

TAXONOMIC AND NOMENCLATURAL NOTES ON THE GENUS MIMOSA (LEGUMINOSAE)

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These notes result from studies concerning the revision of *Mimosa* species occurring in the state of Oaxaca, Mexico. They comprise revised synonymies, typifications, a new combination, and a new name and are based on study of type collections and field observations.

The following taxonomic and nomenclatural notes are based on a study of those species of *Mimosa* L. occurring in the state of Oaxaca, Mexico. Examination of type specimens and of additional material from Oaxaca, other parts of Mexico, and Central and South America, as well as field observations in Mexico, supports the synonymies and changes proposed here.

This paper formalizes and validates synonymies, lectotypifications, a new combination, and a new name before publication of "Leguminosas de Oaxaca," now in preparation, which will include keys, descriptions, and geographic distributions for the genus.

The following species, in alphabetical order, are known to occur in Oaxaca.

Mimosa acantholoba (Humb. & Bonpl. ex Willd.) Poiret in Lam. Encycl. Méth. Bot. Suppl. 1: 83. 1810.

Acacia acantholoba Humb. & Bonpl. ex Willd. Sp. Pl. 4: 1089. 1806. TYPE: America Meridional, *Humboldt & Bonpland 3800* (holotype, B-Willd., IDC 7440. 1391: II. 3!; isotype, P).

Mimosa eurycarpoides Robinson, Proc. Amer. Acad. Arts 36: 472. 1901. *Neomimosa eurycarpoides* (Robinson) Britton & Rose, N. Amer. Fl. 23: 172. 1928. TYPE: Mexico, Sinaloa, near Colomas, 21 July 1897, *Rose 1805* (holotype, US! (fragments, GH!; photo and fragments, NY!)).

Mimosa colimensis Robinson, Proc. Boston Soc. Nat. Hist. 31: 258. 1904. *Neomimosa colimensis* (Robinson) Britton & Rose, N. Amer. Fl. 23: 172. 1928. TYPE: Mexico, Colima, near Colima, Aug. 1897, *Palmer 128* (holotype, GH! (fragments, NY!); isotype, US!).

Neomimosa russellii Britton & Rose, N. Amer. Fl. 23: 173. 1928. TYPE: Mexico, Sinaloa, vicinity of Rosario, 14 April 1910, *Rose, Standley, & P.G. Russell 14555* (holotype, US! (photo, MEXU!)).

The original description of *Mimosa eurycarpoides* was based on a flowering specimen (with an associated unattached fruit, probably of *Acacia farnesiana*, as indicated by Robinson (1904)). *Mimosa colimensis* was also based on flowering material; *Neomimosa russellii*, on a fruiting specimen.

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Because all the type specimens of the synonyms are incomplete, I have collected material with flowers and fruits in type localities or nearby (Sinaloa, 0.5 km NW de Rosario, *R. Grether 810*, MEXU, UAMIZ; Colima, 8.5 km SE de Colima, *R. Grether 875*, MEXU, UAMIZ) and have examined many specimens from the states of Sinaloa, Nayarit, Jalisco, Colima, Michoacán, Guerrero, and Oaxaca in the field and/or the herbarium.

Concerning the inflorescence, Robinson (1904) remarked that *Mimosa colimensis* differs somewhat from *M. eurycarpoides* in the oval form of the young heads; however, examination of the type specimens shows that both of them have subglobose young heads, although they look globose to almost globose when mature. Flower characteristics of both types are also the same: calyx campanulate, glabrous, one third to one half of corolla length; corolla five-lobed, glabrous, 2–2.5 mm long; stamens ten.

Although I could not gather flowering specimens of *Neomimosa russellii* in the type locality, remnants of flowers show the corolla to be five-lobed and glabrous, and fruits of the population growing there clearly correspond to *Mimosa acantholoba*.

Form, pubescence, and size of stipules and leaflets are essentially the same in type specimens of *Mimosa eurycarpoides*, *M. colimensis*, and *Neomimosa russellii*, as are the number of pinnae and leaflets.

My analysis of the original description and the microfiche of the type specimen of *Acacia acantholoba*, as well as my examination of several specimens from Nicaragua, Ecuador, and Peru, leads me to the conclusion that all these names have been used for a single widely distributed American species.

The fruits of *Mimosa acantholoba* vary in form and in the density of bristles (Grether, 1984): the valves can be elliptic to oblong and completely glabrous to setose, even in a single population.

Mimosa adenantheroides (Martens & Galeotti) Bentham, London J. Bot. 5: 88. 1846.

Acacia adenantheroides Martens & Galeotti, Bull. Acad. Roy. Sci. Bruxelles 10(2): 312. 1843. TYPE: Mexico, Oaxaca, mountains of Sola de Vega and Yolotepec, S of Oaxaca, 1840, *Galeotti 3208* (holotype, BR (*fide* Rudd, 1984); isotype, κ! (photos, MEXU!, US!)).

Acacia cylindriflora Martens & Galeotti, Bull. Acad. Roy. Sci. Bruxelles 10(2): 313. 1843. TYPE: Mexico, Oaxaca, Don Domingillo, 1840, *Galeotti 3207* (holotype, BR (photos, MEXU!, US!)).

Mimosa remota Bentham, London J. Bot. 5: 88. 1846. TYPE: Mexico, Oaxaca, Cordillera, 1840, *Galeotti 3240* (holotype, BR; isotype, κ!).

Mimosa gomezii Britton & Rose, N. Amer. Fl. 23: 159. 1928. TYPE: Mexico, Oaxaca, valley of Oaxaca, 20 Sept. 1894, *Nelson 1479* (holotype, US! (fragments, κ!, photo and fragments, NY!); isotype, GH!).

