabrate, striate, internodes to 25 cm or more long. Leaves ovate, to ca. 12 cm long and 11 cm wide, margins entire, apices caudate-acuminate, bases cordate, upper surfaces glabrate, palmately 5-nerved, lower surfaces glandular-punctate, lighter than above; petioles to ca. 7 mm long, thin, puberulent. **Heads** sessile, disposed in somewhat elongate spiciform glomerules, these arranged in panicles; exterior bracts linear, 3–3.5 mm long, puberulent; involucre bracts lance-oblong, ca. 3 mm long, puberulent, apices acute; corollas ca. 3 mm long, greenish-white, tube scarcely distinguishable from and gradually expanding into the throat, teeth deltoid,

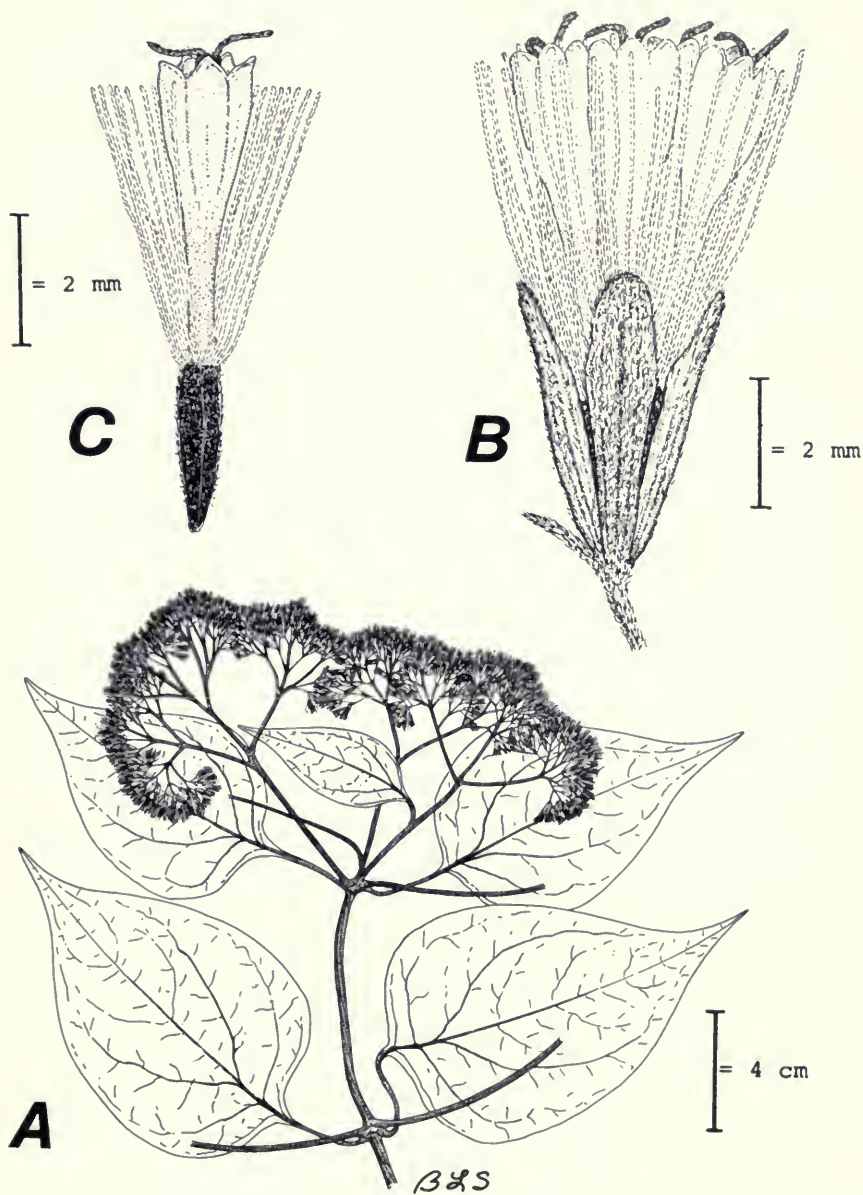


FIG. 3. *Mikania guaco* H. & A. A, habit; B, head; C, flower. (After McDaniel et al. 21503 [IBE].)

ca. 0.3 mm long. **Achenes** ca. 1.5 mm long, black, somewhat hispid at the summit; pappus bristles ca. 30, white, 2.5–3 mm long, barbellate, thickened at the tips.

Mikania haenkeana occurs at ca. 750–1,700 m elevation in Bolivia, Peru, Argentina (Salta), and Ecuador. It is characterized by the paniculate inflorescence with the heads sessile and disposed in somewhat spiciform elongate glomerules.

HUÁNUCO. Pampayacu, hacienda at mouth of Río Chinchao, 3,500 ft, *Macbride 5064* (F, GH, US). JUNÍN. La Merced, Hacienda Schunke, 4,000 ft, *Macbride 5271* (F, GH, US), *5415* (F, GH, US), and *5810* (F, GH); La Merced, *Soukup 1537* (US).

29. *Mikania hexagonocaulis* Holmes & McDaniel, *Phytologia* 471. 1977. TYPE: Peru, San Martín, Palo Blanco, al oeste del puente, Mariscal Cáceres, Tocache Nuevo, December 16, 1972, *Schunke V. 5734* (F, holotype).

Climbing *lianas*; stems obscurely hexagonal to somewhat terete at first, later becoming distinctly hexagonal, reddish-brown, finely puberulent to somewhat scurfy. **Leaves** ovate-elliptic, semifleshy, intense green when alive, to ca. 14 cm long and 6 cm wide, margins entire, apices attenuate, bases rounded, pinnately nerved, the nerves prominent, branching from the midvein and closely following same until separation, above finely puberulent, below lighter, glandular, somewhat puberulent; petioles 1.5–2 cm long. **Inflorescence** a corymb, ca. 8 cm wide and 7 cm long; branchlets angular, densely puberulent. **Heads** sessile, ternately arranged, ca. 12 mm long; exterior bracts subulate, ca. 1 mm long, glandular, weakly puberulent; involucre bracts greenish-yellow, the outer oblong, ca. 6 mm long, glandular, lightly puberulent, apices rounded with ciliate margins, inner narrowly obovate, ca. 7 mm long, glandular, puberulent, apices obtuse, margins ciliate; corollas narrow, white, ca. 5.5 mm long, throat scarcely distinguishable from the tube, teeth ca. 0.8 mm long, narrowly triangular. **Achenes** ca. 4.5 mm long, gradually enlarging from base to apex, olivaceous; pappus bristles 60–70, white, barbellate, ca. 6.5 mm long.

Mikania hexagonocaulis, known only from the type, is characterized by ternately disposed sessile heads, hexagonal stems, pinnately veined leaves, and subulate exterior bracts.

30. *Mikania hookeriana* DC., *Prodr.* 5: 195. 1836. TYPE: Guyana, *Schomburgk 479* (G-DC, holotype, not seen, IDC microfiche 800. 820:I.3, F, photo; K, isotype, not seen).

M. badieri DC., *Prodr.* 5: 194. 1836. TYPE: Guadeloupe, *Badier* (G-DC, holotype, not seen, IDC microfiche 800. 819:II.6).

M. platyphylla DC., *Prodr.* 5: 195. 1836. TYPE: Peru, *Poeppig 2184* (G-DC, holotype, not seen, IDC microfiche 800. 819:III.7, F, photo).

M. imrayana Griseb., *Fl. Brit. W. Ind.* 363. 1861. TYPE: Dominica, *Imray* (K, holotype, not seen).

Willoughbya imrayana (Griseb.) Kuntze, *Rev. Gen. Pl.* 1: 372. 1891.

W. platyphylla (DC.) Kuntze, *Rev. Gen. Pl.* 1: 372. 1891.

Mikania badieri DC. var. *kittsiana* Urban, *Symb. Antill.* 5: 220. 1907. TYPE: St. Kitts, Belmont, *Britton & Cowell 385* (US, holotype).

M. vitrea B. L. Robinson, *Contr. Gray Herb.* 61: 22. 1920. TYPE: Venezuela, Colonia Tovar, Aragua, *Fendler 2349* (GH, holotype; G, not seen, PH, isotypes).

M. hookeriana DC. var. *badieri* (DC.) B. L. Robinson, *Contr. Gray Herb.* 104: 52. 1934.

M. hookeriana DC. var. *cardiophylla* B. L. Robinson, *Contr. Gray Herb.* 104: 53. 1934. TYPE: St. Vincent, *Smith 1090* (GH, holotype).

M. hookeriana DC. var. *kittsiana* (Urban) B. L. Robinson, *Contr. Gray Herb.* 104: 52. 1934.

M. hookeriana DC. var. *platyphylla* (DC.) B. L. Robinson, *Contr. Gray Herb.* 104: 52. 1934.

M. sanjacintensis Badillo, Bol. Soc. Venez. Ci. Nat. 10: 298. 1946. TYPE: Venezuela, Montaña de San Jacinto, N side of Río Chama, Merida, *Steyermark* 56665 (VEN, holotype, not seen; F, isotype).

M. hookeriana DC. var. *crassicaulis* Steyermark, Fieldiana, Bot. 28: 658. 1953. TYPE: Venezuela, Ptarí-tepuí, Bolívar, *Steyermark* 60015 (F, holotype).

Herbaceous to woody **lianas**; stems terete, striate, often fistulose, glabrous to puberulent, internodes 5–20 cm long. **Leaves** ovate to broadly ovate, to ca. 15 cm long and 10 cm wide, margins entire, often with prominent basal angles, apices acute to acuminate, bases rounded to slightly cuneate, upper surfaces glabrate to puberulous, often somewhat muricate, subpinnately 5-nerved from near the base, lower surfaces glabrate to puberulent; petioles to 4 cm long, thin. **Inflorescence** paniculate, ca. 12 cm in diameter and 12 cm high; heads disposed in rather dense short spikes or glomerules; branchlets terete to angular, puberulent. **Heads** sessile, 8–9 mm long; exterior bracts lance-linear, ca. ½ the length of the involucre; involucre bracts oblong, ca. 5 mm long, apices rounded, puberulent, bases swollen; corollas 4–4.5 mm long, white, tube ca. 1.5 mm long, throat narrowly campanulate, 2–2.5 mm long, teeth ca. 0.5 mm long. **Achenes** 2.5–3.5 mm long, lightly glandular, brownish, ribs lighter in color; pappus bristles ca. 40, white, 5–6 mm long, thin, barbellate.

Mikania hookeriana is a very widespread and highly variable species occurring from southern Mexico throughout Central America to Peru, Bolivia, and Brazil. An excellent account of the variation and synonymy of this species is presented by Robinson (1934). This species is distinguished by its sessile heads disposed in short spikes or somewhat elongate glomerules. The swollen bases of the involucre bracts are also a very useful diagnostic character.

AMAZONAS. Lugar Aintami, monte al lado de Cenepa, *Kayap* 348 (MO), Quebrada Shimpunts, alto Río Cenepa, monte al lado de Shimpunts, 800–1,100 ft, *Ancuash* 29 (IBE), *Kayap* 426 (IBE, MO). HUÁNUCO. Pachitea: Honoria, Bosque Nacional de Iparia, Río Pachitea, *Schunke* V. 1145 (US), Tingo María, km 137–138, Carretera Huánuco-Pucallpa, 700 m, *Ferreyra* 906 (GH, MO, US, USM), Carretera a Pucallpa, km 210, *Ridout* s. n. (MO, USM), Agua Blanco (Carretera Monzón), *Schunke* V. 5868 (F). LORETO. Fortaleza near Yurimaguas, 140 m, *Klug* 2897 (F, GH, US), Pampayacu, between Balsapuerto and Moyobamba, *Klug* 3205 (US). SAN MARTÍN. Zepelacio, near Moyobamba, 1,200–1,600 m, *Klug* 3460 (F, GH, MO, US), Mariscal Cáceres: Tocache Nuevo, camino a Shunte, *Schunke* V. 7344 (MO), Mariscal Cáceres: Tocache Nuevo, aeropuerto de Tocache, 400 m, *Schunke* V. 3761 (F, US), Rioja, sabana, 1,000–1,100 m, *Ferreyra* 18470 (MO, USM).

31. *Mikania huanucoensis* Holmes & McDaniel, Phytologia 41: 190. 1979.

TYPE: Peru, Huánuco, Río Negro, pampa of fern, 1,000 m, January 14, 1961, *Woytkowski* 6192 (MO, holotype).

Suffrutescent **lianas** to 10 m tall; stems striate-sulcate, fistulose, glabrous, internodes to 4 cm long. **Leaves** elliptic, to ca. 5.5 cm long and 2.5 cm wide, margins entire-revolute, apices acute to acuminate, bases cuneate, upper surfaces very lightly sericeous toward the margins, obscurely pinnately nerved, with 2 pairs of secondary nerves arising within the basal half of the leaf, these arching toward the apex, lower surfaces glabrate to lightly pilose, the major nerves raised; petioles 0.5–0.7 cm long, lightly sericeous. **Inflorescence** a panicle, to 14 cm tall and 8 cm wide, the ultimate branchlets spicate, opposite, to ca. 8 cm long; branchlets striate, lightly glandular. **Heads** 10–11 mm long, loosely disposed; exterior bracts linear to narrowly elliptic, to ca. 1.5 mm long, glandular; involucre bracts oblong, ca. 6 mm long, glabrate, glandular, apices rounded, puberulent; corollas ca. 5 mm long, white, glandular, tube ca. 3 mm long, gradually expanding into the throat, throat ca. 1.5 mm long, teeth obtuse, ca. 0.5 mm long, glandular. **Achenes** ca. 4.5 mm long, glandu-

lar toward the summit, dark olivaceous, ribs white; pappus bristles 40–45, ca. 5 mm long, barbellate, somewhat thickened toward the tips.

Mikania huanucoensis, known only from the type, is characterized by its spicately disposed inflorescence with the heads 10–11 mm long.

32. *Mikania incasina* B. L. Robinson, Contr. Gray Herb. 64: 11. 1922. TYPE: Peru, Amazonas, Chachapoyas, *Mathews s. n.* (K, holotype, not seen).

Somewhat shrubby twiners; stems terete, striate, puberulent when young, soon glabrate, internodes to 14 cm long. Leaves triangular-ovate, to ca. 18 cm long and 9 cm wide, margins entire, apices acuminate, bases truncate to rounded, upper surfaces glabrous, 3–5-nerved from the base, lower surfaces tomentose, the major nerves exerted from surface, prominent; petioles to 1.5 cm long, puberulent. Inflorescence a panicle, ca. 10 cm long and 10 cm wide; branchlets terete, puberulent; pedicels 3–5 mm long, puberulent. Heads ca. 10 mm long; exterior bracts linear, ca. 3 mm long, sparsely puberulent, generally borne near the summit of the pedicel, but sometimes placed well beneath; involucre bracts oblong, ca. 6 mm long, somewhat glandular, apices obtuse, lightly puberulent; corollas 5 mm long, white, tube ca. 3 mm long, thin, throat campanulate-rotate, ca. 0.5 mm long, teeth ovate, ca. 1.5 mm long, with 1 marginal pair of veins and another pair inward and parallel to the margin. Achenes ca. 4 mm long, olivaceous with white ribs; pappus bristles 55–60, white, ca. 5.5 mm long, barbellate.

Mikania incasina, known only from Peru, is characterized by its rotate-campanulate corolla throat with the teeth greater in length than the throat.

HUÁNUCO. Carpish, entre Huánuco y Tingo María, 2,800–2,900 m, *Ferreyra 2084* (MO, US, USM). JUNÍN. La Merced, Hacienda Schunke, ca. 4,000 ft, *Macbride 5778* (F, GH, US).

33. *Mikania infesta* B. L. Robinson, Contr. Gray Herb. 104: 37. 1934. TYPE: Peru, Junín, Pichís Trail, Yapas, alt. 1,350–1,600 m, June 28–29, 1929, *Killip & Smith 25439* (US, holotype).

Woody vines, stems terete, scabrid, internodes to 7 cm long. Leaves elliptic, to ca. 20 cm long and 7.5 cm wide, margins cuspidate-denticulate, apices acute-acuminate, bases obtuse to rounded, upper surfaces scabrous, pinnately veined, lower surfaces lightly pilose; petioles 3–3.5 cm long, somewhat scabrous. Inflorescence a panicle, ca. 8 cm in diameter, the ultimate segments spicately disposed; branchlets terete, scabrid. Heads ca. 5 mm long; exterior bracts lance-ovate, ca. 1.5 mm long, apices acute, somewhat ciliate; involucre bracts oblong-ovate, 3.5–4 mm long, sparingly pilose, apices obtuse; corollas ca. 3 mm long, greenish-white, tube ca. 1.5 mm long, throat 1 mm long, teeth triangular, ca. 0.5 mm long, pinkish. Achenes immature; pappus bristles ca. 25, white, ca. 4 mm long, scabrid, thickened at tips.

Mikania infesta, known only from the type, is readily characterized by the spicately disposed heads and scabrid leaves.

34. *Mikania inornata* B. L. Robinson, Contr. Gray Herb. 73: 26. 1924. TYPE: Peru, Ancash, Pampayacu, hacienda at mouth of Río Chinchao, ca. 3,500 ft, July 19–25, 1923, *Macbride 5061* (F, holotype).

