

ADDITIONS AND CHANGES IN THE NEOTROPICAL
CONVOLVULACEAE—NOTES ON MERREMIA,
OPERCULINA, AND TURBINA

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SINCE 1978 we have been preparing the first portion of the family Convolvulaceae for *Flora Neotropica*. To date, we have examined 17 genera and about 120 species. During this study various nomenclatural changes and additions have been necessary (Austin & Staples, 1980, 1981; Staples & Austin, 1981); further work has revealed the need for additional changes, and several new taxa require comment.

Merremia Dennst. is represented in the New World by almost 30 species, and there are several others in the Old World. Division of this genus from both *Ipomoea* L. and *Operculina* Silva Manso has been debated for generations, but our own studies (Austin, 1979; Austin & Staples, 1980, 1981; Staples, 1979; Staples & Austin, 1981) have convinced us that they are best treated separately.

THE MERREMIA DIGITATA COMPLEX

On the basis of scant material (about ten sheets) available to him, O'Donell (1941) recognized three species of *Merremia*, *M. digitata* (Sprengel) H. Hallier, *M. contorquens* (Choisy) H. Hallier, and *M. ericoides* (Meisner) H. Hallier. Growth habit and the degree and nature of the pubescence were the criteria used to separate these taxa. During our investigations we have had the opportunity to examine a sample (106 sheets total) larger than O'Donell's, including several type specimens unavailable to him. We found that O'Donell's characters do not provide consistent differentiation between these three nominate species; pubescence, in particular, intergrades completely among them. These taxa all have linear-lanceolate bracts 1–5 mm long, and calyxes with unequal sepals having noticeably scarious margins—characteristics that distinguish this complex from other, similar Brazilian campo/cerrado merremias (*M. cissoides* (Lam.) H. Hallier and *M. flagellaris* (Choisy) O'Donell). We prefer to recognize these somewhat arbitrary units as varieties of *M. digitata*. These can be distinguished with the aid of the key presented below, which is followed by the synonymy and the necessary new combinations.

KEY TO TAXA OF THE MERREMIA DIGITATA COMPLEX

1. Plants erect; sepals and stems glandular. *Merremia digitata* var. *ericoides*.
1. Plants decumbent or trailing; sepals and stems stellate to glabrous.
 2. Leaves entire to lobed, if lobed the lobes over 1 cm wide.
 - *Merremia digitata* var. *elongata*.

2. Leaves digitately lobed, the lobes less than 1 cm wide.
 *Merremia digitata* var. *digitata*.

Merremia digitata* (Sprengel) H. Hallier, Bot. Jahrb. 16: 552. 1893, var. *digitata

- Gerardia digitata* Sprengel, Syst. Veg. 2: 808. 1825. TYPE: Brazil, *Sellow s.n.* (holotype, B 13788, presumably destroyed, photos at F, GH).
Ipomoea albiflora Moric. Pl. Nouv. Am. 114. t. 70. 1838; Choisy in DC. Prodr. 9: 352. 1845; Meisner in Martius, Fl. Brasil. 7: 230. 1869. TYPE: Brazil, apud Igreja Velha, *Blanchet 3330* (G-DC, n.v.; isotype, F).
Ipomoea albiflora var. *stricta* Choisy in DC. Prodr. 9: 352. 1845. TYPE: Brazil, Minas Gerais, Serro Frio, *Martius s.n.* (holotype, presumably at M, n.v., photo at FAU).
Ipomoea albiflora var. *divergens* Choisy in DC. Prodr. 9: 352. 1845. TYPE: Brazil, Minas Gerais, Formegas, *Martius s.n.* (holotype, presumably at M, n.v., photo at FAU).
Ipomoea albiflora var. *cinerea* Meisner in Martius, Fl. Brasil. 7: 231. 1869. TYPE: Brazil, Minas Gerais, Oct. [no year], *Riedel s.n.* (holotype, presumably at M, n.v.).

