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OVERVIEW OF *VICIA* (FABACEAE) OF MEXICO

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Abstract: *Vicia* has 12 species in Mexico; 4 of the 12 are introduced. Two new names are proposed: ***Vicia mullerana*** B.L. Turner, **nom. & stat. nov.**, (based on *V. americana* subsp. *mexicana* C.R. Gunn, non *V. mexicana* Hemsl.), and ***V. ludoviciana*** var. ***occidentalis*** (Shinners) B.L. Turner, based on *V. occidentalis* Shinners, **comb. nov.** *Vicia pulchella* Kunth subsp. *mexicana* (Hemsley) C.R. Gunn is better treated as *V. sessei* G. Don, the earliest name at the specific level. A key to the taxa is provided along with comments upon species relationships, and maps showing distributions.

Keywords: *Vicia*, *V. americana*, *V. ludoviciana*, *V. pulchella*, *V. sessei*, Mexico.

Vicia, with about 140 species, is widely distributed in temperate regions of both hemispheres (Kupicha, 1982). Some of the species are important silage, pasture, and green-manure legumes. Introduced species such as *V. faba*, *V. hirsuta*, *V. villosa*, and *V. sativa* are grown as winter annuals in Mexico, but are rarely collected. Gunn

(1979) provided an exceptional treatment of the Mexican taxa, nearly all of which were illustrated by full-page line sketches. As treated by Gunn, eight species are native to Mexico and four are introduced. I largely follow Gunn's treatment, but a few of his subspecies have been elevated to specific rank, or else treated as varieties.

KEY TO THE SPECIES OF *VICIA* IN MEXICO (largely adapted from Gunn, 1979)

- | | | |
|--------|---|--------------------------|
| 1. | Stipules bearing dark splotches | (2) |
| 1. | Stipules lacking dark splotches | (3) |
| 2. | Tendrils absent; plants erect, black after drying | 2. <i>V. faba</i> |
| 2. | Tendrils present; plants vine-like, green after drying | 10. <i>V. sativa</i> |
| 3. | Style glabrous or glabrate; corollas 3–5 mm long | 4. <i>V. hirsuta</i> |
| 3. | Style hairy; corollas mostly 6 mm long or more | (4) |
| 4. | Hairs on style <i>not</i> all similar and circling the shaft | (5) |
| 4. | Hairs on style all similar and circling the shaft | (8) |
| 5. | Stylar hairs medial; racemes 1–2-flowered | 6. <i>V. leucophaea</i> |
| 5. | Stylar hairs apical; racemes 2–4-flowered | (6) |
| 6. | Annuals; racemes 1–5 flowered | 7. <i>V. ludoviciana</i> |
| 6. | Perennials; racemes 2–26 flowered | (7) |
| 7. | Corolla 6–10 mm long | 9. <i>V. pulchella</i> |
| 7. | Corolla 11–18 mm long | 11. <i>V. sessei</i> |
| 8. | Banner 10 mm long or less | (9) |
| 8(4). | Banner 11 mm long or more | (10) |
| 9. | Style branches not tufted apically, hairs relatively short; not Baja California | 3. <i>V. hassei</i> |
| 9. | Style branches tufted apically, hairs relatively long; Baja California | 5. <i>V. humilis</i> |
| 10(8). | Calyx gibbous at base; racemes mostly 10–14-flowered | 12. <i>V. villosa</i> |
| 10. | Calyx not basally gibbous; racemes mostly 3–10-flowered | (11) |
| 11. | Calyx tube 4–6 mm | 1. <i>V. americana</i> |
| 11. | Calyx tube 2–3 mm long | 8. <i>V. mullerana</i> |

1. *Vicia americana* Muhl. ex Willd., Sp. Pl. 3: 1096. 1802. Fig. 1.