Herbaceous to slightly woody vines; stems somewhat hexagonal, glabrous, internodes 5–23 cm long. Leaves oblong-ovate, to ca. 10 cm long and 5.5 cm wide, margins entire, apices acuminate, bases acute to somewhat rounded, surfaces glabrous, 3(–5)-nerved from the base, reticulating veins obscure; petioles to ca. 4 cm long, glabrous. Inflorescence a lax panicle to ca. 12 cm long and 6 cm in diameter; branchlets hexagonal, glabrous; pedicels 1–2 mm long, angular, glabrous. Heads ca. 8 mm long; exterior bracts oblong-ovate, 5–6 mm long, glabrate, apices acute, bases cuneate, margins somewhat ciliate, surfaces reticulate; involucre bracts ovate-oblong, 4.5–5.5 mm long, glabrate,

apices obtuse; corollas ca. 5 mm long, tube ca. 2.5 mm long, throat campanulate-rotate, ca. 0.7 mm long, teeth ca. 1.8 mm long, ovate, with 2 pairs of veins, 1 pair marginal, the other inward and paralleling the first. Achenes ca. 3 mm long; pappus bristles ca. 100, white, ca. 5 mm long, barbellate, thickened at the tips.

Mikania inornata, known only from the type, is similar in many respects to *M. montana* B. L. Robinson, but easily distinguished by its ovate corolla teeth with two pairs of veins. *Mikania montana* has linear corolla teeth with one pair of veins.

35. *Mikania iquitosensis* B. L. Robinson, Contr. Gray Herb. 104: 38. 1934.

TYPE: Peru, Loreto, Iquitos, woods, ca. 100 m, August 3–11, 1929, Killip & Smith 27080 (GH, holotype; F, isotype).

Woody vines; stems terete, costate, with solid pith, glabrate, internodes to 4 cm long. Leaves oblong, to ca. 8 cm long and 3.5 cm wide, margins entire, apices acute-acuminate, bases acute to obtuse, upper surfaces glabrate, pinnately nerved, lower surfaces glabrate; petioles to ca. 8 mm long, puberulent. Inflorescence a lax panicle; bracts linear, to ca. 1 cm long, puberulent; branchlets angular-costate, puberulent; pedicels ca. 2 mm long. Heads ca. 7 mm long; exterior bracts lance-linear, 1.5–2 mm long, puberulent; involucre bracts lance-linear, ca. 5 mm long, glabrate, apices acute-acuminate, slightly erose, bases slightly enlarged; corollas ca. 5 mm long, greenish-white, tube ca. 1.7 mm long, throat campanulate-turbinate, ca. 2.3 mm long, teeth deltoid, ca. 1 mm long. Achenes ca. 3 mm long, brownish; pappus bristles ca. 40, white, ca. 5 mm long, barbellate, distinctly thickened at the tips.

Mikania iquitosensis is known only from the type. In many respects it is similar to *M. decora* Poepp., but lacks the distinctly racemously disposed heads and prominently reticulate leaves of the latter species. The leaves of *M. iquitosensis* apparently turn dark brown to blackish upon drying. See *M. shushunensis* for distinctions between these two similar species.

36. *Mikania jelskii* Hieron., Bot. Jahrb. Syst. 36: 475. 1905. TYPE: Peru, Cajamarca, near Cutervo, *Jelski 634* (B, holotype, destroyed, F, photo).

Somewhat woody lianas; stems terete, costate, puberulent, internodes to ca. 8 cm long. Leaves elliptic, to ca. 7 cm long and 3 cm wide, margins entire, apices somewhat attenuate, bases rounded, upper surfaces glabrous, the major nerves arising from near the base, lower surfaces glabrous; petioles ca. 1.2 mm long, puberulent. Inflorescence paniculate, heads spicately disposed; branchlets puberulent; pedicels barely perceptible. Heads 5–7 mm long; exterior bracts ca. $\frac{1}{3}$ the length of the involucre, puberulent; involucre bracts oblong, 3–3.8 mm long, puberulent, inner surfaces pearly white, apices narrowed to an obtuse tip; corollas ca. 2.5 mm long, tube ca. 0.5 mm long, somewhat bulbous at the base, throat ca. 1.5 mm long, teeth deltoid, ca. 0.5 mm long. Achenes ca. 1.5 mm long, black; pappus bristles 30–40, brownish, ca. 3 mm long, barbellate, thickened at the tips.

Mikania jelskii is known only from Peru at 1,800–2,700 m elevations. It is very similar to *M. oreopola*, but the former can be distinguished by its dense inflorescence with slightly pedicellate heads, puberulent involucre bracts darkened on the outer surface and pearly white inside and pappus bristles with distinctly thickened tips.

AMAZONAS. Bongorá: Hills WNW of Pomacocha, 2,300–2,700 m, *Wurdack 929* (US); Chachapoyas, *Mathews 1371* (GH, photo & frag.). CUZCO. Villcabamba, hacienda on Río Chinchao, 6,000 ft, *Macbride* (F, GH, US). JUNÍN. Huacapistana, 1,800 m, *Killip & Smith 24292* (GH).

37. *Mikania juninensis* Holmes & McDaniel, *Phytologia* 42: 185. 1979. TYPE: Peru, Junín, Pichís Trail, Porvenir, 1,500–1,900 m, July 3–4, 1929, *Killip & Smith 25912* (GH, holotype; F, isotype).

Subliguous **vines**; stems terete, velvety tomentulose, internodes ca. 7 mm long. **Leaves** ovate, ca. 8.5 cm long and 4.5 cm wide, margins entire, apices acute to rounded, bases rounded to obtuse, upper surfaces glabrate, pinnately nerved, the major nerves with dense white appressed pubescence, lower surfaces crisped-hairy (mainly on the nerves), the veins exserted, lighter than above; petioles 1–2 cm long, velvety tomentulose. **Inflorescence** a rather open panicle with heads clustered near the tips of the oppositely borne branchlets, ca. 30 cm long and 15 cm in diameter; branchlets terete, velvety tomentulose; pedicels 2–4 mm long, terete, velvety tomentulose. **Heads** 4–5 mm long; exterior bracts ovate-oblong, 1–1.2 mm long, glabrate, apices rounded, irregularly ciliate, borne well beneath the involucre; involucre bracts oblong, 3 mm long, glabrate, apices rounded; corollas 3–3.3 mm long, greenish-white, tube 1–1.2 mm long, gradually expanded into the turbinate throat, throat 1–1.2 mm long, teeth lanceolate to narrowly triangular, ca. 1.3 mm long. **Achenes** ca. 2 mm long, olivaceous; pappus bristles ca. 30, white, ca. 3 mm long, barbellate.

Mikania juninensis is known only from two collections from Junín, the type and the one listed below. It is characterized by open panicles with heads somewhat clustered toward the tips of the branchlets.

JUNÍN. Pichís Trail, Dos de Mayo, 1,700–1,900 m, *Killip & Smith 25797* (GH).

38. *Mikania klugii* B. L. Robinson, *Contr. Gray Herb.* 104: 38. 1934. TYPE: Peru, Loreto, Florida, Río Putumayo, at mouth of Río Zubineta, 180 m, May–July, 1931, *Klug 2135* (GH, holotype; F, MO, isotypes).

Subliguous **lianas**; stems terete, costate-striate, puberulent to crisped puberulent (especially on younger parts), internodes ca. 5 cm long. **Leaves** ovate (only bracteal leaves available), to ca. 8 cm long and 5 cm wide, margins entire, apices long-attenuate, bases rounded to truncate to shortly cuneate, surfaces glabrate, prominently reticulate, sub-pinnately nerved from near the base; petioles to ca. 2 cm long, sulcate. **Inflorescence** a panicle, the ultimate branches spicately disposed, to ca. 30 cm long and 20 cm wide; branchlets crisped puberulent. **Heads** sessile, ca. 6 mm long; exterior bracts elliptic-ovate, 0.5–1.0 mm long; involucre bracts elliptic-oblong, ca. 4 mm long, apices acute to a slightly rounded puberulent tip; corollas ca. 3.5 mm long, tube ca. 2 mm long, throat narrowly campanulate, ca. 1.0 mm long, teeth acute, ca. 0.5 mm long. **Achenes** (immature) ca. 1.8 mm long; pappus bristles ca. 30, white, 4–4.5 mm long, barbellate, often thickened at the tips.

Mikania klugii, known only from the type, is difficult to distinguish from *M. aquaria*. The exterior bract of *M. aquaria* is around one-half the length of the involucre, that of *M. klugii* one-fourth the length of the involucre. *Klug 2960*, cited with *M. klugii* in the original description has, among other differences, verticillate leaves and is referred to *M. simpsonii*.

39. *Mikania lanceolata* Hieron., *Bot. Jahrb. Syst.* 29: 17. 1900. TYPE: Ecuador, "in sylvis temperatis prope Niebli." July 1873, *Sodiño 7/1* (B. holotype, destroyed).

Climbing **shrubs**; stems terete, glaucous-green to purplish, glabrate, internodes to ca. 9 cm long. **Leaves** lanceolate, subcoriaceous, to ca. 12 cm long and 3 cm wide, margins entire, apices attenuate, bases rounded to cuneate, upper surfaces glabrate, reticulate, pinnately nerved, lower surfaces glabrate, lighter than above, prominently reticulate, veins exserted. **Inflorescence** a panicle; branchlets puberulent; heads arranged in 3's at the tips of the branches. **Heads** ca. 6 mm long, sessile; exterior bracts subulate, ca. 0.5 mm

long; involucre bracts spatulate, ca. 3 mm long, lightly puberulent, glandular, apices rounded; corollas ca. 4 mm long, glandular, tube ca. 1.5 mm long, the base slightly expanded, throat turbinate-subcylindric, ca. 2 mm long, teeth triangular, ca. 0.5 mm long. **Achenes** ca. 2 mm long, black, ribs lighter in color; pappus bristles ca. 30, white, ca. 4 mm long, barbellate.

Mikania lanceolata is a very distinctive species of Peru and Ecuador recognized by lanceolate leaves and sessile, ternately disposed heads ca. 6 mm long.

CAJAMARCA. Tambillo, *Jelski 601, 604, and 746* (all US).

40. ***Mikania lancifolia*** B. L. Robinson, *Contr. Gray Herb.* 61: 17. 1920. TYPE: Peru, Puno, between Yuncacoya and Tambo Cachicachi on the way from Sandía to Chunchusmayo, 1,800–2,200 m, *Weberbauer 1137* (B, holotype, destroyed, F, photo).

Twining vines or somewhat shrubby; stems angular to terete, yellow-villous to glabrate, internodes to 8 cm long. **Leaves** lanceolate, to ca. 10 cm long and 3.5 cm wide, margins remotely callous-denticulate, the teeth ca. 1 cm apart, apices attenuate, bases acute to obtuse, upper surfaces glabrate, rugulose, prominently reticulate, feather-veined, lower surfaces glandular, reticulate, veins exserted; petioles to ca. 1.5 cm long, thin. **Inflorescence** a lax panicle, to ca. 10 cm in diameter; branchlets pilose; pedicels 3–4 mm long, slender, lightly pilose. **Heads** ca. 7 mm long; exterior bracts lance-linear, ca. 2.5 mm long, borne at the summit of the pedicel; involucre bracts linear-oblong, ca. 4.5 mm long, glabrate except for the somewhat pilose acute apices; corollas ca. 3 mm long, white, tube ca. 1 mm long, throat campanulate, ca. 1 mm long, teeth triangular, equaling the throat in length. **Achenes** ca. 3 mm long, olivaceous; pappus bristles ca. 35, white, ca. 3.5 mm long, barbellate.

An excellent diagnostic character of *Mikania lancifolia*, endemic to Puno, Peru, is its lanceolate leaves with callous-denticulate margins.

PUNO. Sandía: 3 km above Santo Domingo, 1,950 m, *Metcalf 30644* (MO, US).

41. ***Mikania lasiopoda*** B. L. Robinson, *Contr. Gray Herb.* 73: 27. 1924. TYPE: Peru, Junín, La Merced, 2,000 ft, August 10–24, 1923, *Macbride 5567* (F, holotype).

Woody lianas; stems terete, costate, setose, internodes to ca. 20 cm long. **Leaves** narrowly ovate-oblong, to ca. 14 cm long and 6 cm wide, margins entire, apices attenuate, bases cordate on mature leaves, acute on bracteal leaves, upper surfaces glabrate, pinnately nerved, lower surfaces slightly pilose, lighter than above, dark punctate; petioles to ca. 5 mm long, setose-pilose. **Inflorescence** a panicle, to ca. 15 cm long and 8 cm wide; branchlets angular-costate, pilose; pedicels to ca. 3 mm long, pilose. **Heads** 5–6 mm long; exterior bracts ovate, to ca. 1.5 mm long, pilose; involucre bracts oblong, 3–3.5 mm long, glabrous, apices rounded; corollas ca. 3.5 mm long, whitish, tube ca. 1.4 mm long, throat campanulate, ca. 1.3 mm long, teeth triangular, ca. 0.8 mm long. **Achenes** ca. 2.5 mm long, glabrous, light green; pappus bristles 30–35, white, ca. 3.5 mm long, barbellate.

Mikania lasiopoda, endemic to Junín, is marginally distinct from the highly variable *M. banisteriae* DC., but here maintained as a separate species with much smaller heads (5–6 mm long), involucre bracts of 3–3.5 mm long, and smaller corollas and achenes. Older stems lack the dense pubescence normally present on *M. banisteriae*.

JUNÍN. La Merced, Hacienda Schunke, 400 ft, *Macbride 5729* (F, GH, US).

42. *Mikania leiostachya* Benth., Pl. Hartw. 201. 1845. TYPE: Colombia, Cundinamarca, in descent from Guaduas to Honda, *Hartweg 1110* (K, holotype, not seen).

Lianas; stems terete, glabrate to minutely puberulent. **Leaves** ovate, subcoriaceous, to ca. 24 cm long and 13 cm wide, margins entire, often slightly recurved, apices acuminate, bases rounded, surfaces glabrate, subpinnately 5-nerved from near the base, prominently reticulate, veins exserted; petioles to ca. 3.5 cm long. **Inflorescence** a panicle, the ultimate branches spicate; branchlets angled, puberulent. **Heads** sessile, 5–6 mm long; exterior bracts lance-ovate, ca. 1.5 mm long, apices acute-acuminate; involucre bracts ovate-oblong, 3–3.5 mm long, puberulent, apices obtuse to rounded; corollas 2.5–3 mm long, white, tube 1–1.5 mm long, throat 1–1.5 mm long, teeth triangular, ca. 0.5 mm long. **Achenes** ca. 1.5–2 mm long, dark; pappus bristles ca. 35, white, 3.5–4 mm long, barbellate, thickened at the tips.

A widely distributed species of Central America and northern South America characterized by subcoriaceous ovate leaves and spicately disposed heads.

HUÁNUCO. Huánuco: Caymba, entre Huánuco y Tingo María, 150–250 m, *Ferreya 4206* (MO, US, USM). DPTO. UNKNOWN. Chota, Huambos, ca. 2,000 m, *Soukup 4521* (US).

43. *Mikania lindleyana* DC., Prodr. 5: 195. 1836. TYPE: "Guiana" (G-DC, holotype, not seen, IDC microfiche 800. 1820: I.1).

Herbaceous vines; young stems angular, puberulent, soon glabrate, multicostate, internodes to 17 cm long. **Leaves** ovate, to ca. 15 cm long and 8 cm wide, margins entire, apices acuminate, bases rounded, surfaces glabrate, 5–7-nerved from the base; petioles to 6 cm long, glabrate. **Inflorescence** a corymb, branching trichotomously, ca. 5 cm long and 6 cm wide; branchlets angular, puberulent; pedicels to 6–7 mm long, angular, puberulent. **Heads** ca. 8 mm long; exterior bracts ovate, ca. 4 mm long, lightly puberulent to glabrate, apices acute, prominently nerved; involucre bracts ovate-oblong, ca. 5 mm long, lightly puberulent, apices rounded; corollas 3–4 mm long, tube and throat about the same length, throat campanulate, teeth triangular, slightly greater in length than the throat. **Achenes** ca. 3 mm long, olivaceous; pappus bristles ca. 4 mm long, carmine, ca. 60, barbellate, slightly thickened toward the tips.

Mikania lindleyana of Brazil, the Guianas, Venezuela, Trinidad, and Peru, is characterized by the normally ternately branching corymb.

AMAZONAS. Quebrada chichejam ensa, Río Cenepa, 920 ft, *Ancuash 583* (IBE, MO). JUNÍN. Pichís Trail, Yapas, 1,350–1,600 m, *Killip & Smith 25482* (GH, US). LORETO. Iquitos, 100 m, *Killip & Smith 27104* (GH, US); Balsapuerto, 220 m, *Klug 3060* (GH, MO, US).

44. *Mikania lutescens* B. L. Robinson, Contr. Gray Herb. 80: 37. 1928. TYPE: Peru, Ayacucho, Huanta, Coimacola Valley, 2,900 m, February 28–March 10, 1926, *Weberbauer 7574* (F, holotype).

Twining **shrubs**; stems subterete, glabrate, internodes 2–9 cm long. **Leaves** triangular, ca. 5 cm long and 3 cm wide, margins crenate-dentate to coarsely serrate to somewhat irregularly palmately lobed at the base, the teeth mucronate, apices acute-acuminate, bases cordate, surfaces glabrate, palmately 5–7-nerved; petioles ca. 2 cm long, thin, connected by a thin lacerate stipule-like ridge. **Inflorescence** a corymb, ca. 6 cm long and 6 cm wide; branchlets angular, somewhat winged, glabrous; pedicels to ca. 5 mm long, angular, winged. **Heads** ca. 10 mm long; exterior bracts ovate, somewhat petiolate, to ca. 6 mm long, lightly pilose, apices acute; involucre bracts linear-lanceolate, 7–8 mm long, glabrous, apices acute-acuminate, the center of each base expanded into a small knoblike protuberance; corollas ca. 5.2 mm long, reported as yellowish (see below), tube ca. 2.7 mm

long, throat subcylindrical-campanulate, ca. 1 mm long, teeth narrowly triangular, ca. 1.5 mm long. **Achenes** ca. 3 mm long, glabrous, brownish; pappus bristles ca. 60, white, ca. 7 mm long, barbellate.

