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NEW COMBINATIONS AND TYPIFICATIONS IN *MELOCHIA* (MALVACEAE, BYTTNERIOIDEAE)

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ABSTRACT

Three new combinations in *Melochia* (Malvaceae, Byttnerioideae) are proposed. *Riedlea siphonandra*, an older name for *M. manducata*, is the basionym for **Melochia siphonandra** (Turcz.) Dorr, **comb. nov.** *Melochia spicata* is the correct name for a widespread and weedy species complex often referred to as *M. villosa*. Two varieties of the latter, however, lack names under *M. spicata* — **Melochia spicata** var. **regnellii** (K. Schum.) Dorr, **comb. nov.** and **Melochia spicata** var. **tomentosa** (K. Schum.) Dorr, **comb. nov.,** are proposed. Additionally, synonymies are provided for the taxa recognized and fifteen lectotypes and one neotype are designated.

Work on a treatment of *Melochia* L. (Malvaceae, Byttnerioideae) for the Flora of Ecuador revealed the need for several new combinations in this cosmopolitan yet principally American genus of ca. 60 species (Brizicky 1966; Goldberg 1967; Dorr & Barnett 1989; Bayer & Kubitzki 2003). Goldberg (1967) revised the genus globally and his treatment generally has been followed in regional floristic accounts even though several of the names he accepted now are incorrect.

Complete synonymies for the taxa recognized are presented. A number of type specimens cited below were seen only as electronic images and are marked "as image." Goldberg (1967) borrowed extensively for his revision and photographed some type specimens not currently found in online databases. Prints of these photographs, which are deposited in US, are cited as "US neg. no." Similarly, photographs of type specimens in European herbaria assembled and distributed by the Field Museum (Grimé & Plowman 1987) are cited as "F neg. no." The herbarium codes utilized are those listed in Thiers (2023).

An earlier name for *Melochia manducata*

MELOCHIA SIPHONANDRA (Turcz.) Dorr, **comb. nov.** *Riedlea siphonandra* Turcz., Bull. Soc. Imp. Naturalistes Moscou 31(1): 208. 1858 ("*Riedleja*"). **TYPE. ECUADOR. Guayas.** From the savannah of Guayaquil, s.d., *W. Jameson 553* (holotype: KW001000125 [as image]!; isotypes: BM-n.v., NY04382683!, US00579131!).

= *Melochia manducata* C. Wright in Sauvalle, Anales Acad. Ci. Méd. Fis. Nat. Habana 5: 241. 1868. **LECTOTYPE** (designated by Goldberg 1967): **CUBA. Artemisa.** Huaiquibo, San Cristóbal, s.d., *C. Wright 3510* (US00479158!; isolectotypes: GH00589961 [as image]!, K000380963 [as image]!, NY00084209!, NY00084210!, P05428374 [as image]!, S12-17476 [as image]!).

= *Melochia glandulifera* Standl., Contr. U.S. Natl. Herb. 23(3): 803. 1923. **TYPE: MEXICO. Chiapas.** Tonalá, Oct 1913, *C.A. Purpus 6925* (holotype: US00102090!; isotypes: F0073543F [as image]!, GH00062892 [as image]!, MO-139386-n.v., UC172945 [as image]!).

Notes. *Riedlea* Vent., a later homonym of *Riedlea* Mirb. (Aspleniaceae), was reduced to synonymy under *Melochia* by Grisebach (1859). Goldberg (1967) did not see type material of *R. siphonandra* and could not identify the species based on its description alone. Consequently, he

included the name in his list of "Excluded and Doubtful Taxa." Discovery of type material, however, confirms that *R. siphonandra* is an earlier name for *M. manducata*.

Unless Turczaninow indicated otherwise, taxa he described in his *Animadversiones* were based on specimens in his personal herbarium (Mosyakin et al. 2019), which now is deposited in the National Herbarium of Ukraine in Kyiv (KW). A single sheet of *Jameson 553* annotated by Turczaninow is in KW and therefore considered to be the holotype.