***Merremia digitata* var. *elongata* (Choisy) Austin & Staples, comb. nov.**

- Batatas tomentosa* var. *elongata* Choisy in DC. Prodr. 9: 337. 1845. TYPES: Brazil, Minas Gerais, *Martius 1282* (syntype, M); São Paulo, campis Sorocuba, *Lund s.n.* (syntype, presumably at M, n.v.).
Ipomoea contorquens Choisy in DC. Prodr. 9: 385. 1845. TYPE: Brazil, Minas Gerais, Serra de Cacarsa, *Martius 1007* (holotype, M).
Ipomoea maragniensis Choisy in DC. Prodr. 9: 351. 1845. TYPE: Brazil, Maranhão, in sepibus ad fluv Itapicuru, Maragniensis, May [no year], *Martius 80* (holotype, M).
Ipomoea contorquens var. α *vulgaris* Meisner in Martius, Fl. Brasil. 7: 286. 1869. TYPE: Brazil, *Sellow s.n.* (holotype, M).
Ipomoea contorquens var. β *heterophylla* Meisner in Martius, Fl. Brasil. 7: 286. 1869. TYPE: Brazil, São Paulo, in campis graminosis siccisque pr. Villa Franca et Ypanema, Mar.–Jun. [no year], *Riedel s.n.* (holotype, M, n.v.).
Ipomoea contorquens var. γ *simplicifolia* Meisner in Martius, Fl. Brasil. 7: 286. 1869. TYPES: Brazil, Minas Gerais, in arenosis montium Serra Frio pr. Tejuco, *Martius 1282* (syntype, M); prope Caldas, *Pohl s.n.* (syntype, M, n.v.), *Lund s.n.* (syntype, M, n.v.); in campis inter São Paulo et Jundiahy, *Lund s.n.* (syntype, M, n.v.).
Merremia contorquens (Choisy) H. Hallier, Bot. Jahrb. 16: 552. 1893.

***Merremia digitata* var. *ericoides* (Meisner) Austin & Staples, comb. et stat. nov.**

- Ipomoea ericoides* Meisner in Martius, Fl. Brasil. 7: 251. 1869. TYPE: Brazil, Goiás, prope São Felis ad Rio Trahitas, *Pohl s.n.* (isotype, F 874820).
Merremia ericoides (Meisner) H. Hallier, Bot. Jahrb. 16: 552. 1893; O'Donell, Lilloa 6: 505. 1941.

NEW TAXA OF MERREMIA

***Merremia repens* Austin & Staples, sp. nov.**

Herba; ramuli repentes, leviter stellati, trichomatibus cum 2 vel 3 ramis. Laminae palmatae, foliola 3 ad 5, ovato-lanceolata, petiolulata, 40–77 mm longa, 16–29 mm lata, stellata vel glabra. Cymae 2- vel 3-floribus, leviter

pubescentes; sepala inaequales, dua exteriora orbiculato-ovata, 9–11 mm longa, glabra; sepala interiora ovato-lanceolata, 12–18 mm longa; corolla infundibuliformis, 40–50 mm longa, glabra, rosea (vel alba?); filamenta inaequalia, ad 25 mm longa.

Herb; stems creeping or twining at tips, longitudinally striate, sparsely pubescent with simple trichomes and 2- or 3-branched stellate trichomes, reaching 2 m in length and 1.5–2 mm in diameter. Leaves palmately divided to base; petiole cylindrical, 13–30 mm long, striate, with sulcus on upper side, stellate-pubescent; petiolules 4–6 mm long, sulcate, pubescent like petiole; leaflets 3 to 5, entire, ovate-lanceolate, 40–77 by 16–29 mm, median one largest, sparsely stellate-pubescent to glabrous, nerves sunken above and prominent below, lower surface stellate-pubescent or with numerous round, blackish dots, the apex obtuse to acute, mucronulate, the base cuneate, decurrent on petiolule, the margin slightly revolute. Inflorescences axillary, 2- or 3-flowered cymes, sometimes with 2 secondary dichasia arising from same axil; rachis faintly striate, 55–65 mm long, exceeding petiole of subtending leaf, sparsely pubescent, at distal end bearing fleshy lobe or ring surrounding bases of 2 peduncles attached to it; peduncles 13–15 mm long, nearly glabrous, each terminating in pair of unequal bracts, with 1 attached higher than other; bracts scalelike, 1–2.5 mm long, with median ridge on outer surface, mucronate or terminating in fleshy spur, edges membranaceous; pedicels clavate, 17–22 mm long, smooth, glabrous except for few trichomes at level of bracts. Sepals entire, unequal, the outer 2 orbiculate-obovate, 9–11 by 6–7 mm, the inner 3 ovate-lanceolate, 12–18 by 7–8 mm, acute-attenuate at apex, truncate at base, glabrous, membranaceous; corolla funnelform, 40–50 by 30–35 mm, glabrous, rose-pink (or white); stamens unequal, 22–25 mm long, the filaments simple, glabrous, the anthers spirally dehiscent at anthesis, 5–7 mm long, the pollen smooth, 3-colpate; ovary not seen, the style simple, filiform, 20–21 mm long, the stigma 2 mm in diameter, 2-lobed, lobes globose. Fruits and seeds unknown.

