

NEW SPECIES OF MALVACEAE FROM SOUTH AMERICA

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The examination of recent collections from South America has brought to light several new species of Malvaceae, which are here described.

Briquetia brasiliensis Fryxell, sp. nov.—TYPE: BRAZIL. Rondônia: Mpio. Ariquemes, Mineração, Mibrasa, Setor Alto Candeias, Km 128, 10°35'S, 63°35'W, sudoeste de Ariquemes, capoeirão proximo de Igarapé, 13 May 1982, *Texeira, Fife, McFarland, Mota, dos Santos, Gomes & Nelson 423*, (holotype: INPA!; isotypes: K! NY! US! pf!).

Frutex caulibus heterotrichis; foliis late ovatis cordatis subintegris; inflorescentiis paniculatis terminalibus; calycibus 2–3 mm longis; petalis 3–4 mm longis glabris, interdum persistentibus; fructibus minute pubescentibus, mericarpiis per endoglossum in 2 cellulis divis, utraque 1-seminalis, cellula inferna constricta, cellula superna bulbosa.

Shrub to 2 m tall, the stems pubescent with simple and 2–3-armed stellate hairs ca. 1 mm long and with understory of minute stellate hairs, the longer hairs tending to be lost on older stems and absent in the inflorescence. Leaf blades up to 13 cm long, almost as wide (progressively smaller upward), ovate, deeply cordate, obscurely crenate to entire, acute or acuminate, palmately 7-nerved, discolorous, sparsely and minutely stellate-pubescent above, more densely so beneath; petioles subequal to blades on lower leaves, progressively shorter upward, with pubescence like that of stems; stipules 1–3 mm long, subulate. Inflorescences terminal and paniculate, mostly rising above the leaves; pedicels 2–5 mm long; calyx 2–3 mm long, ca. half-divided, minutely stellate-pubescent; petals 3–4 mm long, orangish, glabrous throughout (including the margins of claw), sometimes persistent in fruit. Fruits ca. 5 mm in diameter (basally constricted), minutely pubescent, the hairs bifurcate or stellate, the arms distally oriented; mericarps 5, ca. 4.5 mm long, divided into 2 cells by an endoglossum, the lower cell constricted, 1-seeded, the upper cell bulbous, 1-seeded.

The new species has fruits very similar to those of *Briquetia spicata* (cf. Fryxell, 1988, fig. 32) but differs markedly in the form of the inflorescence, which is an open panicle in *B. brasiliensis* and is narrowly spiciform in *B. spicata*. The two species also differ in stem pubescence.

Current studies of Ecuadorean Malvaceae preliminary to preparing a treatment of the family for the *Flora of Ecuador* have brought to light a previously undescribed species of *Nototriche*. The genus *Nototriche* includes approximately 100 species that occur in Andean páramo habitats, mostly at elevations of 3500 m to well over 5000 m, from Ecuador to Chile, Bolivia, and northwestern Argentina.

The morphology, phytogeography, and systematics of the genus are well described in studies by Hill (1906, 1909), and the genus has received subsequent study by Burt and Hill (1948), Hochreutiner (1956), and Krapovickas (1950, 1951, 1953, 1957a, 1957b, 1973), among others.

Nototriche ecuadoriensis Fryxell, sp. nov.—TYPE: Ecuador. Cotopaxi/Napo: Road San Miguel (Salcedo)-Puerto Nuevo (Napo), 29 km from San Miguel (Cerro Verde Filo); bunch grass páramo and rocky escarpment (78°25'W, 0°59'S), 3950–4050 m, 1 Oct 1976, Øllgaard & Balslev 9929 (holotype: AAU!; isotypes: F! NY!).

Herbae perennes acaulescentes, laminis foliorum pinnatim divisis, utrinque glabris, perspersim ciliatis ad apices segmentorum foliorum, petiolis glabris, stipulis ad petiolum adnatis pro parte maxima longitudinis petioli, vaginam latam facientem quasi ubique glabram; floribus sessilibus in vaginis; calycibus glabris praeter manifeste ciliatis in marginibus lorum; petalis 12–15 mm longis, 3–5 mm latis; androeceo monadelpho columna ca. 4 mm longa; stylis ca. 7; fructus ignotis.