The type specimens of *Acacia adenantheroides*, *A. cylindriflora*, and *Mimosa remota* are in flower, while that of *M. gomezii* has both fruits and flowers (although the spikes are very short in the latter).

I consider *Mimosa adenantheroides* to be a single variable species because all the types were collected in the state of Oaxaca and examination of numerous

specimens from Oaxaca, including material collected near the type locality of *Acacia adenanthroides* (Distrito Sola de Vega, La Cumbre, 18 km SW de Sola de Vega, *M. Sousa et al.* 10509, MEXU!, UAMIZ!; Distrito de Juquila, 22 km E de Juquila, 4 km W de Yolotepec, *M. Sousa et al.* 10545, MEXU!, UAMIZ!), and from the states of Jalisco, Michoacán, México, Puebla, Morelos, Guerrero, and Chiapas, indicates much variation in populations with respect to size and number of pinnae and leaflets, length of spikes, and number of corolla lobes (four or five) and stamens (eight to ten), as well as to size of the legume and density of glandular dots and prickles at its margin.

The genus has been widely collected in Oaxaca, and no other closely related species that could be confused with *Mimosa adenanthroides* has been found.

Mimosa camporum Benth., J. Bot. (Hooker) 2: 130. 1840. TYPE: British Guiana, June 1839, *Schomburgk* 725 (holotype, BR; isotypes, F!, G, K, M, NY!, US!, W).

Mimosa flavescens Splitg. Tijdschr. Natuurl. Gesch. Physiol. 9: 110. 1842. TYPE: Surinam, *Splitgerber* s.n. (isotypes, K (photo, A!), W).

Mimosa aeschynomenes Benth., Bot. Voy. Sulphur, 89. 1844. TYPE: [Nicaragua,] Realejo, 1841, *Hinds* s.n. (holotype, BM; isotype, K!).

Mimosa pusilla Benth., Bot. Voy. Sulphur, 90. 1844. TYPE: [Nicaragua,] Realejo, 1842, *Hinds* s.n. (holotype, BM; isotype, K!).

Mimosa flaviseta Benth., London J. Bot. 5: 90. 1846. TYPE: Surinam, 1843, *Hostman* 813 (holotype, BM; isotypes, GH!, K (photo, A!), NY!).

Mimosa martensis Britton & Rose in Britton & Killip, Ann. New York Acad. Sci. 35: 152. 1936. TYPE: Colombia, Santa Marta, 1898–1899, *H. H. Smith* 714 (holotype, NY!; isotype, US!).

Bentham (1875) considered *Mimosa flaviseta*, *M. aeschynomenes*, and *M. flavescens* as synonyms of *M. camporum* and mentioned (p. 436) *M. pusilla* as “possibly a small slender variety of *M. camporum*.”

Robinson's (1898) description of *Mimosa camporum* was based on two specimens from Mexico (*Rose* 3116 (US!), from Acaponeta [Nayarit], and 3295 (F!, K!, US!), from Tepic [Nayarit], however this corresponds to *M. occidentalis* Britton & Rose, mainly in the large oval heads 2.5 cm in diameter. In fact, Britton and Rose selected *Rose* 3295 as the type of *M. occidentalis*, described in N. Amer. Fl. 23: 162. 1928.

I am here placing *Mimosa pusilla* and *M. martensis* in the synonymy of *M. camporum*, because stipule, leaflet, bracteole, flower, and fruit characters are those of *M. camporum*. Even though size and density of pubescence have been indicated as differences between *M. pusilla*, *M. martensis*, and *M. camporum*, examination of type specimens and other material from Mexico (states of Guerrero, Oaxaca, Veracruz, Tabasco, and Chiapas), Nicaragua (near Realejo, *Ørsted* 4323, F!), Costa Rica, and Venezuela shows variation in size and density of hispidity, even in specimens from the same locality.

Mimosa ervendbergii A. Gray, Proc. Amer. Acad. Arts 5: 178. 1862. TYPE: Mexico, Veracruz, Prov. Huasteca, near Tantoyuca, 1858, *Ervendberg* 2, p.p. (holotype, GH!; isotypes, K! (photo, MEXU!), US!).

Mimosa costaricensis Benth., Trans. Linn. Soc. London **30**: 423. 1875. TYPE: Costa Rica, Aguacate, *Ørsted 15* (lectotype, here designated, κ ! (photo and fragments, US!)).

Mimosa mexiquitensis Britton, N. Amer. Fl. **23**: 168. 1928. TYPE: Mexico, Chiapas, Finca Mexiquito, Sept. 1913, *Purpus 6816* (holotype, NY!; isotypes, GH!, MO!, US!).

Neomimosa donnell-smithii Britton & Rose, N. Amer. Fl. **23**: 173. 1928. *Mimosa donnell-smithii* (Britton & Rose) Standley & Steyer. Publ. Field Mus. Nat. Hist., Bot. Ser. **23**: 163. 1944. TYPE: Guatemala, Departamento Alta Verapaz, Cubilquitz, 1902, *Von Tuerckheim 8197* (holotype, US!).

Mimosa scalpens Standley, Publ. Carnegie Inst. Wash. **461**: 58. 1935. TYPE: British Honduras, vicinity of Jacinto Hills, 4 May 1934, *Schipp 1306* (holotype, F!; isotypes, GH!, MO!, NY!).