As treated by Gunn (1979), *Vicia americana* is highly variable and largely

confined to the USA. He recognized within its fabric populations from north-central Mexico that he called *V. a.* subsp. *mexicana* C.R. Gunn, typified by plants collected from near Monterrey, Nuevo Leon, Mexico and



FIG. 1. Distribution of *Vicia americana*, *V. hassei*, and *V. villosa*.

known by other populations from that general area (Fig. 1).

Gunn distinguished *Vicia americana* subsp. *mexicana* from *V. a.* subsp. *americana* by characters of the calyx, the teeth unequal in the latter, more or less equal in the former. A better calyx character is size, as emphasized in the above key; *V. m.* subsp. *mexicana* also possesses fewer flowers per raceme and smaller flowers and appears to possess a syndrome of characteristics that appear confined to north-central Mexico. For *V. a.* subsp. *americana*, Gunn noted that "In Texas, *V. a.* subsp. *americana* occurs no further south than the Panhandle" and added that populations of *V. a.* subsp. *americana* (said to be typified by Oaxacan material but I have never seen a specimen collected from Oaxaca) are to be found in central Mexico, these thought to be

relics "of what once was a larger population in Mexico." I agree with this assertion, but believe that his *V. a.* subsp. *mexicana*, which is known from north-central Mexico, evolved independently and is worthy of specific status, possessing a combination of singular characteristics and restricted geography and showing little evidence of intergradation with *V. a.* subsp. *americana*. The newly discerned entity is described below as *V. mullerana*.

2. *Vicia faba* L., Sp. Pl. 737. 1753. Fig. 2.

Relatively few collections of *Vicia faba*, a widely cultivated species, have been made in Mexico. Gunn provided an excellent account of the species. Most of the dots on my Fig. 2 are taken from specimens cited (but not mapped) by him.



FIG. 2. Distribution of *Vicia ludoviciana* showing the two varieties and location of intermediate forms, *V. faba*, and *V. hirsuta*.

3. *Vicia hassei* S. Wats., Proc. Amer. Acad. Arts 25: 129. 1890. Fig. 1.

This species is known from Mexico only by collections from northern Baja California and off-shore islands. It superficially resembles *V. ludoviciana* but is readily distinguished by its styler hairs that are of unequal lengths rather than of equal lengths (Lassetter 1975, Gunn 1979).

In Gunn's key to species, in which *Vicia hassei* is separated from *V. humilis* (key couplet 9, there appears to be an error of repetition as regards style and calyx characters, an unusual slip for Mr. Gunn, his work mostly error free.

4. *Vicia hirsuta* (L.) Gray, Nat. Arr. Brit. Pl. 2: 614. 1821. Fig. 2.

This cultivated species is identified by its peculiar styler hairs (only a few scattered cilia at the apex) and relatively small, hairy pods. Gunn cites three collections from Mexico, mapping only one of these; the sole square on my Fig. 2 is that of a Hinton collection from Temascaltepec, Mexico State.

5. *Vicia humilis* Kunth, Nov. Gen. Sp. Pl. 6: 498. 1824. Fig. 3.

As noted by Gunn, this is a commonly encountered native species of Mexico as



FIG. 3. Distribution of *Vicia humilis* and *V. leucophaea*.

shown in Fig. 3. Note my comments under *Vicia hassei* re keying errors.

6. *Vicia leucophaea* Greene, Bot. Gaz. 6: 217. 1881. Fig. 3.

This relatively rare species is known by collections from northwestern Mexico and adjacent USA. It is identified by its unique stilar pubescence and inflorescences with 1–2 flowers.

7. *Vicia ludoviciana* Nutt. ex Torrey & A. Gray, Fl. N. Amer. 1: 271. 1838. Fig. 2.

Isely (1998) provided an overview of variation in *Vicia ludoviciana*, recognizing two broadly delimited regional taxa, both occurring in Texas, only one extending into Mexico.