Acaulescent perennial herbs forming compact cushions a few cm above ground, the underground stems 8–12 mm in diameter, sparingly branched and merging imperceptibly into a stout rootstock, the leaf sheaths of previous years apparently not persistent. Leaf blades 8–12 mm long, 7–10 mm wide, pinnately divided, often secondarily so, the ultimate divisions 15–20 or more, with 1 to several cilia (ca. 1 mm long) at tip of each segment, otherwise glabrous; petiole 2–3 times length of blade, glabrous; stipules laterally adnate to the petiole for most of its length forming a yellowish laminar sheath 3–4 mm wide, the “free” tips of the stipules diverging for ca. 5 mm, lance-ovate, with a few cilia at apex, the whole petiolar-stipular sheath otherwise glabrous. Flowers subsessile on the sheath, inserted 2–3 mm below the divergence of the free stipule tips; involucre absent; calyx 10–11 mm long, yellowish, ca. half-divided, the lobes triangular, often purplish tipped (especially on midrib and margins), the margins prominently ciliate (hairs 1–1.5 mm long), the calyx otherwise glabrous; petals 12–15 mm long, 3–5 mm wide, “light violet” (drying blue-purple) with yellowish green base; staminal column ca. 4 mm long, slender, glabrous, yellowish, the purplish anthers subsessile at apex forming a subglobose anther mass; styles slightly exceeding anthers, ca. 7, glabrous, the stigmas clavate-capitellate. Fruits unknown. Fig. 1.

ADDITIONAL SPECIMENS EXAMINED: ECUADOR. Napo: Páramo de Papallacta, sector El Paso, 4060 m, planta creciendo en almohadilla, flor de color lila, 28 Oct 1984, *Fierro 33* (QCA). Pichincha: Slopes NW of N peak of Antisana, 4400 m, *Grubb et al. 578* (K, NY).

Species of *Nototriche* are generally characterized by having leaf blades that are densely tomentose on the upper surface and densely to sparsely pubescent to glabrous on the lower surface. This is in contrast to the condition generally characteristic of other Malvaceae, where the denser pubescence tends to be on the lower (rather than the upper) surface of the leaf. *Nototriche ecuadoriensis* is distinctive in *Nototriche* for having foliage that is glabrous, with the exception of a few cilia at the tips of the stipules and of the ultimate leaf subdivisions, and with ciliate margins of the calyx lobes. The upper (and lower) surfaces of the leaves are quite glabrous in *N. ecuadoriensis*, as are the petioles and leaf sheaths. Only *N. pseudoglabra* A. W. Hill from southern Bolivia and *N. glabra* Krapovickas from Argentina approach the

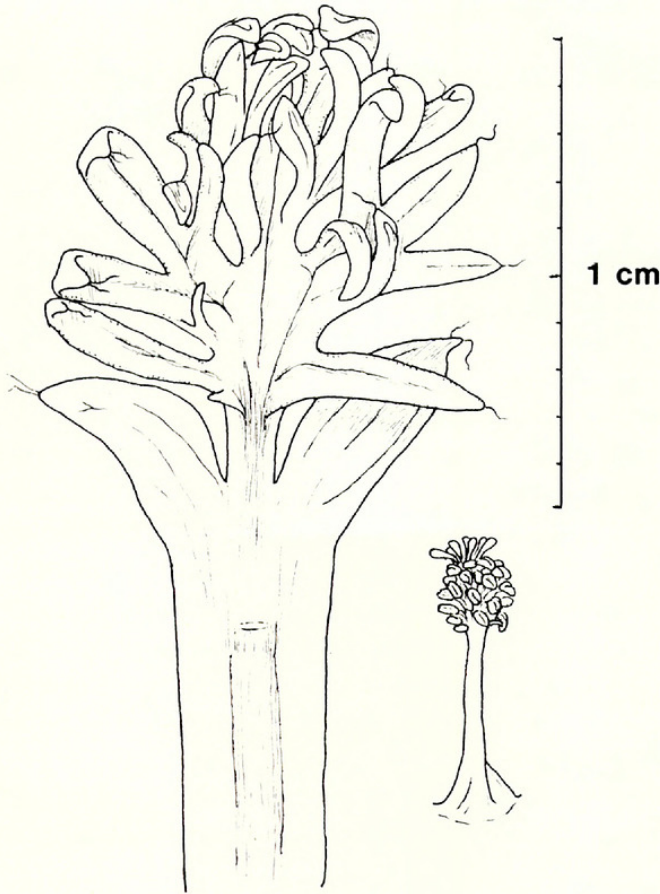


FIG. 1. *Nototriche ecuadoriensis*: leaf (adaxial view) and androecium (with emergent stigmas) (Øllgaard & Balslev 9929).

glabrous condition of the new species, and they differ in a number of characters and are geographically at the opposite end of the distribution of the genus.