The *Malva spicata* complex

A widespread and weedy species complex found throughout the Americas was long known as *Melochia hirsuta* Cav. Schumann (1886) emphasized the variability of this species by recognizing eight varieties. Fawcett and Rendle (1926), however, realized *M. hirsuta* was conspecific with the earlier *Sida villosa* Mill. and made the necessary combination, *M. villosa* (Mill.) Fawc. & Rendle. Although they also provided an extensive synonymy, they did not include infraspecific taxa and were silent about variability. Goldberg (1967) accepted *M. villosa*, reduced the eight varieties recognized by Schumann (1886) to three, and made the appropriate varietal combinations. A plate (Sloane, 1707: t. 138, fig. 1) depicting *Melochia* associated with a pre-starting point polynomial was cited in the synonymies of Schumann (1886) and Fawcett and Rendle (1926) for *M. hirsuta* and *M. villosa*, respectively. Goldberg (1967), however, did not mention this illustration.

Shortly before Goldberg's (1967) revision was published, Borssum Waalkes (1966) designated the Sloane (1707: t. 138, fig. 1) plate as the lectotype of *Malva spicata* L. The plate (reproduced here as Fig. 1) is the only material explicitly cited by Linnaeus (1759) in his protologue. Borssum Waalkes (1966), however, misidentified the species the plate depicts as *Malva americana* L. (≡ *Malvastrum americanum* (L.) Torrey), which has led to confusion. Hill (1982) who revised *Malvastrum* A. Gray and who evidently was unaware that Borssum Waalkes (1966) had already lectotypified *Malva spicata*, also incorrectly believed *Malva spicata* was a *Malvastrum* and selected a specimen in the Sloane herbarium (BM-n.v.) to be the lectotype of *Malva spicata* even though there is no evidence that Linnaeus saw this specimen (Jarvis 2007). Hill (1982) suggested that the description in Sloane's (1707) publication, which was not cited by Linnaeus (1759), fit *Malvastrum spicatum* while the illustration, which was cited, "seemed" to illustrate *Melochia villosa*. Fryxell (1988) realized the plate represented *Melochia villosa* and proposed the new combination *Melochia spicata* (L.) Fryxell because the Linnaean name provided an earlier epithet. Fryxell (1988) did not transfer the varieties of *Melochia villosa* recognized by Goldberg (1967).

Krapovickas and Cristóbal (1997) took exception to Fryxell's (1988) new combination and argued the type of *Malva spicata* must be a specimen examined by Linnaeus despite the fact that the only element explicitly cited by Linnaeus (1759) was the Sloane (1707) plate. They therefore selected a specimen (LINN 870.1 [as image!]) of *Malvastrum americanum* as lectotype of *Malva spicata* despite knowing that the Sloane illustration is an original element for the name and that it was formally chosen as lectotype by Borssum Waalkes (1966). Krapovickas and Cristóbal (1997) argued that this earlier selection could be superseded because they believed that Linnaeus (1759) included two or more heterogeneous elements in the original description (viz., an implied specimen and the cited plate) and their new choice of lectotype would preserve current usage (Turland et al. 2018; Rec. 9A.4). Ignoring the fact that Krapovickas and Cristóbal (1997) based their argument on a recommendation and not an article in the International Code of Nomenclature (Turland et al. 2018), they failed to supersede the first lectotype designation. The choice made by Borssum Waalkes (1966) can only be superseded if it is found to be in serious conflict with the protologue and by definition it is not because "cited specimens and illustrations are part of the protologue and cannot therefore be in serious conflict with it" (Turland et al. 2018; Art. 9.19(c), Note 7).