The type of this relatively widespread variable species was, according to the description of the species, collected by Leavenworth from “grassy places on the Red River in Texas” in the early 1800s. Shinnars (1948) provided an excellent overview of the complex, noting that it is seemingly composed of an eastern assemblage of populations, which he referred to as *Vicia ludoviciana* var. *ludoviciana* (I include in this *V. l.* var. *laxiflora* Shinnars and *V. l.* var. *texana* [Torrey & A. Gray] Shinnars, both typified by plants from eastern Texas), and western assemblage of populations, which he referred to as *V. leavenworthii* var. *occidentalis* Shinnars. The distribution in Texas of these two regional complexes, which I recognize as intergrading in Texas,



FIG. 4. Distribution of *Vicia sativa* and *V. mullerana*.

but not in Mexico, is shown in Fig. 2 (taken from Turner et al. 2003).

Broich (2007) took up the name *Vicia ludoviciana* var. *leavenworthii* (type from Arkansas) for the western assemblage. In my opinion it is better named **Vicia ludoviciana** var. **occidentalis** (Shinners) B.L. Turner, **comb. nov.** based upon *Vicia leavenworthii* var. *occidentalis* Shinners, Field & Lab. 16: 22. 1948 (holotype: *Muller s. n.*, Chisos Mts, 29 Jul 1932, SMU; isotypes MO, NY).

Gunn (1979) treated the two regional groupings as subspecies, with the Mexican material as part of his *Vicia ludoviciana* subsp. *ludoviciana* (T. & G.) Lassetter & Gunn (Lassetter 1984, cf. Turner and Nesom 2000 for additional discussion). Mexican material of this taxon is more appropriately labeled *Vicia ludoviciana* var. *occidentalis* (see above). The following key gives the major differences between the varieties.

KEY TO THE VARIETIES OF *VICIA LUDOVICIANA*

- Leaflets of mid-stem leaves 1–3 mm wide, length 5–10 times width; racemes usually shorter than subtending leaves, mostly 1–3(4)-flowered; central and western USA var. *occidentalis*
 Leaflets of mid-stem leaves (2)-3–5 mm wide, length 4–6 times width; racemes mostly longer than subtending leaves, 4 or more flowered; eastern USA var. *ludoviciana*

8. *Vicia mullerana* B.L. Turner, nom. & stat. nov. Fig. 4.

Based on *Vicia americana* Muhl. Ex Willd. subsp. *mexicana* C.R. Gunn, USDA



FIG. 5. Distribution of *Vicia pulchella*.

Tech. Bull. 1601: 25. 1979, non *Vicia mexicana* Hemsl. Type: Mexico. Nuevo Leon, Puerta, Jul 1933, C.H. Muller and M.T. Muller 510 (Holotype: MEXU; Isotypes: F, TEX).

PERENNIAL HERBS, 10–60 cm high. STEMS glabrous. LEAVES (tendrils excluded) 2–6 cm long; leaflets (2-)4–9, linear-lanceolate to ovate, entire, mostly 15–30 mm long, 2–8 mm wide. STIPULES lanceolate to irregularly deltate, 3–5 mm long, lacking dark splotches. PEDUNCLES 2–6 cm long, 1–4-flowered. PEDICELS ca. 2 mm long. COROLLAS 8–10 mm long, the banners 6–9 mm long. CALYCES sparsely hairy, 4–6 mm long, not gibbous; tubes 2–3 mm long; lobes 1–3 mm long. STYLE apex tufted, length of lower hairs 2–3 times the upper. LEGUMES glabrous, 25–30 mm long, 6–7 mm wide.

Vicia mullerana consistently differs from *V. americana* in having fewer, smaller

flowers with smaller calyces. It is discussed in more detail under *V. americana*, above. According to label data, the plants occur in pine-oak forests, from 1400 to ca. 3000 m; flowering: Apr–Aug.

Vicia mullerana is named for Prof. Cornelius Herman (Neil) Muller and his wife, M.T. Muller (nee M. E. Taylor) who collected the type material.