The new species appears to have its closest affinity with *N. phyllanthos* (Cav.) A. W. Hill and *N. jamesonii* A. W. Hill, in both of which the upper surfaces of the leaf blades, petioles, and leaf sheaths are densely pubescent. Both are fairly widely distributed in Ecuador, whereas *N. ecuadoriensis* is known only from the collections cited above.

Pavonia falconensis Fryxell, sp. nov.—TYPE: VENEZUELA. Falcón: Cerro Piritu, 61 km E de Coro, cerca y al margen de carretera de tierra que pasa al E de la cumbre, 340–360 m, 24 Feb 1984, *Wingfield 12402* (holotype: MO!; isotypes: CORO! NY! pf!).

Frutex pilis recurvatis 0.1–0.2 mm longis dense atque pilis simplicibus 1 mm longis disperse vestitis; laminis foliorum ovatis usque 7 cm longis grosse serratis, petiolis usque 4.5 cm longis; pedicellis in axillis foliorum solitariis, quam petiolis brevioribus, floribus folium congruentem saepe excedentes; bracteolae involucellorum ca. 13 distinctis lanceo-linearibus ciliatis quam calyce ca. duplo longioribus; petalis glabris albidis maculis maroninis ad basem quam calyce aliquantum longioribus; fructibus oblatis 5–6 mm diametro subglabris vel ad apicem leviter pubescentibus.

Much-branched shrubs 1–2.3 m tall, the stems densely invested with minute (0.1–0.2 mm) recurved hairs, some glandular hairs, and scattered longer simple

hairs (ca. 1 mm long), the latter denser toward apex. Leaves ovate (well-grown leaves to 7 cm long, 5.5 cm wide, smaller upward), cordate, coarsely crenate-serrate, acuminate, palmately 7–9-nerved, glabrate above, minutely and sparsely stellate-pubescent beneath, somewhat discolored; petioles up to 4.5 cm long ($\frac{1}{3}$ – $\frac{2}{3}$ length of blade), with pubescence like stem; stipules 1–3 mm long, filiform, caducous. Pedicels 0.5 cm (or less) to 2.5 cm long, with pubescence like stems, solitary in the leaf axils, often crowded at apex of branches, the flower often exceeding the subtending leaf; involucellar bracts ca. 13, 10–12 mm long, 0.5 mm wide, lance-linear, distinct, hispid-ciliate (hairs 2–3 mm long) and glandular-pubescent (hairs 0.2 mm long); calyx 6 mm long, basally yellowish, distally green, more than half-divided, the lobes 3(–5)-veined, the veins more or less parallel, green with yellowish intercostal areas, ciliate, the hairs principally on margins and veins; petals 6–8 mm long, 4 mm wide, whitish with maroon basal spot and radiating veins, subelliptic or subrhomboidal, glabrous throughout; staminal column glabrous, pallid, ca. 4 mm long, the filaments 1 mm long, the anthers ca. 20, pale yellow, with a whorl of staminodes ca. 1 mm long at base of column; styles and stigmas 10, glabrous, pallid, slightly exceeding the androecium. Fruits 5–6 mm diameter, oblate, subglabrous or slightly pubescent apically, dehiscent both septicidally and loculicidally; mericarps 5, 1-seeded; seeds 2–2.5 mm long, minutely and sparsely pubescent, the hairs curled and more or less appressed. Fig. 2.

ADDITIONAL SPECIMENS EXAMINED: VENEZUELA. Falcón: Cerro El Caballo, 53 km E do Coro, 300 m, 26 Jan 1984, *Wingfield 11970* (CORO, MICH, pf); Fila Barigua, 22 km E de Coro, 1 km SE de Guaibacoa, ca. 350 m, 5 Feb 1984, *Wingfield 12157* (CORO, US, pf); Cerro Mampostal, 44 km E de Coro, ladera SE, entre San Francisco y San Juan, 200–260 m, 12 Feb 1984, *Wingfield 12255* (CORO, pf); S de Dos Bocas (sitio de represa), 200 m, 11 Feb 1977, *Steyermark & González 113,575* (VEN); Cerro Agua María, 75 km SE de Coro, lado N, sendero hacia el manantial, 100–170 m, 27 Feb 1984, *Wingfield 12423* (CORO, pf).