Mikania lutescens, known only from the type, is in many respects similar to *M. brachyphylla* Hieron., which has somewhat coriaceous leaves usually less than 1 cm long. *Mikania lutescens* has leaves ca. 5 cm long, membranous in texture. Apparently the specific epithet refers to the pale yellow flowers.

45. *Mikania marinii* Cabrera, Bol. Soc. Arg. Bot. 5: 37. 1953. TYPE: Peru, Cuzco, Calca, Manto, Lares, en borde de bosque a 2,400 m, August 1950, *Marin* 2360 (LP, holotype, not seen).

Scandent vines; stems terete, multistriate, hazel-hispid, 2–3 mm thick, internodes 5–12 cm long. **Leaves** ovate-lanceolate, 7–8 mm long and 2.5–3.5 cm wide, membranous, apices attenuate, bases rounded, margins remotely denticulate, teeth 0.1–0.3 mm long, pinnately 5-nerved, minutely bullate, strigose-hispid, below brownish-pubescent; petioles 2–3 cm long, densely hazel-subretorse-hispid. **Inflorescence** thyrsoid-paniculate, to ca. 15 cm long and 8 cm wide; pedicels 2–6 mm long, hispid. **Heads** large; external bracts widely lanceolate, hazel-hispid, 2–4 mm long; involucre bracts lanceolate, ca. 8 mm long and 2 mm wide, apices attenuate, submucronate, outer involucre bracts somewhat hirsute, inner glabrous; corollas 8 mm long, teeth ca. 1 mm long. **Achenes** 4.5 mm long, glabrate to lightly sericeo-pubescent at the base; pappus bristles numerous, carmine, ca. 7 mm long.

The above description is compiled from the original publication of Cabrera (1953), which includes an excellent illustration. This species, known only from the type, is characterized by hazel-colored pubescence on the young stems, leaves, and involucre bracts.

46. *Mikania mathewsii* B. L. Robinson, Contr. Gray Herb. 61: 18. 1920. TYPE: Peru, without exact location, in the Andes, *Mathews* 1368 (GH, holotype, F, photo & fragm.; NY, isotype). Figure 4.

M. tenax Sch.-Bip. ex B. L. Robinson, Contr. Gray Herb. 80:41. 1928. TYPE: Peru, in mountains near San Govan, July 1854, *W. Lechler* 2355 (K, holotype, not seen, GH, photo & fragm., not seen; G, not seen, BR, isotypes).

Somewhat woody lianas; stems terete, puberulent, soon glabrate, the nodes generally puberulent, internodes to 6 cm long. **Leaves** ovate to ovate-oblong (bracteal leaves lance-ovate), to ca. 14 cm long and 9 cm wide, margins entire, apices acuminate, bases acuminate, upper surfaces glabrate, pinnately nerved, with 3 pairs of nerves separating within the basal $\frac{1}{3}$ of the leaf, lower surfaces paler than above, often punctate, glabrate, the nerves often puberulent; petioles to ca. 2 cm long, puberulent. **Inflorescence** a panicle with heads disposed in somewhat dense corymbiform clusters at the tips of the branches; branchlets appressed pubescent; pedicels to ca. 3 mm long, thin puberulent. **Heads** 6–7 mm long; exterior bracts lanceolate to ovate, 1.5–2 mm long, margins ciliate, borne at the base of the pedicel; involucre bracts ovate-oblong, ca. 3.3 mm long, puberulent, especially at the apex, narrowing to a somewhat tumid base, apices obtuse; corollas ca. 4 mm long, tube ca. 1.3 mm long, throat subcylindric-semicampanulate, ca. 2.1 mm long, teeth narrowly triangular, ca. 0.6 mm long. **Achenes** ca. 2.8 mm long, dark brown; pappus bristles ca. 30, white, ca. 4.5 mm long, barbellate.

Mikania mathewsii is endemic to Peru at elevations up to ca. 1,200 m. It is characterized by a paniculate inflorescence with heads rather densely clustered near the tips of the branches.

CUZCO. Quispicanchis: entre Oraya y 15 Mil, 730, *Vargas* 14597 (US), Quispicanchis: Quincemil, 800 m, *Marin* 1558 (US), Pamaostamso, 970 m, *Vargas* 11013 (US). HUÁNUCO. Tingo María, Río Monzón, *Ferreya* 10040 (MO, US,

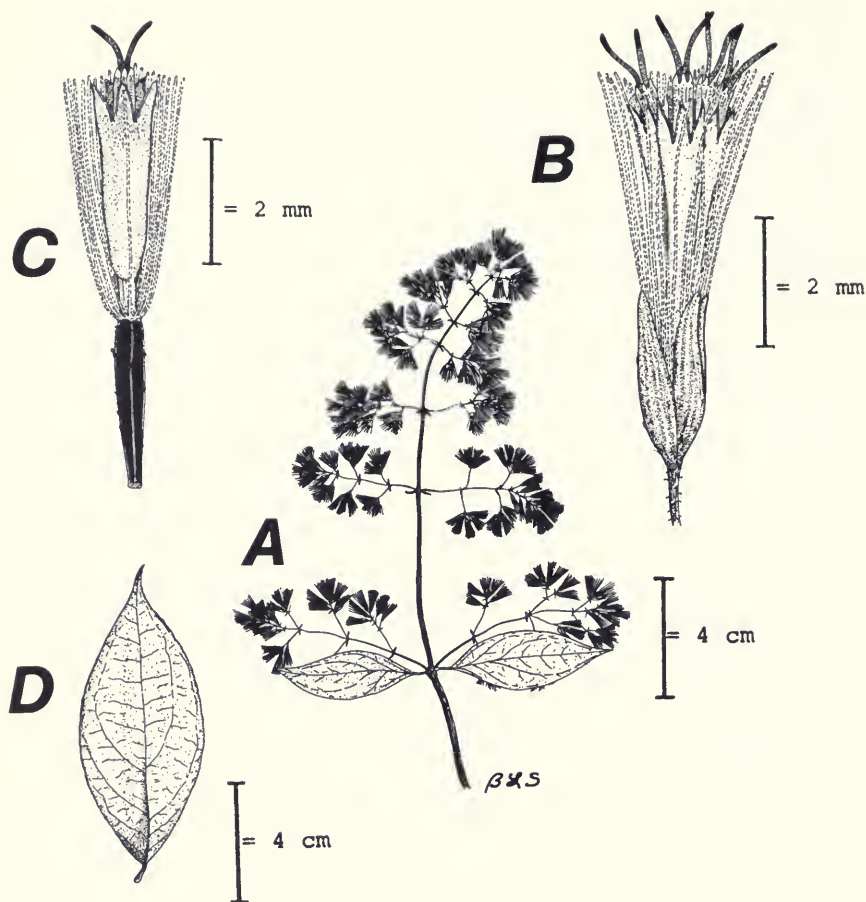


FIG. 4. *Mikania mathewsii* B. L. Robinson. A, habit; B, head; C, flower; D, leaf. (After McDaniel & Rimachi 21971 [IBE].)

USM). LORETO. Between Balsapuerto and Moyobamba, 600–1,200 m, Klug 3205 (F, GH, MO), Coronel Portillo: Padre Abad, granja del Sr. Barrera, 295 m, Schunke V. s. n. (F), Yurimaguas, lower Río Huallaga, 135 m, Killip & Smith 27556 (F, GH, US) & 27949 (F, GH, US), Iquitos, 200 m, Killip & Smith 26968 (GH, US), Iquitos, Quisto Cocha, McDaniel & Persinos 10696 (IBE, NATC). SAN MARTÍN. Mariscal Cáceres: Tocache Nuevo, camino a Shunte, 500–800 m, Schunke V. 7342 (MO), Rioja, sabana, 1,000–1,100 m, Ferreyra 18462 (MO, USM).

47. *Mikania mazanensis* Holmes & McDaniel, *Phytologia* 31: 275. 1975. TYPE: Peru, Loreto, Maynas, Gamitanacocha, Río Mazán, 100–125 m, February 12, 1935, Schunke 231 (F, holotype; GH, UC, isotypes).

Twining vines; stems obscurely angled, glabrous, internodes 6–14 cm long. Leaves ovate, 5–10 cm long, 3–6 cm wide, semicoriaceous, margins subentire to weakly crenate-undulate, apices acute to acuminate, bases subcordate to truncate, upper surfaces gla-

brous, weakly muricate, pale green, palmately 5-nerved from the base, major nerves whitish, lower surfaces glabrous, weakly bullate, pale green, major nerves wide, to 2.5 mm, whitish; petioles 2–3 cm long, glabrous to weakly puberulent, whitish, ca. 2 mm thick. **Inflorescence** corymbose, 3–8 cm long, 5–10 cm wide; branchlets angled, glabrous; pedicels 5–15 mm long, glabrous. **Heads** 7–10 mm long; exterior bracts subulate to linear, 2–3 mm long, glabrous, borne near the middle or base of pedicel; involucre bracts lance-elliptic to linear lanceolate, ca. 7 mm long, glabrous to weakly puberulent; corollas salverform, 4.5–4.7 mm long, cream-colored, glabrous, tube ca. 2.5 mm long, glandular near throat, throat ca. 0.7 mm long, teeth 1.3–1.5 mm long, lanceolate, distinctly longer than the throat. **Achenes** (immature) ca. 2.5 mm long, smooth, light olive in color; pappus bristles ca. 120, in 2 series, reddish in age, ca. 5 mm long, remotely barbellate at base, distinctly barbellate at tips.

Mikania mazanensis, known only from the type, is readily identified by its corymbose inflorescence with pedicels 5–15 mm long, the linear to subulate exterior bract borne well beneath the involucre, the mostly linear-lanceolate involucre bracts with involute margins, the corolla teeth distinctly longer than the throat and numerous pappus bristles in two series.

48. *Mikania megalophylla* Holmes & McDaniel, *Phytologia* 31: 276. 1975.

TYPE: Peru, San Martín, Río Huallaga, S of Shapaja 1–4 km, 900 ft, July 28–30, 1937, *Belshaw* 3153 (F, holotype; MO, isotype). Figure 5.

Twining lianas to ca. 5 m long; stems terete, striate to sulcate, hollow, glabrous to villous (at node), internodes to 10 cm or more. Mature cauline leaves elliptic, 33–40 cm long, 13–17 cm wide, margins entire to weakly and obscurely crenate, apices cuspidate to caudate-cuspidate, bases truncate to obtuse, upper surfaces glabrous, dull green, veins

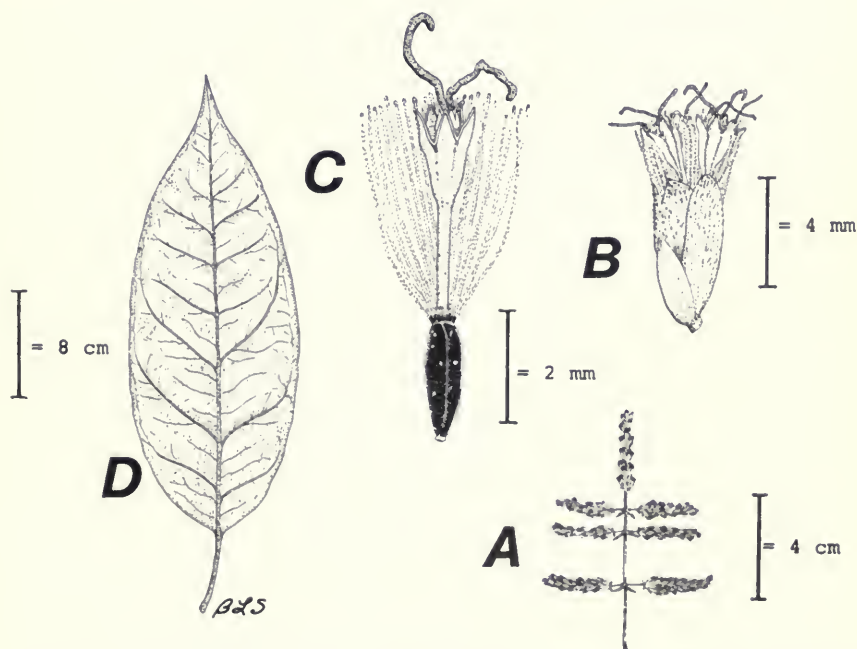


FIG. 5. *Mikania megalophylla* Holmes & McDaniel. A, inflorescence; B, head; C, flower; D, leaf. (A & D after *Belshaw* 3153 [F]; B & C after *Foster* 2467 [IBE].)

pinnate, exserted, prominent, lower surfaces glabrous, lighter than above, veins exserted, prominent, slightly puberulent on the major veins; petioles to ca. 4 cm long, glabrous, sulcate, thick. **Inflorescence** paniculate, ca. 20 cm long, 7–15 cm wide, open, ultimate branchlets spicate to glomerate-spicate, 1–4 cm long; branchlets slightly angular, puberulent. **Heads** sessile, 3.5–5 mm long, somewhat antrorse and paralleling branchlets (rather than being perpendicular to branchlets); exterior bracts elliptic to narrowly ovate, 2–4 mm long, glabrous to weakly pilose, margins entire to erose, apices acute to subobtuse; involucre bracts ovate, 3.5–4 mm long, pilose, margins entire, slightly involute, apices obtuse, with a tuft of hair; corollas salverform, 2.5–3 mm long, white, sparingly glandular, tube 1.25–1.5 mm long, throat ca. 1 mm long, teeth ca. 0.5 mm long, triangular. **Achenes** ca. 1.5 mm long, glandular, smooth, light to dark brown, with a darkened ring at the summit near pappus bristles; pappus bristles 30–35, white, ca. 3 mm long, barbellate, thickened at the tips.

Mikania megalophylla grows at elevations to ca. 900 m in Acré, Brazil; Huánuco, Madre de Dios; and San Martín, Peru. Mature cauline leaves of this species are up to 40 cm long, the largest known for the genus.

HUÁNUCO. Pendencia, in forest, 900 m, *Woytkowski* 7521 (MO). MADRE DE DIOS: Manú, forest behind settlement, *Foster* 2467 (IBE, F, USM). SAN MARTÍN. Juan Jui, alto Río Huallaga, 400–800 m, *Klug* 4363 (F, MO), W side of Río Huallaga, S of Shapaja 1–4 km, 900 ft, *Belshaw* 3154 (F, MO, UC), Lamas, arriba de San José de Sisa, selva, 400–450 m, *Ferreya* 7914 (MO, USM).

49. *Mikania micrantha* HBK. Nov. Gen. Sp. Pl. 4: 105. ed. fol. 1818. TYPE: Venezuela, "prope Caripe Cumanesianum," *Humboldt & Bonpland* (P, holotype, not seen). Figure 6.

Kleinia alata G. F. W. Mey., Prim. Fl. Esseq. 249. 1818. *nomen confusum* (apparently based upon more than one element). TYPE: not seen, probably nonexistent.

Mikania orinocensis HBK., Nov. Gen. Sp. Pl. 4: 105. ed. fol. 1818. TYPE: Venezuela, "insulae Pararuma, Missiones del Orinoco," *Humboldt & Bonpland* (P, holotype).

M. alata (Mey.) DC., Prodr. 5: 197. 1836. (See Robinson, Contr. Gray Herb. 104: 57. 1934.)

M. subcrenata H. & A., Companion Bot. Mag. 1: 243. 1836. TYPE: Argentina, woods of Tucumán, *Tweedie* 1189 (K, holotype, not seen).

M. umbellifera Gardner, London J. Bot. 4: 109. 1845. TYPE: Brazil, Organs Mts., ca. 4,000 ft, *Gardner* 483 (K, holotype, not seen).

M. subcymosa Gardner, London J. Bot. 6: 448. 1847. TYPE: Brazil, Goias, *Gardner* 3271 (K, holotype; NY, P, US, isotypes).

M. scandens var. *umbellifera* (Gardner) Baker in Mart., Fl. Bras. 6: 249. 1876.

M. glechomaefolia Schultz-Bip. ex Baker in Mart., Fl. Bras. 6: 249. 1876. TYPE: not specified.

M. scandens var. *hirsuta* Hieron., Bot. Jahrb. Syst. 19: 47. 1894. TYPE: Colombia, Cauca prope Cali et Quilichao, *Lehman* 4888 (B, holotype, destroyed).

Willoughbya micrantha (HBK.) Rusby, Mem. Torrey Bot. Club 4: 211. 1895.

Mikania scandens var. *villosa* Hieron., Bot. Jahrb. Syst. 36: 473. 1905. SYNTYPES: Peru, Tambillo, *Jelski* 600, 640, 641, & 695 (all B, destroyed).

M. micrantha f. *hirsuta* (Hieron.) B. L. Robinson, Contr. Gray Herb. 64: 43. 1922.

M. sinuata Rusby, Bull. N.Y. Bot. Gard. 8: 127. 1912. TYPE: Bolivia, San Juan, March 20, 1902, *Williams* 207 (NY, holotype, US, isotype).