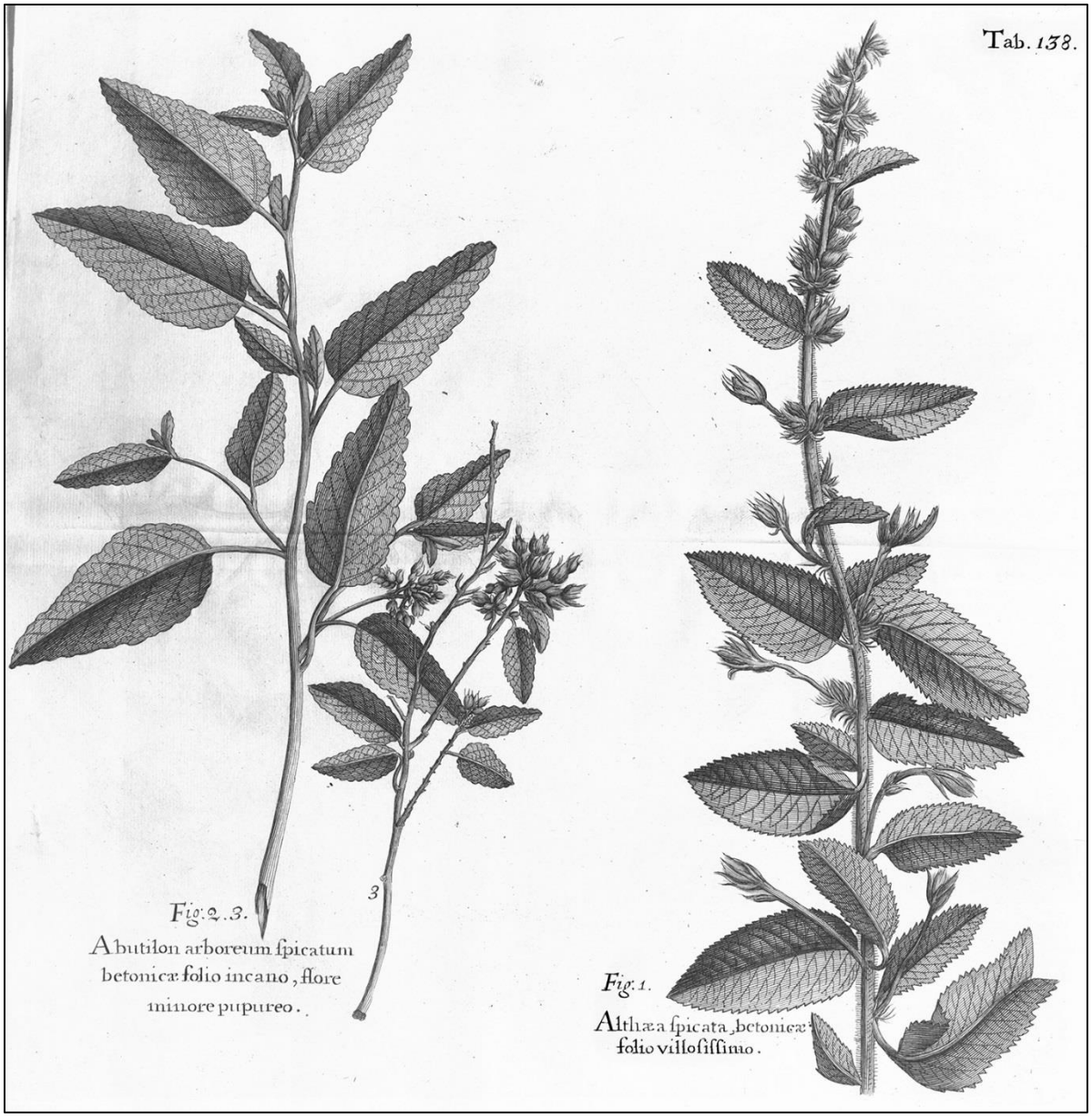

Figure 1. Lectotype of *Malva spicata* L. (Sloane, 1707: t. 138, fig. 1).

MELOCHIA SPICATA (L.) Fryxell, Syst. Bot. Monogr. 25: 457. 1988. *Malva spicata* L., Syst. Nat., ed. 10: 1146. 1759. *Malvastrum spicatum* (L.) A. Gray, Mem. Amer. Acad. Arts, ser. 2, 4: 22. 1849. *Malveopsis spicata* (L.) Kuntze, Revis. Gen. Pl. 1: 72. 1891. **LECTOTYPE** (as "holotype" designated by Borssum Waalkes 1966): [icon.] "Althæa spicata, betonicæ folio villosissimo," in Sloane, Voy. Jamaica 1: t. 138, fig. 1. 1707.

= *Waltheria angustifolia* L., Syst. Nat., ed. 10: 1140. 1759. **LECTOTYPE** (designated by Saunders & Dorr 2022): Sine loc., s.d., s.c. (LINN 852.4 [as image]!).