The specific epithet notes that the distribution of the new species is apparently confined to the state of Falcón in Venezuela, to the east and southeast of Coro within a radius of 75 km, at elevations of 100–360 m. According to the collectors' notes, it is relatively common in partial shade, especially on the margins of evergreen or semi-evergreen forest, often in association with *Abutilon pubistamineum* Ulbrich. According to R. Wingfield (pers. comm.) the flowers were seen open at least from 9:45 a.m. to about midday.

The new species cannot be satisfactorily keyed out in Gürke (1892); in Kearney's key to the South American species of *Pavonia* (Kearney 1958), it keys out to *P. laetevirens* R. E. Fries. In describing *P. laetevirens*, Fries refers to a group of species from Paraguay and central Brazil that includes *P. patuliloba* Hochreutiner, *P. vitifolia* Hochreutiner, *P. opulifolia* S. Moore, and *P. aspera* Hassler, to which Kearney (1958, p. 246, note 68) adds *P. subhastata* Triana & Planchon from Colombia. *Pavonia spinistipulata* Gürke from Brazil (Bahia) perhaps also belongs here. It is to this group that the new species belongs and from which it must be distinguished. *Pavonia falconensis* may be the only species of this group with staminodes at the base of the staminal column. The contrasting characters (not including the possible presence of staminodes, unknown for many of the species) are presented in the form of the following key:

1. Leaves simple (subrotund, ovate, or elliptic); corolla white (with or without a red center) or red.
2. Corolla 3 cm long, white and sometimes with a red center; leaves elliptic or suborbicular (Paraguay).