Herbaceous to semiwoody **twiners**; stems terete to angled, mostly glabrate, internodes 5–20 cm long. **Leaves** ovate, thin, 2–13 cm long and 3–10 cm wide, margins entire to crenate, undulate, or dentate, apices acute to acuminate, bases cordate, sinuses open, upper surfaces glabrous, 3–5(7)-nerved from the base, lower surfaces glabrous; petioles 1–8 cm long, glabrous to pilose, slender. **Inflorescence** a rather large corymbose panicle, 3–6 cm long, 3–10 cm wide; branchlets lightly winged, glabrous. **Heads** 4–6 mm long; exterior bracts lanceolate, 2–3 mm long, glabrous, apices acute; involucre bracts ovate-oblong to rarely elliptic, 3–4 mm long, glabrous, apices acute; corollas campanulate, 2.5–3

mm long, white to greenish, lightly glandular, tube 1–1.5 mm long, throat ca. 1 mm long, teeth deltoid, ca. 0.5 mm long, recurved. Achenes 1.5–2 mm long, sparingly glandular, black; pappus bristles 33–36, white, 2–3 mm long, barbellate.

Mikania micrantha is very widespread in disturbed areas, wet places, river-banks, etc., to ca. 3,000 m elevation; flowering all year. The species occurs in wet tropical North America (excluding Florida), the West Indies, and South America to northern Argentina and is widely naturalized in Southeast Asia, the East Indies, Sri Lanka, India, Hong Kong, Solomon Island, Guam, Fiji, etc.

Because of the widespread natural distribution and presence of several highly variable and often confusing characters, *Mikania micrantha* is often confused with several other species of *Mikania*. These include *M. scandens*, which is largely confined to the United States, and *M. congesta* which has the inflorescence a dense subspherical glomerule. The best diagnostic characters for *M. micrantha* include the ovate leaves with cordate bases, large corymbose panicle, heads 4–6 mm long, involucre bracts normally less than 4 mm long, and whitish to greenish corollas with recurved teeth.

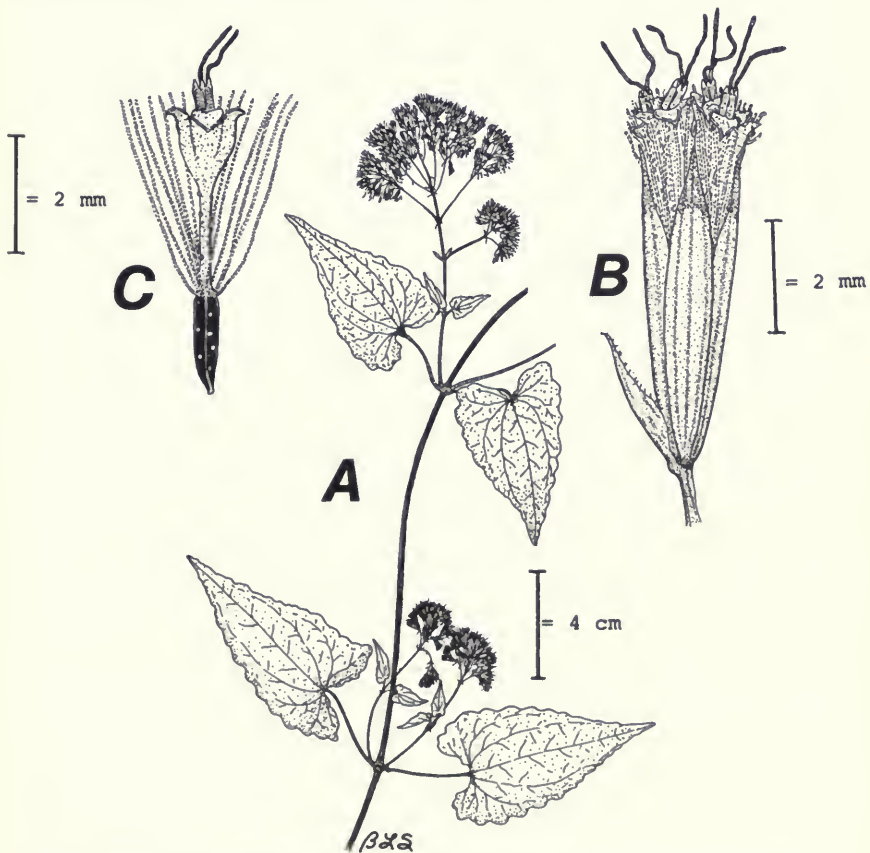


FIG. 6. *Mikania micrantha* HBK. A, habit; B, head; C, flower. (After McDaniel 16221 [IBE].)

AMAZONAS. Huampani, 600–800 ft, *Berlin* 1977 (IBE), Quebrada Huampani, 600 ft, *Kayap* 1167 (MO), Río Cenepa, La Banda, Huampani, 840 ft, *Berlin* 287 (MO), Lugar Kayamas, monte orilla de Cenepa, *Kayap* 274 (GH, MO), Kusa, Río Numpakin, 1,100–1,300 ft, *Ancuash* 60 (MO). ANCASH. Caracha (way from Supe to Ocos), *Weberbauer* 2638 (GH). AYACUCHO. Aina, between Haunta and Río Apurímac, 750–1,000 m, *Killip & Smith* 23113 (F, GH, NY, US), Río Apurímac valley, near Kimpitiriki, 400 m, *Killip & Smith* 22851 (GH, NY, US). CAJAMARCA. Tambillo, *Jelski* 640 (GH) and 641 (GH, US). CUZCO. Entre Salvación y Río Yunsayo, 620 m, *Vargas* 16286 (US), entre Sta. Rita y Machupicchu, 2,000–2,100 m, *Vargas* 3356 (F), Callanga, en la purma, 1,500 m, *Woytkowski* 491 (MO, USM). HUÁNUCO. Huánuco, 3,000 ft, *Macbride* 3227 (F, GH), Huánuco, ca. 7,000 ft, *Macbride* 3203 (F, GH), Pachitea: Honoría, en bosque alto en el camino a Ayamiria a 4 km, 300–400 m, *Schunke* V. 1528 (US), Pachitea: Honoría, Bosque Nacional de Iparia, Río Pachitea, cerca 3 km del campamento Miel de Abeja, 300–400 m, *Schunke* V. 1836 (F, US), Moena, 600 m, *Woytkowski* s. n. (MO, USM). JUNÍN. La Merced, 700 ft, *Macbride* 3203 (US) and 3227 (US). LIBERTAD. Cicama Valley, on road to Chiclin, *Smith* 71 (US), Trujillo, near sea level, *Killip & Smith* 21502 (F, GH, NY, US). LIMA. Barranca Hda. Molina, 320 m, *Vargas* 4617 (F), *Ridoutt* s. n. (MO, USM), Chosica, 3,000 ft, *Macbride* (F, GH), Chosica, *Zuñiga* s. n. (MO, USM), *Esposito* s. n. (IBE, MO, USM), Surco, 2,000 m, *Asplund* 11035 (US), Lima, *Gaudichaux* s. n. (GH), Lima, *Wilkes* 89 (GH, NY, US), near Lima, *Nation* 203 (K), Lima, *Anderson* s. n. (NY), Hacienda Patao, Barranca, camino a orillas del Río Pativilca, *Ridoutt* s. n. (MO, USM), Ñaña, a 20 km E de Lima, *Ferreyra* 10548 (MO, USM). LORETO. Balsapuerto, 220 m, *Klug* 2977 (F, GH, MICH, MO, NY, US), Maynas: Fernando Lores, Dos Unidos, Río Amazonas below Capironal, big bend above Río Tahuayo, *McDaniel & Rimachi* (F, IBE, MO), Maynas: Mazán, Baradero de Mazán, near Mazán, *McDaniel & Rimachi* (IBE, NATC), Maynas: Alto Nanay, Trocha a Santa Rosa, a 3 km de Santa María de Nanay, 130 m, *Schunke* V. 2502 (US), Alto Nanay, Río Nanay just below mouth of Quebrada Anguilla, *McDaniel et al.* 21507 (AMAZ, F, IBE, MO, NATC, NY, RB, US, USM), Manfinfa on the upper Río Nanay, *Williams* 1105 (F, GH), Maynas: Iquitos, Isla de Escabino near Santa María de Nanay, *McDaniel & Rimachi* (IBE, NATC), Maynas: Iquitos, Versailles, *McDaniel* 11744 (FSU, IBE, MO), lower Río Nanay, *Williams* 492 & 513 (both F, GH), Río Nanay just below Moronacocha near Iquitos, 120 m, *Gentry & Daly* 19125 (MO), lower Río Hualaga, 155–210 m, *Williams* 4703 (F, GH), Pebas on the Amazon River, *Williams* 1860 (F, GH), La Victoria on the Amazon River, *Williams* 3009 (F, GH), Río Marañón valley, 150 m, barranca between mouth of Río Monora and Río Pastaza, *Killip et al.* 29232 (NY, US), IVITA, km 59, Pucallpa-Tingo María road, *Gentry et al.* 18591 (MO), Coronel Portillo: Cerca a Neshuya, IVITA, selva tropical, 250 m, *Ferreyra* 17183 & 17563 (both MO, USM), Bosque Nacional von Humboldt, km 86, Pucallpa-Tingo María road, 300 m, *Gentry et al.* 18647 (MO), San Jorge, cerca Pucallpa, 280–300 m, *Ferreyra* 13006 (MO, USM). MADRE DE DÍOS. Manú: Parque Nacional de Manú, several miles upriver from Cocha Cashú, *Foster* 2706 (IBE), Cocha Cashú, *Foster et al.* 3310 (IBE). PIURA: Huanacabamba, entre Serrán y Canchaque, 500–600 m, *Ferreyra* 10779 (MO, USM). SAN MARTÍN: Juan Jui, alto Río Huallaga, 400–800 m, *Klug* 4307 (F, GH, MO, NY, UC, US), Tarapoto-Yurimaguas Highway, km 14–17, 820–850 m, *McDaniel* 13797 (IBE, NATC), Mariscal Cáceres: Tocache Nuevo, Quebrada de Ishichimi,

Schunke V. 3912 (IBE), Moyobamba, *Mathews 1836* (BR, K), San Roque, 1,350–1,500 m, *Williams 7058 & 7746* (both F, GH), Zepelacio, near Moyobamba, 1,200–1,600 m, *Klug 3453* (F, GH, MO, NY, US).

50. *Mikania microptera* DC., Prodr. 5: 196. 1836. TYPE: Brasil, Bahia, *Blanchet 1710* (G-DC, holotype, not seen, IDC microfiche 800. 820:II.2; MO, isotype).

M. scandens (L.) Willd. var. *microptera* (DC.) Baker in Mart., Fl. Bras. 6: 259. 1876.

M. hexagona B. L. Robinson, Proc. Am. Acad. 47: 196. 1911. TYPE: Venezuela, near Tovar, 1,700 m, 1854–55, *Fendler 626* (GH, holotype).

Vigorous herbaceous **twiners**; stems hexagonal, winged, younger parts puberulent to pilose, soon glabrate, internodes 10–20 cm long. **Leaves** ovate to triangular, 5–15 cm long and 3–18 cm wide, margins coarsely serrate to dentate to crenate, often with two divergent, pointed lateral lobes, apices acute to attenuate, bases cordate, sinuses wide, open, broadly cuneate on petiole at point of insertion, upper surfaces pale green, glabrous, 3–5-nerved from the base, lower surfaces lighter than above, glabrous, sometimes glandular, veins prominent, lightly pilose; petioles 3–8 cm long, weakly winged, glabrous to slightly villous. **Inflorescence** corymbose, terminal, 4–8 cm long and 5–12 cm wide; branchlets pilose, winged; pedicels 3–10 mm long, angled, winged, pilose. **Heads** 6–8 mm long; exterior bracts linear to lanceolate, ca. 3 mm long, pilose, apices acute to attenuate; involucre bracts narrowly elliptic to oblong, 5–6 mm long, lightly pilose, weakly nerved, margins thin, apices acute to rounded, often with mucronate tips; corollas ca. 4 mm long, white to greenish, sparingly glandular, tube ca. 2 mm long, throat ca. 0.5 mm long, teeth longer than the throat, lanceolate, ca. 1.5 mm long. **Achenes** 2.7–3.5 mm long, glandular, tan to brown; pappus bristles 40–50, white, ca. 3.5 mm long, barbellate, gradually thinning toward the tips.

Mikania microptera occurs on riverbanks and in other wet places to ca. 1,000 m; flowering July–February, occasionally at other times. It is known from wet tropical west and central Africa, and South America, the Guianas and western Venezuela, the Amazon Basin (Peru, Bolivia), and Amapa, Bahia, and Paraná Brasil. *Mikania microptera* apparently is native to both continents, though it appears with more regularity in African collections, possibly indicating more extensive and thorough collecting in Africa than South America. This species is very readily identified by its distinctly hexagonal usually glabrate stems with narrow wings.

LORETO. Maynas: Gamitanacocha, Río Mazán, 100–125 m, *Schunke 386* (F, US); Dtto. Iquitos: Río Itaya, trocha de Sanangal, disturbed forest of restinga, *McDaniel & Rimachi 23282* (AMAZ, DUKE, F, FLAS, FSU, GA, IBE, MO, NY, RSA, SMU, US, USM, VDB); Carretera de Zungaro Cocha, near Quebrada de Shushuna, *McDaniel & Rimachi 23301* (ALA, AMAZ, DUKE, F, FLAS, FSU, GA, IBE, LACM, MO, NATC, NO, RB, SMU, TENN, US, USM, VDB); exact location unknown, *Poeppig 2335* (P). SAN MARTÍN. Tocache Nuevo, Quebrada de Huaquisha, margen izquierda del Río Huallaga, 400 m, *Schunke V. 7017* (MO).

51. *Mikania montana* B. L. Robinson, Contr. Gray Herb. 73: 29. 1924. TYPE: Peru, Huacachi near Muna, 1,982 m, May 20–June 1, 1923, *Macbride 4169* (F, holotype).

Lianas; stems terete, somewhat succulent, glabrate, internodes 3–7 cm long. **Leaves** ovate, fleshy, to ca. 5 cm long and 3 cm wide, margins entire to somewhat cuspidate-dentulate, apices acute, bases rounded to an acute insertion, surfaces glabrous, 5–7-nerved from the base, reticulate-areolate; petioles to ca. 2 cm long, glabrate, connected by a stipule-like annular ring. **Inflorescence** a corymb, to ca. 8 cm in diameter; branchlets angled, puberulent; pedicels to ca. 4 mm long, puberulent. **Heads** ca. 10 mm long; exterior

bracts ovate-lanceolate, ca. 1 mm long, prominently reticulate, apices acute, borne at the top of the pedicel; involucre bracts oblong, ca. 8 mm long, glabrate except for the ciliated acute apices; corollas 5.5 mm long, greenish to yellow-green, tube ca. 3 mm long, throat ca. 0.5 mm long, teeth linear, ca. 2.5 mm long. **Achenes** ca. 4.5 mm long, glabrous; pappus bristles ca. 80, white, ca. 5 mm long, barbellate.

Mikania montana is thus far known only from Peru at elevations above 1,900 m.

CUZCO. La Convención, on steep dry ridges ca. 1/2-way between Camp 2 1/2 and Camp 3, 1,980 m, *Dudley 10633A* (US); La Convención, Camp 2 1/2 on sharp ridge, ca. 1,950 m, ca. 3/4 way to Camp 3, *Dudley 10524* (US); Paucartambo, Cordillera de Tres Cruces, 3,600 m, *Vargas 2231* (F); Pillahuata, Cerro de Cusiluyoc, forested cliff above Río Pillahuata, 2,300–2,400 m, *Pennell 14002* (F, US).

52. *Mikania ochroleuca* B. L. Robinson, Contr. Gray Herb. 80: 38. 1928. TYPE: Brasil, Amazonas, Rio Acre, Seringal São Francisco, July 1911, *Ule 9886* (K, holotype, not seen, GH, photo & fragm.).

Twining vines; stems terete, minutely crisped puberulent, internodes to 16 cm. **Leaves** deltoid-ovate, 7–8 cm long and 5–6.5 cm wide, bases hastate, 3–5-nerved from the base, apices acuminate, basal lobes acute to subacute, glabrous above and below, margins entire to undulate; petioles 3–3.5 cm long. **Inflorescence** paniculate, 7–13 cm high and 6–10 cm wide, ultimate branchlets 1–2 cm long with spicately arranged heads, puberulent. **Heads** sessile to shortly pedicellate, 5–7 mm long; exterior bracts linear-lanceolate, 1–1.5 mm long, lightly puberulent, uninervate, borne at top of pedicel; involucre bracts oblanceolate-oblong, ca. 4 mm long, 3–5-nerved, glabrate, glandular-atomiferous with somewhat orange glands, apices acute to obtuse, bases acute; corollas 3 mm long, whitish-yellow, tube ca. 2 mm long, throat salverform, ca. 0.5 mm long, teeth deltoid-ovate, ca. 0.5 mm long, recurved. **Achenes** ca. 2 mm long, black with white ribs, glandular; pappus bristles 30–40, white, ca. 2.5 mm long.

Mikania ochroleuca was previously known only from the type. It is similar in many respects, according to Robinson (1928), to *M. hastifolia* of Rio de Janeiro, Brazil, a plant with larger heads and achenes 2× as long as *M. ochroleuca*.

CUZCO. Quispicanchis: entre Inambari y 15 Mil, 500–650 m, *Vargas 16528* (US).

53. *Mikania oreopola* B. L. Robinson, Contr. Gray Herb. 64: 16. 1922. TYPE: Peru, St. Gavan, July 1852, *Lechler 2315* (K, holotype, not seen; GH, isotype).

