

## New species of *Fleischmannia* from Panama and Andean South America (Asteraceae: Eupatorieae)

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**Abstract.**—Fifteen species of *Fleischmannia* are named as new, *F. hammelii* from Panama, *F. killipii* and *F. narinoensis* from Colombia, *F. ceronii*, *F. dodsonii*, *F. kingii*, *F. microstemoides*, and *F. zakii* from Ecuador, and *F. al-tihuanucana*, *F. cajamarcensis*, *F. davidsmithii*, *F. petiolata*, *F. quirozii*, *F. sagasteguii*, and *F. vargasii* from Peru. Distinctions of other Colombian, Ecuadorian and Peruvian species are discussed.

During the course of previous identification and floristic studies, many specimens of *Fleischmannia* were put aside for later study. One part of this backlog was studied for the Flora Mesoamericana, and two new species were described (Robinson 1991). Preparation of a treatment for the Flora of Ecuador has been the occasion for a more complete review of the remaining backlog of material. The result is the presentation of the following 15 new species of the genus. This includes one species from Panama that is in the Flora Mesoamericana range, two species from Colombia, five species from Ecuador, and seven from Peru.

*Fleischmannia* was first described to accommodate a single Mesoamerican species that had a pappus of five well spaced, slender bristles and a well developed anther appendage (Schultz-Bip. 1850). It was named by Schultz-Bipontinus in honor of his teacher at Erlangen, Hon. Prof. Dr. Gottfried Fleischmann. The concept was expanded over the next 100 years to include a number of additional species, some with reduced anther appendages. The value of the generic separation from *Eupatorium* by the five pappus bristles was questioned at least twice, at least indirectly by Schultz-Bipontinus himself (Seemann 1852–1857) and more directly by B. L. Robinson (1926). It remained for R. M. King & H.

Robinson (1966, 1970a, 1970b) to remove all previously added species of the genus except the type. Two species were transferred to *Hofmeisteria* (King & Robinson 1966) and one to *Ageratina* (King & Robinson 1970b). About the same time, 52 species from *Eupatorium* were transferred to *Fleischmannia* on the basis of newly discovered characteristics by which the genus could be very naturally defined (King & Robinson 1970a).

The characteristics of *Fleischmannia* as defined by King & Robinson (1970a) indicated a very distinct genus that lacked striking macroscopic distinctions but was sharply differentiated by a combination of microscopic features. The base of the corolla tube is ribbed when dry because of the five thickened veins; the lobes of the corolla have a prorate papillosity, where only the upper ends of the elongate cells project as papillae; and the anther collars are slender with dense transverse annulate thickenings that totally obscure the cellular structure. Geographically and in general habit, *Fleischmannia* species are often confused with members of *Ageratina* Spach, even though the two genera are not closely related. *Fleischmannia* species usually differ by the additional characteristics of subimbricate (distinctly shingled) versus eximbricate (scarcely overlapping) involucre



bracts, the lack versus the presence of an enlarged basal styler node, and the prorsity versus the non-prorate papillosity of the corolla lobes that is not restricted to the inside surface. The corollas of *Ageratina* are white or reddish whereas those of *Fleischmannia* are often lavender to purplish or bluish. The involucre bracts are more subimbricate in some species of *Ageratina* and nearly eximbricate in a few *Fleischmannia*, and the style is without a basal node in a few central Andean *Ageratina*, but the chromosome numbers of *Fleischmannia* are always based on  $n = 10$  or, rarely,  $n = 4$ , whereas those of *Ageratina* are based on  $n = 17$  or 40–42 or are apomicts.

In the present concerted study of *Fleischmannia*, many variations have been noted in the specimens, and it has sometimes been difficult to determine which features were of taxonomic value. The new Panamanian species has a reduced number of pappus bristles, a characteristic of some other Mesoamerican species, but not of those from South America. Some Mesoamerican species have peripheral achenes totally lacking a pappus, but all achenes have a pappus with many bristles in South American species. The persistence of yellow in the achene ribs does not seem so constant in the Andean species as it does in the Mesoamerican ones, but it has been used to some extent in the following species concepts. Glandular dots on the leaves seem to be present in most Andean species, but they are sometimes difficult to see; their absence in some Ecuadorian species such as *F. lloensis* (Hieron.) R. M. King & H. Rob. and *F. pastazae* (B. L. Rob.) R. M. King & H. Rob. is not totally proven. Minute, stipitate glands on stems, leaves, peduncles, or involucre bracts seem useful in four of the new species, although some stipitate glands sometimes occur on the abaxial leaf surfaces in the common *F. pratensis* (Klatt) R. M. King & H. Rob. Heads sizes and floret number in the heads seem to distinguish some species adequately in spite of some observed variability. Inflorescence density

alone depends partly on peduncle length and partly on head size, but dense versus lax head disposition seems to be a useful character.

Corolla color seems to distinguish some species in spite of some cited variation. The color might prove more valuable if collectors could be relied upon to check carefully, distinguish corolla color from bract color, and be careful with immature specimens.

The widespread *Fleischmannia microstemon* (Cass.) R. M. King & H. Rob. and *F. pratensis* usually occur in the Andean areas from which the new species are described, and these widespread species maintain the characteristics as cited in the Flora of Panama (King & Robinson 1975).

#### Panama

*Fleischmannia hammellii* H. Rob., sp.

nov.

Fig. 1

*Type*.—Panama: Pcia. Chiriquí: N of Tolé, herb on rocks along Río Curibora, flowers lavender, 17 Feb 1979, Hammel 6263 (holotype US; isotype MO).

*A Fleischmannia capillari* in setae pappi ca. 10 similis sed in foliis anguste ellipticis et ramis inflorescentiae minute stipitoglanduliferis differt.

Herbs with clustered stems to 4 dm tall, with few slender mostly short and ascending branches; stems brownish, densely short-hirtellous. Leaves opposite; petioles 2–3 mm long; blades membraneous, narrowly elliptical, mostly 10–20 mm long, 3–5 mm wide, base cuneate, distal margins bluntly 2–4 serrulate, apex bluntly acute, adaxial surface green, pilosulous, abaxially paler, densely pilosulous to hirtellous on main veins, with glandular dots; triplinervation from base of blade. Inflorescences diffuse, branches opposite proximally, alternate distally, ascending, with foliose bracts smaller distally; branches and peduncles densely covered with minute stipitate glands; peduncles slender, 5–12 mm long. Heads 3.5 mm high and wide; involucre



bracts ca. 23, lanceolate, inner more oblong, weakly subimbricate in ca. 3 series, 1.5–3.0 mm long, 0.3–0.4 mm wide, apices narrowly acuminate, abaxially mostly glabrous, outer bracts minutely pilosulous. Florets ca. 35; corollas lavender, ca. 2 mm long, basal tube ca. 0.3 mm long, throat ca. 1.4 mm long, sometimes with colored resin in ducts, lobes ca. 0.3 mm long, with only few minute short hairs outside; styles narrowly linear. Achenes ca. 1.5 mm long, with persistently pale ribs, sides and ribs setulose with scattered short binary hairs; pappus of 10–12 non-contiguous, slender bristles ca. 1.8 mm long.

*Fleischmannia hammelii* is known only from the type. The species is like *F. capillipes* (Benth. ex Ørsted) R. M. King & H. Rob. on the basis of the weakly subimbricate involucre and the 10–12 widely spaced setae of the pappus. The new species differs by the small, narrow leaves and the numerous, minute, stipitate glands in the inflorescence. The species is named for the collector, Barry Hammel.

#### Colombia

Of the Colombian species, *Fleischmannia granatensis* R. M. King & H. Rob. with lavender florets, has now been found in the north and northwest at lower elevations and at higher elevations in Cundinamarca. The species seems close to the widespread *F. pratensis*, but it has more pointed leaves and involucre bracts and has denser stem pubescence. The heads seem particularly densely clustered in glomerules. Other species in Colombia with black achenes include the more robust *F. mayorii* (B. L. Rob.) R. M. King & H. Rob. with the triplinervation usually above the base of the leaf blade and florets lavender, and *F. pennellii* (B. L. Rob.) R. M. King & H. Rob., with broadly rounded, non-scarious apices on the involucre bracts and florets that are white. Other Colombian species with dense inflorescences and pale-ribbed achenes and white florets include *F. klattiana* and *F.*

*magdalenensis*, the latter nearly glabrous with rather succulent leaves. More diminutive species of western Colombia include *F. misera* (B. L. Rob.) R. M. King & H. Rob., *F. cuatrecasasii* R. M. King & H. Rob., *F. sideritides* (Benth. in Ørsted) R. M. King & H. Rob. and *F. lellingeri* R. M. King & H. Rob., the first three with laxly deposited heads and the last with small clusters of heads terminal on elongate branches.

The following two species are described as new from Colombia.

*Fleischmannia killipii* H. Rob., sp. nov.

Fig. 2

*Type*.—Colombia: Depto. Santander: between El Roble and Tona, 1500–1900 m, 17 Feb 1927, Killip & A. C. Smith 19414 (holotype US, isotypes GH, NY).

A *F. steyermarkii* in foliis celtidiformis similia sed in caulibus puberulis et laminis foliorum herbaceis et capitulis remotioribus et bracteis involucri basilaribus brevioribus differt.