P. aspera.

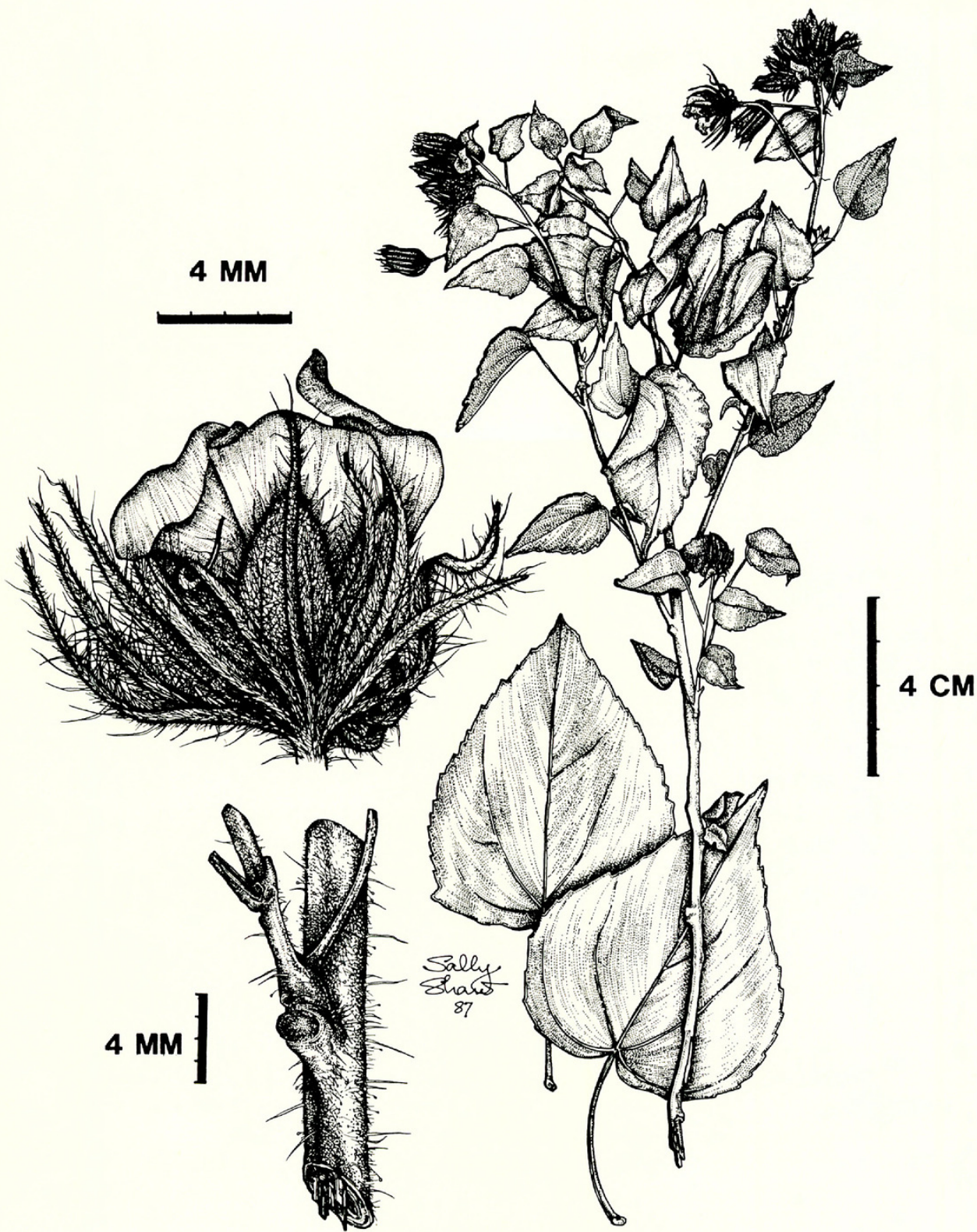


FIG. 2. *Pavonia falconensis*. Left, above: flower at anthesis; left, below: stem pubescence; right: flowering branch. (Wingfield 12157.)

- 2. Corolla 1–2.5 cm long, red or white with red center; leaves ovate.
- 3. Corolla 1 cm long, white with red center (Venezuela).
- 3. Corolla 2–2.5 cm long, red (Brazil: Bahia).
- 1. Leaves more or less angulate or lobed, ovate or hastate; corolla yellow.
- 4. Corolla 1–1.5 cm long.

P. falconensis.
P. spinistipulata.

5. Leaves 3–5-lobed or -angled, almost as broad as long; corolla 1 cm long (Brazil: Matto Grosso). *P. laetevirens.*
5. Leaves hastate, ca. twice [?] as long as broad; corolla 1.5 cm long (Colombia). *P. subhastata.*
4. Corolla 2–3 cm long.
6. Corolla 3 cm long or more, yellow tinged with red (Paraguay). *P. patuliloba.*
6. Corolla 1.5–2.5 cm long, yellow.
7. Stems stellate-tomentose; carpels 5–6 mm long (Brazil: Matto Grosso). *P. opulifolia.*
7. Stems sparsely strigillose; carpels scarcely 5 mm long (Paraguay, n. Argentina, Bolivia). *P. vitifolia.*

Kearney (1958, p. 246, note 67) suggests that *P. opulifolia* and *P. vitifolia* are not specifically distinct.

Pavonia insperabilis Fryxell, sp. nov.—TYPE: PERU. San Martín: environs of Chazuta Forest, in rank second growth, on red clay along Río Huallaga (6°36'S, 76°11'W), 300 m, 5 Apr 1986, *Knapp & Mallet 7018* (holotype: MO!; isotypes: F! TEX! plus ca. 7 duplicates distributed by MO).

Frutex caulibus seriebus densis pilorum plus minusve recurvorum atque pilis simplicibus dispersis; laminis foliorum ovatis vel subhastatis usque 8 cm longis, petiolis usque 5 cm longis, stipulis falcatis saepe recurvatis; pedicellis gracilis axillaribus scabridulis; bracteolis involucellorum 6 distinctis anguste ligulatis quam calycibus 2–3-plo longioribus; petalis luteolis 8–10 mm longis glabris praeter pubescentibus in unguibus; columna staminalis rudimentariis, filamentis 3–6 mm longis erectis; fructibus subglabris oblatis 4 mm diametro.