TYPES: Brazil, Minas Gerais, Cerra do Cipó, km 135, 19 Feb. 1980, *H. S. Irwin et al.* 20526 (holotype, NY); Serra do Espinhaço, lower slopes of Pico de Itacolomi, S of Ouro Preto, 1600 m, 30 Jan. 1971, *H. S. Irwin et al.* 29376 (paratypes, FAU, NY).

There is some question concerning the flower color of this taxon. The label on the holotype collection clearly states "rose-pink," and this color is visible on the buds (there are no open flowers on the type). The paratypes are morphologically similar to the holotype, but the label information indicates that the corollas are white. While it is possible (given the variability in corolla color within the family) for this species to have both pink and white flowers, such a condition has not previously been observed in *Merremia*.

Corollas that are any shade of red are extremely uncommon in *Merremia*; *M. weberbaueri* Ooststr. of Peru is the only species of the genus known to have them. Although superficially similar to *M. repens*, *M. weberbaueri* has incompletely palmatifid leaves, is completely glabrous, has flowers to 7.5 cm long, and is known only from the western side of the Andes in Peru. Despite the

large disjunction in their ranges, it seems likely (based on their morphology) that the two species are closely related. Since neither is well represented in North American herbaria (we have seen a total of about ten sheets for both) and the region between their known ranges has not been well collected, it is possible that they are not as widely geographically separated as it seems.

Within the area where *Merremia repens* has been found, two other species of *Merremia* occur that may be confused with it. *Merremia macrocalyx* is an extensive liana that is either completely glabrous or sparsely pubescent with simple trichomes and generally has numerous (up to 20) flowers in compound cymes. *Merremia digitata* has palmately divided leaves; plants of this species are much smaller in both vegetative (leaflets 20–40 mm long) and floral (corolla 28–33 mm long) dimensions and are generally much more pubescent than those of *M. repens*.

Merremia species A

Based on the very fragmentary material available to date, this appears to be an undescribed species of *Merremia*. Although it shares features with several other species of that genus, the taxon has an apparently unique combination of leaf shape and surface characters, as noted below. Until we are able to examine more material, we prefer not to propose a specific epithet. We give the information here to alert herbarium curators and collectors to the need for more specimens.

Herb; stems twining(?), cylindrical, striate, sparsely stellate-pubescent to glabrous, 1 mm in diameter. Leaves palmately divided to base; leaflets 5, petiolulate, ovate-lanceolate, nerves sunken above, the upper surface glabrous, dark brown-black when dry, the lower surface whitish stellate-tomentose, the apex obtuse to acute, the base acute. Sepals unequal in bud, glabrous, the outer 2 covering the inner 3; anthers (undehisced) 10–12 mm long, the pollen 3-colpate, nonspinulose. Corolla, fruit, and seeds not seen.

If one judges by the general aspect of the fragments, this taxon most resembles *Merremia platyphylla* (Fern.) O'Donell of southwestern Mexico. The length of the anthers, in particular, suggests this species, which has the longest anthers of any species of *Merremia* we have seen. Specimens of *M. platyphylla* that we have examined are completely glabrous or have sparse, simple trichomes markedly distinct from the stellate indumentum of species A. In pubescence type, occurrence of trichomes only on the lower surface of the leaflets, and coloration of dried material, this species matches *Merremia nervosa* Pittier, a Venezuelan endemic. The latter is only known to have trifoliolate leaves, however.