Mimosa ervendbergii was based on a mixed collection of flowering material, as indicated by Robinson (1898); the specimen on the left corresponds to this species, and the one on the right to *M. invisia* Martius. Robinson considered *M. costaricensis* to be a synonym of *M. ervendbergii*, and I have confirmed the correctness of that decision by examining the type specimens. *Ørsted 15* is here selected as the lectotype of *M. costaricensis*.

Mimosa mexiquitensis also corresponds to the same species; examination of flowering and fruiting material from Chiapas, in addition to the type specimen, leads me to this conclusion.

The type of *Neomimosa donnell-smithii*, a fruiting specimen, has remnants of flowers that clearly match the same structures in *Mimosa ervendbergii* (calyx long ciliate, one third to one half of corolla length; corolla glabrous, four-lobed, stamens eight). It is interesting to note that Standley and Steyermark transferred *Neomimosa donnell-smithii* as *Mimosa donnell-smithii* in 1944; the same authors included that species in the *Flora of Guatemala* (1946), although pointing out (p. 56) that "we have seen no representation of this species." In the same publication they considered *M. scalpens* from Belize, described by Standley in 1935, to be a different species occurring in Guatemala, even though the two are, in fact, the same taxon.

The original description of *Mimosa scalpens* indicates pentamerous flowers, and that of *M. ervendbergii* tetramerous ones; however, variation in the number of corolla lobes (four or five) and stamens (eight to ten) has commonly been observed in the species. Although corolla-lobe number is a good character for many species of *Mimosa*, it varies (four or five) in several species of the genus.

Considering the characters that distinguish *Mimosa ervendbergii* (calyx lobes long-ciliate, very conspicuous in bud; corolla four- or five-lobed, glabrous; stamens eight to ten; legume articulated, stipitate, glabrous, apex rostrate, margins prickly; twigs angled, densely tomentose; stipules filiform, tomentose; leaflets puberulous above, tomentose below, with a prominent excentric nerve) and having seen all of them in the type specimens and in additional herbarium material from Mexico (states of Veracruz, Puebla, Oaxaca, Tabasco, and Chiapas), Guatemala, Nicaragua, and Costa Rica (Monte Aguacate, 11/47, *Ørsted 4463*, F!, topotype of *M. costaricensis*), as well as in field observations made mainly in the states of Chiapas and Oaxaca, I conclude that all these names have been used for one taxon, the correct name of which is *M. ervendbergii* A. Gray.

Mimosa hexandra Micheli, Mém. Soc. Phys. Genève **30**(pt. 2, 7): 91. t. 27. 1889.

Mimosa bimucronata (DC.) Kuntze subsp. *hexandra* (Micheli) Hassler, Repert. Spec. Nov. Regni Veg. **9**: 3. 1910, and var. *intermedia* Hassler, *ibid.* *Mimosa bimucronata* (DC.) Kuntze var. *hexandra* (Micheli) J. F. Macbr. Contr. Gray Herb. **59**: 12. 1919. TYPE: Paraguay, bords du Mbay, près de Paraguari, Oct. 1882, *Balansa 4422* (holotype, G (photo, US!); isotypes, B (photo, US!), F!, NY!, P).

Mimosa vepres Lindman, Bih. Kongl. Svenska Vetensk.-Akad. Handl. **24**(3,7): 46. fig. 12. 1898. TYPE: Paraguay, Colonia Risso, 30 Oct. 1893, *Lindman A2263* (holotype, s, *fide* R. C. Barneby, pers. comm.; isotypes, GH!, US!).

Mimosa coroncoro Killip & Dugand, *Caldasia* **3**(11): 33. 1944. TYPE: Colombia, Departamento Atlántico, entre Palmar de Varela y Ponedera, Finca "El Paraíso," Aug. 1943, *Dugand & Jaramillo 3461* (lectotype, COL 16064; isoelectotypes, A!, COL 16065, US!).

The original description of *Mimosa coroncoro* indicates *Dugand & Jaramillo 3461* (COL) as the type; however, Forero and Ruíz (1983) lectotypified the species because there are two specimens of that collection at COL; they selected COL 16064 as lectotype and COL 16065 as isoelectotype.

I am placing *Mimosa coroncoro* in the synonymy of *M. hexandra* mainly because the corolla is three-lobed and there are six stamens, characteristics rarely encountered in the genus. The legume is also very distinctive: examination of *Dugand 3132* (US!; from Finca "El Paraíso," entre Palmar de Varela y Ponedera, Departamento Atlántico, Colombia) shows that it has a persistent margin, even though the authors of the original description indicated that this was not the case.

This is the first report of *Mimosa hexandra* in Mexico; observation of fruits in the field (Isthmus of Tehuantepec, state of Oaxaca) confirms the presence of persistent margins.

Macbride considered the species to be a variety of *Mimosa bimucronata*; however, the very distinctive, completely sessile fruit with very thick coriaceous valves, the predominantly trimerous flowers, and the fewer (six to twenty), thicker-textured leaflets (all characters observed in material from Mexico, Colombia, Venezuela, Brazil, and Paraguay) clearly distinguish *M. hexandra* from the related *M. bimucronata*.

Mimosa lacerata Rose, Contr. U. S. Natl. Herb. **5**: 141. 1897.

Acanthopteron laceratum (Rose) Britton, N. Amer. Fl. **23**: 179. 1928. TYPE: Mexico, Puebla, vicinity of Piaxtla, 24 Nov. 1894, *Nelson 2008* (lectotype, here designated, US!; isoelectotype, NY!).

Mimosopsis glutinosa Britton & Rose, N. Amer. Fl. **23**: 178. 1928; not *Mimosa glutinosa* Malme, Ark. Bot. **23**(13): 51. 1931. TYPE: Mexico, Puebla, near San Luis Tultitlanapa, July 1908, *Purpus 3174* (holotype, US!; isotypes, F!, GH!, MO!).