Scrambling subshrubs to 1.3 m tall, with branches spreading at an 80–90° angle; stems greenish brown, minutely puberulous to glabrescent; internodes often 9–13 cm long. Leaves opposite; petioles 1.2–2.7 cm long, broadened and fleshy at base; blades herbaceous, narrowly ovate, mostly 4–8 cm long, 1.0–2.8 cm wide, base rounded, with small acumination at petiole, margins crenulate to crenate-serrate, with 9–12 teeth on each side, apex narrowly acuminate, adaxial surface shortly pilose, abaxial surface pilosulous on veins, with glandular dots; triplinervation from basal acumination of blade, secondary and largest tertiary veins pale, strongly ascending. Inflorescences thyrsoid with laxly corymbiform branches; peduncles 3–15 mm long, minutely puberulous. Heads ca. 7 mm long, 3 mm wide when closed; involucre bracts ca. 20 in ca. 4 series, 0.8–5.0 mm long, outermost minutely ovate, puberulous outside, inner bracts oblong to narrowly oblong, apices rounded, sides scarious to a third of width,



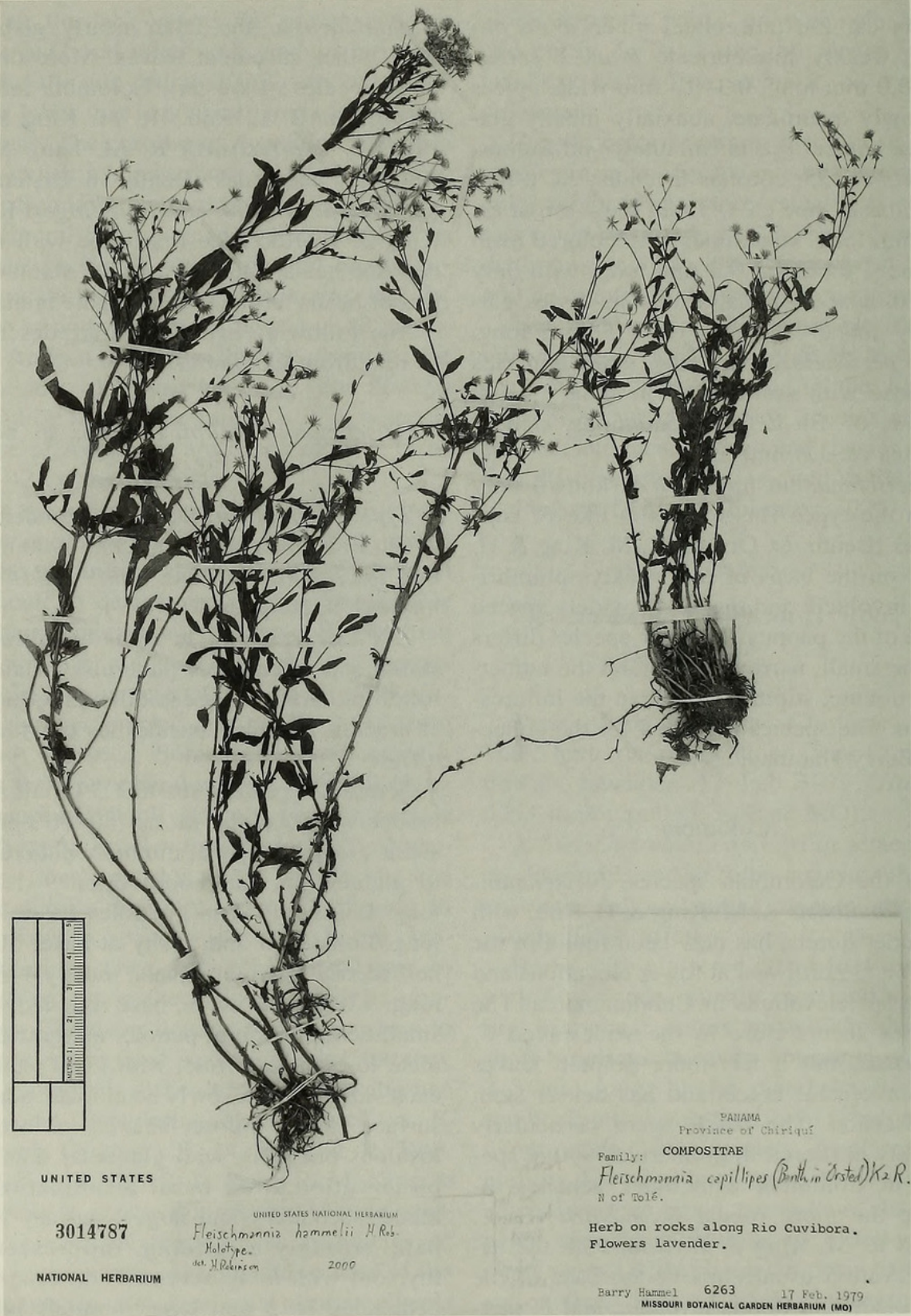


Fig. 1. *Fleischmannia hammelii* H. Rob., holotype, Hammel 6263 (US).



glabrous abaxially. Florets ca. 20; corollas white, ca. 2.5 mm long, basal tube ca. 0.5 mm long, throat ca. 1.5 mm long, without colored resin in ducts, lobes ca. 0.4 mm long, with few or no hairs outside; styles linear. Achenes ca. 1.8 mm long, black with, rarely, somewhat pale ribs, setulose with minute binary hairs on ribs and distally on sides; pappus ca. 2.5 mm long, bristles scarcely broadened and almost contiguous at base.

*Fleischmannia killipii* is known only from the type from a wooded area at 1500–1900 m in Santander. The narrow, acuminate leaves with strongly ascending secondary and tertiary veins are reminiscent of *F. steyermarkii* R. M. King & H. Rob. of the Cordillera del Avila of Venezuela. The Venezuelan species differs most obviously by its glabrous stems, the membranaceous leaf blades with glabrous adaxial surfaces, and more isolated rather dense clusters of few heads.

*Fleischmannia narinoensis* H. Rob., sp.  
nov.  
Fig. 3

*Type*.—Colombia: Depto. Nariño: Reserva Natural La Planada, 7 km above Chucunés (on road between Tuquerres and Ricaurte); along trail to Pialapí, past entrance to La Planada Field Station, 1°06'N, 77°53'W, 150–200 m, 10 Mar 1990, *Croat 71273* (holotype PSO; isotypes MO, US).

E speciebus majoribus plantis in sicco atro-brunnescentes in bracteis involucri obtusis et in corollis albis distincta.

Herbs or vines, becoming dark brownish when dry, to 2.5 m high, with branching often at a 90° angle; stems pilose to sparsely hirsutulous; internodes of primary stems to 13 cm long. Leaves opposite; petioles slender, 0.7–2.5 cm long; blades membranaceous, ovate, mostly 2.5–6.5 cm long, 0.9–4.0 cm wide, base obtuse to truncate, margins serrate with up to 13 teeth on each side, apex sharply acute to scarcely acuminate, adaxial surface pilose, abaxial sur-

face pilose on veins, darkly minutely gland-dotted; triplinervation ascending from base of blade. Inflorescences of lax, widely spreading cymes, divaricately branching; peduncles 2–8 mm long, densely puberulous to hirtellous. Heads mostly 5–7 mm long, 4–5 mm wide; involucre bracts ca. 25, in ca. 4 series, outer lanceolate, 1.5–2.5 mm long, pilosulous abaxially, inner oblong, to 5.5 mm long, rounded to mucronate at tip, margins usually broadly lustrous, mostly glabrous outside. Florets ca. 25; corollas white, ca. 3.4 mm long, basal tube ca. 0.8 mm long, throat ca. 1.8 mm long, with dark resin in ducts, lobes ca. 0.8 mm long, with few, short, scarcely noticeable hairs; style branches linear. Achenes ca. 1.6 mm long, with few binary hairs on the often somewhat persistently pale angles; pappus of many bristles, to 3 mm long, white or sordid.

*Paratypes*.—Colombia: Nariño: Reserva Natural La Planada, a 7 km de Chucunés, 1°10'N, 77°58'W, 1800 m, 2 Nov 1987, *Benavides 8818* (MO, PSO, US). Trayecto San Isidro–La Planada, 1°10'N, 77°58'W, 1500–1800 m, 13 Feb 1988. *Benavides 9219* (MO, PSO, US). Quebrada: El Mar - La Calladita, 1°10', 77°58'W, 1500–1800 m, 29 Apr 1988, *Benavides 9553* (MO). Trail from La Planada to Pielapi, wet lower montane cloud forest, 1°04'N, 78°02'W, 1600–1800 m, 22 Jul 1988, *Gentry, Benavides et al. 63587* (MO, PSO, US). La Planada, 7 km above Chucunés on road between Tuquerres and Ricaurte, along trail to summit of hill behind Centro de Científicos, 1°01'N, 78°01'W, 1780 m, 28 Jul 1988, *Croat 69659* (MO, PSO, US). Reserva Natural La Planada, 7 km above Chucunés on road between Tuquerres and Ricaurte, primary forest and margins of old pasture along Sendero La Vieja, 1°06'N, 77°54'W, 1780–1850 m, vine, to 2.5 m in tree, 7 Mar 1990, *Croat 71140* (MO, PSO, US). 7 km above Chucunés (on road between Tuquerres and Ricaurte); along trail above La Posada to El Mojenes, disturbed virgin forest and pasture margin along forest, 1°06'N, 77°53'W, 1800–1900,





Fig. 2. *Fleischmannia killipii* H. Rob., isotype, Killip & Smith 19414 (US).



12 Mar 1990, *Croat 71336* (MO, PSO, US). La Planada Biological Reserve, ca. 7 km S of Chucunez, along trail to Pialapi, 1°10'N, 77°53'W, 1800-1900 m, disturbed premontane forest and open potreros, along road edge, scandent herb, phyllaries green, florets white, 6 Aug 1990, *Luteyn & Steela Sylvia S. 13899* (NY, US).

*Fleischmannia narinoensis* is rather distinctive in the laxly divaricate branching of the inflorescence with mostly non-contiguous heads and the blunt involucre bracts with often broad and lustrous margins. While it may not be absolutely characteristic, all the specimens examined are dark brown when dry, differing from the usually greenish color of dried material of other species.

#### Ecuador

Preparation for the Flora of Ecuador treatment has led to discovery of the following five previously undescribed species. The total number of species presently recognized in the country is 13. This takes into account the reduction of *Fleischmannia aequinoctialis* (B. L. Rob.) R. M. King & H. Rob. to synonymy under *F. obscurifolia* (Hieron.) R. M. King & H. Rob. and the resurrection of *F. huigrensis* (B. L. Rob.) R. M. King & H. Rob. from the synonymy of the *F. obscurifolia*.

*Fleischmannia ceronii* H. Rob., sp. nov.

Fig. 4

*Type*.—Ecuador: Pcia. Pichincha: Reserva Geobotánica del Pululahua, Sector Moras Pungo - Papa Tena, Segundo Chipantasi y Francisco Santillán, 00°05'N, 78°30'W, 2900-3100 m, 17 Aug 1988, *Cerón & Cerón 4484* (holotype US, isotype MO).