Geographic ranges of *Merremia platyphylla* and *M. nervosa* do not correspond to that of species A. Printed labels attached to the two fragments from the Field Museum indicate Peru or Chile as the origin of the material; neither of the similar taxa occurs in this region, as noted above. Collection localities published in *Plantae Novae Hispaniae* (Sessé & Moçino, 1887) are vague; *Convolvulus pentaphyllus*, to which these fragments had been referred, is cited

(p. 23) from "caliodore America." Many of the other species of Convolvulaceae listed in *Plantae Novae Hispaniae* are found in Mexico; we believe that these fragments might have originated in Mexico also, and that they may represent an undescribed form of *M. platyphylla* or a species related to it. Additional, complete specimens are needed to ascertain the status of this taxon.

Fragments examined (*Sessé, Moçino, Castillo, & Maldonado 890 and 5022*, both F, accessioned as 844986 and 846511) are labeled "Novae Hispaniae, in vice-regno Chili et Peruvii lectae," without date.

OPERCULINA

Operculina is a small genus with less than 12 taxa in the New World; several others occur in the Old World. During our study we have found a need for a name change for the most common American species, and an atypical variant of that species.

***Operculina hamiltonii* (G. Don) Austin & Staples, comb. nov.**

Ipomoea hamiltoni G. Don, Gen. Syst. 4: 268. 1838. This is a new name for *Convolvulus alatus* Ham. Prodr. Fl. Ind. Occ. 24. 1824, not *C. alatus* (R. Br.) Sprengel, 1819. *Convolvulus alatus* Ham. Prodr. Fl. Ind. Occ. 24. 1824. TYPE: Tobago, Scarborough, Hamilton s.n. (not found).

Ipomoea alulata Miq. Linnaea 18: 599. 1844. TYPE: Surinam, crecit prope Paramaribo, Miquel s.n. (lectotype, U).

Ipomoea altissima Martius ex Choisy in DC. Prodr. 9: 359. 1845; Meisner in Martius, Fl. Brasil. 7: 213. 1869. TYPE: Brazil, Amazonas, Rio Negro, Martius s.n. (syntype, M, photo at NY).

Ipomoea ampliata Choisy in DC. Prodr. 9: 361. 1845. TYPE: Mexico, "in Campeche, in oceani Pacifici" (syntype, BM, n.v.).

Operculina altissima (Martius ex Choisy) Meisner in Martius, Fl. Brasil. 7: 213. 1869.

Ipomoea pterodes Choisy in DC. Prodr. 9: 361. 1845. TYPE: French Guiana, Cayenne, Gabriel s.n. (holotype, G-DC).

Operculina pterodes (Choisy) Meisner in Martius, Fl. Brasil. 7: 213. 1869.

Operculina pterodes f. *pubescens* Pilger, Bot. Jahrb. 30: 186. 1901. TYPE: Brazil, Mato Grosso, Bandeira bei Cuiabá, H. Meyer 325 (holotype, B, presumably destroyed; no duplicates found).

Operculina alata (Ham.) Urban, Symb. Antill. 3: 343. 1902; Powell, Jour. Arnold Arb. 60: 244. 1979; Austin & Staples, Mem. New York Bot. Gard. 32: 322. 1981.

Operculina alata var. *pubescens* (Pilger) O'Donell, Lilloa 30: 61. 1960.

The name *Operculina alata* (Ham.) Urban has predominated in the literature since the combination was made in 1902 (see Powell, 1979; Howard *et al.*, 1981; Austin & Staples, 1981). No one seems to have noted that G. Don (1838) was correct in stating that *Convolvulus alatus* Ham. is a later homonym and that, as such, the specific epithet published by Hamilton is unavailable. We therefore propose the new combination *Operculina hamiltonii*, using the next available name.