Slender twiners; stems somewhat hexagonal, costate, hollow, glabrous to slightly puberulent, internodes 12–17 cm long. **Leaves** elliptic to ovate to ca. 20 cm long and 10 cm wide, margins more or less entire, apices acuminate, bases narrowed to cuneate, upper surfaces glabrous, 5-nerved from near the base, secondary veins prominent, arching to the apex and somewhat parallel to the margins, reticulating veins prominent, exerted, lower surfaces glabrous to weakly puberulent; petioles to ca. 2 cm long, glabrate. **Inflorescence** spicate; branchlets terete, costate, glabrous. **Heads** ca. 5 mm long; exterior bracts lance-linear, ca. 0.7 mm long; involucre bracts oblong, 2.5–3 mm long, glabrous, apices rounded; corollas semifunnelform, ca. 2.5–3 mm long, tube 1–1.2 mm long, throat 0.7–1 mm long, teeth deltoid, ca. 0.5 mm long, glandular. **Achenes** ca. 1.8 mm long, glandular toward the summit, black, ribs white; pappus bristles ca. 40, white, ca. 2.5 mm long, barbellate.

Mikania oreopola is known at present only from Peru.

AMAZONAS. Quebrada Huampani, Río Cenepa, 700–800 ft, *Ancuash 126* (IBE, MO). CUZCO. Quispicanchis: Entre 15 Mil & Sn. Lorenzo, 700 m, *Vargas*

11860 (US). HUÁNUCO. Huánuco: Cerca Tingo María, entre Huánuco y Pucallpa, 600–700 m, *Ferreyra* 918 (US, USM). JUNÍN. La Merced, Hacienda Schunke, ca. 4,000 ft, *Macbride* 5731 (F, GH, US). LORETO. Boqueron Padre Abad, 470 m, *Woytkowski* 34419 (F, MO). SAN MARTÍN. Huallaga, Muna, 2,300–2,400 m, *Weberbauer* 6713 (F, GH, US).

54. *Mikania parvicapitulata* Hieron., Bot. Jahrb. Syst. 40: 392. 1908. TYPE: Peru, Huánuco, Huamalies, mountains to S of village of Monzón, 2,500–2,900 m, *Weberbauer* 3405 (B, holotype, destroyed, F, GH, photos).

Twining shrubs; stems terete, at first rusty or dark villous, internodes 1–5 cm long. Leaves broadly elliptic, at most 4.5 cm long and 2.5 cm wide, margins entire, apices minutely toothed, mucronate, bases acute, upper and lower surfaces glandular-punctate, pinnately veined, with 2 pairs of lateral nerves beginning within 1 cm of base; petioles 0.5–1 cm long. Inflorescence a panicle with heads ultimately disposed in racemes; pedicels 1.5–3 mm long. Heads small for genus (less than 4 mm?); exterior bracts linear, ca. 1.5 mm long; involucre bracts oblong, ca. 2.5 mm long, thickish, rather densely glandular, 1-nerved, villous on dorsal surface, apices subtruncate; corollas ca. 3 mm long, whitish-yellow, with globular sessile glands, tube ca. 1 mm long, throat turbinate, ca. 1.5 mm long; corolla teeth deltoid-ovate, ca. 0.5 mm long. Achenes (immature) ca. 1 mm long, sessile glands on angles; pappus bristles 35–40, yellowish-white.

Mikania parvicapitulata is known only from the type and no specimen was seen. The description given here is condensed from that of Robinson (1922) and characters discernible from photos of the type. The inflorescence of this species suggests the Bolivian *M. dioscoreoides* in head size, denseness, and disposition.

55. *Mikania parviflora* (Aubl.) Karst., Deutsche Fl. 1061. 1883.

Eupatorium parviflorum Aubl., Pl. Guian. 2: 797. 1775. TYPE: not seen.

E. amarum Vahl. Symb. 3: 93. 1794. TYPE: not seen.

Mikania amara (Vahl) Willd., Sp. Pl. 3: 1744. 1803.

M. lorentensis B. L. Robinson, Contr. Gray Herb. 64: 15. 1922. TYPE: Peru, Loreto, Maynas, Iquitos, *Ule* 6338 (K, holotype, not seen, GH, photo & fragm.).

Lianas; stems terete, finely puberulent, internodes to 20 cm or more. Leaves ovate, to ca. 15 cm long and 11 cm wide, margins entire, apices acute to acuminate, bases rounded to subcordate, texture somewhat chartaceous-coriaceous, upper surfaces glabrate to lightly puberulent, veins prominent, exserted, pinnate; petioles to ca. 5 cm long, terete, glabrous to puberulent. Inflorescence a corymb, trichotomously branching, ca. 10 cm in diameter; branchlets terete to irregularly angled, puberulent. Heads sessile, ternately disposed, 9–10 mm long; exterior bracts spatulate-elliptic, somewhat petiolate, ca. 3.5 mm long, apices acute to rounded, bases cuneate, borne at summit of pedicel; involucre bracts oblong, 6–7 mm long, glabrate to puberulent (especially at apex), apices rounded, bases somewhat swollen; corollas ca. 4–4.5 mm long, white to lilac in color, tube 1.5–1.8 mm long, throat cylindrical to narrowly campanulate, 2.2–2.5 mm long, teeth deltoid, ca. 0.3 mm long, glandular. Achenes ca. 4.0 mm long, somewhat greenish to brownish; pappus bristles ca. 50, carmine in age, 4.5–5 mm long, barbellate.

Mikania parviflora of northern South America is nomenclaturally the oldest name of a difficult group of closely related plants with sessile, ternately arranged heads. The plant is characterized by its ovate leaves with pinnate venation, somewhat petiolate exterior bract, and corolla teeth much shorter than the length of the throat.

AMAZONAS. Quebrada Wampushik entsa, monte, 940 m, *Kayap* 958 (MO), Bagua: Valley of Río Marañon near Cascadas de Mayasi, about km 278 of Marañon Road, *Wurdack* 1928 (GH, US). LORETO. Balsapuerto, 220 m, *Klug* 3060 (F),

Río Paranapura above Yurimaguas, *Croat 17939* (MO), along Río Huallaga in vicinity of Lagunas, *Croat 17861* (MO), Gamitanacocha, Río Mazán, 100–125 m, *J. M. Schunke 29* (GH, MO, USM) & *104* (MO, USM), Iquitos, *Ule 6235* (GH), Iquitos, 100 m, *Killip & Smith 27355* (GH, US), Mishuyacu, near Iquitos, 100 m, *Klug 837* (F, US), along Río Amazon S of Iquitos, *Croat 19307* (IBE), Carretera de San José across Río Itaya, *Rimachi 737* (IBE, NATC), Santa Ana on the upper Río Nanay, *Williams 1223* (GH), Río Nanay, vicinity of Santa María de Nanay, 120 m, *Gentry & Ayala 15564* (MO), Boqueron del Padre Abad, 470 m, *Woytkowski s.n.* (MO, USM). SAN MARTÍN. Tarapoto, *Spruce 4118* (GH), Mariscal Cáceres: Tocache Nuevo, Puerto Pizana, 350 m, *Schunke V. 6955* (MO).

56. *Mikania pendula* Holmes & McDaniel, *Phytologia* 37: 472. 1977. TYPE: Peru, Cusco, Convención, Quellomayo to Lucomayo, 2,800 m, July 26, 1944, *Vargas 4485* (F, holotype).

Slightly woody lianas; stems terete, striate-costulate, glabrous to sparingly puberulent, internodes to 12 cm long. Leaves ovate, to 10 cm long and 5 cm wide, margins serrate, teeth ca. 1 cm apart, apices attenuate, bases subcordate, upper surfaces glabrous, 5–7-nerved from the base, tertiary veins prominent, lower surfaces glabrate, often glandular-atomiferous; petioles ca. 3.5 cm long, glabrous. Inflorescence paniculate, ultimate branches bearing spicately arranged heads; branchlets irregularly angled to flattened, slightly pilose. Heads 5–6 mm long; exterior bracts elliptic, ca. ½ the length of the involucre bracts, glabrate, somewhat ciliate toward the rounded apex; involucre scales oblong, 3–4.5 mm long, glabrate to puberulent, margins entire, apices obtuse, bases slightly enlarged; corollas narrowly funnelliform, 3–4 mm long, glandular, tube 1–2 mm long, throat gradually expanded, 1–2 mm long, teeth triangular, ca. 0.5 mm long. Achenes ca. 2 mm long, greenish; pappus bristles 35–40, white, ca. 3 mm long, barbellate.

Mikania pendula is known only from Cuzco, Peru. The ovate leaves with subcordate bases, palmate veins, and serrate margins provide ample distinction from all known Peruvian, Brazilian, or Bolivian species of *Mikania* with spicately disposed heads.

CUZCO. Huallpacunca: Pillahuata, Paucantambo, 2,800–3,100 m, *Vargas 1917* (GH).

57. *Mikania psilostachya* DC., *Prodr.* 5: 190. 1836. TYPE: Peru, *Poeppig 2344* (G-DC, holotype, not seen, IDC microfiche 800. 818:II.3, F, photo). Figure 7.

M. scabra DC., *Prodr.* 5: 190. 1836. TYPE: French Guiana, Cayenne, *Patris* (G-DC, holotype, not seen, IDC microfiche 800. 818: II.5, F, photo).

M. racemulosa Benth., *Ann. Nat. Hist.* 2: 109. 1839. TYPE: British Guiana, *Schomburgk 480* (K, holotype, not seen; F, US, isotypes).

M. consanguinea Gardner, *London J. Bot.* 6: 448. 1847. TYPE: not seen.

M. psilostachya DC. var. *scabra* (DC.) Baker in *Mart., Fl. Bras.* 6: 265. 1876.

M. psilostachya DC. var. *racemulosa* (Benth.) Baker in *Mart., Fl. Bras.* 6: 265. 1876.

M. lima Schlecht in *Mart., Fl. Bras.* 6: 700. 1876. TYPE: not seen.

M. moyabambensis Hieron., *Bot. Jahrb. Syst.* 40: 393. 1908. TYPE: Peru, Amazonas, Moyabamba, *Weberbauer 4476* (B, holotype, not seen, F, photo; GH, isotype).

M. karuaiensis Badillo, *Bol. Soc. Venez. Ci. Nat.* 10: 296. 1946. TYPE: Venezuela, Bolívar, Santa Teresita de Kavanayin, Gran Sabana, *Steyermark 59372* (VEN, holotype, not seen; F, isotype).

Vigorous shrubby twiners; stems terete to obscurely quadrangular, solid, striate, densely rusty velvety, internodes to 20 cm or more. Leaves elliptic to ovate, to 13 cm long and 5 cm wide, pinnately nerved, reticulating veins prominent, exceedingly scabrous above, below usually puberulent and densely glandular-atomiferous, bases acute to rounded, apices acute to attenuate, margins entire, or undulate or sometimes prominently

serrate; petioles 1–3 cm long, densely rusty puberulent. **Inflorescence** paniculate with elongate spicate to racemose branches, puberulent with curved pubescence. **Heads** 8–11 mm long, sessile to pedicellate (up to 6 mm long); exterior bracts linear-lanceolate, at base of pedicel, puberulent; involucre bracts oblong with acute apices, puberulent, somewhat glandular, 5–6 mm long; corollas ca. 5 mm long, white, tube short, ca. 1 mm long, throat turbinate-subcylindric, ca. 4 mm long, teeth triangular, ca. 0.5 mm long. **Achenes** ca. 3 mm long, glandular; pappus bristles ca. 40, white, 5–6 mm long, barbellate.

Mikania psilostachya occurs from Panama throughout South America to Bolivia and is widespread in Peru, to ca. 1,500 m elevation. As in the case of many species of *Mikania* with wide distributions, this species exhibits great variation, that when studied for limited areas, may appear ample for specific delimitation. However, when this "complex" is examined as a whole, intermediates are encountered and it becomes apparent that there is no justification for retention of many of the proposed species. This species is readily identified by its scabrous leaves, large paniculate inflorescence with spicately or racemously disposed heads, rusty pubescence of the stems, and the glandular nature of the involucre bracts and achenes.

AMAZONAS. Bagua: near Campamento Stte. Montenegro, km 280–284 of Marañon Road, 450–600 m, *Wurdack 1873* (US), al lado de Quebrada Sasa, 600 ft,

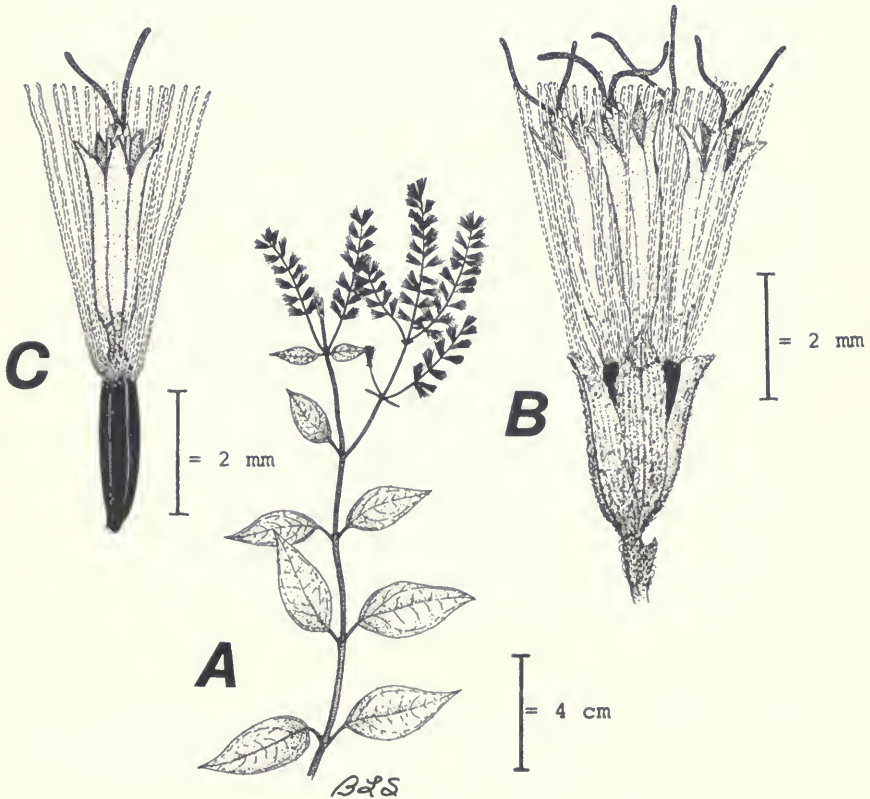


FIG. 7. *Mikania psilostachya* DC. A, habit; B, head; C, flower. (After McDaniel & Rimachi 22025 [IBE].)

Kayap 995 (MO), trail N of Huampani, 600–800 ft, *Berlin* 1844 (IBE), Moyobamba, 890 m, *Woytkowski s. n.* (MO, USM), 1,200 m, *Noriega s. n.* (MO, USM). JUNÍN. Colonia Perené, 680 m, *Killip & Smith* 25004 (GH, US), E of Quimiri Bridge, near La Merced, 1,100 m, *Killip & Smith* 23844 (GH, US), Pichís Trail, San Nicolas, 1,100 m, *Killip & Smith* 26071 (GH, US), San Ramón, 900–1,300 m, *Killip & Smith* 24774 (GH, US). LORETO. Boqueron Padre Abad, 470 m, *Woytkowski* 34365 (F, MO), Coronel Portillo: Boqueron Padre Abad, entre Tingo María y Pucallpa, 470 m, *Woytkowski s. n.* (US), Florida, Río Putumayo, at mouth of Río Zubineta, 180 m, *Klug* 2238 (F, GH, MO, US), Gamitanacocha, Río Mazán, 100–125 m, *J. M. Schunke* 388 (F, GH, US), Río Putumayo near Colombia boundary, *Klug* 1618 (F, GH, MO, US), Yurimaguas on the lower Río Huallaga, *Williams* 7822 (GH), Iquitos, 120 m, *Williams* 3634 & 7973 (both F, GH), Iquitos, Versailles, 100–110 m, *McDaniel* 16825 (IBE, MO, NATC), Iquitos, *Williams* 1375 (F, GH), Mishuyacu, near Iquitos, 100 m, *Klug* 331 (F, US). SAN MARTÍN. Mishquiyacu, NE of Moyobamba, 1,800 m, *Woytkowski* 35338 (F, MO, UC), Puerto Huicte (Putante), 500–600 m, *Ferreya* 4404 (MO, US, USM), San Roque, 1,350–1,500 m, *Williams* 7504 (F), Saposá, 400 m, *Woytkowski* 7254 (GH), Tarapoto, *Ule* 6781 (GH), Tarapoto, 830 m, *Woytkowski* 35044 (F, MO, USM), Mariscal Cáceres: Tocache Nuevo, camino a Shunté, al este del Puente de Palo Blanco, 500–800 m, *Schunke* V. 7371 (IBE, MO), Nichiza, Sanja Seca de Tipishea, 8 km de Progreso, *Schunke* V. 7920 (MO), Tocache Nuevo, Fundo Melodia, *Schunke* V. 7464 (MO), Tocache, Huallaga, *Poeppig* 1888 (F, GH), Tocache, entre Uchiza y Juanjui, 400–450 m, *Ferreya* 447 (MO, USM).

58. *Mikania pycnadenia* B. L. Robinson, Contr. Gray Herb. 64: 18. 1922. TYPE: Peru, San Martín, Tarapoto, *Spruce s. n.* (K, holotype, not seen, GH, photo & fragm.).