= *Sida villosa* Mill., Gard. Dict., ed. 8: Sida no. 6. 1768 ("*Villosa*"). *Melochia villosa* (Mill.) Fawc. & Rendle, Fl. Jamaica 5: 165. 1926. **LECTOTYPE** (as "type" designated by Fawcett & Rendle 1926): Sine loc., s.d., *P. Miller s.n.* (BM000630227 [as image]!).

= *Melochia hirsuta* Cav., Diss. 6: 323, t. 175, fig. 1. 1788. *Mougeotia hirsuta* (Cav.) Kunth in H.B.K., Nov. Gen. Sp. 5 [qu.]: 331, ibid. 5 [fol.]: 257. 1823 ["1821"]. *Riedlea hirsuta* (Cav.) DC.,

Prodr. 1: 492. 1824 ("*Riedleia*"). *Visenia hirsuta* (Cav.) Spreng., Syst. Veg. 3: 30. 1826. **LECTOTYPE** (designated here): Sine loc., s.d., sine coll. [= Catal. Nº 12.489] (P00672018 [= F neg. no. 35389] [as image]!; isolectotype: MA475974-fragm. [as image]!).

= *Riedlea serrata* Vent., Mém. Cl. Sci. Math. Inst. Natl. France 8: 2. [Jul] 1807; Choix. 37, t. 37. [Nov] 1807 ("1803"). *Visenia serrata* (Vent.) Spreng., Syst. Veg. 3: 30. 1826. *Melochia serrata* (Vent.) A. St.-Hil. & Naudin, Ann. Sci. Nat., Bot., sér. 2, 18: 36. 1842. **NEOTYPE** (designated here): **PUERTO RICO** ["Porto-ricco"]. Sine loc., s.d., *A. Riedlé s.n.* (G00341560 [as image]!; possible isoneotype: P00672019 [as image]!).

= *Melochia lilacina* A. St.-Hil., Fl. Bras. Merid. 1 [qu.]: 162. [16 Nov] 1825, Ibid. 1 [fol.]: 128. 1825. **LECTOTYPE** (designated here): **BRAZIL. Minas Gerais.** Prope praediolum Tapeira, [1816], *A. St.-Hilaire s.n.* [Catal. B[1], Nº 1814] (P02273633 [as image]!; isolectotypes: MPU016606 [as image]!, P02273634 [= US neg. no. 5672] [as image]!, P02273635 [as image]!, US00102096!).

= *Riedlea serrata* var. *glabrescens* C. Presl, Rel. Haenk. 2: 147. 1835 ("*Riedleia serrata* β *glabrescens*"). *Melochia hirsuta* var. *glabrescens* (C. Presl) A. Gray, Syn. Fl. N. Amer. 1(1[2]): 340. 1897. *Riedlea glabrescens* (C. Presl) Small, Fl. S.E. U.S. 780, 1335. 1903. **TYPE**: **MEXICO.** "in terris occidentalibus Mexici," s.d., *T. Haenke s.n.* (PR-n.v.).

= *Riedlea elongata* C. Presl, Rel. Haenk. 2: 148. 1835 ("*Riedleia*"). **LECTOTYPE** (as "type" designated by Goldberg 1967): **USA. California.** "California ad Monte-Rey," s.d., *T. Haenke s.n.* (PR-24355-n.v. [= US neg. no. 5549]).

= *Melochia vestita* Benth., J. Bot. (Hooker) 4: 130. 1841. **LECTOTYPE** (designated here): **GUYANA** ["British Guiana"]. Sine loc., 1836, *R.H. Schomburgk* [ser. 1] *133* (K000380951 [as image]!; isolectotypes: BM-n.v., BR0000005423071 [as image]!, E00265879 [as image]!, F0073562F [as image]!, K000779792!, K000779793!, P02273624 [= F neg. no. 35388] [as image]!, TCD0003745 [as image]!, W-n.v.).

= *Melochia clinopodium* A. St.-Hil. & Naudin, Ann. Sci. Nat., Bot., sér. 2, 18: 36. 1842 ("*Clinopodium*"). **TYPE: BRAZIL. Mato Grosso.** Province de Mato-Grosso, 1833, *C. Gaudichaud s.n.* [Herbier Impérial du Brésil N.º 170] (holotype: P02273614 as image!).

