

STUDIES IN AMERICAN PLANTS, IV

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Studies in the family Gesneriaceae for the Flora of Guatemala resulted in the discovery of a few new species and, perhaps of more importance, led to a new evaluation of some close generic relationships, requiring the transfer of some species to other genera.

I wish to thank the curators of the U. S. National Herbarium and the New York Botanic Garden for their kindness in lending specimens, and especially to express my appreciation to Mr. Conrad V. Morton, of the U. S. National Herbarium, for his continued interest, cooperation, and helpful comments.

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ALLOPLECTUS Mart.

The difficulties in separating certain species of Alloplectus and Columnnea have been discussed by various authors, and in 1969, Dr. Wm. T. Stearn, in his paper, The Jamaican species of Columnnea and Alloplectus (Gesneriaceae), Bull. Brit. Mus. Bot. 4: 181-236, took an important step toward clarifying this situation by defining the two genera much more narrowly than has been done before. By restricting the corolla characters of Columnnea to those species with "a distinctly bilabiate red or yellow corolla, with the four upper (posterior) lobes fused and extended into a galea, the lower (anterior) lobe narrow and bent downwards...", and by placing in Alloplectus those species with the corolla limb "regular or almost so with five short rounded lobes" [Sect. Stygnanthe (Hanst.) Hanst. and Sect. Collandra (Lem.) Hanst.] he has provided us, at least for the Guatemalan representatives of these genera, with a practical solution to an old and complicated problem. It seems to me not only convenient but highly desirable to follow his suggestions instead of clinging to previous vague generic descriptions, especially since the fruits of many species remain unknown. In my forthcoming treatment of the Gesneriaceae for the Flora of Guatemala, I am reinstating Alloplectus calochlamys Donn.-Sm. (Columnnea calochlamys Morton), and propose the following new combinations:

ALLOPLECTUS VINACEUS (Morton) D. Gibson, comb. nov.
Columnnea vinacea Morton, Contr. U. S. Nat. Herb. 29: 38. 1944
(type from Sololá, Guatemala, Steyermark 47408).

ALLOPLECTUS VIRIDIS (Morton) D. Gibson, comb. nov.

Columnea viridis Morton, Contr. U. S. Nat. Herb. 29: 38. 1944
(type from Alta Verapaz, Guatemala, Goll 187).

DRYMONIA Mart.

DRYMONIA PSILA D. Gibson, sp. nov.

Frutices epiphyticae interdum repentes, rami glabri; folia late elliptica vel oblanceolata breviter acuminata integra glabra, 9-25 cm. longa, basi cuneata obliqua; pedicelli 1-2, glabri, 0.5-1 cm. longi; bracteae parvae, inconspicuae, caducae; calyx glaber, lobis 5, oblongo-ovatis vel lanceolatis acutis 1-2 cm. longis; corolla alba vel cremoricolor, interdum purpureo-maculata, glabra, 3-3.5 cm. longa, limbus obliquus, lobis 5, crenatis, lobus anticus plus minusve fimbriatus; antherae oblongae cohaerentes inter se, basaliter dehiscentes; ovarium superum glabrum; stigma stomatomorphum; capsula ignota.

Shrubby, sometimes scandent epiphytes, glabrous throughout, the stems more or less quadrangular, often red or purplish; leaves on petioles 1-3.5 cm. long, those of a pair subequal or unequal, the blades coriaceous, broadly elliptic to oblanceolate, mostly 9-25 cm. long, short-acuminate, cuneate and often oblique at the base, glabrous on both surfaces, paler beneath, margins entire, lateral veins 5-7 pairs; pedicels 1-3, glabrous, 0.5-1 cm. long; bracts small and inconspicuous, linear-lanceolate, caducous; calyx glabrous, accrescent, the 5 segments unequal, one considerably smaller than the others, oblong-ovate to lanceolate, acute, 1-2 cm. long; corolla white or cream-colored, sometimes marked with purple, glabrous, 3-3.5 cm. long, the tube a little saccate at the base, ampliate above, the limb oblique, the 5 lobes more or less rounded, crenate, the anterior one more or less fimbriate; anthers oblong-linear, about 3 mm. long, united face to face, dehiscent basally, the pores uppermost until the pollen is shed; ovary superior, glabrous; stigma stomatomorphic; disk gland solitary; fruits unknown.