Mimosa biuncifera Benth. var. *horrida* Miranda, Anales Inst. Biol. Univ. Nac. México **12**: 610. 1941. TYPE: Mexico, Puebla, cerro NW de Matamoros, 22 March 1941, *F. Miranda 1410* (lectotype, here designated, MEXU!).

Two syntypes of *Mimosa lacerata*, *Nelson 2008* (NY!, US!) and *Pringle 6247* (F!, GH!, K!, MEXU!), were originally cited; no lectotype has been chosen. I hereby

select the specimen collected by Nelson because it represents the taxon more completely.

Britton (*in* Britton & Rose, 1928, p. 179) transferred the species to the monospecific genus *Acanthopteron*; he considered the "legume with marginal wings deeply irregularly cleft into flat, rigid spinous teeth" to be a generic character; however, all other characters are those of *Mimosa*. *Mimosa lacerata* is not the only species with lacerate margins of the legume; for example, the legumes of *M. bahamensis* Benthham also have such a margin, even though it is not closely related to *M. lacerata*. Therefore, I cannot consider *Acanthopteron* a distinct genus.

Britton and Rose (*op. cit.*) described *Mimosopsis glutinosa* based on a fruiting specimen; the type specimen has abnormal and immature fruits of *M. lacerata*. In addition, field observations in the states of Puebla and Oaxaca have demonstrated that some individuals growing in very eroded areas are depauperate, with the lacerate margin of the legume not well developed; however, such plants can always be recognized as *M. lacerata* because of other vegetative and flower characters, as well as the somewhat lacerate margin and the glandular dots of the fruit.

Miranda (1941) described *Mimosa biuncifera* var. *horrida*, pointing out that he had not found any other character besides the prickles to distinguish the plant collected in Matamoros from the typical *M. biuncifera*. Miranda did not cite specimens in the original description, but he mentioned (p. 611) "la planta de Matamoros" in the protologue and annotated the specimen *F. Miranda 1410* (MEXU!) as *M. biuncifera* var. *horrida*. Considering all aspects of the protologue and having found the specimen collected and annotated by the author, I hereby propose *Miranda 1410* as lectotype. Examination of that specimen shows tetramerous flowers with puberulous corollas, as well as the twinned, laterally compressed, very broad prickles typical of *M. lacerata*.

Fruiting material collected in Matamoros, Puebla (*Miranda 2279*, MEXU!) also corresponds to *Mimosa lacerata*. In addition, herbarium and field observations, mainly in the states of Puebla and Oaxaca, show that flowering *Mimosa lacerata* (e.g., *Miranda 1410*) has rose to purple heads and rose stamens, and it can thus be clearly distinguished from *M. biuncifera*, which has pentamerous flowers with pubescent corollas, white to slightly rose heads, and white stamens. Therefore, I consider *M. biuncifera* var. *horrida* to be conspecific with *M. lacerata*.

Mimosa lactiflua Del. ex Benthham, Trans. Linn. Soc. London **30**: 393. 1875; Martius, Fl. Brasil. **15**(2): 311. 1876, descr. ampl. TYPE: habitat in America Meridionali (an Brasilia?), ex specimine olim in Horto Monspeliensi culto, in Herb. D.C. asservato, 1836, 307*b* (holotype, G-DC!).

Mimosa mixtecana Brandegee, Univ. Calif. Publ. Bot. **3**: 379. 1909. TYPE: Mexico, Puebla, vicinity of San Luis Tultitlanapa, near Oaxaca, May–July 1908, *Purpus 2673* (lectotype, here designated, US! (photo, MEXU!); isolectotypes, F!, GH!, MO!, NY!, UC (photo, MEXU!)).

Mimosa vazquezii Britton & Rose, N. Amer. Fl. **23**: 153. 1928. TYPE: Mexico, Oaxaca,

Distrito de Tlacolula, Cerro de la Carbonera, Matatlán, June 1906, *Conzatti & Vázquez 1482* (holotype, US! (photo and fragments, NY!); isotype, GH!).

Concerning the occurrence of *Mimosa lactiflua* in Mexico, Bentham (1875, pp. 393, 394) stated, "Delile's specimens were from the Botanical Garden of Montpellier, supposed to be of American, perhaps Brazilian, origin. In the Berlin herbarium there is a specimen from Mexico, *Ehrenberg*, which agrees with the detailed description I had made (now inserted in the *Flora Brasiliensis*), except that the leaflets are under instead of over $\frac{1}{2}$ in. long."

I (Grether, 1978) cited the species as occurring only in the state of Oaxaca, Mexico. Since that time, however, numerous specimens from the states of Morelos, Puebla, Guerrero, and Oaxaca have been examined that clearly correspond to *Mimosa lactiflua*. Personal communication with R. C. Barneby and a review of the holdings of different herbaria have yielded no evidence that this species occurs in Brazil. Besides, I have not seen it in material examined from Central America.

The holotype of *Mimosa lactiflua*, seen when it was on loan to NY from G-DC, is a flowering specimen characterized mainly by its glabrous, tetramerous flowers and its oblong-lanceolate to elliptic or ovate, glabrous, glaucous leaflets with prominent reticulate nerves beneath. The lectotype and isolectotypes of *M. mixtecana* (*Purpus 2673*) are flowering and fruiting specimens, also with glabrous, tetramerous flowers and glabrous, glaucous leaflets, very variable in shape and size as *M. lactiflua*. The type of *M. vazquezii* shows the same flower characters and variable, elliptic to ovate leaflets. In spite of the uncertain origin of the specimen cultivated at Montpellier, the holotype of *M. lactiflua* is a good specimen, and this is the oldest and correct name for the species.