We have examined about 200 collections of *Operculina hamiltonii*, as well as a number of living plants in several countries in the northern part of its range. While there is considerable variation within the species, one collection

from the southern part of the range appears to us to fall beyond that noted elsewhere. The leaves are markedly mucronate and the sepals smaller; these traits do not appear to this extreme in the northern part of the range. We believe the difference sufficient to merit varietal status.

Operculina hamiltonii* var. *mucronata Austin & Staples, var. nov.

Ad varietatem *hamiltonii* similis, sed foliis angustis lanceolatisque mucronatis, sepalis obovatis minoribus (16–18 mm vs. 25–30 mm) divergens.

Herb; stems prostrate or perhaps twining at tips, cylindrical, to 2 mm in diameter, striate to sub-alate. Leaves with petiole stout, 5–12 mm long, striate, sulcate; blade entire, lanceolate-hastate, 74–87 by 7–14 mm, the nerves impressed above and prominent below, the apex attenuate, mucro to 1 mm long, the base cordate to auriculate, the margin slightly revolute. Flowers axillary, solitary; peduncle slender, 50–70 mm long, striate basally to alate distally, or striate throughout; bracts 2, membranaceous, attenuate-deltoid, 5–9 by 1–2 mm, apically attenuate, basally truncate, probably caducous; pedicel thickened, clavate, 9–15 by 3–4 mm, striate to 5-angled; calyx pyriform, reddish brown when dried, the sepals entire, obovate, \pm equal, 16–18 by 7–8 mm, acute and mucronate at apex, truncate at base, margin membranaceous; corolla campanulate, 36–38 by 38–43 mm, yellow, sericeous on tips of interplacae, otherwise glabrous; stamens unequal, included, the filaments filiform, the anthers spirally dehiscent, 3–4 mm long. Fruits unknown.

TYPE: Brazil, Mato Grosso, Serra das Araras, in campo aprico, 14 Feb. 1894, *Lindman A2997* (2 sheets) (both s; holotype numbered 1 and isotype numbered 2 on our annotation labels).

TURBINA

Five species of *Turbina* are known in Neotropical regions; several others occur in Paleotropical areas. For many years there has been confusion and difficulty in separating this genus from *Ipomoea*. The indehiscent, usually one-seeded fruits of *Turbina* are distinctive. Since *Flora Brasiliensis* was published in 1869, the following species of *Turbina* has been misidentified as an *Ipomoea*. Only upon examination of fruiting material did we notice the difference.

Turbina cordata (Choisy) Austin & Staples, comb. nov.

Rivea cordata Choisy in DC. Prodr. 9: 326. 1845. TYPES: Brazil, Minas Gerais, in sylvis catingas ad fluv. St. Francisco prope Salgado, *Martius s.n.* (lectotype, G-DC; isolectotype, M, n.v., photo at FAU); *Pohl s.n.* (syntype, M, n.v., photo at FAU).

Ipomoea martii Meisner in Martius, Fl. Brasil. 7: 258. 1869. A substitute name for *Rivea cordata*.

There are three taxa in South America that have been confused and misidentified by Choisy, Meisner, and others. Choisy also misidentified a fourth species. Thus *Ipomoea tubata* Nees (Brazil), *I. subincana* Choisy (Brazil), *Turbina abutiloides* (H.B.K.) O'Donnell (Ecuador to Venezuela and Panama), and

T. cordata (Choisy) Austin & Staples (Brazil) have all been misidentified. The two species of *Ipomoea* are typical members of sect. ERIOSPERMUM Hallier f., having dehiscent, two- to four-valved fruits and seeds with long, woolly trichomes along the margins.

When Choisy named *Rivea cordata*, he included specimens of *Ipomoea tubata* but not the type of that species. Thus, Choisy's concept of *Rivea cordata* included two taxa, one of which may be assigned to *I. tubata* Nees as per the Code. That makes his binomial applicable to remaining specimens. Instead of transferring the epithet to *Ipomoea*, however, Meisner (1869) created the substitute name *I. martii*. To bring the names in line with modern nomenclature, we have used the earliest specific epithet for the taxon.

Since a complete description of both *Turbina abutiloides* and *T. cordata* will be published with a key to the genus in *Flora Neotropica*, we will not give a detailed discussion here.

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