GUATEMALA: Izabal, Cerro San Gil, uppermost ridges and summit, 1,200-1,300 meters, Steyermark 41980, type (F), (US); Alta Verapaz, near the Finca Sepacuite, Cook & Griggs 469 (US).

Three species formerly placed in Alloplectus were found to have anthers typical of Drymonia, appearing sagittate at the base, and united by their inner faces with the pores (at the base of the thecae) uppermost until the pollen is shed; in addition, the corolla tubes of all of these species are ampliate upward, not contracted in the throat, and the corolla lobes are spreading, the limb oblique and more or less bilabiate. The following new combinations are therefore proposed:

DRYMONIA GUATEMALENSIS (Morton) D. Gibson, comb. nov.

Alloplectus guatemalensis Morton, Contr. U. S. Nat. Herb. 29: 37. 1944 (type from San Marcos, Guatemala, Steiermark 37403).

DRYMONIA MACRANTHA (Donn.-Sm.) D. Gibson, comb. nov.

Alloplectus macranthus Donn.-Sm. Bot. Gaz. 31: 117. 1901 (type from Cubilgüitz, Alta Verapaz, Guatemala, Tuerckheim 7642).

DRYMONIA OINOCHROPHYLLA (Donn.-Sm.) D. Gibson, comb. nov.

Alloplectus oinochrophyllus Donn.-Sm. Bot. Gaz. 54: 239. 1912 (type from Pansamala, Alta Verapaz, Guatemala, Tuerckheim 1080).

KOHLERIA Regel

KOHLERIA SKUTCHII Morton and Gibson, sp. nov.

Sect. Moussonia. Frutices graciles usque ad 2-3 m. alti; folia oblongo-ovata vel elliptico-oblonga, acuminata, serrata vel crenata, 12-25 cm. longa, basi rotundata aut subcordata; inflorescentiae axillares, pedunculo elongato, 7-9 cm. longo; bracteae obovatae, foliiformes, 10-15 mm. longae; calyx velutinus, lobis late ovatis vel obovatis acutis vel obtusis 4-5 mm. longis; corolla cinnabarina, lobis suborbicularibus pectinato-denticulatis; stigma stomatomorphum; capsula ignota.

Slender shrubs 2-3 m. tall, the stems and branches velutinous with multiseptate, reddish hairs; leaves opposite, on velutinous petioles 3-7 cm. long, the blades oblong-ovate to elliptic-oblong, mostly 12-28 cm. long, 5-13 cm. wide, acuminate, oblique and rounded to subcordate at base, densely velutinous to tomentose above, velutinous below, the margins serrate to crenate, the lateral veins 9-10 pairs; inflorescences axillary, the common peduncle elongate, 7-9 cm. long, velutinous, the pedicels usually 4, sometimes 3, velutinous, 3-4 cm. long, subtended by a pair of obovate, leaflike bracts 10-15 mm. long; calyx densely velutinous, the lobes broadly ovate to obovate, acute or obtuse, 4-5 mm. long; corolla erect in the calyx, 3.5-4 cm. long, the tube orange-red, velutinous outside, slightly dilated at the base but not saccate, more or less ventricose above, 10-15 mm. wide, the lobes yellowish, marked with red, 7-9 mm. long, suborbicular, the margins more or less pectinate-denticulate; stamens short-exserted, the filaments inserted on the base of the corolla tube, pubescent, dilated at base, the anthers initially connate, quadrate in outline; ovary densely villous; style pubescent; stigma stomatomorphic; disk annular, the glands much reduced, irregular and inconspicuous; capsule unknown.

GUATEMALA: Quezaltenango, 2,400 meters, Fuentes Georginas, near Zunil, Skutch 906, type (US). MEXICO: Chiapas, 2,585 meters, Pinabeto, Motozintla, Matuda 15430.

Probably most closely related to K. deppeana (Schlecht.

and Cham.) Fritsch and to K. elegans (Dcne.) Loesener, which differ in their smaller leaves (the blades mostly 6-15 cm. long), in their bracts (linear to very narrowly oblanceolate) and in their calyx lobes (triangular and acute to subulate at the apex in K. deppeana, linear to linear-lanceolate and attenuate to the apex or subulate in K. elegans).

NIPHAEA Lindley

NIPHAEA SAXICOLA (Brandegee) D. Gibson, comb. nov.