Ad *F. granatensem* et *F. pratensem* in habitus similis sed in foliis supra velutinis et subtus non vel obscure glandulo-punctatis differt.

Erect to procumbent subshrubs or shrubs to 1 m high; branching mostly at a 35-50° angle; stems brown, hirsute to hirsutulous with reddish or brownish hairs; internodes

mostly 2-12 cm long. Leaves opposite; petioles 0.5-2.0 cm long; blades herbaceous, broadly ovate, mostly 1.5-5.0 cm long, 1.2-2.8 cm wide, base rounded to subtruncate, slightly acuminate at petiole, margins crenulate to crenate-serrate, with 9-13 teeth on each side, apex acute to scarcely acuminate, adaxial surface velutinous with whitish to reddish hairs, abaxial surface densely pale pilose to subtomentose on and between veins, without evident glandular dots; triplinervation from basal acumination of blade. Inflorescences terminal on primary stems and long lateral branches, forming isolated small dense corymbiform clusters; peduncles 2-4 mm long, densely puberulous to tomentellous. Heads 5-6 mm long; involucre bracts ca. 20 in ca. 4 series, 1-4 mm long, outer bracts puberulous abaxially, ovate, acute, inner bracts sparsely puberulous, narrowly oblong to linear, short-acute. Florets ca. 19; corollas greenish-white, 2.5-4.0 mm long, basal tube ca. 0.5 mm long, throat 1.5-1.8 mm long, with reddish ducts, lobes 0.4-0.5 mm long, with many short hairs abaxially; style branches linear. Achenes 1.5-1.8 mm long, black with ribs rarely persistently yellow, glabrous to sparsely scabrid with spiculiform binary hairs; pappus 2.3-2.5 mm long, bristles slightly broader and contiguous at base.

*Paratype*.—Ecuador: Pcia. Pichincha: Cantón Quito: Parroquia Calacalí, Reserva Geobotánica Pululahua, Línea de cumbre La Ventanilla - Sincholagua, 00°05'N, 78°30'W, 3100 m, 12 Nov 1989, *Cerón & Montesdeoca 7687* (MO, US).

*Fleischmannia ceronii* is known only from two collections, both from the Reserva Geobotánica del Pululahua in Pichincha, in humid premontane forest at 2900-3100 m elevation. The species seems close to the widely distributed *F. pratensis*, but differs by the densely pubescent leaves and the whitish corollas.

*Fleischmannia dodsonii* H. Rob., sp. nov.

Fig. 5

*Type*.—Ecuador: Pcia. Los Rios: Cantón Vinces: Between Mocacho and Palenque on



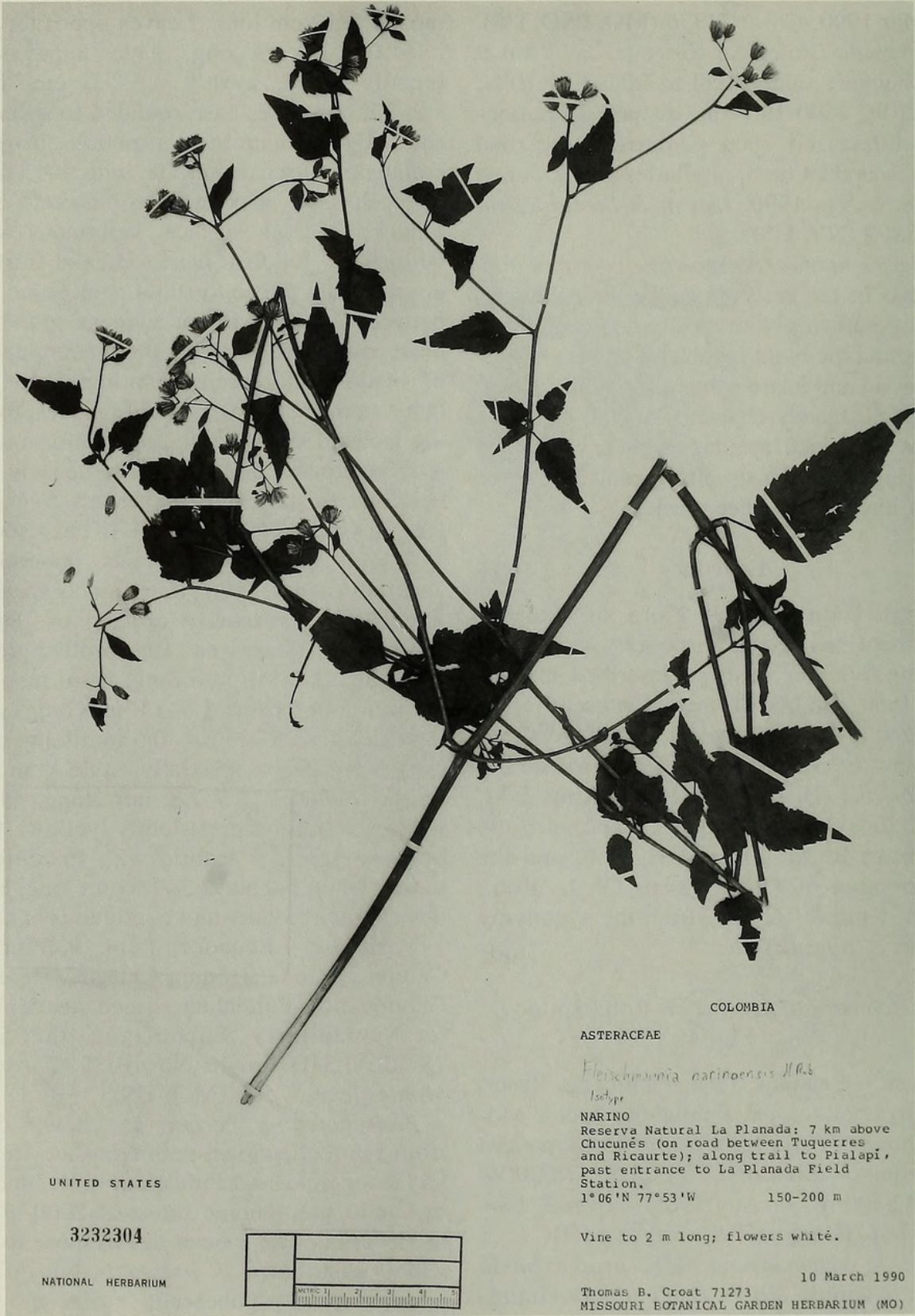


Fig. 3. *Fleischmannia narinoensis* H. Rob., holotype, Croat 71272 (US).



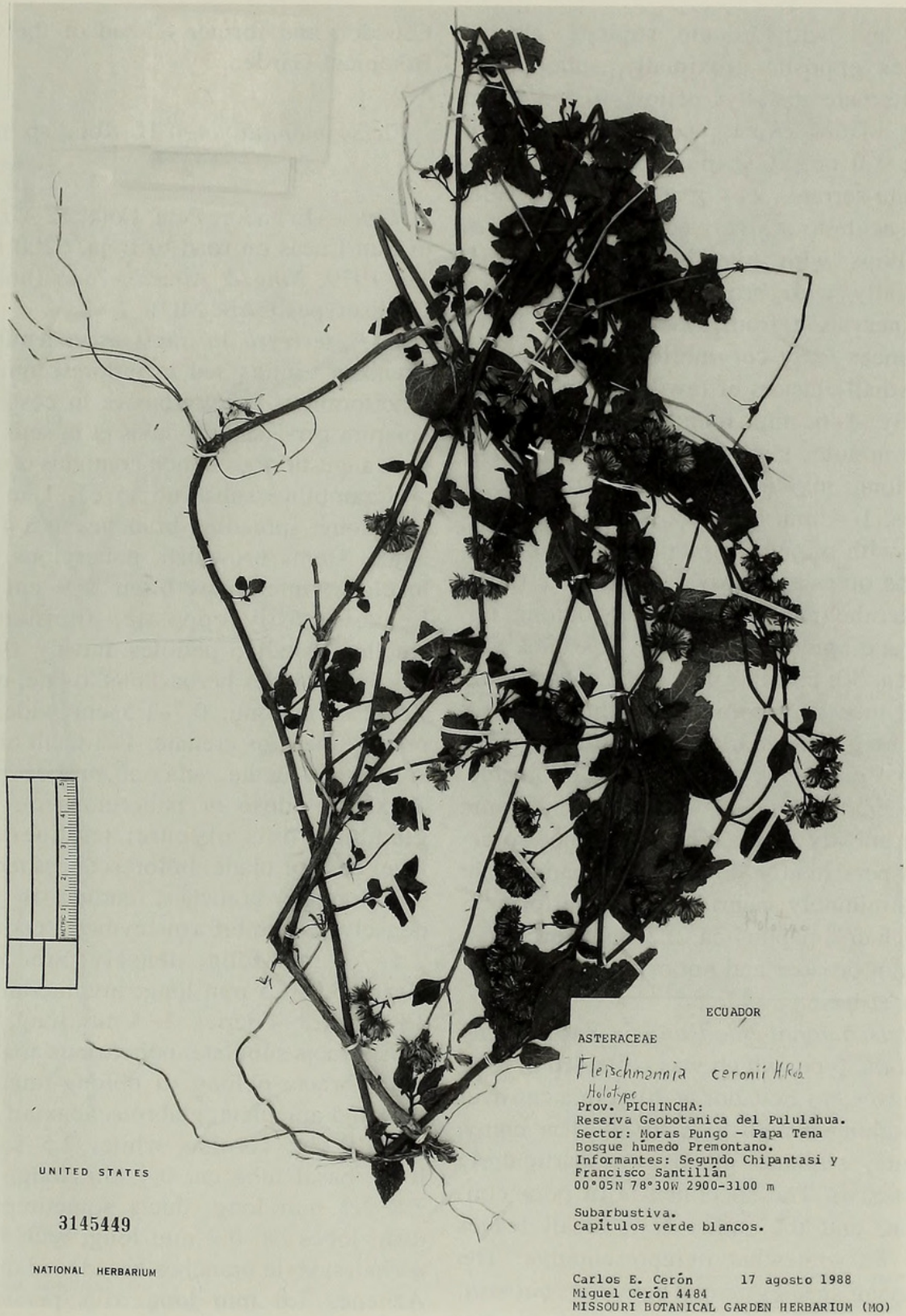


Fig. 4. *Fleischmannia ceronii* H. Rob., holotype, Cerón & Cerón 4484 (US).