= *Melochia densiflora* Miq., Linnaea 22: 800. 1849. **LECTOTYPE** (designated here): **BRAZIL. Bahia.** Jacobin [= Jacobina], s.d., *J.S. Blanchet 3231* (U1374703 [as image]!; isolectotypes: BM013853099 [as image]!, BM013853101 [as image]!, P006626449 [as image]!).

= *Riedlea cubensis* Turcz., Bull. Soc. Imp. Naturalistes Moscou 31(1): 209. 1858 ("*Riedleja Cubensis*"). **TYPE**: **CUBA.** Sine loc., s.d., [*E.F. Poeppig s.n.*] (holotype: KW001000132 [as image]!).

= *Riedlea jurgensenii* Turcz., Bull. Soc. Imp. Naturalistes Moscou 31(1): 211. 1858 ("*Riedleja Jurgensenii*"). *Melochia jurgensenii* (Turcz.) Hemsl., Biol. Centr. Amer. Bot. 1: 131. 1879. **TYPE**: **MEXICO.** [**Sonora**]. Sierra San Pedro Nolasco, Talea, &c., 1843–44, *C. Jürgensen 751* (holotype: KW001000127 [as image]!; isotype: G00358510 [= F neg. no. 23859] [as image]!).

= *Riedlea heterotricha* Turcz., Bull. Soc. Imp. Naturalistes Moscou 31(1): 211. 1858 ("*Riedleja*"). **LECTOTYPE** (designated here): **MEXICO. Veracruz.** Miradores [= Mirador], 3000 peds, 1838, *J.J. Linden 835 p.p.* (KW001000131 [as image]!; isolectotypes: BR0000005423118 [as image]!, MICH1192754 [as image]!).

= *Riedlea tenella* Turcz., Bull. Soc. Imp. Naturalistes Moscou 31(1): 212. 1858 ("*Riedleja*"). *Melochia tenella* (Turcz.) Hemsl., Biol. Centr. Amer. Bot. 1: 132. 1879. **TYPE**: **MEXICO.** [**Sonora**]. Sierra San Pedro Nolasco, Talea, &c., 1843–44, *C. Jürgensen 506* (holotype: KW001000122 [as image]!; isotypes: BM000630185 [as image]!, BM000630198 [as image]!, G00358509 [= F neg. no. 23864] [as image]!, K000380894 [as image!] [= US neg. no. 5414]).

= *Riedlea scutellarioides* Turcz., Bull. Soc. Imp. Naturalistes Moscou 31(1): 210. 1858 ("?*Riedleja*"). *Melochia scutellarioides* (Turcz.) Hemsl., Biol. Centr. Amer. Bot. 1: 131. 1879. **TYPE: MEXICO. Veracruz.** Prope Miradores [= Mirador], s.d., *J.J. Linden 835* p.p. (holotype: KW001000126 [as image]!).

= *Melochia cephalodes* K. Schum. in Martius, Fl. Bras. 12(3): 45. 1886. **LECTOTYPE** (designated here): **BRAZIL**. Minas Gerais. Serra da Lapa, 18 Nov 1824, *L. Riedel 902* (K000380953 [as image]!; isolectotype: LE-n.v.).

= *Melochia hirsuta* var. *grandiflora* K. Schum. in Martius, Fl. Bras. 12(3): 46. 1886 ("Var. β *grandiflora*"). **LECTOTYPE** (designated here): **BRAZIL. Bahia.** "Prope urbem," s.d., *J.S. Blanchet 1589* (P02273623 [as image]!; isolectotypes: BM013853098 [as image]!, P02273622 [as image]!).

= *Melochia hirsuta* var. *rotundifolia* K. Schum. in Martius, Fl. Bras. 12(3): 46. 1886 ("Var. γ *rotundifolia*"). **LECTOTYPE** (designated here): **BRAZIL. Minas Gerais.** Rio Arassuahy, 8 Jul 1880, *A. Glaziou 12460* (P06626377 [as image]!; isolectotypes: BR0000005586103 [as image]!, K001212638 [as image]!, R000007704 [as image]!).