Napeanthus saxicola Brandegee, Univ. Calif. Publ. Bot. 6: 65. 1914 (type from Chiapas, Mexico, Purpus 6701).

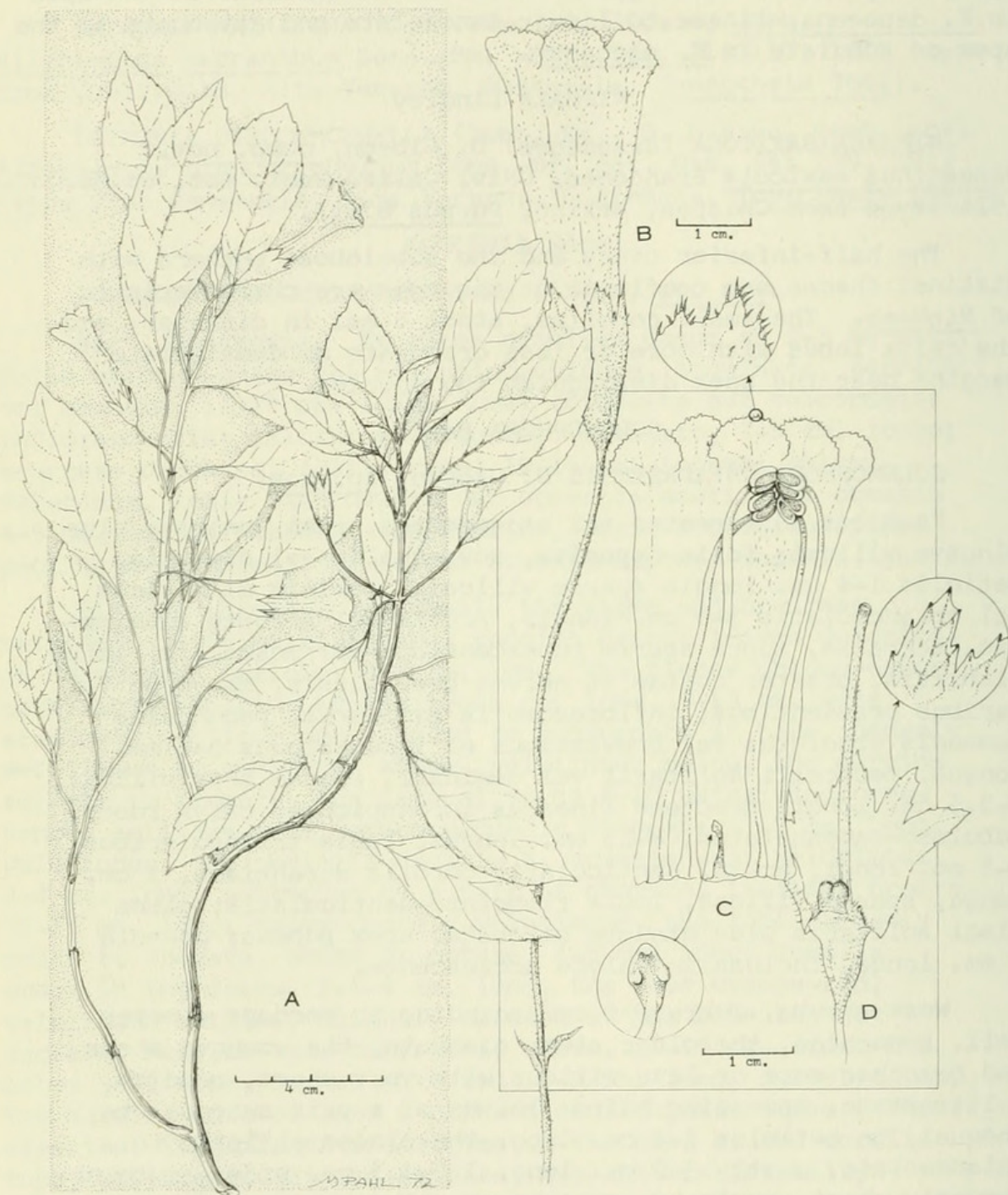
The half-inferior ovary and the subglobose anthers with distinct thecae not confluent at the apex are characteristic of Niphaea. The small corollas, about 6 mm. in diameter, and the calyx lobes with more or less crenulate or denticulate margins near the apex distinguish the species.

SOLENOPHORA Benth.