Estero Peñafiel, 70 m, 15 Aug 1978, *Dodson, Dodson, Embree & Perry* 7058 (holotype US, isotype SEL).  
A speciebus pluribus in caulibus et foliis

et pedunculis et bracteis involucri minute stipitate glanduliferis distincta.  
Scandent herbs ca. 0.5 m tall, branches at a ca. 80° angle; stems brownish, hirtel-



lous and with minute stipitate glands. Leaves opposite proximally, subopposite or alternate distally; petioles 0.4–1.1 cm long; blades ovate, at least 1.2–1.5 cm long, 1.0 cm wide, base obtuse, margins crenate-serrate, 2–4 teeth on each side, apex acute to scarcely acuminate, surfaces hirtellous with minute, stipitate glands, abaxially with brownish glandular dots; triplinervation from base of blade. Inflorescences laxly corymbiform with numerous small clusters of few heads; peduncles mostly 4–6 mm long, densely covered with minute, stipitate glands. Heads 5–6 mm long; involucre bracts ca. 18 in ca. 3 series, 1–4 mm long, mostly densely covered with minute, stipitate glands abaxially, the outer bracts ovate-lanceolate to subulate, the inner ones narrowly oblong, obtuse and apiculate, narrowly scarious. Florets ca. 30; corollas pink, ca. 2.5 mm long, basal tube ca. 0.5 mm long, throat ca. 1.8 mm long, with dark resin in ducts, lobes ca. 0.4 mm long, with short hairs outside; style branches linear. Achenes ca. 1.2 mm long, mostly black, ribs sometimes somewhat persistently yellowish, ribs and upper sides minutely scabrid with spiculiform binary hairs; pappus ca. 2.2 mm long, bristles not broader and not or scarcely contiguous at base.

*Fleischmannia dodsonii* is known only from the type, which was collected in lowland western Ecuador at 70 m in a cut-over area along a path to a forest. The many, minute, stipitate glands are particularly distinctive. The specimen is in poor condition, and the rather few, small leaves may be somewhat unrepresentative. The Peruvian species named below, *F. quirozii*, also has many, minute, stipitate glands, but it differs in the usually alternate branching, the larger heads with 50 or more florets, and the persistently yellow ribs on the achenes. The species is named for the collector, Calaway H. Dodson, founder of the Río Palenque Science Center, Los Rios,

Ecuador, and formerly head of the Selby Botanical Garden.

*Fleischmannia kingii* H. Rob., sp. nov.

Fig. 6

*Type*.—Ecuador: Pcia. Loja: 12–20 km S of San Lucas on road to Loja, 6200 ft., 27 Jan 1979, King & Almeda 7846 (holotype US, isotypes CAS, MO).

A *F. ferreyrii* in ramis ascendentibus et attenuatis similis sed in inflorescentiis corymbiformibus densioribus et in costis acheniarum persistentiter flavis et in setis pappi base angustioribus et non contiguis distincta.

Scrambling subshrub to ca. 1 m high, with long, spreading branches at a 45–60° angle; stems brownish, puberulous to pilosulous; internodes often 6–9 cm long. Leaves mostly opposite, alternate and smaller distally; petioles mostly 0.3–1.0 cm long; blades herbaceous, ovate, mostly 1.5–2.5 cm long, 0.7–1.5 cm wide, base obtuse, margins crenate, 4–8 teeth on each side, apex acute, adaxial surface pilose, abaxially pilose or puberulous on veins, glandular dots obscure; triplinervation from base of blade. Inflorescences terminal on elongate branches, ending in rather densely corymbiform cymes; peduncles 2.5–7.0 mm long, densely puberulous. Heads 5.0–5.5 mm long; involucre bracts 18–20 in 3–4 series, 1–4 mm long, outermost bracts subulate, puberulous abaxially, inner bracts oblong to oblong-linear, obtuse and apiculate, glabrous abaxially. Florets 19–24; corollas white, 2.5–2.8 mm long, basal tube ca. 0.4 mm long, throat 1.8–2.9 mm long, ducts sometimes reddish, lobes ca. 0.4 mm long, with few or no hairs; style branches broadened distally. Achenes 1.8 mm long, ribs persistently yellow, ribs and some upper sides setulose with short binary hairs; pappus ca. 2.5 mm long, bristles not narrowed distally, narrow and not or scarcely contiguous at base.

*Fleischmannia kingii* is known only from the type, collected on a roadside at 6200 ft. in southern Ecuador. Its closest relationship





Fig. 5. *Fleischmannia dodsonii* H. Rob., holotype, Dodson, Dodson, Embree & Perry 7058 (US).

is probably to Peruvian species such as *F. ferreyrii* R. M. King & H. Rob.; but the latter has distinctly cymiform inflorescences, black achenes, and broadened contiguous

bases of the pappus bristles. The species is named for the first collector and noted student of the Eupatorieae, Robert Merrill King.





Fig. 6. *Fleischmannia kingii* H. Rob., holotype, King & Ameda 7846 (US).

*Fleischmannia microstemoides* H. Rob.,  
sp. nov.

Fig. 7

*Type*.—Ecuador: Pcia. Pastaza: Road  
Puyo - Macas, ca. 15 km southeast of Puyo,

28 Nov. 1974, Lugo S. 4688 (holotype US,  
isotype GB).

A *F. microstemon* simila sed in laminis  
foliorum herbaceis acutis vel obtusis non  
acuminatis in inflorescentiis cymosis robus-



tioribus in ramis lateralibus brevioribus paucioribus vel nullis in bracteis involucri acutioribus et in corollis 2.5–3.0 mm longis distincta.

Short-lived herbs ca. 0.5 m high, with ascending branches at a ca. 30° angle; stems reddish-tinged, minutely puberulous; main internodes ca. 8 cm long. Leaves opposite proximally, alternate distally; petioles 0.3–1.3 cm long; blades herbaceous, rhomboid-ovate, mostly 2–5 cm long, 1.2–2.5 cm wide, base acute to obtuse, not acuminate, margins serrate with 7–13 teeth on each side, apex acute, adaxial surface pilosulous, abaxially sparsely pilosulous on veins, with many dark glandular dots; triplinervation from distal part of petiole, not marginal at base of blade. Inflorescences cymiform, with few shorter, lateral branches; peduncles 2–9 mm long, densely puberulous. Heads 5.5–6.0 mm high; involucral bracts 18–20 in 3–4 series, ovate-lanceolate to linear-lanceolate, 1–5 mm long, apices narrowly acute, margins narrowly scarious, pilosulous abaxially. Florets ca. 19; corollas violet, 2.5–3.0 mm long, basal tube ca. 0.8 mm long, throat ca. 1.5 mm long, with reddish resin in ducts, lobes ca. 0.3–0.4 mm long, with short hairs externally; style branches narrowly linear. Achenes 1.3–1.5 mm long, ribs rather persistently yellow, scabrid with spiculiform binary hairs; pappus ca. 2.5 mm long, bristles scarcely broader and almost contiguous at base.

*Fleischmannia microstemoides* is known only from the type, collected at low elevation east of the Andes in Pastaza. The species has a weak habit that superficially resembles *F. microstemon*. The leaves are not so thin and not acuminate at the base, the inflorescence is more strongly cymiform without the numerous lower lateral branches, the involucral bracts are more acute, and the corollas are larger.

*Fleischmannia zakii* H. Rob., sp. nov.

Fig. 8

*Type*.—Ecuador: Pcia. Pichincha: Carretera Quito - Lloa - Mondo, Hacienda "El

Pedregal," 00°03'S, 78°40'W, 1650–1850 m, 10 Jul 1987, Zak & Jaramillo 2158 (holotype US, isotype MO).

Ad *F. huigrensem* in bracteis involucri basilaribus elongatis sed in habitis volubilis et in foliis et bracteis involucri anguste acuminatis differt.

Scandent plants with branches spreading at a 70–80° angle at base, curving upward; stems greenish, minutely puberulous to glabrescent; internodes mostly 8–20 cm long. Leaves opposite; petioles 0.3–1.1 cm long; blades lanceolate, mostly 3.5–6.5 cm long, 0.9–1.5 cm wide, base shortly to narrowly acute, margins remotely serrulate, with 3–8 teeth on each side, apex narrowly acuminate, adaxial surface sparsely pilosulous, puberulous on veins, abaxially puberulous on veins, with glandular dots obscure or lacking; triplinervation from a little above base of blade. Inflorescences terminal, laxly subumbellate; peduncles mostly 1–3 cm long, finely puberulous. Heads 8–9 mm long; involucral bracts 18–20 in ca. 3 series, green, oblong-lanceolate, 3–7 mm long, very weakly bicostate, apices narrowly acuminate, margins very narrowly scarious, outer bracts puberulous abaxially, inner bracts glabrous. Florets 25–30; corollas lilac, 4.0–4.5 mm long, basal tube ca. 1 mm long, throat ca. 2.5 mm long, with colored resin in ducts, lobes ca. 0.7 mm long, many short hairs outside; style branches long-linear. Achenes ca. 1.5 mm long, with persistently yellow ribs, glabrous; pappus white, ca. 3 mm long, bristle bases contiguous, not broadened.

*Fleischmannia zakii* is known from only the type collection, obtained from 1650–1850 m elevation at the margins of fields in moist remnants of primary vegetation. The species is an individually distinctive, scandent plant with attenuate apices on the leaves and involucral bracts. Closest relation is to the more widely distributed Ecuadorian endemic, *F. huigrensis* (B. L. Rob.) R. M. King & H. Rob., which also lacks shorter outer bracts in the involucre. The





Fig. 7. *Fleischmannia microstemoides* H. Rob., holotype, Holguer Lugo S. 4688 (US).