Branching herbaceous twiners; stems terete, tawny tomentulose, internodes to 12 cm long. Leaves ovate, to ca. 6 cm long and 3 cm wide, margins revolute, apices acuminate, bases rounded, upper surfaces puberulent, lightly covered with sessile orange globular glands, 5-nerved from near the base, lower surfaces pubescent, densely covered with sessile orange globular glands, prominently reticulate, veins exserted; petioles to 4 mm long, terete, tomentulose. Inflorescence a somewhat dense corymb, conspicuously bracteate, ca. 7 cm wide and 4 cm long. Heads sessile, arranged in 3's, 9–10 mm long; exterior bracts ovate; involucre bracts oblong, ca. 6.5 mm long, puberulent, glandular, apices rounded; corollas ca. 4.5 mm long, tube gradually expanded into the funnelliform throat, teeth broadly deltoid, ca. 0.5 mm long, hispidulous at the apex. Achenes ca. 4.3 mm long, pale brown; pappus bristles ca. 65, fulvous, 4.5–5 mm long, barbellate.

Mikania pycnadenia is known only from the type. The above description was compiled from that of Robinson (1922) and items obtainable from a photo and fragments of the type. This species is well marked by its glandular leaves and petioles less than 5 mm long.

59. *Mikania rimachii* Holmes & McDaniel, Phytologia 41: 195. 1979. TYPE: Peru, Loreto, Maynas, Dtto. Indiana, ca. 3 km up Río Amazonas from Indiana on opposite bank, May 26, 1978, *McDaniel*, *Rimachi*, *Holmes & Bruza* 21646 (IBE, holotype; AMAZ, F, FSU, GA, K, MO, NATC, NY, RB, RSA, TENN, US, USM, VDB, isotypes). Figure 8.

M. scandens (L.) Willd. var. *alata* Baker in Mart., Fl. Bras. 6: 250. 1876. TYPE: Brasil, Santarem, *Spruce* 983 (F, isotype) not *M. alata* (G. F. Mey.) DC., Prodr. 5: 197. 1836.

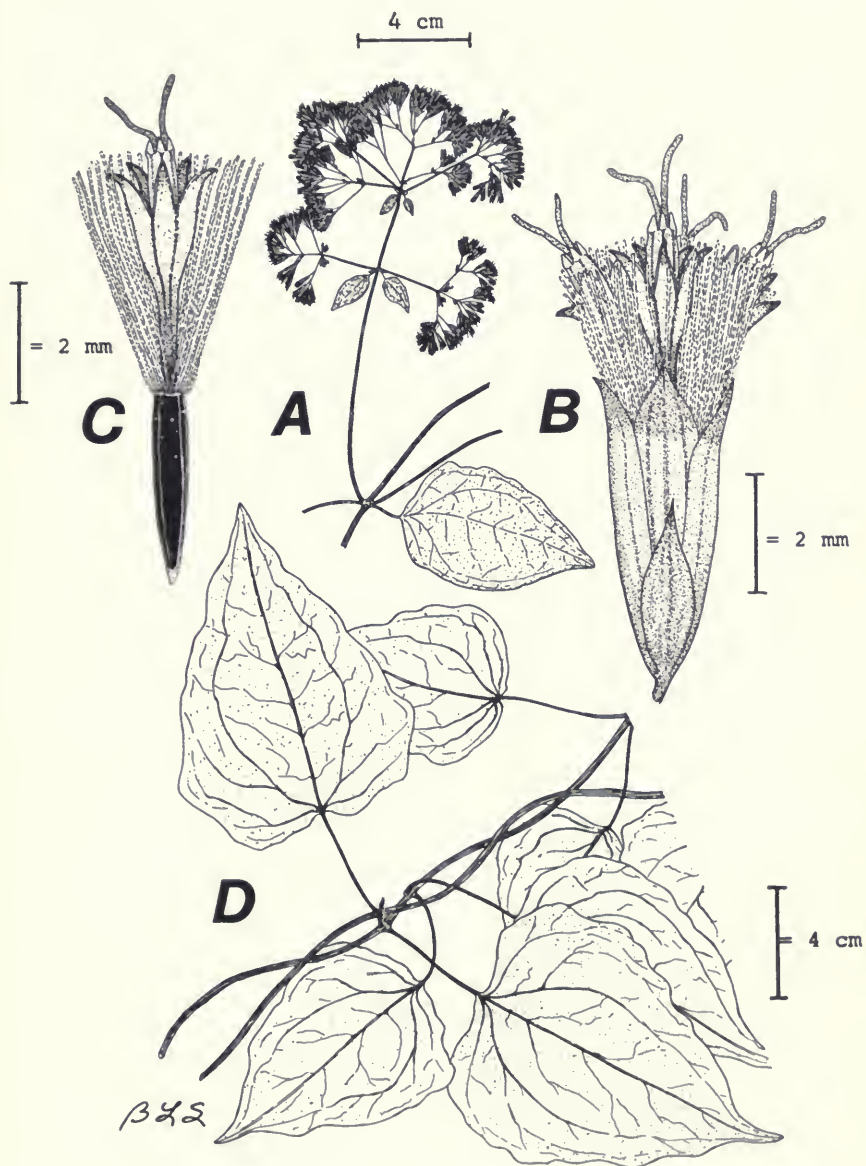


FIG. 8. *Mikania rimachii* Holmes & McDaniel. A, inflorescence; B, head; C, flower; D, habit. (After McDaniel et al. 21646 [IBE].)

Lianas; stems terete, weakly striate, glabrate, internodes to 11 cm or more. Leaves broadly ovate, to ca. 14 cm long and 10 cm wide, margins entire, apices acuminate, bases shallowly cordate, upper surfaces glabrous, palmately 5-7-nerved, lower surfaces sparsely muricate, lighter than above, often purple; petioles to ca. 6 cm long, glabrate. Inflorescence a somewhat cymose corymb, to ca. 6.5 cm long and 11 cm in diameter; branchlets angular, winged, lightly puberulent, reddish; pedicels ca. 4 mm long. Heads 6.5-7.5 mm long; exterior bracts lanceolate to ovate, 2.5-3 mm long, glabrate to lightly puberulent, often reddish, apices acute to acuminate, borne at the summit of the pedicel; involucre bracts linear-oblong, ca. 5.5-6.5 mm long, glabrate to sparsely puberulent (especially at the base), with 1-3 somewhat obscure but visible nerves, stramineous in color, apices acute; corollas ca. 3.5 mm long, tube ca. 1.7 mm long, throat campanulate-funnelform, 0.7-0.8 mm long, teeth 1-1.1 mm long, about the same length to slightly longer than the throat, triangular. Achenes ca. 3 mm long, glabrous, greenish (slightly immature), ribs with somewhat narrow subherbaceous wings; pappus bristles ca. 32, thin, white, ca. 3.5 mm long, barbellate.

Mikania rimachii closely resembles *M. micrantha* but may be distinguished by its larger heads of ca. 7 mm long, larger involucre bracts over 5 mm long and corolla teeth about the same length as the throat. *Mikania micrantha* has heads 6 mm or less long, involucre bracts 4 mm or less long, and corolla teeth distinctly shorter than the throat. Experience in the field has shown that this species may be distinguished at a glance, even when sterile, by its broadly ovate leaves with shallowly cordate bases and often purplish lower surfaces. For a detailed discussion of the nomenclature of this species, see Holmes & McDaniel (1979).

LORETO. Maynas: Dtto. Iquitos, Río Amazonas SE of Iquitos across from Padre Isla, near Sacarita de Yanayacu, *McDaniel & Rimachi* 18963 (IBE, NATC); Iquitos, Ushpa-Caña, across Río Itaya, 100-110 m, *McDaniel* 10879 (AMAZ, IBE, NATC, RB, USM); Dtto. Mazán, Río Napo near Mazán. 110 m, *Mexia* 6467 (F, GH, MICH, MO, NO, NY, PH, TEX, UC), Dtto. Las Amazonas, Río Amazonas just above Orellana, *Rimachi* 4423 (AMAZ, F, FSU, GA, IBE, MO, NATC, NY, RSA, SMU, US, USM, VDB).

60. *Mikania rugosa* B. L. Robinson, Contr. Gray Herb. 61: 20. 1920. TYPE:

Peru, Puno, Ramospata, between Sandía and Chunchusmayo, 2,400-2,500 m, July 27, 1902, *Weberbauer* 1323 (B, holotype, destroyed, GH, photo & fragm.).

Twining shrubs; stems somewhat 6-angled, densely and sometimes retrorsely tawny tomentose, internodes to 12 cm long. Leaves narrowly ovate, to ca. 11 cm long and 5.5 cm wide, margins entire to remotely and obscurely cuspidate-denticulate, apices attenuate, bases shallowly cordate, upper surfaces subcoriaceous, finely fulvous-pilose, bullate-rugose, 3-7-nerved from the base, lower surfaces densely fulvous-tomentose; petioles to ca. 2.5 cm long, terete, tawny-tomentose, opposite petioles connate by a transverse fold or ring. Inflorescence a panicle, to ca. 5 dm long and 2.5 dm in diameter; branchlets tawny-tomentose; pedicels 0.5-5 mm long, tawny-tomentose. Heads ca. 6 mm long; exterior bracts lance-oblong, to ca. 4 mm long, tomentose, borne at the summit of the pedicel; involucre bracts oblanceolate-oblong, to ca. 4 mm long, tawny-tomentose, apices subacute; corollas ca. 3.5 mm long, whitish, tube ca. 1.5 mm long, appressed hirtellous toward the summit, throat broadly campanulate, ca. 1 mm long, teeth ovate-lanceolate, ca. 1 mm long. Achenes ca. 3 mm long; pappus bristles ca. 30, whitish, ca. 4.5 mm long, barbellate.

Mikania rugosa is known only from the type material. It is very near to *M. banisteriae* in characters of inflorescence, corolla, pubescence, etc., but may be distinguished by its somewhat hexagonal stems and densely tawny-tomentulose involucre bracts. *Mikania banisteriae* has terete stems and glabrate involucre bracts. Much of the above description is from Robinson (1922).

61. *Mikania shushunensis* Holmes & McDaniel, *Phytologia* 45: 298. 1980.
 TYPE: Peru, Loreto, Maynas, Dtto. Iquitos, Carretera de Zungaro Cocha near Quebrada de Shushuna, September 20, 1978, *Rimachi* 3984 (IBE, holotype; AMAZ, F, NATC, US, USM, isotypes). Figure 9.

Lianas; stems terete, costate, glabrous, pithy, internodes to ca. 7 cm long. **Leaves** lanceolate to ovate, to 10 cm long and 4.5 cm wide, apices attenuate, bases cuneate, margins entire, pinnately nerved, surfaces glabrous, lower surfaces prominently reticulate; petioles ca. 1.5 mm long, glabrous. **Inflorescence** a panicle, to ca. 15 cm long and 7 cm in diameter; branchlets puberulent. **Heads** somewhat racemously disposed, ca. 6 mm long; exterior bracts linear, puberulent, ca. 3 mm long, borne at the base of the pedicel; involucre bracts lanceolate, ca. 5 mm long, glabrate, apices somewhat pointed to rounded, puberulent; corollas white, ca. 4 mm long, tube gradually expanding into and scarcely distinguishable from the throat, teeth lanceolate, ca. 1.2 mm long. **Achenes** (immature) ca. 1.8 mm long; pappus bristles 30–35, ca. 4.5 mm long, brownish near the base, gradually turning whitish and slightly enlarged toward the tips, scabrid.

Distinguishing characteristics of *Mikania shushunensis* include its paniculate inflorescence with heads somewhat racemously disposed, linear exterior bracts

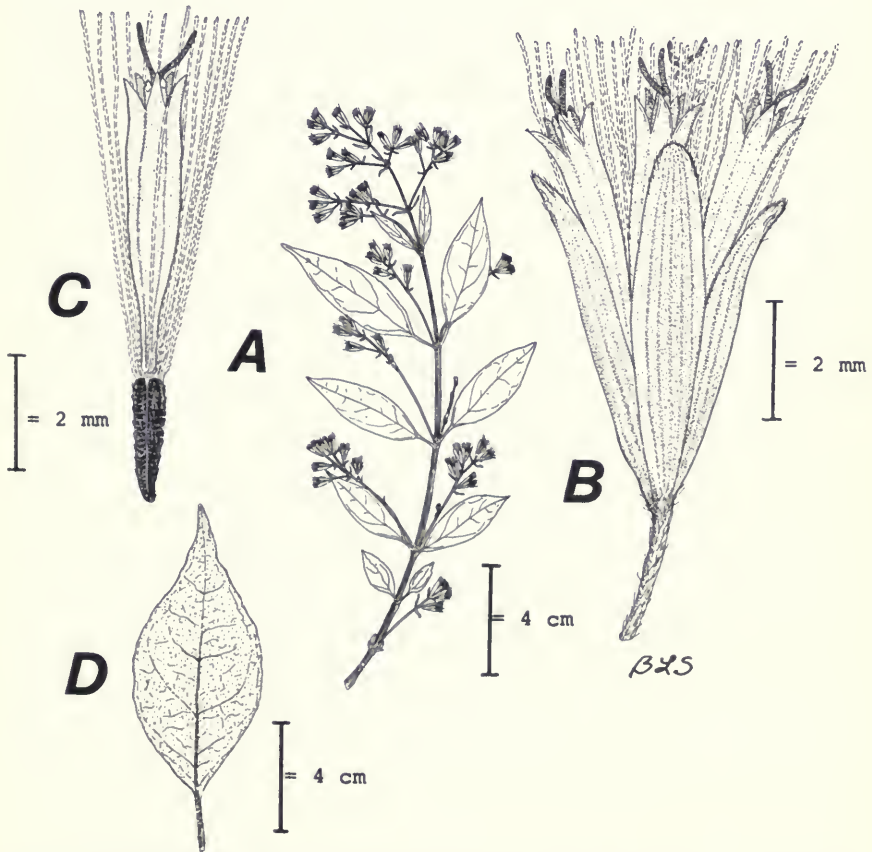


FIG. 9. *Mikania shushunensis* Holmes & McDaniel. A, habit; B, head; C, flower; D, leaf. (After *Rimachi* 3984 [IBE].)

borne at the base of the pedicel, and bicolored pappus, the bases brownish, the tips white. This species is similar to *M. iquitosensis*. Both species appear to turn dark brown upon drying. The former has leaves with cuneate bases and a corolla with tube and throat scarcely distinguishable, while the latter has leaves with acute to obtuse bases and a campanulate corolla throat easily distinguishable from the tube.

LORETO. Maynas. Dtto. Iquitos. Carretera de Peña Negra, ca. 11 km from Quisto Cocha, on trail to Río Itaya, sandy uplands, September 30, 1980, *Rimachi* 5333 (AMAZ, F, FSU, GA, IBE, MO, NATC, NY, RB, TEX, US, USM).

62. *Mikania simpsonii* Holmes & McDaniel, *Phytologia* 37: 473. 1977. TYPE: Peru, Loreto, Maynas, Dtto. Alto Nanay, trail near Santa María de Nanay, March 4, 1968, *Simpson 781* (US, holotype, F, isotype).

Lianas; stems terete, pithy, weakly puberulent, soon glabrate, internodes ca. 6.5 cm long. **Leaves** verticillate (3 per node), ovate, to ca. 14 cm long and 6.5 cm wide, margins entire, apices attenuate, bases acute to obtuse, upper surfaces dark green, glabrous, pinnately veined, with 2–3 pairs of veins prominent and arching toward the apex, lower surfaces glabrous, medium green, reticulate-alveolate, with at least the prominent veins being darkened; petioles ca. 2.5 cm long, thickish. **Inflorescence** a lax panicle with the heads ultimately disposed in open spikes; branchlets irregularly angled to terete, puberulent, with linear bracts near the base, 0.5–1.5 cm long. **Heads** ca. 6.5 mm long, sessile; exterior bracts lance-ovate, ca. $\frac{1}{3}$ the length of the involucre, glabrate, apices acuminate; involucre bracts oblong, ca. 4 mm long, glabrate, apices rounded, white inside; corollas ca. 3 mm long, tube ca. 1.5 mm long, throat abruptly expanded, ca. 0.5 mm long, teeth lanceolate, ca. 1.0 mm long. **Achenes** ca. 2.5 mm long, glabrous, dark brown, ribs white, distinctly narrowed toward the apex; pappus bristles 33–35, light carmine, ca. 3.5 mm long, barbellate, thickened at the tips.

Mikania simpsonii is known from northeastern Peru and adjacent Colombia. It is the only known Peruvian species of *Mikania* with whorled leaves.

AMAZONAS. Quebrada Huampani, Río Cenepa, 700–800 ft, *Ancuash 126* (IBE). LORETO. Balsapuerto, 220 m, *Klug 2960* (F, GH, MO, US) (paratype of *M. klugii* B. L. Robinson). SAN MARTÍN. Mariscal Cáceres, Tocache Nuevo, Fundo Gran Chaparral del Sr. Carlos Arevala, 500 m, *Schunke V. 8665* (MO).

63. *Mikania speciosa* DC., *Prodr.* 5: 196. 1836. TYPE: Peru, *Haenke* (G-DC, holotype, not seen, IDC microfiche 800. 820: I.6, GH, photo).