9. *Vicia pulchella* Kunth, Nov. Gen. Sp. Pl. 6: 499. 1824. Fig. 5.

According to Gunn (1979), *Vicia pulchella* is the most common and widespread native Mexican vetch, and it is one of two vetches endemic to Central America. He recognized within this complex two sympatric infraspecific taxa, *Vicia pulchella* subsp.



FIG. 6. Distribution of *Vicia sessei*.

pulchella and *V. p.* subsp. *mexicana* [= *M. sessei*], these largely delimited by corolla length. Gunn stated, “Of the approximately 250 specimens of the subspecies *pulchella* and *mexicana* collected in Mexico and Guatemala, only three have an intermediate flower length.” I agree with Gunn’s assessment. I, too, found no evidence of intergradation between the two taxa, at least among the sheets from Mexico that I examined at LL-TEX.

Because *Vicia pulchella* and *V. sessei* are sympatric, showing little evidence to form natural hybrids, they appear worthy of specific rank, as treated herein.

10. *Vicia sativa* L., Sp. Pl. 736. 1753. Fig. 4.

This is a widespread, cultivated species, native to Europe, having a long list of

synonyms. It is reportedly represented by five or more infraspecific taxa, as well noted by Gunn (1979), who provided a key to at least six of the described subspecies. In Mexico, I have treated the complex as a single species without infraspecific taxa, as indicated in Fig. 4.

11. *Vicia sessei* G. Don, Gen. Hist. 2: 318. 1832. Fig. 6.

Vicia mexicana Hemsl.

Vicia pulchella subsp. *mexicana* (Hemsl.) C.R. Gunn

Reasons for the treatment of this taxon at specific rank are given under *Vicia pulchella* above. The correct name at the specific level is *Vicia sessei* G. Don, typified by *Sesse & Mocino* 3636, from Mexico.

12. *Vicia villosa* Roth, Tent. Fl. Germ. 2: 182. 1793. Fig. 1.

This is a cultivated species, native to Europe and widely distributed elsewhere. Gunn (1979) was only familiar with collections from Guatemala; more recent collections (LL-TEX) have been obtained from Mexico in or near cultivated fields in southern Coahuila and adjacent Nuevo Leon.

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Grenadier produced the final versions of the maps.

LITERATURE CITED

- Broich, S. L.** 2007. New combinations in North American *Lathyrus* and *Vicia* (Fabaceae: Faboideae: Fabae). *Madroño* 54: 63–71.
- Gunn, C. R.** 1979. Genus *Vicia* with notes about tribe Viceae (Fabaceae) in Mexico and Central America. USDA Tech. Bull. 1601: 1–41.
- Isely, D.** 1998. Native and naturalized Leguminosae (Fabaceae) of the United States, Brigham Young Univ., Provo, Utah.
- Kupicha, F. K.** 1982. Tribe Viceae. In R. Polhill and P.H. Raven, eds. *Advances Legume Syst.* part 1: 377–381, Royal Botanic Garden, Kew.
- Lassetter, J. S.** 1975. Taxonomic status of *Vicia hassei* (Leguminosae). *Madroño* 23: 73–78.
- . 1984. Taxonomy of the *Vicia ludoviciana* complex (Leguminosae). *Rhodora* 86: 475–505.
- Shinners, L. H.** 1948. The vetches and pea vines (*Vicia* and *Lathyrus*) of Texas. *Field & Lab.* 16: 18–29.
- Turner, B. L. and G. L. Nesom.** 2000. Use of variety and subspecies and new varietal combinations for *Styrax platanifolius* (Styracaceae). *Sida* 19: 257–262.
- , **H. Nichols, G. Denny, and O. Doron.** 2003. *Atlas of the Vascular Plants of Texas*. Vol. 1: 1–647. *Sida, Bot. Misc.* 24.