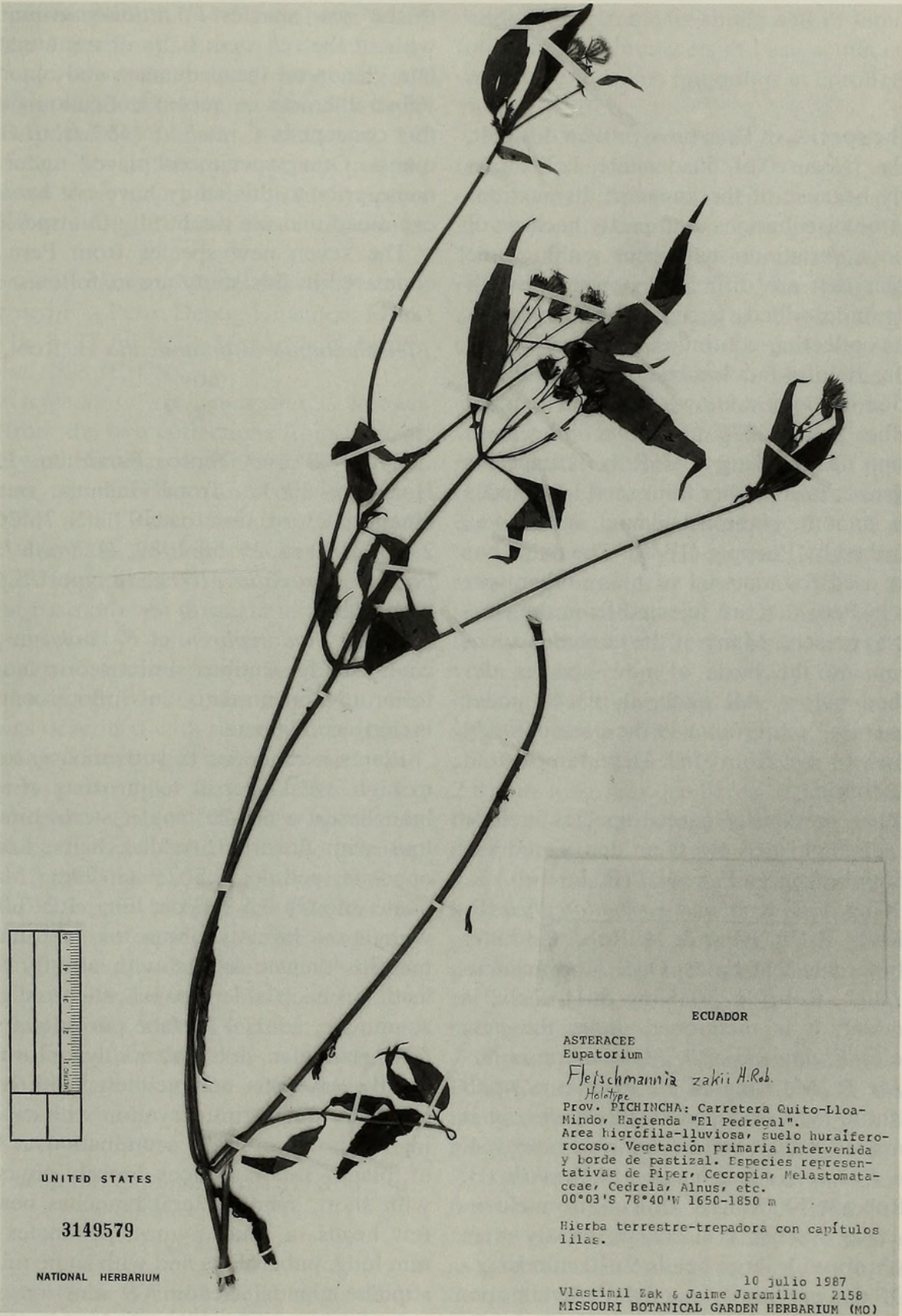


Fig. 8. *Fleischmannia zakii* H. Rob., holotype, Zak & Jaramillo 2158 (US).



species is named for the collector, Vlastimil Zak.

### Peru

The species of Peru have proven difficult, partly because of inadequate collecting, partly because of the apparent disjunctions in some distributions, and partly because of obvious variations that occur within some species that are difficult to correlate. Still other undescribed species are to be expected as collecting continues.

One helpful fact has been the ease of resolution of the best known Peruvian member of the genus, *Fleischmannia marginata* (Poepp.) R. M. King & H. Rob. The species is distinct in its rather thickened leaf blades with smooth, glabrous adaxial surfaces as described by Poeppig (1845). The name has been used for material of many other species in Peru that are rejected from the concept at present. Many of the excluded specimens are the basis of new species described below. All material placed under the name *F. marginata* in the present study proves to be from one Departamento in Peru, Junín.

Other previously named species include two distinguished by their dense, reddish stem pubescence, *F. cookii* (B. L. Rob.) R. M. King & H. Rob. and *F. rhodotephra* (B. L. Rob.) R. M. King & H. Rob., the latter with cordate leaf bases. One, *F. mercedensis* (B. L. Rob.) R. M. King & H. Rob., is scandent; it is mentioned under the new species *F. davidsmithii*. *Fleischmannia fereyreae* R. M. King & H. Rob. is a small subshrub with reduced distal leaves; it is compared under the Ecuadorian new species, *F. kingii*. *Fleischmannia lithophila* (B. L. Rob.) R. M. King & H. Rob. from Huánuco near Ancash is a coarse, mostly erect subshrub with large heads 9–10 mm long.

Of the previously named Peruvian species, *Fleischmannia fragilis* (B. L. Rob.) R. M. King & H. Rob., from Huánuco, has been the most difficult to define. It has been resolved in this study as a slender, decum-

bent to scrambling plant somewhat similar to the new species *F. altihuanucana*, but without the red stem hairs or minute stipitate glands on the peduncles and outer involucre bracts. A recent collection fitting this concept is *C. Ochoa 1562* from Cajamarca. Other specimens placed under the name prior to this study have not been re-examined and are doubtfully this species.

The seven new species from Peru encountered in this study are as follows:

*Fleischmannia altihuanucana* H. Rob., sp.  
nov.  
Fig. 9

*Type*.—Peru: Depto. Huánuco: Pcia. Huánuco, 32 km from Huánuco on the Huánuco - La Union road, 9°53'S, 76°26'W, 2940–3100 m, 25 Jul 1982, *D. Smith Huapalla & Huapalla 2169* (holotype US, isotype MO).

*Ad F. rhodotephra* et *F. cookii* in pilis caulinis rufescentibus similia sed in laminis foliorum non cordatis aut inflorescentibus laxioribus distincta.

Plants herbaceous to suffrutescent, to 1.2 m high, weakly erect to prostrate at base, branches at a 60–70° angle; stems hirsutulous with distorted, reddish hairs. Leaves opposite; petioles 0.5–2.3 cm long; blades ovate, mostly 2.5–5.0 cm long, 1.2–3.0 cm wide, base broadly obtuse to subtruncate, margins crenate-serrate with usually 6–10 teeth on each side, apex acute to slightly acuminate, adaxial surface pilosulous with few glandular dots, abaxially pilosulous mostly on veins and veinlets, with many glandular dots; triplinervation with ascending veins from slight acumination at base of blade. Inflorescences loosely thyrsoid, with short, sparse lateral branches bearing few heads in small cymes; peduncles 2–9 mm long, puberulous and with some minute stipitate glands. Heads 7–9 mm long; involucre bracts ca. 18 in 3–4 series, outer bracts lanceolate, 2.5–3.5 mm long, inner oblong-linear to linear, 4.0–6.5 mm long, acute, outer bracts puberulous and with mi-



nute stipitate glands abaxially. Florets 15–19; corollas pink, 4.0–4.5 mm long, basal tube ca. 1 mm long, throat ca. 3 mm long, with colored resin in ducts, lobes ca. 0.5 mm long, many short hairs externally, style narrowly linear to filiform. Achenes ca. 2.2 mm long, ribs rather persistently yellow, few or no short binary hairs on ribs; pappus 4.5–5.0 mm long, bristles subcontiguous at base.

Common name: “Macha Macha.”

*Paratype*.—Peru: Depto. Huánuco: Mito, 9000 ft., 8–22 Jul 1922, *Macbride & Featherstone 1508* (F, US).

*Fleischmannia altihuanucana* is known only from the two collections from west of the city of Huánuco at 2900–3100 m elev. Habitats are described as a dense thicket floor and a tall shrub field in valley bottoms. One habit description cites stems 2–4(–6) ft. long, weakly erect or often prostrate at base or even throughout trailing toward sun.

The new species may be closest to *Fleischmannia fragilis*, also from Mito, but that was described with stems at first glance appearing glabrous but being obscurely and minutely puberulous distally. The dense, reddish pubescence of the new species is more like *F. cookii* and *F. rhodotephrum*, both of which have denser inflorescences, and the latter of which has cordate leaf bases. The present species is further distinguished by the glandular dots of the leaves being unusually dense abaxially with a few occurring on the adaxial surface.

The species is named for its occurrence at high elevations in the Department of Huánuco.

*Fleischmannia cajamarcensis* H. Rob., sp. nov.

Fig. 10

*Type*.—Peru: Depto. Cajamarca: Pcia. San Miguel: Ushcundul, Niepos, borde de camino, suelos arcillosos y humedos, 2400 m, 29 Jun 1985, *Quiroz 1218* (holotype US, isotype HUT).

Ad *F. harlingii* in inflorescentiis laxe ascendititer ramosis simila sed in laminis foliorum membranaceis et base acutis et in capitulis et floribus minoribus et corollis lavandulis differt.