Mimosa langlassei Micheli, Mém. Soc. Phys. Genève **34**(3): 277. t. 22. 1903.

TYPE: Mexico, Michoacán, pied du Volcán de Jorullo, 13 April 1898, *Langlassé 99* (holotype, G; isotypes, F!, K! (photo, MEXU!)).

Mimosa conzatti Britton & Rose, N. Amer. Fl. **23**: 153. 1928. TYPE: Mexico, Oaxaca, Distrito del Centro, Cerro San Antonio, 6 Sept. 1908, *Conzatti 2239* (holotype, GH! (photo and fragments, NY!, US!); isotype, F!).

Mimosa langlassei was described from a flowering specimen, and the description of *M. conzattii* was based on a fruiting one; however, examination of material of the latter at F, GH, NY, and US shows remnants of flowers at the base of fruits; these flowers are tetramerous and the corolla lobes are puberulous, as in *M. langlassei*. Vegetative characters observed in types, and mentioned in the original descriptions of both species, clearly correspond.

Flowering and fruiting material of *Mimosa langlassei* (Michoacán, 18 km N de La Huacana, cerca del Volcán El Jorullo, *R. Grether 1117*, MEXU, UAMIZ) was collected near the type locality; the pubescent and slightly setose valves of the legume agree with the fruits of *M. conzattii*, and the flowers are tetramerous and puberulous. I also visited the type locality of *M. conzattii*; unfortunately, the area is quite disturbed, and the species is no longer growing there.

Concerning typification of *Mimosa conzattii*, there is a note on the GH, NY,

and US sheets of *Conzatti* 2239 saying "ex herb. Field Mus." I have studied the Field Museum specimen distributed by Conzatti as "*Acacia*"; this was annotated in 1910 by Greenman, who identified it as *M. xanti* Gray and sent fragments to B. L. Robinson (GH), who verified the identification. Britton and Rose saw only the specimen of the same number at GH and took even smaller fragments from it. These were deposited at NY by Britton and at US by Rose, and each was mounted with a photograph of the undivided GH specimen. At the suggestion of D. H. Nicolson (US), I now recognize the GH specimen as the holotype of *M. conzattii*, the specimens at NY and US as fragments of the holotype, and the specimen at F as an isotype.

Examination of additional material from Michoacán, Guerrero, Oaxaca, Puebla, and Chiapas confirms that it is a single species, *Mimosa langlassei*.

Mimosa mellii Britton & Rose, N. Amer. Fl. **23**: 155. 1928. TYPE: Mexico, Oaxaca, near Chivela, 18 Jan. 1927, *Mell* 2 (holotype, US! (photos, MEXU!, UAMIZ!)).

Mimosa chiapensis Britton, N. Amer. Fl. **23**: 154. 1928. TYPE: Mexico, Chiapas, river bottom, Hacienda Monserrate, May 1925, *Purpus* 10313 (holotype, NY! (photos, MEXU!, UAMIZ!); isotype, US!).

Mimosa doylei Britton & Rose, N. Amer. Fl. **23**: 155. 1928. TYPE: Mexico, Chiapas, near Los Pinos, 12 Dec. 1906, *C. B. Doyle* 56 (holotype, US! (photos, MEXU!, UAMIZ!; fragments, NY!)).

Mimosa oaxacana Britton & Rose, N. Amer. Fl. **23**: 155. 1928. TYPE: Mexico, Oaxaca, between Guichocovi and Lagunas, 27 June 1895, *Nelson* 2746 (holotype, US! (photos, MEXU!, UAMIZ!; fragments, NY!)).

Mimosa mellii, *M. chiapensis*, *M. doylei*, and *M. oaxacana* were all described by Britton and Rose in the same publication. Although the original descriptions show some differences (mainly in pubescence of leaflets and corolla lobes), all of them correspond to a single species.

There are several bases for this conclusion. Types of *Mimosa mellii* and *M. doylei* are fruiting specimens with remnants of flowers; fruits of both are sessile and slightly setose, and they clearly correspond to the same taxon. The type specimen of *M. doylei* has few, tetramerous flowers, like those of *M. mellii*—not pentamerous, as quoted in the original description. The type of *M. doylei* has puberulous corolla lobes and leaflets, while the type of *M. mellii* has glabrous to slightly puberulous corolla lobes and completely glabrous leaflets.

The types of *Mimosa oaxacana* and *M. chiapensis* are flowering specimens; both have tetramerous flowers, as well as puberulous corolla lobes and leaflets.

I have visited the type locality of *Mimosa mellii* and have collected a topotype of that species (Oaxaca, Chivela, *R. Grether* 1363, MEXU, UAMIZ); I have also examined other topotypes (*Mell* s.n., Aug. 1928, US!, and Dec. 1928, NY!). The type locality of *M. oaxacana* (between Guichocovi and Lagunas) is south of Chivela in the same region. There are several collections from this area, although it is difficult to state which could be considered as a topotype. I located Hacienda Monserrate through Sousa's (1969) publication on Purpus's botanical collections in Mexico; despite a thorough search of this locality and the vicinity, I could not find *M. chiapensis* there. However, I did collect additional material southwest of the type locality (Chiapas, Municipio Cintalapa, 9.5 km NW de

Rizo de Oro, camino a Colonia Rodolfo Figueroa, cerca del límite con Oaxaca, *R. Grether 1758*, MEXU, UAMIZ). I could not locate the type locality of *M. doylei* (Los Pinos) on present or old maps, or by asking local people in Chiapas.