= *Melochia hirsuta* var. *glabrata* K. Schum. in Martius, Fl. Bras. 12(3): 47. 1886 ("Var. ε *glabrata*"). **LECTOTYPE** (designated here): **BRAZIL. São Paulo.** "In Provincia S. Paulo, Batataës in umbrosis," [Jun 1834], *L. Riedel* [*& B. Luschnath*] *2243* (P02273613 [as image]!; isolectotypes: K001212659 [as image]!, LE-n.v. [= US neg. no. 5269], P02273612 [as image]!).

Notes. The protologue of *Riedlea serrata* (Ventenat 1807a) states that the species was described from plants cultivated by J.P.M. Cels in 1800 from seed collected by A. Riedlé in Puerto Rico. No original material has been located. A specimen labeled "Hort. (Cels)" was found (P02273608 [as image]!) but it is dated 1809, which is several years after the name was published. Likewise, although Ventenat (1807b) illustrated the species several months after validating the name, he does not explicitly state in the earlier original description that the plate was examined or even that it existed. Consequently, it seems best to designate a neotype (Turland et al. 2018; Arts. 9.4, 9.8).

Malva spicata has not been collected in California, which makes the type locality cited in the protologue of *Riedlea elongata* suspect. Although T. Haenke and the Malaspina Expedition did visit California (Jepson 1899), the type of this name probably was collected when the expedition visited the Pacific coast of Mexico.

In describing *Riedlea scutellarioides* Turczaninow (1858) stated "Specimen unicum mixtum in collectione Mexicana Lindeni cum R. heterotricha Turcz. sub n. 835" (i.e., the name was based on a unicate specimen mixed in with the type of *R. heterotricha*). Duplicates are unlikely to exist.

Schumann (1886) cited only "*Riedel n. 2243*" when he described *Melochia hirsuta* var. *glabrata*. An isolectotype in LE [= US neg. no. 5269], however, is labeled as having been collected by "L. Riedel & B. Luschnatt [sic]: Iter Brasiliense 1831–35." Labels on all the other material of this collection distributed by LE have only Riedel as collector.

Goldberg (1967) published a key to distinguish the three varieties that are considered here part of the *Melochia spicata* complex, and Gonçalez and Esteves (2015) published a slightly modified key to their different circumscription of these same three taxa. The keys rely principally on pubescence and to a much lesser extent inflorescence, bract, and capsule characters.

MELOCHIA SPICATA var. **REGNELLII** (K. Schum.) Dorr, **comb. nov.** *Melochia hirsuta* var. *regnellii* K. Schum. in Martius, Fl. Bras. 12(3): 46, t. 10. 1886 ("Var. δ *Regnellii*"). *Melochia villosa* var. *regnellii* (K. Schum.) Goldberg, Contr. U.S. Natl. Herb. 34(5): 287. 1967. **LECTOTYPE** (designated by Goldberg 1967): **BRAZIL. Minas Gerais.** Caldas, 2 May 1870, *A.F. Regnell Ser. III, No. 278* (S-R-11312 [as image]!; possible isolectotype: R-n.v.).

Notes. A large number of specimens are labelled "*Regnell Ser. III, No. 278*" yet have a bewildering array of dates that differ from the date given on the lectotype label. These include the following specimens, at least: BR0000005422463 [as image]!, F-V0073551F [as image]!, M0209736 [as image]!, NY00222317 [as image]!, P02273615 [as image]!, P02273616 [as image]!, P02273617 [as image]!, U0246319 [as image]!, U1374704 [as image]!, US00102093!, S14-46314 [as image]!, S14-46316 [as image]!, and S14-46318 [as image]! These Regnell collections are not considered here as isolectotypes since it cannot be established due to their conflicting dates that they are part of a single gathering. This problem of varying dates on Regnell specimens of the same number has been noted before (Fryxell 2009; Saunders and Dorr 2022) and it may be that these numbers are species-distribution rather than collection numbers.