Plants weak subshrubs, to 1 m tall, branches slender, at a 45–60° angle; stems dark brown, glabrous, internodes often 10–18 cm long. Leaves opposite; petioles 0.5–1.5 cm long; blades membranaceous, narrowly ovate, mostly 2.5–5.5 cm long, 0.5–2.0 cm wide, base acute to obtuse, margins crenate-serrate, with 6–12 teeth on each side, apex narrowly acute to acuminate, adaxial surface pilose, abaxially pilose on veins, without evident glandular dots; triplinervation ascending from base of blade. Inflorescences laxly branched with ascending branches; peduncles mostly 0.7–2.5 mm long, glabrous or glabrescent. Heads ca. 6 mm long; involucre bracts 20–22 in 3–4 series, outer subulate, 1.5–2.5 mm long, often some loosely inserted near base of involucre, inner bracts narrowly oblong to linear, 3.5–6.0 mm long, apices apiculate to slightly erose, often lavender, glabrous abaxially. Florets ca. 19; corollas lavender, 2.8 mm long, basal tube ca. 0.5 mm long, throat ca. 1.7 mm long, no colored resin in ducts, lobes ca. 0.3 mm long, with short hairs externally; style branches linear with broader tips. Achenes ca. 2.2 mm long, ribs persistently yellow, setulose with fine binary hairs on ribs and upper sides; pappus ca. 3 mm long, bristles not broader below, subcontiguous.

*Paratype*.—Peru: Depto. Cajamarca: Pcia. Contumazá: La Pampa abajo de Guzmango, quebrada, 2500 m, 24 Jul 1977, *Sagástequi & Mostacero 9060* (HUT, US).

*Fleischmannia cajamarcensis* is known from two collections at 2400–2500 m in southwestern Cajamarca. Habitats are given as quebrada and suelos arcillosos y humedos, and habit is given as sufrútice and hierba endeble de hasta 1 m de largo. The lax inflorescence with ascending branches and the membraneous narrow leaves without evident glandular dots seem characteristic.



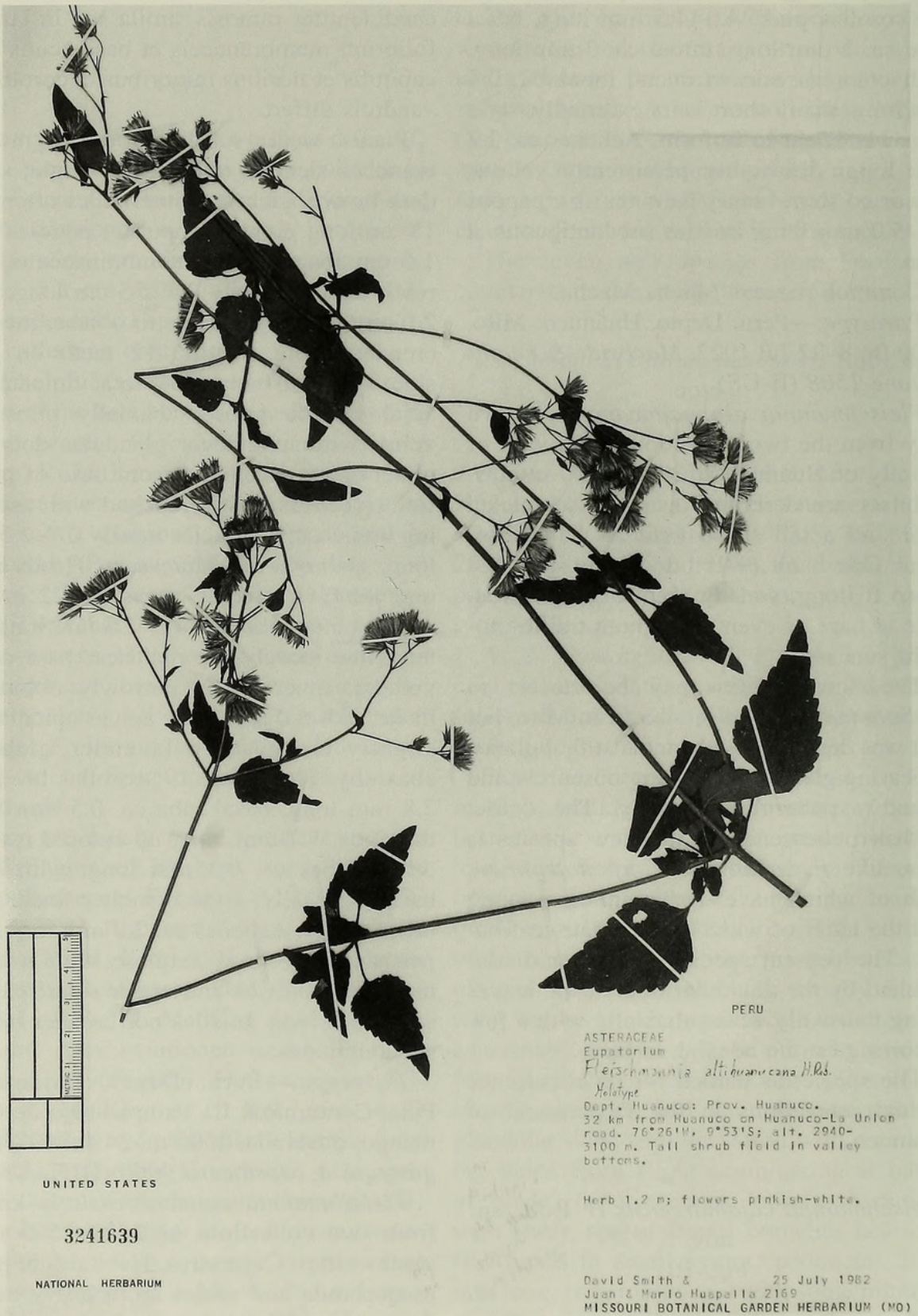


Fig. 9. *Fleischmannia altihuanucana* H. Rob., holotype, Smith, Huapalla & Huapalla 2169 (US).



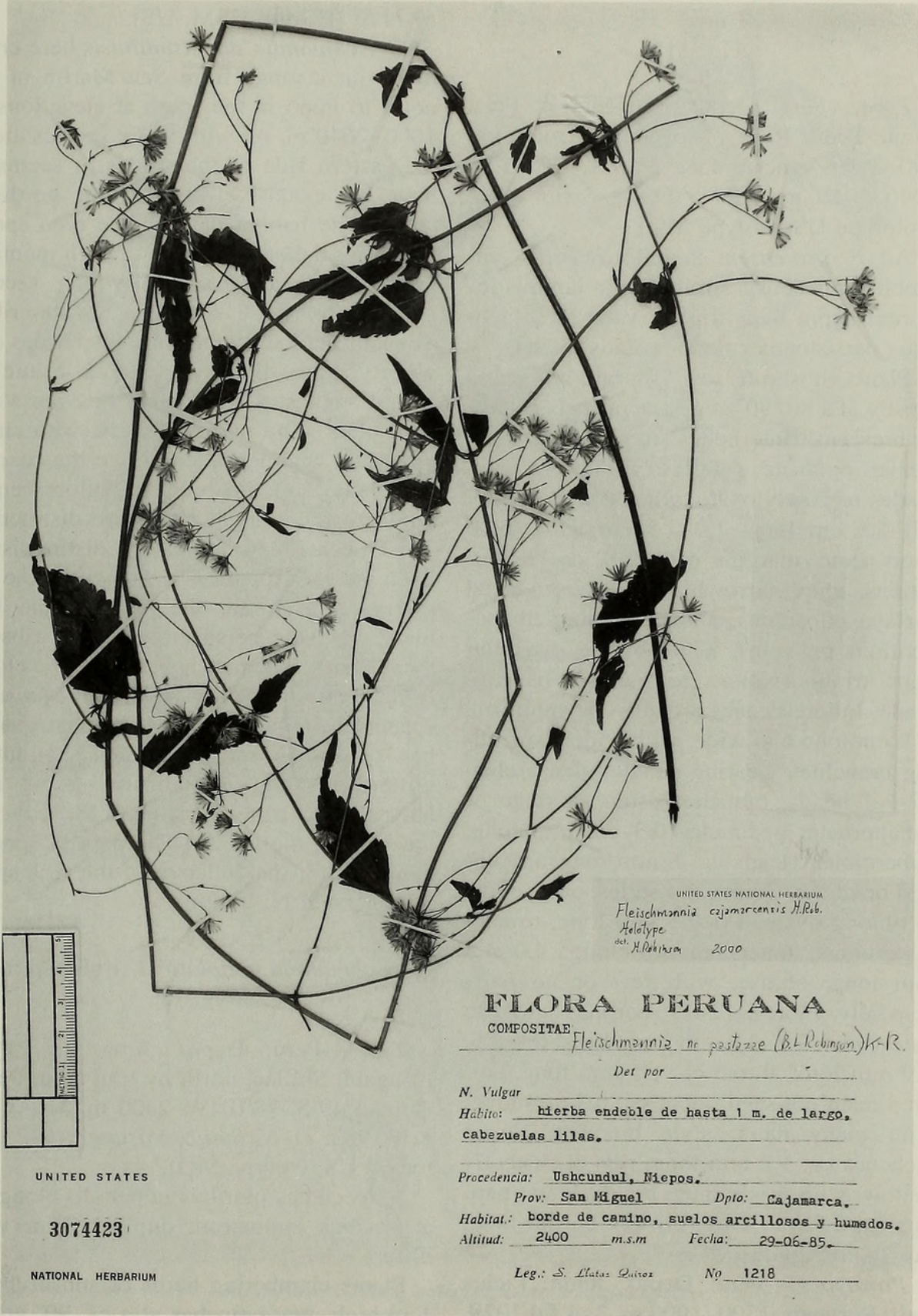


Fig. 10. *Fleischmannia cajamarcensis* H. Rob., holotype, Quirez 1218 (US).



*Fleischmannia davidsmithii* H. Rob., sp.  
nov.

Fig. 11

*Type*.—Peru: Depto. San Martín: Pcia. Rioja: Pedro Ruíz - Moyobamba road, km 390–394, Venceremos, 5°50'S, 77°45'W, 2040–1910 m, 1988?, *D. N. Smith* 4533 (holotype US, isotype MO).

Ad *F. pratensem* in inflorescentiis corymbiformis densis similia sed in laminis foliorum supra base triplinervatis et in acheniis persistentiter flavo-costatis differt.