Shrub to 2 m tall, the stems with dense longitudinal rows of more or less curved or twisted hairs ca. 1 mm long, also with evenly scattered, spreading simple hairs that are somewhat longer. Leaves mostly 4–8 cm long, 1–4.5 cm wide (progressively smaller upward), subhastate to ovate, basally truncate, crenate, rounded-acute, palmately 5–7-nerved, the lower surface stellate-pubescent (the hairs 0.4–0.7 mm diameter, more prominent in the intercostal areas than on the veins), the upper surface sparsely and obscurely pubescent, the hairs smaller and deciduous; petioles 1–5 cm long, with scattered simple hairs and a dense row of curved or twisted hairs on adaxial side; stipules 3–7 mm long, 1–1.8 mm wide, falcate, acuminate, sparsely ciliate, often recurved; pedicels solitary in the axils (but the flowering branches much-branched), 1–3 cm long, slender, scabridulous; involucellar bracts 6, distinct, 10–12 mm long, 0.5 mm wide, narrowly ligulate (2–3 times as long as calyx), prominently ciliate, the hairs 1.5–2 mm long; calyx 3–5 mm long, sparsely ciliate, ca. half-divided, the lobes acute to acuminate; petals 8–10 mm long, pale yellow, externally pubescent in bud, minutely pubescent on claw internally, otherwise glabrous; staminal column rudimentary (1–2 mm long), divided distally into ca. 20 erect filaments 3–6 mm long; style ca. 7 mm long, glabrous, dividing distally into 10 branches 1–2 mm long, each with a capitellate stigma. Fruits oblate, ca. 4 mm diameter, subglabrous, more or less enclosed by calyx. Fig. 3.

The new species shows a superficial resemblance to *Pavonia alba* Seemann but probably has a closer alliance to *P. paniculata* Cav. and *P. subhastata* Triana & Planchon. It is distinctive for its rudimentary staminal column with relatively long filaments, its prominent involucler, and its distinctive stem pubescence.

Urocarpidium stipulatum Fryxell, sp. nov.—TYPE: PERU. Cajamarca: Las Chirimoyas, above San Benito (NE of Trujillo), 1400 m, trailside in moist for-



FIG. 3. *Pavonia insperabilis*. Left: flowering and fruiting branch, with inset of stipules and stem pubescence; center: flower at anthesis; right: flower bud and fruit. (Knapp & Mallet 7018.)

ested area, 2 Apr 1987, Burandt, Keil & Sagástegui 2333 (holotype: F!; isotypes: USM-fide Burandt, pf!).

Herba vel suffrutex subglaber; laminis foliorum plerumque divaricate trilobatis glabris; stipulis late ovatis sessilibus ciliatis ad marginem; inflorescentiis cincinnos 3–6-flores; involucellis trimeris; lobis calycis lanceolatis glabris praeter 1–2 setis ad apicem unusquisque; fructibus glabris oblatis 4 mm diametro, mericarpiis 12–15 dorsaliter rugosis.

Herb or subshrub up to 60 cm tall, the stems green, glabrous or nearly so. Leaf blades mostly 4–7 cm long, sometimes ovate but usually divaricately 3-lobed, basally truncate, serrate, acute, palmately 5-lobed, concolorous, glabrous above and beneath; petioles 2–3.5 cm long, adaxially ciliate, the hairs 1–2 mm long, otherwise glabrous; stipules 8 mm long, 5 mm wide, broadly ovate, sessile, entire, acute or acuminate, marginally ciliate, the hairs 1.5–2 mm long (otherwise glabrous), persistent. Inflorescences 3–6-flowered helicoid cymes in the axils of the upper leaves (shorter than subtending leaves), the peduncle adaxially ciliate; pedicels 2–3 (–8) mm long, bracteate, essentially glabrous; involucler trimerous, the involucellar bracts 4 mm long, 0.5 mm wide or less, narrowly lanceolate, inserted at base of calyx, glabrous except often with a single seta (1.5 mm long) at apex of each; calyx 5 mm long, basally yellowish, more than half divided, the lobes lanceolate-acuminate, glabrous except for 1 or 2 setae (1.5 mm long) at tip of each lobe; corolla “violet-pink” (drying purplish). Fruits oblate, 4 mm diameter, glabrous; mericarps 12–15, dorsally rugose, the prominences of adjacent mericarps interlocking in fruit; seeds solitary. Fig. 4.