Melochia spicata var. *regnellii* differs from the nominate variety in that the apical portion of the stems and branches have simple hairs in two longitudinal lines (versus stellate hairs not in discrete longitudinal lines), leaf blades with simple hairs above and below (versus leaf blades with stellate hairs above), foliaceous floral bracts to 2.5 mm wide (versus 1.5 mm wide), and capsules estipitate (versus stipitate) (see also Gonçalez and Esteves 2017, Fig. 3).

Gonçalez (Gonçalez & Esteves 2015) attempted to transfer *Melochia hirsuta* var. *regnellii* K. Schum. to *M. villosa* and to elevate the varietal name to species rank, but the combination he proposed is invalid because the basionym was not indicated nor was there a direct reference to its author and "place of valid publication, with page or plate reference and date" (Turland et al. 2018; Art. 41.5). The variety is clearly related to *M. spicata* and the characters cited above do not seem to warrant the change in rank. The variety does not appear to have a discrete range and occurs sympatrically with both the nominate variety and *M. spicata* var. *tomentosa* (K. Schum.) Dorr (Gonçalez & Esteves 2017, fig. 4).

MELOCHIA SPICATA var. **TOMENTOSA** (K. Schum.) Dorr, **comb. nov.** *Melochia hirsuta* var. *tomentosa* K. Schum. in Martius, 12(3): 47. 1886 ("Var. ζ *tomentosa*"). *Melochia villosa* var. *tomentosa* (K. Schum.) Goldberg, Contr. U.S. Natl. Herb. 34(5): 287. 1967. **LECTOTYPE** (designated here): **BRAZIL. Goiás.** Inter Rio Paranahyba [= Paranaiba] et urbem Goyaz, s.d., *W. Burchell 6009* (BR0000005585779 [as image]!; isolectotype: K001212687 [as image]!).

= *Melochia hirsuta* var. *macrophylla* K. Schum. in Martius, Fl. Bras. 12(3): 47. 1886 ("Var. η *macrophylla*"). **LECTOTYPE** (designated here): **BRAZIL. São Paulo.** Pr. Ytú [= Itú], 1831–35, *L. Riedel & B. Luschnatt* [sic] *1992 p.p.* (LE-n.v. [= US neg. no. 5274]; possible isolectotype: K001212678 [as image]!).

= *Melochia hirsuta* var. *calophylla* K. Schum. in Martius, Fl. Bras. 12(3): 47. 1886 ("Var. θ *calophylla*"). **LECTOTYPE** (designated here): **BRAZIL** ["Brasilia"], Sine loc., s.d., *J.B.E. Pohl 517* (M0209735 [as image]!; isolectotypes: M0209734 [as image]! [= F neg. no. 19636], W-n.v.).

= *Melochia subcordata* Morong, Ann. Acad. New York Sci. 7: 62. 1892. **LECTOTYPE** (designated here): **PARAGUAY. Central.** "Near Luque," Dec 1888, *T. Morong 292* (NY00222325!; isolectotypes: F0073560F [as image]!, MO-1484430 [as image]!, PH00017195 [as image]!, TEX00371928 [ex WELC] [as image]!, US00102109!).

= *Melochia hirsuta* f. *albiflora* K. Schum. & Hassl., Bull. Herb. Boissier, sér. 2, 4: 72. 1903. **TYPE: PARAGUAY. Concepción.** In valle fluminis Y-acá in arenosis pr. Valensuela [= Valenzuela], Feb 1900, *E. Hassler 7091* (holotype: G00382207 [as image]!).

= *Melochia hirsuta* f. *ferruginea* K. Schum. & Hassl., Bull. Herb. Boissier, sér. 2, 4: 72. 1903. **LECTOTYPE** (designated here): **PARAGUAY. Concepción.** In valle fluminis Y-acá, in campis pr. Piribebuy, Dec 1900, *E. Hassler 6748* (lectotype: G00382204 [as image]!; isolectotypes: G00382203 [as image]!, S14-46307 [as image]!).