SOLENOPHORA CHIAPASENSIS D. Gibson, sp. nov.

Frutices subrepentes vel ascendentes, rami juniores plus minusve villosi; folia opposita, subaequalia vel disparia, petiolis 1-4 cm. longis sparse villosis, laminis ellipticis vel oblanceolatis 3-9 cm. longis, acutis vel abrupte acuminate, serratis, supra sparse pubescentibus vel scabellis, infra glabratis, praeter costas et nervos brevivillosis, nervorum 7-8 paribus praesentibus; inflorescentia axillaris, pedunculus communis obsoletus vel brevissimus et inconspicuus 3-8 mm. longus, pedicelli solitarii vel geminati, sparse brevivillosi, 2-3.5 cm. longi; bracteae lineares inconspicuae; calyx ruber, tubuloso-campanulatus, 8-15 mm. longus, lobis triangularibus, 4-5 mm. longi, acuti, denticulati; corolla aurantiaca, 3 cm. longa, sparse villosa, lobis fimbriato-denticulatis; glans disci solitaria plus minusve bilobata, apex pubens; capsula 8 mm. longa, inclusa in calyce accrescente.

Weak shrubs, subrepent or ascending to perhaps a meter tall, branching, the older stems glabrate, the younger stems and branches more or less villous with very short, reddish, multiseptate, spreading hairs; leaves of a pair subequal to unequal, on petioles 1-4 cm. long, the blades elliptic to oblanceolate, mostly 3-9 cm. long, 1.5-4.5 cm. wide, acute or abruptly short-acuminate, cuneate or attenuate to the base and often oblique, the margins serrate, sparsely pubescent to somewhat scabrous above, glabrous below except on costae and veins which are more or less short-villous, often red or reddish, the lateral veins 7-8 pairs; inflorescences axillary, the pedicels usually solitary, sometimes geminate, sparsely short-villous, 2-3.5 cm. long, subtended by a pair of small, inconspicuous, linear bracts, the common peduncle obsolete or if present, inconspicuous, 3-8 mm. long; calyx rose-red or



PLATE

Solenophora chiapasensis. A, habit; B, pedicellate flower; C, corolla opened to show stamens and staminodes; D, calyx opened to show bilobate disk gland and style.

reddish, tubular-campanulate, 8-15 mm. long, almost glabrous or thinly villosulous, more densely so near the base, the lobes triangular, mostly 4-5 mm. long, acute, denticulate; corolla orange, about 3 cm. long, sparsely villous or almost glabrous, the limb to 1.5 cm. wide, the lobes semiorbicular, 3-5 mm. long, the margins fimbriate-pectinate, usually conspicuously so, and often more or less ciliate; stamens about equalling the corolla or slightly exserted, the anthers 1.5-2 mm. long, united by their tips; disk gland solitary, large, very shallowly and irregularly bifid or bilobate, more or less pubescent, at least near the apex; style pubescent; stigma stomatomorphic; capsule about 8 mm. long, enclosed in the accrescent calyx; seeds broadly fusiform.

MEXICO: Chiapas, Municipio of Tenejapa, 9,100 feet, Breedlove 15187, type (F); Shilom Ton 1768; 6,600 feet, Breedlove 10741; 7,600 feet, Breedlove 6996.

Previously identified as S. tuerckheimii Donn.-Sm. which differs in its larger leaves (mostly 8-15 cm. long with 8-10 pairs of lateral veins), its subumbelliform to cymose inflorescences with peduncles mostly 3-8 cm. long, and its short calyx lobes (mostly 1-2 mm. long, very rarely to 3 mm.) that are very broadly and irregularly subtriangular and obtuse to nearly rounded rather than acute.

SOLENOPHORA MACULATA D. Gibson, sp. nov.

Frutices vel herbae suffruticosae; folia late elliptica vel ovato-elliptica 11-25 cm. longa acuminata, duplicato-serrata, supra sparse villosa, infra glabrata; pedunculus communis 1-2 cm. longus, pedicelli 2-3 cm. longi, bracteati; calyx 2-2.5 cm. longus, lobis triangularibus denticulatis; corolla lutea vel aurantiaca intus purpureo-maculata 2.5-3 cm. longa, tubo villosa; glans disci solitaria, plus minusve bilobata.