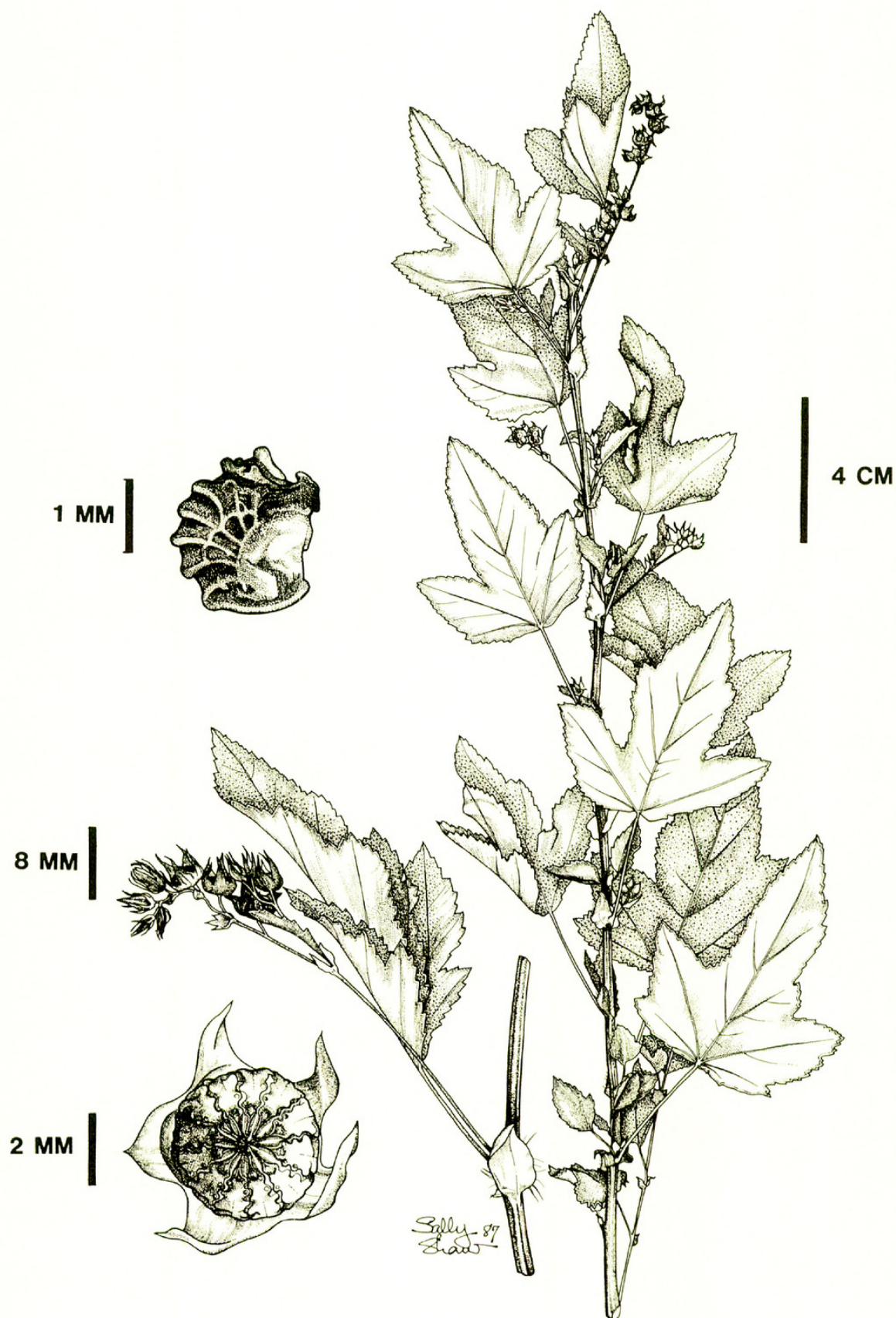


FIG. 4. *Urocarpidium stipulatum*. Left, above: individual mericarp; left, center: individual inflorescence with subtending leaf; left, bottom: fruit, from above; right: flowering and fruiting branch. (Burandt et al. 2333.)

Urocarpidium stipulatum is distinctive for its prominent stipules, as the specific epithet indicates. It shares this trait only with *U. chilense* (Braun & Bouché) Krapovickas (= *Malvastrum hinkleyorum* I. M. Johnston), from which it can be distinguished by its greater stature and larger leaves, its longer pedicels, its lesser amount of pubescence (but longer cilia), and perhaps by corolla color and by occurring at higher elevation. The two species are otherwise similar and set apart from the remainder of the genus.

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