Plants subshrubs to 1.7 m tall, branching mostly at a 80–90° angle; stems puberulous, glabrescent, internodes to 14 cm long. Leaves opposite; petioles 0.3–1.5 cm long; blades narrowly ovate to lanceolate, mostly 3.0–5.5 cm long, 1.2–2.3 cm wide, base short-acute, margins with 5–12 coarse serrations, apex narrowly acuminate, adaxial surface pilosulous, abaxially minutely puberulous on veins, with obscure glandular dots; triplinervation from above base of blade. Inflorescences broadly corymbiform, 5–9 cm long and wide, with widely spreading branchlets bearing smaller, dense clusters of heads, branches often alternate or subalternate; peduncles 0.3–3.5 mm long, puberulous. Heads ca. 5 mm long; involucre bracts ca. 20 in ca. 4 series, outer ovate to oblong-ovate, 1.0–2.5 mm long, usually puberulous, inner bracts oblong, 4.0–4.5 mm long, obtuse, with few or no hairs abaxially. Florets 12–19; corollas white to pale violet, 2.5–3.0 mm long, basal tube ca. 0.9 mm long, throat ca. 1.5 mm long, colored resin not seen, lobes ca. 0.3 mm long, with many hairs; style branches linear. Achenes ca. 1.2 mm long, ribs persistently yellow, with few minute binary hairs; pappus ca. 2.5 mm long, bristles thin to base, nearly contiguous.

*Paratypes*.—Peru: Depto. Junín: Pichis trail, Porvenir, 1500–1900 m, 3, 4 Jul 1929, *Killip & A. C. Smith* 25933 (US). Puno: Prov. Carabaya, Ollachea to San Gabon, "Ceja de la montaña", 1000–2000 m, 17–

24 Jul 1978, *Dillon, Aronson, Herra & Berry* 1118 (F, MO, USM, US).

*Fleischmannia davidsmithii* is here credited with a range from San Martín in the north to Puno in the south at elevations of 1000–2040 m. As with many species along the eastern side of the Andes, it seems to have an extensive range from north to south. The habitat data on the type specimen cites a disturbed edge of high montane rainforest, roadsides, and young second growth, "purma." Although not described as such, the habit with long internodes and widely spreading vegetative branches would suggest a scrambling or even scandent plant. The narrow leaves, with sharp teeth and triplinervation above the base of the blade, and the rounded inflorescences with crowded, small heads are distinctive. The species can be easily distinguished from the widespread *F. pratensis* by the triplinervation not at the base of the leaf blades and the persistently yellow ribs on the achenes. The new species may be closely related to the Peruvian *F. mercedensis*, a species described as a vine, but that species has a much looser inflorescence, minutely puberulous to subglabrous stems and leaves, and a triplinervation of the leaves at the base of the blades. The present species is named for the collector of the type specimen, David N. Smith.

*Fleischmannia petiolata* H. Rob., sp. nov.

Fig. 12

*Type*.—Peru: Depto. Amazonas: Pcia. Bongará: Shillac, north by trail from Pedro Ruíz, 5°49'S, 78°01'W, 2300 m, 31 Aug–2 Sep 1983, *D. N. Smith, Vasquez* 4912 (holotype US, isotype MO).

A speciebus pluribus in petiolis elongatis et basibus laminarum duplo triplinervatis differt.

Plants clambering herbs or subshrubs to 1 m high, few branches at a ca. 90° angle; stems puberulous; internodes 8–14 cm long. Leaves opposite; petioles 1–6 cm long; blades ovate to broadly ovate, mostly 3.5–





Fig. 11. *Fleischmannia davidsmithii* H. Rob., holotype, D. N. Smith 4533 (US).



9.0 cm long, 2–6 cm wide, base rounded to obtuse with slight acumination, margins sharply serrate to crenulate-serrate, usually with 5–15 teeth on each side, apex shortly narrowly acuminate, adaxial surface sparsely pilosulous, abaxially puberulous mostly on veins, with sparse and obscure glandular dots; main triplinervation distinctly above base, weaker triplinervation at base of blade, usually in acumination. Inflorescences loosely thyrsoid with branches bearing denser, smaller corymbiform clusters of heads; peduncles 0.5–4.0 mm long, puberulous. Heads ca. 6 mm high; involucre bracts 17–20 in 3–4 series, outer 1–2 mm long, obtuse to short-acute; inner bracts 4–5 mm long, oblong-linear, rounded at apex, with scarious margins, mostly glabrous abaxially. Florets 17–23; corollas lavender, 3.0–3.5 mm long, basal tube 0.5–1.0 mm long, throat ca. 2 mm long, with reddish resin in ducts, lobes ca. 0.5 mm long, with many short hairs externally; style branches linear. Achenes 1.3–1.5 mm long, black with ribs often slightly yellow, few or no scabrimiform or setuliform binary hairs; pappus 2.5–3.0 mm long, bristles contiguous at base.

*Paratypes*.—Peru: Depto. Huánuco: Pcia. Huánuco: cuesta de Carpish, entre Huánuco y Tingo María, 2700 m, 2 Aug 1945, *Vargas 156* (US, USM); Cayumba, entre Huánuco y Tingo María, expedición Huallaga, 800–900 m, 15 Jul 1948, *Ferreyra 4194* (US, USM). Pcia. Leoncio Prado: Distr. Hermilio Valdizan, cerca a la Divisoria, 1500–1600 m, 25 Jun 1976, *Schunke 9406* (F, MO, US, USM).

*Fleischmannia petiolata* is known from northern Amazonas and central Huánuco at elevations of 800–2700 m, but it has not yet been found from areas between. Habitats include “selva tropical alta,” “selva subtropical,” and “primary high montaine rainforest, moist.” The habit is apparently clambering, as stated on the type specimen. The petioles are very slender and often exceptionally elongate. The leaf blades are

distinctive in the double triplinervation, the basal one being weaker.

*Fleischmannia quirozii* H. Rob., sp. nov.

Fig. 13

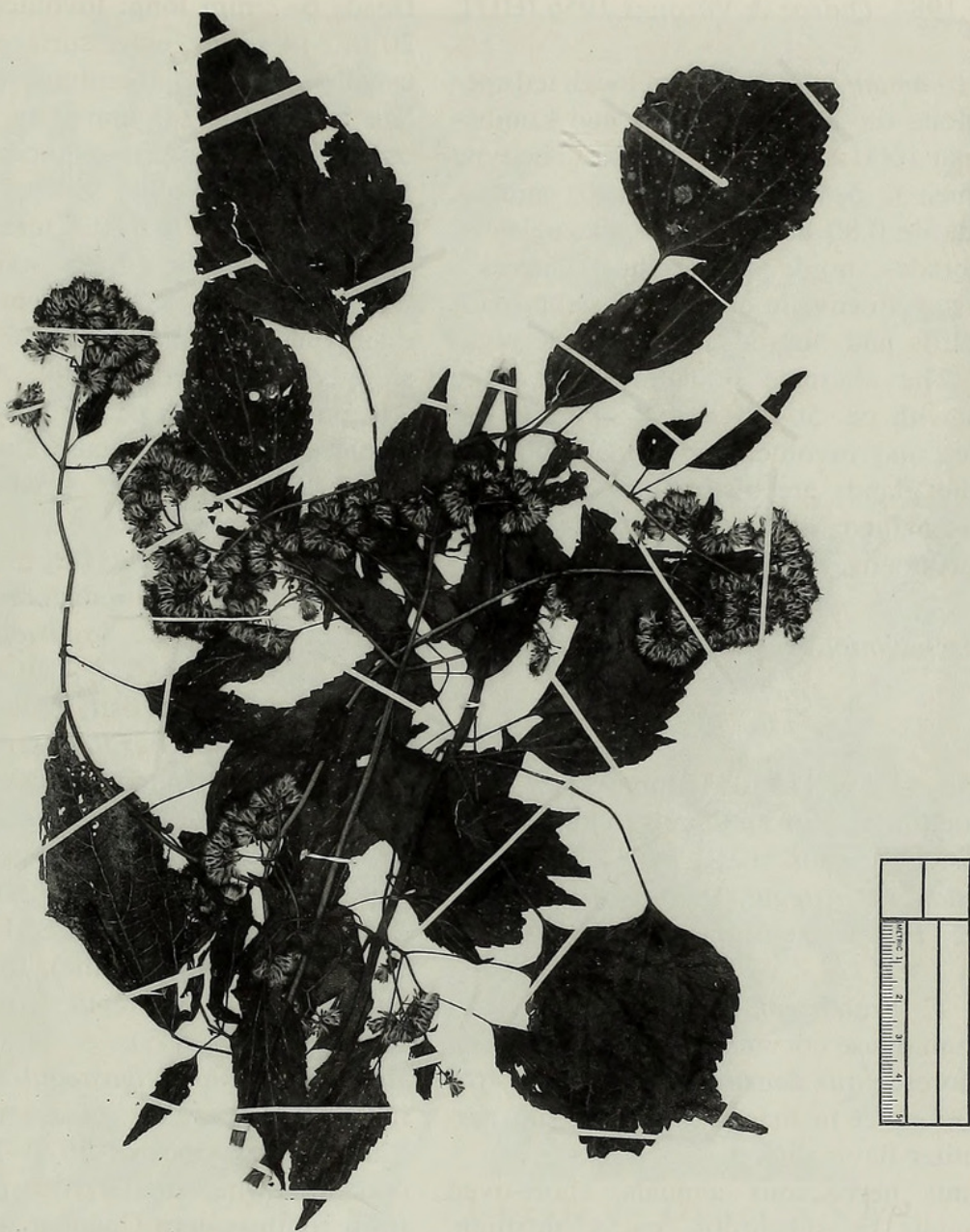
*Type*.—Peru: Depto. Piura: Pcia. Huanabamba: La Beatita, 1200 m, 20 Apr 1986, *Quiroz 1868* (holotype US, isotype HUP).

A speciebus pluribus in floribus ca. 50 in capitulo et in pedunculis dense stipitato glanduliferis distincta.