Shrubs or suffruticose herbs, simple or sparsely branched, the young stems reddish, usually villous, later more sparsely villous or glabrate; leaves of a pair subequal, on glabrous petioles 5-10 cm. long, the blades broadly elliptic or ovate-elliptic, mostly 11-25 cm. long, 8-14 cm. wide, short-acuminate, oblique at base, sparsely short-villous above, glabrate beneath, the costae and veins rose-red, the margins doubly serrate, the lateral veins 9-12 pairs; inflorescence axillary, the common peduncle 1-2 cm. long, sparsely pubescent or glabrate; bracts oblong-lanceolate or oblong-elliptic, 0.5-1 cm. long; pedicels glabrous, 2-3 cm. long; calyx suffused with rose or maroon, sparsely villous near the base, glabrous above, 2-2.5 cm. long, the triangular lobes unequal, 2-4 mm. long, more or less denticulate; corolla 2.5-3 cm. long, deep yellow or orange-yellow, spotted or striped with maroon within, the tube erect,

ampliate above, about 1 cm. broad below the lobes, not constricted, villous outside, the lobes about 4 mm. long, irregularly undulate; stamens exserted, the anthers about 2 mm. long, united by their tips; style exserted; disk gland solitary, more or less bilobate.

GUATEMALA: Between Todos Santos and Finca El Porvenir, middle slopes of Volcán Tajumulco, San Marcos, 1,300-3,000 meters, Steiermark 36992, type (F).

This species may be distinguished from the other large-leaved species in our area by its much shorter corollas. It is similar in many ways to S. pirana Morton, but that species has longer peduncles (commonly 5-10 cm. long), and the corollas of S. pirana are not only longer (4-5 cm.) but are not spotted nor marked within.

SOLENOPHORA OBLIQUA Denham and Gibson, sp. nov.

Frutices vel arbores debiles, usque ad 6 m. altae, rami sparse pubescentes vel glabrati; folia opposita, petiolis glabris, 3-12 cm. longis, laminis 14-30 cm. longis, oblongo-ovatis vel elliptico-oblongis acuminatis vel acutis duplicatis, serratis, supra sparse pilosis, infra glabratis vel glabris; inflorescentia cymosa, pedunculus communis ad 2 cm. longus, pedicelli 0.5-3 cm. longi, bracteati; calyx glaber, 3.5-4 cm. longus, plus minusve bilabiatus urceolatus, lobis denticulatis; corolla 6.5-7.5 cm. longa, glabra aurantiaca, limbus ca. 3 cm. latus, lobi intus purpureo-maculati, fimbriato-denticulati; glans disci solitaria bilobata, pubens; calyx multo longior quam capsula.

Shrubs or weak trees to 6 m. tall, the stems and branches glabrate or sparsely, bifariously pubescent with multiseptate hairs; leaves opposite, subequal, the petioles essentially glabrous, mostly 3-12 cm. long, the blades oblong-ovate to elliptic-oblong, acuminate or acute, cuneate or rounded at the base and usually very oblique, mostly 14-30 cm. long, 7-17 cm. wide, sparsely pilose above, nearly glabrous beneath, the margins doubly serrate, the lateral veins 10-14 pairs; inflorescences axillary, cymose, the common peduncle 1-2 cm. long, glabrous (sometimes the flowers solitary, the peduncle then much reduced and inconspicuous), pedicels 0.5-3 cm. long, glabrous, bibracteate, the bracts leaflike, mostly 2-3 cm. long, sometimes caducous in age; calyx glabrous, brownish or green with orange-brown stripes, 3.5-4 cm. long, accrescent, 3-4 times longer than the ovary, conspicuously urceolate in bud, the limb narrowly contracted, oblique, more or less bilabiate, the 5 lobes irregular, short, 3-8 mm. long, triangular to lanceolate, appearing irregularly denticulate but the lobules actually rounded and obtuse, sometimes minutely papillate within, the tube in anthesis becoming deeply cleft on one side for about 2/3 of its length, the

calyx then appearing narrowly tubular-campanulate; corolla 6.5-7.5 cm. long, glabrous or nearly so, erect in the calyx, yellowish-orange to reddish-orange outside, deep yellow to orange and sometimes marked with maroon within, the tube gradually ampliate, the limb somewhat oblique, about 3 cm. wide, the 5 lobes broadly suborbicular, spotted with purple or maroon within, the margins rounded and more or less fimbriate-pectinate; stamens 4, didynamous, short-exserted, the glabrous filaments inserted on the base of the corolla tube, the anthers about 3 mm. long, initially united by their tips, the thecae oblong, fully dehiscent; a staminode usually present; ovary inferior; style densely pubescent; stigma stomatomorphic; disk gland solitary and usually deeply bilobate, or 2 glands connate at the base, pubescent; capsule far surpassed by the calyx tube, rupturing irregularly near the middle when mature, containing numerous, minute, reddish-brown, shining, ellipsoidal to fusiform seeds.