Suffruticose **lianas**; stems terete, glabrate to puberulent, internodes to ca. 16 cm or more. **Leaves** broadly ovate, to ca. 15 cm long and 11 cm wide, margins entire, apices acute, bases rounded, cuneately decurrent upon petiole at insertion, surfaces somewhat scabrid, pinnately nerved from near the base, prominently reticulate; petioles to ca. 3–4 cm long, scabrid-puberulent. **Inflorescence** a trichotomous corymb, to ca. 10 cm or more in diameter, heads disposed in 3's at the tips of the branches; branchlets irregularly terete, puberulent. **Heads** 10–12 mm long, sessile; exterior bracts linear-lanceolate, ca. 3 mm long, puberulent; involucre bracts oblong, 7–8 mm long, puberulent, glandular, apices rounded to obtuse; corollas ca. 5 mm long, purplish, tube ca. 3 mm long, throat ca. 0.7 mm long, the teeth oblong, ca. 1.3 mm long. **Achenes** ca. 3.5 mm long, dark grayish; pappus bristles ca. 65, carmine (in age), ca. 5 mm long, barbellate.

Mikania speciosa occurs to about 2,400 m elevation in Bolivia and Peru.

AMAZONAS. Chachapoyas, Quebrada Molina 5 km below Chachapoyas, 2,200–2,400 m, *Wurdack 7770* (F, US). CUZCO. San Miquel, Urubamba Valley, 1,800 m, *Cook & Gilbert 947* (US); Villcabamba, hacienda on Río Chinchao, 6,000

ft, *Macbride 5190* (GH, US). SAN MARTÍN. Río Huallaga Cañon, below Santo Domingo, ca. 4,000 ft, *Macbride 4198* (F, GH, US).

64. *Mikania stereodes* B. L. Robinson, Contr. Gray Herb. 77: 60. 1926. TYPE: Peru, Cuzco, hacienda on Río Chinchao, July 17–26, *Macbride 5163* (F, holotype).

Woody **twiners**; stems terete, multicostate, fulvous, somewhat scabrid, internodes to 20 cm long. **Leaves** ovate, ca. 10 cm long and 6 cm wide, margins entire, apices acuminate, bases obtuse, upper surfaces scabrid, pinnately nerved, the major nerves strigose, lower surfaces puberulent, the major nerves strigose, prominently reticulate, minutely dark punctate; petioles to 1.5 mm long, strigose. **Inflorescence** thyrsoid, ca. 25 cm long and 10 cm wide; branchlets terete, strigose; pedicels to ca. 3 mm long, terete, strigose. **Heads** 8–9 mm long; exterior bracts lanceolate-linear, ca. 2 mm long, pilose, especially toward the margins; involucre bracts oblong, ca. 4 mm long, outer strigulose, inner glabrate, somewhat dark punctate, apices obtuse to rounded; corollas ca. 5 mm long, green, remotely pilose, tube ca. 1 mm long, throat subcylindric, ca. 3 mm long, teeth triangular, ca. 1 mm long. **Achenes** ca. 4 mm long, light olivaceous; pappus bristles ca. 30, white, ca. 4 mm long, barbellate.

Mikania stereodes, known only from the type, resembles *M. psilostachya* in having pinnately veined leaves, scabrid leaf surfaces and subcylindric corollas with a very short tube. *Mikania psilostachya* is easily distinguished by its spikelike to racemose inflorescence, rather than the panicle of *M. stereodes*.

65. *Mikania stuebelii* Hieron., Bot. Jahrb. Syst. 21: 333. 1895. TYPE: Colombia, near El Tambo on Mt. Munchique not far from Popayan, 3,000 m, *Stuebel 320* (B, holotype, destroyed).

M. stuebelii var. *latifolia* Hieron., Bot. Jahrb. Syst. 28: 577. 1901. TYPE: Colombia, Cauca, western Popayan Andes, 2,500–2,900 m, *Lehmann 5970* (K, holotype, not seen; F, isotype).

M. meridensis Badillo, Bol. Soc. Venez. Ci. Nat. 9: 134. 1944. TYPE: Venezuela, Mérida, entre Santa Cruz de Mora y Canagua, *Badillo 609a* (VEN, holotype, not seen).

M. larensis Badillo, Bol. Soc. Venez. Ci. Nat. 10: 298. 1946. TYPE: Venezuela, Lara, entre Santo Domingo y Los Quebraditos, 2,430–2,475 m, February 8, 1944, *Steyermark 55380* (VEN, holotype, not seen; F, isotype).

M. stuebelii var. *larensis* (Badillo) Steyermark, Fieldiana, Bot. 28: 661. 1953.

Climbing **vines**; stems terete, striate-sulcate, glabrate to puberulent, internodes to 4 cm long. **Leaves** lance-ovate, to ca. 7 cm long and 4 cm wide, margins remotely denticulate, apices acuminate, bases cuneate to obtuse, surfaces glabrous, pinnately 4–5-nerved; petioles ca. 1 cm long, glabrate. **Inflorescence** thyrsoid, heads arranged in 3's at the tips of the branches or more often somewhat spicately in 5's; branchlets puberulent. **Heads** ca. 9 mm long, sessile; exterior bracts linear, 2–3 mm long; involucre bracts linear-oblong, 5–6 mm long, glabrous, ciliate, apices somewhat rounded; corollas 4–4.5 mm long, tube ca. 1.5 mm long, throat subcylindric-campanulate, 2.5–3 mm long, teeth triangular, ca. 0.5 mm long. **Achenes** ca. 4 mm long, dark, puberulent at summit; pappus bristles 40–50, white, 4–5 mm long, barbellate.

Mikania stuebelii is found in northern South America, and is known in Peru from Amazonas, Cuzco, and Huánuco from 1,500–3,000 m elevation. The inflorescence of this species is distinctive, a panicle with heads arranged in 3's at the tips of the branches or more often somewhat spicately disposed with five heads, three of these being terminal and sessile.

AMAZONAS. Chachapoyas, Cerros Calla Calla, E side, 7.5 km above Leimebamba on road to Balsas, 2,535 m, *Hutchison & Bennett 4635* (F). CUZCO. Villcabamba, hacienda on Río Chinchao, 6,000 ft, *Macbride 5163* (US).

HUÁNUCO. SW slope of Río Lllallapichis watershed on the ascent of Cerros del Sira, 1,565–1,950 m, *Dudley 13322* (US); Sariapampa, *Woytkowski 34300* (F, MO).

66. *Mikania stygia* B. L. Robinson, *Contr. Gray Herb.* 77: 36. 1926. TYPE: Bolivia, La Paz, Mapiri, 850 m, *Buchtien 1847* (GH, holotype).

Semiwoody climbers; stems terete, glabrate to puberulent, internodes to 17 cm long. Leaves lanceolate, to ca. 12 cm long and 2.5 cm wide, margins entire, apices caudate-acuminate, bases acute-obtuse, surfaces glabrous, pinnately nerved; petioles ca. 1.5 cm long. **Inflorescence** a corymb, ca. 4 cm long, 4 cm wide, heads in 3's at the tips of the branches; branchlets puberulent. **Heads** ca. 10 mm long, sessile; exterior bracts elliptic, ca. 5 mm long, puberulent; involucre bracts oblong, ca. 8 mm long, puberulent, nerves prominent, apices rounded; corollas ca. 6 mm long, glabrate, tube gradually expanding into and indistinguishable from the throat, teeth broadly deltoid, ca. 0.5 mm long. **Achenes** (immature) ca. 3 mm long; pappus bristles ca. 45, ca. 5 mm long, barbellate. Style appendages densely hirsute.

The species is known from Peru and Bolivia. *Mikania stygia* and *M. lanceolata* are two species with corymbose inflorescence and sessile ternately disposed heads with lanceolate leaves. *Mikania stygia* has heads ca. 10 mm long and oblong involucre bracts ca. 8 mm long, while *M. lanceolata* has heads ca. 6 mm long and spatulate involucre scales ca. 3 mm long.

LORETO. Alto Amazonas, Balsapuerto, lower Río Huallaga Basin, 150–350 m, *Killip & Smith 28616* (US).

67. *Mikania szyszyłowiczii* Hieron., *Bot. Jahrb. Syst.* 36: 475. 1906. TYPE: Peru, Cajamarca, near Tambillo, *Jelski 681* (B, holotype, destroyed, F, photo, GH, fragm.).

Somewhat woody lianas; stems glabrous, terete, internodes to ca. 14 cm long. Leaves ovate to somewhat obovate, 4–6 cm long, about 1/2 as wide, glabrous, pinnately nerved, bases cuneate, apices rounded, margins entire; petioles 1–2 cm long. **Inflorescence** paniculate; ultimate branchlets spicate. **Heads** 5–7 mm long; exterior bracts elliptic, ca. 1/2 the length of the involucre; involucre bracts oblong, irregularly ciliolate toward the rounded apex, bases slightly gibbous, 3–3.5 mm long; corollas 3–4 mm long, white, tube 1.5–2 mm, throat campanulate-turbinate, 1–1.5 mm long, teeth triangular, ca. 0.5 mm long. **Achenes** dark brown, ca. 2 mm long; pappus bristles ca. 30, pale yellow, thickened toward the tips, 3–4 mm long, barbellate.

Mikania szyszyłowiczii is known from Peru and Ecuador (*Espinoza 663*, F). At present it is the only Peruvian species of *Mikania* with spicately disposed heads and with leaves with rounded apices and cuneate bases.

AMAZONAS. Bongará, Jalca zone, 3 km S of Pomacocha, *Wurdack 976* (US). CAJAMARCA. Jaen, *Weberbauer 6114* (F, GH). HUÁNUCO: Carpish, above Acomayo, *Hutchinson, Wright & Straw 5949* (F, MO, US). JUNÍN. La Merced, *Soukup 3370* (F). SAN MARTÍN. Zepalacio near Moyobamba, *Klug 3412* (F, MO).

68. *Mikania tambillensis* Hieron., *Bot. Jahrb. Syst.* 36: 470. 1909. TYPE: Peru, Cajamarca, near Tambillo, *Jelski 762* (B, holotype, destroyed; GH, not seen, US, isotypes).

Twining or somewhat shrubby lianas; stems glabrous, subterete, internodes to ca. 7 cm long. Leaves ovate-oblong, to ca. 8 cm long and 4 cm wide, margins entire, apices acuminate, bases pointed to rounded, pinnately 5-nerved; petioles to ca. 2 cm long, smooth. **Inflorescence** a dense corymb, somewhat pyramidal, heads arranged in groups of 3's at the tips of the branches, these groups arranged in groups of 3–5, imparting a somewhat congested, glomerate look; branchlets angular, puberulent. **Heads** ca. 8 mm long, sessile;

exterior bracts linear, ca. 2 mm long, ciliolate at summit; involucre bracts lance-linear, ca. 5 mm long, apices obtuse; corollas 6–6.5 mm long, tube gradually expanded into a cylindric-subulate throat, teeth deltoid, ca. 0.5 mm long. Achenes immature; pappus bristles ca. 33, buff, ca. 6 mm long, barbellate.

Mikania tambillensis is known only from the type. Due to the immature nature of the heads, much of the above description is from Robinson (1922). A very closely related plant is *M. weberbaueri*, which differs only in having more attenuate leaves.

69. *Mikania ternata* (Vell.) B. L. Robinson, Contr. Gray Herb. 39: 198. 1911.
Figure 10.

Cacalia ternata Vell., Fl. Flum. 336. 1825. TYPE: not seen.

Mikania dentata Spreng., Syst. 3: 422. 1826. TYPE: not seen.

M. apiifolia DC., Prodr. 5: 202. 1836. TYPE: Brasil, São Paulo (P, holotype, not seen; G-DC, isotype, not seen, IDC microfiche 800. 823: 1-4).

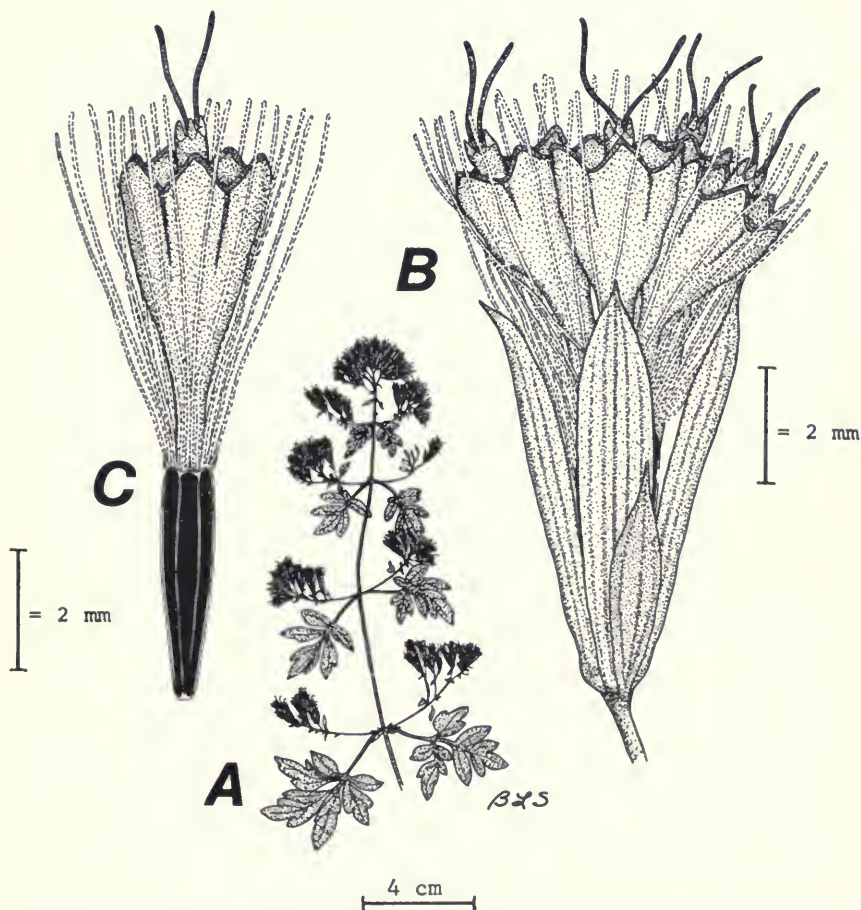


FIG. 10. *Mikania ternata* (Vell.) B. L. Robinson. A, habit; B, head; C, flower. (After Coleman s. n. [IBE].)

Twining vines; stems terete, glabrate to crisped puberulent, internodes 4–8 cm long. Leaves to ca. 8 cm long and 4 cm wide, palmately divided into 3–7 segments, the segments lanceolate to narrowly elliptic-ovate, the margins entire to somewhat coarsely serrate-crenate to sometimes 3-lobed, often apiculate to end of major veins, apices acute, surfaces glabrate to lightly puberulent, segments pinnately veined; petioles 2–6 cm long, glabrous to puberulent, connected by a prominent incised stipule-like appendage. Inflorescence a compound corymb, ca. 15 cm long and 6 cm wide; branchlets somewhat angular, crisped puberulent; pedicels 0.5–1.5 mm long, terete, puberulent. Heads ca. 10 mm long; exterior bracts lanceolate to narrowly ovate, 5–6 mm long, glabrate, apices acute to attenuate, borne slightly below head; involucre bracts elliptic to narrowly ovate, ca. 8 mm long, glabrate, apices acute to attenuate; corollas semicampanulate, ca. 7 mm long, white, tube ca. 2 mm long, throat ca. 4.25 mm long, teeth obtuse, ca. 0.75 mm long. Achenes 4–5 mm long, brownish, ribs white; pappus bristles 80–100, white, 5–6 mm long, barbellate.

Side-by-side comparison of the Peruvian material of *M. ternata* with that of elsewhere in its range (Brazil, Paraguay, and Argentina) revealed no differences worthy of taxonomic recognition. This species is apparently present as a disjunct in Peru. It is readily distinguished from *M. filicifolia*, the other Peruvian species of *Mikania* with parted leaves, by its palmately divided leaves, rather than pinnate, fernlike divisions.

HUÁNUCO. Tingo María, *Asplund* 12107 (US); Hacienda El Aquila, cerca Tingo María, entre Huánuco y Pucallpa, *Ferreyra* 4180 (MO, US, USM); Tingo María, carretera Huánuco-Pucallpa, 700 m, *Ferreyra* 912 (MO, US, USM). LORETO. Divisoria, entre Tingo María y Pucallpa, 1,500–1,600 m, *Ferreyra* 1011 (MO, US, USM).

70. *Mikania trachodes* B. L. Robinson, Contr. Gray Herb. 61: 22. 1920. TYPE: Peru, Huánuco, Huamalies, mountains SW of Monzón, 2,500–2,900 m, July 13, 1903, *Weberbauer* 3395 (B, holotype, destroyed, GH, photo & fragm.).

Twining shrubs; stems terete, striate-costulate, strigillose-papillose, scabrous, internodes to 12 cm or more. Leaves broadly ovate, subcoriaceous, to ca. 15 cm long and 8 cm wide, margins somewhat remotely callous-denticulate, apices acuminate, bases rounded, upper surfaces appressed tawny-puberulent, pinnately veined, lower surfaces spreading villous; petioles ca. 1.5 cm long, yellow tomentose, opposite petioles connected by a transverse ring or fold. Inflorescence a dense panicle, to 40 cm or more wide; branchlets villous. Heads 7–8 mm long; exterior bracts lanceolate, ca. ½ the length of the involucre, loosely villous, apices acute, borne at the summit of the pedicel; involucre bracts lanceolate to oblong, ca. 4 mm long, villous, apices acute; corollas ca. 3.5 mm long, tube ca. 1.5 mm long, pubescent at the summit, throat campanulate, ca. 1 mm long, teeth lance-ovate, ca. 1 mm long. Achenes ca. 2 mm long, olivaceous; pappus bristles ca. 40, white, ca. 3.5 mm long, barbellate.