Notes. Schumann (1886) based *Melochia hirsuta* var. *tomentosa* on several syntypes, including "*Riedel n. 1992 ex parte*." Goldberg (1967) selected "*Riedel* 1992 dupl. 16" (W 1890-0002628 [as image]!) as the lectotype but it cannot be established that this sheet is original material for this variety. The handwriting on the specimen is not that of Schumann and there is nothing to indicate that "dupl. 16" is the part of "*Riedel 1992*" that Schumann used. Inasmuch as other unambiguous syntype material is available it seems appropriate to supersede Goldberg's lectotypification. Consequently, *Burchell 6009* (BR0000005585779 [as image]!) is selected to serve as lectotype of this name. This lectotype sheet is from the Martius Herbarium ("ex Herbarium Martii") and annotated "*Melochia hirsuta* Cav. ζ *tomentosa* K.Sch." by Schumann clearly establishing that it is original material.

Schumann (1886) also based *Melochia hirsuta* var. *macrophylla* on "*Riedel n. 1992 ex parte*" and wrote "*Var. η. in provincia Minas Geraës*." While several duplicates of *Riedel 1992* are extant, the one in LE selected as lectotype and annotated "*Melochia hirsuta* Cav. η *macrophylla* Sch" by Schumann gives "pr. Ytu" [sic] as the locality and not the locality cited in the protologue. The lectotype also is labeled as being collected by Riedel & Luschnath while the specimen in K (ex LE) has only Riedel as collector and neither locality nor date.

The type of *Melochia hirsuta* f. *ferruginea* is *Hassler 6748*, which according to the protologue was collected "In campis montanis pr. Piribebuy." There are four specimens of this collection at G of which only two have labels with locality data that match the protologue. The specimen with the more ample inflorescence is selected as the lectotype. A number of duplicates of *Hassler 6748* (i.e., G00382205 [as image]!, G00382206 [as image]!, MICH1202716 [as image]!, MPU742406 [as image]!, NY214649!, P02273620 [as image]!, and P06625480 [as image]!), however, have printed labels that give a different locality, "In regione cursus superioris fluminis – Y-acá," and as a consequence are not considered types. Someone struck a line through the locality data on the MICH sheet presumably having noted the conflict with the protologue. A specimen in BM (BM013853252 [as image]!) has the printed locality data reduced to "In regione Cordillerae centrale." Additional duplicates of *Hassler 6748* (BM000545936b, C, LIL, MO, and W) have not been seen.

Names in the *Malva spicata* complex not validly published or excluded

Malva mollis Willd. ex Kunth in H.B.K., Nov. Gen. Sp. 5 [qu.]: 331, Ibid. 5 [fol.]: 257. 1823 ("1821"), nom. nud., pro syn. = **Malva spicata** (L.) Fryxell var. **spicata**

Malveopsis spicata var. *normalis* Kuntze, Revis. Gen. Pl. 1: 72. 1891 ("α *normalis*"), nom. inval. = **Malva spicata** (L.) Fryxell var. **spicata**

Melochia cardenasii Rusby ("*Cardenasii*"), nom. nud., in sched. = **Malva spicata** (L.) Fryxell var. **spicata. Note.** Rusby annotated specimens of *M. Cardenas 1628* from Bolivia (e.g., US03378709!) with this unpublished name.

Melochia hirsuta var. *paraguayensis* Chodat, Bull. Herb. Boissier, sér. 2, 1: 403. 1901 ("*paraguagensis*"). **LECTOTYPE** (designated here): **PARAGUAY. Cordillera.** In campo pr. San Bernardino, Jul [1885–1895], *E. Hassler 384* (lectotype: G00382210 [as image]!; isolectotypes: G00382208 [as image]!, G00382209 [as image]!, P02273621 [as image]!). = **Waltheria indica** L.

Melochia hirsuta f. *minus induta* K. Schum. & Hassl., Bull. Herb. Boissier, sér. 2, 4: 72. 1903, nom. inval. = **Melochia spicata** var. **tomentosa** (K. Schum.) Dorr. **Note.** The full "epithet" is

"*minus induta* quam typus," which even when truncated is not properly formed as it consists of two or more adjectival words in the nominative case (see Turland et al. 2018; Art. 23.6(c), Ex. 19).

Melochia regnellii (K. Schum.) Gonçalez, Phytotaxa 226: 220. 2015, comb. inval. = **Melochia spicata** var. **regnellii** (K. Schum.) Dorr. **Note:** The combination is not valid because the author failed to clearly indicate the basionym, etc. (see Turland et al. 2018; Art. 41.5).

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