GUATEMALA: Quezaltenango, western slopes of Volcán Zunil, opposite Santa María de Jesus, alt. 1,500 m., Steiermark 35182, type (F); between San Martín Chili Verde and Colomba, alt. 1,800 m., Standley 85478 and 85523; El Pocito, south of San Martín Chili verde, on road to Colomba, alt. about 2,200 m., Standley 85049; between Quebrada Chicharro and Montaña Chicharro, on southeast-facing slope of Volcán Santa María, alt. 1,300-1,400 m., Steiermark 34329. Chimaltenango, Johnson 1785. San Marcos, wet mountain forest near Aldea Fraternidad, west-facing slope of the Sierra Madre Mountains, alt. 1,800-2,400 m., Williams, Molina, & Williams 26209 and 26251.

Differs from S. purpusii Brandegees in its longer, more narrow, urceolate calyx.

SOLENOPHORA TOUCANA Denham and Gibson, sp. nov.

Frutices usque ad 4 m. altae, rami et petioli plus minusve pilosi; folia opposita oblongo-ovata vel oblongo-elliptica, 16-30 cm. longa acuminata, duplicato-serrata, supra sparse vel dense pubescentia vel pilosa, infra pilosa non nisi in costis et nervis tantum; inflorescentia cymosa, pedunculus communis ad 5 mm. longus, pedicelli 5-15 mm. longi, bracteati; calyx campanulatus, 1.5-2.5 cm. longus, pilosus, fere truncatus, lobi denticulati; corolla aurantiaca 5.5-7 cm. longa, pilosa, limbus 3-3.5 cm. latus, lobi intus rubro-maculati fimbriato-denticulati; glans disci solitaria bilobata pubens; capsula ignota.

Shrubs 2-4 m. tall, the stems and branches more or less pilose with multiseptate hairs; leaves opposite, subequal, on pilose petioles mostly 5-12 cm. long, the blades oblong-ovate to broadly oblong-elliptic, mostly 16-30 cm. long, usually acuminate, rarely acute, obliquely cuneate to nearly rounded at the base, sparsely or densely pubescent to pilose above,

pilose beneath on costae and veins, otherwise pubescent or glabrate, the margins doubly serrate, the lateral veins about 10 pairs; inflorescences axillary, cymose, the common peduncle seldom more than 5 mm. long, more or less pilose, the pedicels 5-15 mm. long, pilose, bibracteate, the bracts linear, ciliate; calyx urn-shaped in bud, becoming campanulate and 1.5-2.5 cm. long at anthesis, about 3 times longer than the ovary, accrescent, more or less pilose, densely so near the base, very shallowly lobate and appearing almost truncate, the margins unevenly denticulate; corolla orange outside, yellow within, 5.5-7.5 cm. long, erect in the calyx, the tube gradually ampliate, pilose outside, the limb 3-3.5 cm. in diameter, the lobes suborbicular, broadly rounded, spotted with red within, the margins minutely fimbriate-denticulate; stamens 4, didynamous, short-exserted, the filaments usually sparsely pubescent, inserted on the base of the corolla tube, the anthers united by their tips, the thecae fully dehiscent; staminode present; ovary inferior; the style exserted, densely pubescent; stigma stomatomorphic; disk gland solitary and usually deeply bilobate or 2 glands connate at the base, pubescent; capsule unknown.

EL SALVADOR: Depto. Chalatenango, banks of Río Sumpul at boundary between El Salvador and Honduras, alt. ca. 2,250 m., Tucker 1172, type (UC); (F, NY, US, PH). HONDURAS: Depto. La Paz, 2,100 m., Molina y Molina 14072; Depto. Ocotepeque, 1,800 m., Molina 22359. GUATEMALA: Depto. Guatemala, Palencia, 1,480 m., Morales 947.

The only large-leaved species in our area with a nearly truncate calyx limb.



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