Mikania trachodes is known only from Huánuco above 2,500 m. It is another species difficult to distinguish from *M. banisteriae* in characters of corollas, inflorescence, pubescence, etc. It was separated in Robinson's (1922) key to the species of *Mikania* of Peru from *M. lanuginosa* and *M. ruiziana* (both = *M. banisteriae*) by its very prominent interpetiolar ring or fold connecting opposite petioles, a condition not characteristic of *M. banisteriae*. In addition *M. trachodes* has a scabrous stem. With only a few fragments and photos available for direct comparison and study, it appears appropriate to retain *M. trachodes* as a distinct species.

HUÁNUCO. Huánuco: Carpish, above Acomayo, 2,800 m, *Hutchison, Wright & Straw* 5962 (F, MO).

71. *Mikania turbaricola* Holmes & McDaniel, *Phytologia* 37: 474. 1977. TYPE: Peru, Amazonas, Chachapoyas, Jalca zone 3–6 km W of Molinopampas, 2,200–2,450 m, July 19, 1962, *Wurdack* 1399 (US).

Subshrubs to short vines; stems terete to angled, sulcate after drying, internodes to 5 cm long. Leaves ovate, semicoriaceous, to ca. 7 cm long and 4 cm wide, margins entire to irregularly and coarsely dentate, the teeth remote, apices attenuate, bases truncate to rounded, upper surfaces glabrous, sparsely glandular-punctate; petioles ca. 1 cm long, grooved above. Inflorescence paniculate, to ca. 15 cm long and 6 cm wide; branchlets somewhat angled, crisped puberulent to pilose. Heads ca. 9 mm long; exterior bracts lance-linear to oblanceolate, ca. 3.5 mm long, borne slightly beneath the head, puberulent; involucre bracts lanceolate to lance-elliptic, ca. 6 mm long, puberulent, ciliate at apex, apices acute; corollas ca. 4.5 mm long, white, glandular, tube ca. 1.7 mm long, throat semicampanulate, 2.2–2.3 mm long, teeth deltoid, ca. 0.5 mm long. Achenes (immature) ca. 3 mm long, green, glandular; pappus bristles 28–30, white, ca. 4.5 mm long, barbellate, thickened at the tips.

Mikania tubaricola is a subshrub or short vine known only from the holotype collected above 2,000 m in a *Sphagnum* seepage bog.

72. *Mikania vargasii* Holmes & McDaniel, *Phytologia* 35: 330. 1977. TYPE: Peru, Cuzco, Quispicanchis, 3,250 m, June 10, 1963, *Vargas* 14565 (US, holotype).

Twining lianas; stems costate to sulcate (after drying), glabrous, internodes 6–10 cm long. Leaves ovate to ovate-oblong, to ca. 6 cm long and 4 cm wide, margins entire, apices attenuate, bases cordate, upper surfaces sparsely puberulent, dark green, 5-nerved from the base, lower surfaces glabrous, dark punctate with globular sessile glands, lighter than above; petioles to ca. 2 cm long, thin, glabrous. Inflorescence paniculate, the ultimate branchlets spicately disposed, ca. 20 cm long and 10 cm wide; branchlets angular, pilose. Heads 10–12 mm long, sessile; exterior bracts elliptic, 3–3.5 mm long, glabrate, apices acute; involucre bracts oblong to obovate, ca. 6 mm long, appressed-puberulent, entire, apices rounded to obtuse, bases slightly gibbous; corollas semisalverform, lightly glandular, ca. 6 mm long, tube ca. 4 mm long, throat ca. 1 mm long, teeth triangular, ca. 1 mm long. Achenes 4–4.5 mm long, dark brown to black; pappus bristles 80–85, white, 5–6 mm long, barbellate, gradually narrowed from base to tip.

Mikania vargasii, known only from Cuzco above 2,000 m, is easily recognized by the large paniculate inflorescence with the spicately disposed heads 10–12 mm long.

CUZCO. Calca, Manfio, K84, 2,000–2,200 m, *Vargas* 15634 (US).

73. *Mikania violaefolia* Cuatrecasas, *Ann. Missouri Bot. Gard.* 52: 307. 1965. TYPE: Peru, Amazonas, Chachapoyas, km 416–419 of Leimebamba-Balsa Road, 2,900–3,100 m, July 9, 1962, *Wurdack* 1257 (US, holotype; F, isotype).

Twining vines; stems angular to somewhat hexagonal, purplish, glabrous, internodes to 15 cm long. Leaves triangular to deltoid, to ca. 3 cm long and 3 cm wide, margins coarsely crenate-dentate, apices acute, bases cordate, upper surfaces somewhat rugose, palmately 5–7-nerved, lower surfaces glabrate-puberulent, prominently reticulate; petioles 1.5 cm long, glabrous, connected by a lacinate stipule-like ring. Inflorescence a corymb, ca. 4 cm in diameter; branchlets angular, glabrous; pedicels to 8 mm long, glabrate. Heads ca. 10 mm long; exterior bracts lanceolate to oblanceolate, purple tinged, ca. 5 mm long, glabrate to puberulent, apices acute, borne well beneath the involucre; involucre bracts lance-oblong, 8–9 mm long, glabrous, purplish, apices acute, base narrowly bulbous; corollas ca. 5.5 mm long, white, tube and throat indistinguishable, teeth triangular, ca. 1.5 mm long. Achenes ca. 3 mm long; pappus bristles ca. 100, white, ca. 5 mm long, barbellate.

Mikania violaefolia, known only from Amazonas above 2,900 m, is characterized by its small (usually less than 1.5 cm long) leaves, with coarsely crenate-dentate margins.

AMAZONAS. Chachapoyas: Cerros Calla Calla, 18 km above Leimebamba on road to Balsas, 3,100 m, *Hutchison & Wright 5679* (F, MO, US).

74. *Mikania vitifolia* DC., Prodr. 5: 202. 1836. TYPE: Brasil, São Paulo (P, holotype, not seen; G-DC, isotype not seen, IDC microfiche 800. 823: I.2). Figure 11.

M. gracilis Schultz-Bip. ex Miq., Stirp. Surin. Sel. 187. 1850. TYPE: Surinam, *Hostmann & Kappler 1017* (G, holotype, not seen; F, isotype).

M. punctata Klatt, Bull. Soc. Bot. Belgique 31: 195. 1893. TYPE: Costa Rica, *Pittier 3434 & 4934*, syntypes, BR).

M. boliviensis Lingelsh., Fedde Rep. 7: 251. 1909. TYPE: Bolivia, San Carlos near Mapiri, September 1907, *Buchtien 71* (F, isotype).

M. cryptodonta B. L. Robinson, Contr. Gray Herb. 73: 22. 1924. TYPE: Peru, Pozuzo, June 20–22, 1923, *Macbride 4683* (F, holotype).

M. lechleri Schultz-Bip. ex B. L. Robinson, Contr. Gray Herb. 77: 35. 1926. TYPE: Peru, Puno, Carabay, St. Govan, August 1854, *Lechler 2480* (K, holotype, not seen, GH, photo & fragm.), including *M. lechleri* Schultz-Bip., *Bonplandia* 4: 54. 1856, *nomen nudum*.

M. caustolepis B. L. Robinson, Contr. Gray Herb. 77: 49. 1926. TYPE: Peru, Cuzco, Río Yanamayo, below Pillahuata, 2,000–2,300 m, May 4–5, 1925, *Pennell 14070* (GH, holotype; F, isotype).

M. vitifolia f. *boliviensis* (Lingelsh.) B. L. Robinson, Contr. Gray Herb. 104: 54. 1934.

M. vitifolia f. *cryptodonta* (B. L. Robinson) B. L. Robinson, Contr. Gray Herb. 104: 55. 1934.

M. anzoatiguensis Badillo, Bol. Soc. Venez. Ci. Nat. 10: 301. 1946. TYPE: Venezuela, Anzoátequi, NE of Bergantín, March 1–2, 1945, *Steyermark 61376* (VEN, holotype, not seen; F, isotype).

Herbaceous to subwoody **lianas**; stems terete, striate to costate, fistulose in age, puberulent to pilose at nodes, internodes to 25 cm long. **Leaves** ovate, often with 2 divergent basal lobes in the lower $\frac{1}{3}$ of the leaf, to 20 cm long and 17 cm wide, margins entire, apices acuminate-attenuate, base obtuse to truncate to subcordate or cordate, surfaces glabrate to puberulent, usually dark glandular-punctate, palmately or subpinnately 5–7-nerved from or near the base; petioles to 11 cm long, glabrate to puberulent. **Inflorescence** elongated, bracteate, lax to dense panicle to 5 dm or more long; branchlets terete to angular, puberulent; pedicels 1–2 mm long. **Heads** 7–9 mm long; exterior bracts lanceolate, ca. 2 mm long, puberulent, glandular; involucre bracts oblong, 4.5–5 mm long, glandular, margins thin, often whitish in color, nerves prominent, apices puberulent, obtuse; corollas ca. 5 mm long, white, glandular (especially on teeth), tube ca. 3 mm long, thin, throat ca. 1 mm long, teeth triangular, ca. 1 mm long. **Achenes** ca. 3.5 mm long, glandular, greenish-brown; pappus bristles 35–40, thin, ca. 5 mm long, barbellate.

Mikania vitifolia is a widespread (southern Mexico to Bolivia and Brazil) and somewhat polymorphic species with leaf shape varying greatly. Mature cauline leaves generally have two divergent, pointed basal lobes ca. two-thirds the distance from the apex. Often this character is not evident, because many specimens have only bracteate leaves and the inflorescence.

ANCASH. Pampayacu, hacienda at mouth of Río Chinchao, 3,500 ft, *Macbride 5062* (F, GH, US). CUZCO. Convención: Hacienda Portusco, 1,300 m, *Vargas 11677* (F, US), Paucartambo, Hacienda Patria, *Marín 1717* (F, US). HUÁNUCO. Pozuzo, ca. 2,000 ft, *Macbride 4552* (F, GH, US), Río Huallaga Cañon, below Santo Domingo, *Macbride 4219* (F, GH, US). JUNÍN. La Merced, Hacienda

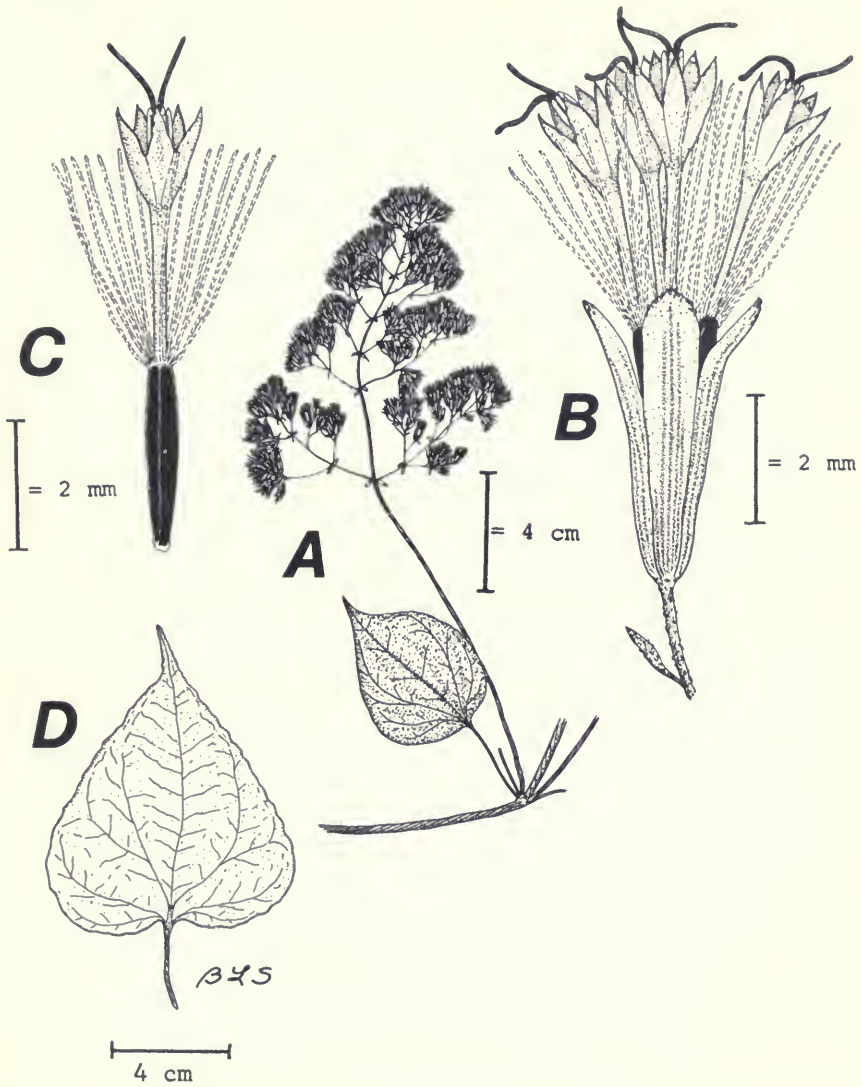


FIG. 11. *Mikania vitifolia* DC. A, habit; B, head; C, flower; D, leaf. (After McDaniel & Rimachi 22019 [IBE].)

Schunke, ca. 4,000 ft, Macbride 5461 (F, GH, US), E of Quimiri Bridge, near La Merced, 800–1,300 m, Killip & Smith 23835 (F, GH, US), Río Paucartambo Valley near Perené Bridge, 700 m, Killip & Smith 25313 (F, GH, US), Sanibeni, 900 m, Woytkowski 5038 (GH). SAN MARTÍN. Valley of San Martín along Río Shilcayo, 1–4 mi NE of Tarapoto, ca. 1,000 ft, Belshaw 3282 (GH, MO, US), Tarapoto, Carretera Tarapoto-Yurimaguas, km 12–15, 2,250 ft, McDaniel & Rimachi 22019 (AMAZ, F, IBE, MO, NY, US, USM).

75. *Mikania weberbaueri* Hieron., Bot. Jahrb. Syst. 11: 389. 1908. TYPE: Peru, Huamalies, Monzón, 100–1,000 m, July 23, 1903, *Weberbauer* 3426 (B, holotype, destroyed, F, GH, photos).

M. rivularis B. L. Robinson, Contr. Gray Herb. 73: 30. 1924. TYPE: Peru, Junín, La Merced, 2,000 ft, August 10–24, *Macbride* 5414 (F, holotype).

Twining shrubs; stems terete, striate-sulcate, glabrous (?), internodes to 19 cm long. Leaves ovate-oblong to broadly lanceolate, to ca. 13 cm long and 5 cm wide, margins entire, apices long attenuate, bases obtuse to somewhat cuneate, surfaces smooth, sub-pinnately 3–5-nerved from near the base; petioles to ca. 2 cm long. **Inflorescence** a panicle composed of rather dense glomerate corymbs, the corymbs 2–3 cm in diameter. **Heads** 7–8 mm long, sessile to nearly so; exterior bract lanceolate, ca. 3 mm long; involucre bracts ca. 5 mm long, puberulent, 5–7-nerved, apices acute to obtuse, ciliolate; corollas ca. 6 mm long tube gradually expanded into the throat, teeth oblong, ca. 0.5 mm long. **Achenes** ca. 2 mm long; pappus bristles ca. 35–40, white, thickened at tips, obscurely barbellate.

Mikania weberbaueri is known only from Peru. The actual type specimen was not seen. The description is compiled from that of Robinson (1922) and photos and sketches of the type. This species is uncomfortably close to *M. tambillensis*, but is distinguished from that species, which has acute to abruptly acuminate leaf apices, by its long attenuate leaf apices.

From available evidence *Mikania weberbaueri* and *M. rivularis* cannot be separated and are to be considered conspecific.

76. *Mikania woytkowskii* Holmes & McDaniel, Phytologia 37: 475. 1977. TYPE: Peru, Loreto, Boqueron Padre Abad, August 20, 1946, *Woytkowski* 34393 (F, holotype; MO, isotype).

Herbaceous lianas; stems terete, costate, hollow, glabrous, internodes to 10 cm long. Leaves elliptic to narrowly ovate, to 7 cm long and 2.5 cm wide, margins entire, apices acute to acuminate, bases cuneate, upper surfaces glabrous, 3–5-nerved from the base, veins exerted from lower surfaces, glabrous, veins exerted; petioles to ca. 1 cm long. **Inflorescence** paniculate, the ultimate branchlets spicate; branchlets costate, puberulent. **Heads** 6–7 mm long; exterior bracts elliptic, ca. $\frac{1}{3}$ – $\frac{1}{2}$ the length of the involucre, sparingly puberulent, apices acute, margins slightly ciliolate; involucre bracts elliptic-oblong, ca. 4.5 mm long, glabrate, 3–5(7)-nerved, apices obtuse; corollas funnelform, 3.5–4 mm long, white, tube 1.5–2 mm long, throat ca. 1.5 mm long, teeth deltoid, ca. 0.5 mm long. **Achenes** ca. 2 mm long, glandular, dark brown (immature); pappus bristles ca. 35, white, ca. 4 mm long, barbellate, thickened at the tips.

Mikania woytkowskii, known only from the type, is a slender herbaceous, twining vine. A similar species is *M. oreopola*, which is distinguished by its ovate leaves with obtuse bases, prominent, reticulating veins, and elliptic involucre scales to 3 mm long.



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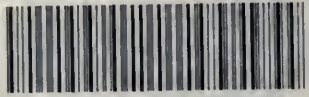


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