Plants herbaceous, to 0.8 m tall, vegetative branches usually alternate, usually ascending at a 45–60° angle; stems puberulous to hirsutulous. Leaves mostly alternate or subopposite, less often opposite; petioles mostly 0.7–2.5 cm long; blades ovate, mostly 2–7 cm long, 1.5–4.7 cm wide, base broadly obtuse to subtruncate, margins serrulate to serrate with usually 7–9 teeth on each side, apex slightly acuminate, surfaces sparsely to densely pilosulous, abaxial surface with dark often obscure, glandular dots; triplinervation from small or large basal acumination of blade. Inflorescences multi-branched with rather few heads per branch; peduncles mostly 0.2–2.0 cm long, densely covered with small-tipped stipitate glands. Heads 7–8 mm long; involucre bracts 14–16 in ca. 4 series, somewhat reddish, often with minute, stipitate glands abaxially, outer few bracts subulate, 2–3 mm long, the inner ones oblong, to 6 mm long, apices short-acute, erose-margined. Florets ca. 50–56; corollas lavender to bluish, ca. 3.8 mm long, basal tube ca. 0.8 mm long, throat ca. 2.5 mm long, with little or no colored resin in ducts, lobes ca. 0.5 mm long, few or no hairs externally. Achenes 1.5–2.3 mm long, ribs yellow, with long setulae; pappus 3.0–3.5 mm long, bristles contiguous at base.

*Paratypes*.—Peru: Depto. Lambayeque: 26 km E of Olmos, steep roadside cliffs, almost exactly on border with Depto. Piura, 1000 m, 10 Jun 1978. *Gentry, Dillon, Aronson & Diaz 22593* (F, MO, US, USM). Prov Ferreñafe, Oxapampa (camino a Incahuasi),





PERU

Asteraceae  
Ageratum  
*Fleischmannia marginata* (Poepp.) K. R.  
AMAZONAS, Bongará Prov, Shillac, north  
by trail from Pedro Ruiz (78°01'W,  
5°49'S) 2300m.  
Primary high montaine rainforest, moist.  
Habitat analysis for Yellow-tailed  
Woolly Monkey study.

Clamoring herb; flowers lavender.

UNITED STATES

3247595

*Fleischmannia petiolata* H. Rob.  
Holotype

NATIONAL HERBARIUM

U. S. National Herbarium, det. H. Robinson 2000

31 Aug-2 Sep 1993  
D. M. Smith & Sergio Vasquez S. 4912  
MISSOURI BOTANICAL GARDEN HERBARIUM (MO)

Fig. 12. *Fleischmannia petiolata* H. Rob., holotype, Smith & Vasquez 4912 (US).



4 Feb 1984, Quiroz & Vázques 1956 (HUT, US).

*Fleischmannia quirozii* is a localized species along the border of Piura and Lambayeque at 1000–1200 m elevations. The type specimen is described as “Hierba annual, erguida de 0.80 m de porte, cabezuelas lilas-moradas, borde de caminos, laderas”. Other specimens are cited from steep roadside cliffs and “borde de canales de regadío”. The alternate branching, the large heads with ca. 50–56 florets, and the peduncles and involucre with many minute stipitate glands are distinctive. The specimen is named for the collector of two of the specimens, S. Llatas Quiroz.

*Fleischmannia sagasteguii* H. Rob., sp. nov.

Fig. 14

*Type*.—Peru: Depto. Lambayeque: Abra de Procula, road from Olmos to Pucará, km 45 east of Olmos, 1950 m, 13 Jul 1986, Plowman, Sagástegui, Mostacero, Mejía & Peláez 14283 (holotype US, isotypes F, HUT).

Ad *F. pratensem* in inflorescentiis aliquantum dense corymbiformibus similia sed in inflorescentiis densioribus et capitulis robustioribus et in marginis acheniarum persistentiter flavis differt.

Plants herbaceous annuals, short-lived perennials or subshrubs, ca. 1 m high, branches spreading at a 45–75° angle; stems glabrescent, branches sparsely to densely puberulous. Leaves opposite; petioles 0.4–2.3 cm long, broad at base; blades ovate to triangular, mostly 2.5–6.5 cm long, 1.0–4.2 cm wide, bases truncate to broadly obtuse, margins coarsely serrate or crenate-serrate, with 7–15 teeth on each side, apex acute, adaxial surface sparsely to densely pilose, abaxially with few to many hairs usually mostly on veins, with yellowish glandular dots; triplinervation from base of blade. Inflorescences terminal on primary stems and long branches, in densely corymbiform clusters; peduncles 2–5 mm long, puberulous.

Heads 6–7 mm long; involucre bracts ca. 20 in 3–4 series, outer surfaces sparsely to usually densely puberulous, outer lanceolate bracts 1.5–3.0 mm long, inner bracts oblong, ca. 5 mm long, apices obtuse. Florets ca. 20; corollas violet, 3.0–3.3 mm long, basal tube 0.5–0.7 mm long, throat 2.0–2.3 mm long, ducts sometimes with reddish resin, lobes ca. 0.5 mm long, with many hairs externally; style branches linear, slightly broadened distally. Achenes 1.5–2.0 mm long, with persistently yellow ribs, setulose with binary hairs along ribs; pappus 2.0–2.5 mm long, bristles narrow at base, slightly separated.

*Paratypes*.—Peru: Depto. Cajamarca: Pcia. Contumazá: Alrededores de Trinidad, 1950 m, 6 Jul 1977, Sagástegui, Alvitez & Mostacero 8940 (HUT, US). Depto. Lambayeque: ca. 70 km östl. Olmos, 20°S, 2035 m, 26 Dec 1970, Ellenberg 3695 (US). Lambayeque, Huaratara, 2000 m, 5 Jul 1986, Quiroz 1969 (HUP, US). Depto. Piura: Pcia. Huancabamba: Abra de Porculla, entre Olmos y Jaén, 2100–2200 m, 28 Jun 1959, Ferreyra 13736 (US, USM). El Lúcumo (Palambla - Yumbe), 1350 m, 13 Sep 1981, Lopez, Sagástegui, Lopez & Mostacero s.n. (HUT, US).

*Fleischmannia sagasteguii* occurs mostly in the Departments of Lambayeque and Piura at elevations of 1920–2200 m, with one somewhat distinctive specimen seen from southwestern Cajamarca. Habitats are cited as dry forest along presently dry rocky quebrada, “quebrada boscosa,” “monte bajo,” “Teilimmergr. mässig xeromorpher montaner Wald mit mesomorphem Unterwuchs,” and “cercos, borde de caminos, laderas, monte perennes.” Habit is cited as “herba anual, erguida o postrada, de hasta 1.2 m de largo,” or as “sufrutice” in the Cajamarca specimen. The involucre bracts are usually very pubescent but are nearly glabrous in the Cajamarca specimen. The tight, often isolated clusters of heads seem distinctive. The species is named for the well-known botanist at the Universidad Nacional de Trujillo and a collector of the





FLORA PERUANA

HERBARIUM DEL PERU (HUP)

ASTERACEAE, *Fleischmannia quirozii* (B.L. Robinson) K+R

Det por \_\_\_\_\_

N. Vulgar \_\_\_\_\_

Hábito: Hierba anual, cespitosa de 0.30 m. de porte, cabezuelas lilas-moradas.

Habitat: Orillas de caminos, laderas.

Procedencia: La Beata.

Prov.: Huancabamba

Dpto.: Piura.

Altitud: 1200 m s.m.

Fecha: 20-01-36.

Leg.: S. Alfaro Quiroz

Nº 1308

3074427

*Fleischmannia quirozii* H. Rob.  
Holotype

NATIONAL HERBARIUM

U.S. National Herbarium det. H. Robinson 2000

Fig. 13. *Fleischmannia quirozii* H. Rob., holotype, Quiroz 1868 (US).





Fig. 14. *Fleischmannia sagasteguii* H. Rob., holotype, Plowman, Sagástegui, Mostacero, Mejía & Peláez 14283 (US).





Fig. 15. *Fleischmannia vargasii* H. Rob., holotype, Gentry, Revilla, Castaneda & Daly 19418 (US).



type and two paratypes, Abundio Sagástegui Alva.

*Fleischmannia vargasii* H. Rob., sp. nov.  
Fig. 15

*Type*.—Peru: Depto. Cuzco: shrubby slope above Machu Picchu, along old Inca trail, 2600 m, 17 Apr 1977, *Gentry, Revilla, Castaneda & Daly 19418* (holotype US, isotypes F, US, USM).

A speciebus pluribus in inflorescentiis thyrsoideis et incapitulis minutis et in bracteis involucri pallidis gradatis et omnino obtusis differt.

Plants herbaceous, scrambling, to 0.8 m high, branching at a 80–90° angle; stems hirtellous, greenish to brownish. Leaves opposite; petioles mostly 0.5–2.5 cm long; blades ovate, mostly 2.5–6.5 cm long, 2.0–4.5 cm wide, base rounded to subtruncate, margins crenate-serrate, with 5–10 teeth on each side, apex short-acuminate, adaxial surface densely pilosulous to velutinous, abaxially densely pilosulous mostly on veins, with dense glandular dots; triplinervation from base or basal acumination of blade. Inflorescences terminal, usually on long, thyrsoid lateral branches, with small corymbiform clusters of rather crowded heads; peduncles 1–4 mm long, hispidulous. Heads mostly ca. 4 mm long; involucre bracts ca. 20, in ca. 4 series, pale greenish to pale brownish, gradate, ovate to oblong, 0.5–3.0 mm long, all obtuse to rounded, margins broadly scarious, mostly glabrous abaxially. Florets 12–19; corollas white, 2.0–2.2 mm long, basal tube ca. 0.2 mm long, throat 1.3 mm long, without colored resin in ducts, lobes ca. 0.3 mm long, with many short hairs externally; style branches linear. Achenes 1.7–2.0 mm long, with persistently yellow ribs, scabrous with few small spiculiform binary hairs on ribs; pappus ca. 1.8 mm long, bristles scarcely broadened at base, subcontiguous.

*Paratypes*.—Peru: Depto. Cuzco: Pcia.

Convención, Samagaro?, 900 m, 18 May 1963, *Vargas 14473* (CUZ, US). Rosario Mayo, 1200 m, 12 May 1968, *Vargas 20689* (CUZ, US).

*Fleischmannia vargasii* is known only from the Department of Cuzco at 900–2600 m in elevation. The species is particularly distinctive in the small size of the heads and the orderly progression of short to long, blunt, pale bracts in the involucre. The leaf tips show considerable variation from short-acute to long-acuminate.

The species is named for the collector of two of the specimens, C. Vargas C. of Cuzco.

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