Field observations—as well as examination of type specimens, topotypes of *Mimosa mellii*, and additional flowering and fruiting material from Oaxaca and Chiapas—permit me to state that variation in pubescence of leaflets is probably due to the stage of leaf development: flowering specimens (May to July) generally have puberulous leaflets, although some populations show variation from puberulous to glabrate leaflets even in a single individual, and some others have leaflets always glabrous. In fruiting specimens (December to January) the leaflets are generally glabrous, although they are puberulous to glabrous in a few of them. However, the linear-oblong, strongly reticulate-nerved leaflets are constant in all flowering and fruiting material examined. The corolla lobes of *M. mellii* also vary in pubescence: in some individuals they are glabrous and in others puberulous; in some variation is from puberulous to glabrous even on a single plant. In addition, the legume varies from slightly setose to completely glabrous.

Despite the differences mentioned above, it is not possible to distinguish several species or varieties. Also, the geographic distribution of this taxon is apparently restricted to the Isthmus of Tehuantepec (Distrito de Juchitán), Oaxaca, and the adjacent region of Chiapas (Municipio de Cintalapa and Municipio de Arriaga), at altitudes between 150 and 1000 m.

I have selected *Mimosa mellii* as the name for the species, considering that its type is the best and most complete specimen (with mature fruits and remnants of flowers).

Mimosa mollis Benth., *J. Bot. (Hooker)* **4**: 408. 1842. TYPE: Mexico, Puebla, Acatlán, 1834, *Andrieux 400* (holotype, κ ; isotypes, G (photos, F!, MEXU!), OXF (photo, MEXU!), W (photo, F!)).

Mimosa herincquiana Micheli, *Mém. Soc. Phys. Genève* **34**(3): 276. 1903. TYPE: Mexico, Guerrero, Cariote [Cañón] del Zopilote, 27 May 1899, *Langlassé 1040* (holotype, G; isotypes, F!, GH!, κ ! (photo, MEXU!), US!).

The types of *Mimosa mollis* and *M. herincquiana* are flowering specimens; the original descriptions show differences only in numbers of pinnae (four or five vs. seven or eight, respectively) and leaflets (six to ten vs. seven or eight).

Examination of photographs of types, specimens collected near the type locality of *Mimosa mollis* (Puebla, 11 km SE de Acatlán de Osorio, *M. Sousa 8210*, MEXU!), isotypes, and the topotype of *M. herincquiana* (Guerrero, Cañón del Zopilote, 36 km N de Zumpango del Río, *R. Grether 1143*, MEXU, UAMIZ), as well as additional flowering and fruiting material from Puebla, Guerrero, and Oaxaca, indicates the similarity of the two taxa, which I consider synonymous.

There are four to ten pinnae and six to twelve leaflets. The tomentose branchlets and stipules, the villous oblong to elliptic leaflets, the villous pentamerous flowers, and the tomentose, unarmed, sessile fruits are distinctive characters of the species.

Mimosa orthocarpa Spruce ex Bentham, Trans. Linn. Soc. London **30**: 437. 1875; Martius, Fl. Brasil. **15**(2): 380. 1876, descr. ampl. SYNTYPES: Brazil, "habitat prope Santarem provinciae Paraensis," *Riedel s.n.* (κ); ad Lacum Quiriquiry, Prov. Pará, 1850, *Spruce 518* (κ, herb. Bentham; NY neg. 1897!).

Mimosa glandulosa Bong. ex Bentham, Trans. Linn. Soc. London **30**: 437. 1875, *nomen nudum*.

Mimosa calderonii Britton & Rose, N. Amer. Fl. **23**: 167. 1928. TYPE: El Salvador, El Angel, Oct. 1923, *S. Calderón 1842* (holotype, us! (photo and fragments, NY!); isotype, GH!).

Two syntypes of *Mimosa orthocarpa*, *Riedel s.n.* and "Sello" 518 were originally cited. According to Barneby (pers. comm.), "Sello" must be an error for Spruce, considering that Sello was never on the Amazon. Bentham attributed the epithet to Spruce, and the specimen at κ in Bentham's herbarium is labeled *Spruce 518*.

I have examined a photograph from B (F neg. 1350) and a specimen at NY, both labeled "*Spruce s.n.*, ad ripas fluminis das Trombétas et lacus Quiriquiry, Prov. Pará, Dec., 1849." Barneby has examined other specimens labeled *Spruce s.n.* at κ (herb. Hooker), LE, and w. The specimens *Spruce s.n.* could be from the same collection as *Spruce 518*, but they have different collection dates (Dec. 1849, and 1850, respectively). According to Urban (1906), Spruce was at Quiriquiry in December, 1849. If that is so, then the date on Bentham's sheet could be an error; however, there is no doubt that the specimens *Spruce s.n.* and *Spruce 518* are conspecific.

Bentham (1875) considered *Mimosa glandulosa* to be a synonym of *M. orthocarpa*, based on the specimen named by Bongard. After examining two specimens originally named *M. glandulosa* Bong. (Santarem, Nov. 1828, *Riedel 37*, A, κ, *Riedel 1560*, LE), Barneby (pers. comm.) confirmed that *M. glandulosa* Bong. ex Bentham is a *nomen nudum* and a synonym of *M. orthocarpa*.

Barneby's and my examinations of type specimens of *Mimosa orthocarpa* and *M. calderonii*, of additional material from Mexico (states of Guerrero, Oaxaca, Veracruz, Tabasco, and Chiapas), Colombia, Venezuela, and Brazil, as well as my study of original descriptions, support this synonymy.

I have not chosen a lectotype of *Mimosa orthocarpa* because I have seen a photograph only of *Spruce 518*.

Mimosa polyantha Bentham, J. Bot. (Hooker) **4**: 410. 1842. TYPE: Mexico, Puebla, Acatlán, *Andrieux 397* (holotype, κ; isotype, w (photos, F!, MEXU!)).

Mimosa polyanthoides Robinson, Proc. Boston Soc. Nat. Hist. **31**: 260. 1904. TYPE: Mexico, Guerrero, on mountains above Iguala, 5 Oct. 1900, *Pringle 8408* (holotype, GH!; isotypes, κ!, MEXU!, MO!, NY!, US!).

Mimosa stipitata Robinson, Proc. Boston Soc. Nat. Hist. **31**: 261. 1904. TYPE: Mexico, Guerrero, on mountains above Iguala, 5 Oct. 1900, *Pringle 8406* (holotype, GH!; isotypes, F!, κ!, MEXU!, NY!, US!).

Mimosa setigera Britton & Rose, N. Amer. Fl. **23**: 160. 1928. TYPE: Mexico, Sinaloa,

vicinity of Rosario, 14 April 1910, *Rose, Standley, & Russell 14553* (holotype, us!; isotypes, GH!, NY!).

The fruits of *Mimosa polyantha* were unknown to Bentham; however, Robinson (1898) described them, and he assumed material with oblong legumes abruptly acuminate at each end, hispid on the margins, and with valves having short, spreading setae to be typical, based on the specimens *Pringle 4635* (MEXU!), *Rose 1475*, and *Palmer s.n.*

I have examined topotypes of *Mimosa polyantha* (Puebla, 4 km SE de Acatlán de Osorio, *R. Grether 735*, MEXU, UAMIZ; 11 km SE de Acatlán, *Téllez 1086*, MEXU!; Acatlán, *F. Miranda 2971*, MEXU!), and the legumes correspond to Robinson's description of them.

Mimosa stipitata and *M. polyanthoides* were collected in the same place. I have visited the type locality and vicinity and have observed variation in number of pinnae and leaflets, as well as in density of setae and length of the stipe of the legume, even in the same population (Guerrero: 22 km W de Iguala, camino a Teloloapan, *R. Grether 1132*, MEXU, UAMIZ; 6 km W de Xalostoc, camino a Teloloapan, *R. Grether 1133*, MEXU, UAMIZ).

Mimosa setigera was based on a specimen with setose legumes; however, examination of material from Rosario, Sinaloa, and vicinity (Sinaloa: 16 km SE de Escuinapa, *R. Grether 1099*, MEXU, UAMIZ; between Agua Caliente and Rosario, *Rudd 2099*, MEXU!, *Rudd 3000*, MEXU!) also shows variation in valves (from setose to glabrous) and differences in the length of the legume stipe.

Differences in number of pinnae and leaflets depend on the season, because flowering specimens have immature leaves, while fruiting material has mature and old ones. Flower characters are constant for all material examined from Sonora, Sinaloa, Michoacán, Guerrero, and Oaxaca, as well as from Puebla, Morelos, and Veracruz.

Mimosa pueblensis* R. Grether, *nomen novum

Mimosopsis filipes Britton & Rose, N. Amer. Fl. **23**: 177. 1928. *Mimosa filipes* (Britton & Rose) Gentry, Brittonia **6**: 315. 1948, not Martius, Herb. Fl. Brasil. 132. 1837. TYPE: Mexico, Puebla, vicinity of San Luis Tultitlanapa, July 1908, *Purpus 3175* (holotype, us!; isotypes, GH!, MO!).

I am proposing a new name for the species because the epithet *filipes* used by Britton and Rose was not available. It had been used by Martius for a different Brazilian *Mimosa*, making the Britton and Rose name a later homonym.

Mimosa pueblensis is known only from the states of Puebla and Oaxaca, Mexico; although Britton and Rose mentioned the state of Morelos, I have not seen material from there.

The species is characterized mainly by its slender, puberulous peduncles with red glandular dots, axillary, solitary or in clusters of two to six (to ten); its deep purple buds and flowers; its deeply five- (rarely four-)lobed, glabrous to puberulous corolla; and its sessile, glabrous legume, with red glandular dots more conspicuous in young fruits, and the margin sparingly prickly or unarmed.

Britton and Rose (1928) cited *Purpus 3175* as the type of *Mimosopsis filipes*;

however, the original description was based on two specimens, *Purpus* 3175 (flower) and *Purpus* s.n. (flower and fruit). Both were annotated as type, and both were collected in the same locality on the same date; there is no doubt that they are conspecific.

Mimosa rhodocarpa (Britton & Rose) R. Grether, *comb. nov.*

Mimosopsis rhodocarpa Britton & Rose, N. Amer. Fl. **23**: 175. 1928. TYPE: Mexico, Michoacán, Patamban, Jan. 1903, *Nelson* 6550 (holotype, US!; isotype, GH!).

A new combination is necessary to transfer the species to the genus *Mimosa*. *Mimosopsis* Britton & Rose is an artificial genus: the only distinctive character is the unsegmented legume; all other vegetative and flower characters are those of *Mimosa*.

The species is distinguished by its oblong, glabrous, rather thick leaflets with ciliate margins; its five-lobed, glabrous calyx about half as long as the corolla and with a ciliate margin; its five-lobed, glabrous, purple corolla; and its sessile, reddish, puberulous to glabrous, shiny, reticulate, completely unarmed legume 3–4.5 cm by 8–10 mm. *Mimosa rhodocarpa* has the broadest fruit of all the related Mexican species.

Mimosa rhodocarpa is known from the states of Zacatecas, Jalisco, Michoacán, México, Hidalgo, Puebla, Guerrero, and Oaxaca.

Mimosa ursina Martius, Flora 21(2), Beibl. **4**: 56. 1838. TYPE: Brazil, Prov. Bahiensis, inter Conceição et Arrayal da Feira de S. Anna in desertis, II–III, 1819, *Martius* s.n. (holotype, M).

Mimosa paucisperma Britton & Rose, N. Amer. Fl. **23**: 151. 1928. TYPE: Mexico, Chiapas, Jalisco Arriaga, Sept. 1923, *Purpus* 9306 (holotype, UC (photo and fragments, NY!, US!)).

Barneby examined the holotype of *Mimosa ursina* at M, and he and I examined photographs and fragments (branchlets, leaves, flowers, and fruits) of the type collection of *M. paucisperma* at NY and US; the characters of the type material are in accord. In addition, the original descriptions of both species are complete, and all characters, including those of habitat (in savannas and flooded places) clearly agree.

Our review of additional material from Brazil, Honduras, El Salvador, and southern Mexico (states of Oaxaca, Tabasco, and Chiapas), including a topotype of *Mimosa paucisperma* (Chiapas, alrededores de Arriaga, salida de la carretera a Tapachula, R. Grether 1783, MEXU, UAMIZ), indicates that it comprises only one species.

Detailed observation of herbarium specimens and fresh material shows some flower characters not considered in the original descriptions of *Mimosa ursina* and *M. paucisperma*, including a glabrous, four-lobed corolla, four stamens, and a widened stigma.

Mimosa watsonii Robinson, Proc. Amer. Acad. Arts **36**: 473. 1901. TYPE: Guatemala, eastern portion of Vera Paz and Chiquimula, 1885, *Watson* 323 (lectotype, here designated, GH!; islectotype, US!).

Mimosa recordii Britton & Rose, N. Amer. Fl. **23**: 170. 1928. TYPE: British Honduras, Stann Creek District, Middlesex, 19 Jan. 1926, *Record* s.n. (holotype, US!; isotype, NY!).

Mimosa rekoana Britton, N. Amer. Fl. **23**: 170. 1928. TYPE: Mexico, Oaxaca, Cafetal Concordia (Cerro Espino), 20 Nov. 1917, *Reko* 3610 (holotype, US! (fragments, NY!); isotype, MEXU!).

Mimosa resinifera Britton, N. Amer. Fl. **23**: 169. 1928. TYPE: Honduras, Department of Atlántida, vicinity of Tela, 14 Dec. 1927–15 March 1928, *Standley* 54698 (holotype, NY!; isotypes, A!, F!, US!).

Robinson described *Mimosa watsonii* from flowering and fruiting material (*Watson* 185 and *Watson* 323, respectively); I am here selecting *Watson* 323 as lectotype because fruiting material is more distinctive of the species than the flowering specimen.

The species was originally characterized by its leaves with two pairs of pinnae, the lower pinnae bearing one or two pairs of leaflets and the upper ones with two or three pairs; terminal leaflets up to 5 cm long; tetramerous flowers with a four-lobed corolla and eight stamens; and 5 cm by 7–10 mm, articulate, glabrous and finely papillose pods unarmed except for a few scattered, minute, recurved spines on the tomentulose replum.

Mimosa recordii was described by Britton and Rose; *M. rekoana* and *M. resinifera* by Britton. The descriptions of these three taxa were based on flowering material and were published in *North American Flora*.

Standley and Steyermark (1946) included *Mimosa watsonii*, *M. resinifera*, and *M. recordii* in the *Flora of Guatemala*. The authors considered *M. rekoana* to be a synonym of *M. recordii* and described its legume, which is like that of *M. watsonii*. The amplified description of *M. resinifera* given by Standley and Steyermark also agrees with that of *M. watsonii*, even though the fruit was not described.

I have examined type specimens and additional material from Mexico (states of Guerrero, Oaxaca, Veracruz, Tabasco, and Chiapas), Guatemala, Belize, and Costa Rica. Although the presence of resinous dots on the lower surface of the leaflets was cited as a distinguishing character for *Mimosa resinifera*, these are present in the other three type specimens, as well as in all additional material examined. Other constant leaf characters include the cupular gland at the petiole base, some cylindrical glands along primary and secondary leaf rachides, and the pubescence and reticulate nerves of the leaflets. Great variation has been observed in the number of pinnae and leaflets: from two pairs of pinnae with one to three pairs of leaflets, as *Mimosa watsonii* was originally described, to two or three pinnae with two to five leaflets per pinna, to two to four pinnae with four to seven leaflets, to five or six pinnae with four to nine leaflets. The leaflets also vary from 2.5 to 12 cm in length, and from 1.5 to 6 cm in width. Intermediate combinations are frequent and make it difficult to delimit several taxa.

I have analyzed geographic distribution, altitudinal range, vegetation types where the species grows, and flowering and fruiting times but have not found it possible to delimit subspecific taxa from the accumulated data.

The flowers are arranged in large panicles of white heads and the corolla is four- (rarely 5-)lobed, glabrous, and with few or no resinous dots on the lobes

in all types and additional material examined. The fruits are sessile or very slightly stipitate, with five to eleven segments, glabrous, and with resinous dots on the valves on the type specimen of *Mimosa watsonii*, as well as on additional material. Because flower and fruit characters are exactly the same for the four taxa originally described, and there are several constant leaf characters, I consider these four taxa to be a single species, *Mimosa watsonii*.

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