

## Recension of *Viguiera* (sensu stricto) (Asteraceae: Heliantheae) of Mexico

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### ABSTRACT

A taxonomic account of the genus *Viguiera* (sensu stricto) for Mexico is rendered. Two species are recognized within the complex: a very localized edaphic endemic of northern Michoacan, *V. moreliana* B.L. Turner, **sp. nov.** and a widespread, highly variable, *V. dentata* with 4 intergrading varieties, one of these newly described, var. *longibracteata* B.L. Turner, **var nov.**, a localized gypsophile from sw Coahuila. A complete synonymy is provided, along with keys to the taxa, and maps showing their distribution, all following the format of my ongoing, Comps of Mexico Turner (2014).

**KEY WORDS:** Asteraceae, Heliantheae, *Viguiera*, *V. dentata*, Mexico. Published on-line [www.phytologia.org](http://www.phytologia.org) *Phytologia* 97(1): 16-24 (Jan 2, 2015). ISSN 030319430.

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### VIGUIERA H.B.K. [sensu stricto]

Annual or perennial herbs, shrublets, shrubs or small trees to 5 m high. Leaves opposite below, opposite or alternate above, simple, entire, dentate or shallowly lobed. Heads radiate, solitary or arranged in a branched capitulescence. Involucres 2-7 seriate, the bracts graduate or subequal, appressed or markedly reflexed. Ray florets neuter, sterile, the ligules yellow. Disk florets numerous, yellow. Achenes obovate, plump at maturity, radially compressed, the margins without wings, the pappus, when present, of 2 lateral awns between which are present 2-8 lacerate short scales. Base chromosome number,  $x = 17$ .

Type species, *Viguiera dentata* (Cav.) Spreng.

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As treated by Blake (1918), **Viguiera** was conceived as a large genus with perhaps 150 species. McVaugh (1984) and Panero (2006) essentially accepted Blake's circumscription. Schilling and Panero (2011), largely on DNA data, drastically revised **Viguiera** and related genera, restricting the latter to a single species, the widespread, commonly encountered, **V. dentata**, this readily identified by the pubescent filaments of its stamens (other taxa lacking such hairs). In addition to their earlier establishment of **Bahiopsis**, **Davilianthus**, **Heliomeris**, **Hymenostephium** (Schilling and Panero 2002), these carved out of Blake's **Viguiera**, they also recognized four newly described genera from within its midst: **Dendroviguiera**, **Gonzalezia**, **Heiseria** and **Sidneya**, at the same time expanding **Aldama** (including *Rhysolepis*) to about 120 taxa. All very difficult, but the authors did provide a partial key to the complex, intercalated with yet other genera of the tribe Heliantheae, this difficult to use, as might be expected following such extraordinary reevaluations.

Early on, I accepted a monotypic **Viguiera**, as espoused by Schilling and Panero (2011), readily recognized by its markedly pubescent filaments, the only Mexican species to possess this trait (H. Robinson, 1977). Previous workers accepted several intergrading infraspecific taxa within the **V. dentata** complex. In the present reappraisal of **Viguiera**, I treat the genus as consisting of two species: **V. dentata**, a widespread taxon having 4 intergrading varieties, and the newly proposed **V. moreliana**, confined to the state of Michoacan, and without evidence of intergradation with **V. dentata** or its varieties.

#### Key to species

1. Peduncles and petioles pubescent with loose spreading trichomes  
1.0-1.5 mm long; petioles wingless, abruptly passing into the broadly  
subcordate blades; north-central Mic.....**V. moreliana**
1. Peduncles and petioles pubescent with stiff appressed hairs; petioles  
with a pronounced wing or not, these often passing into the blades;  
absent from n Mic.....**V. dentata**

**VIGUIERA DENTATA** (Cav.) Spreng., Syst. 3: 615. 1826.

This is an extremely variable, widespread species, forms of which may mimic this or that taxon, making it difficult to key using leaf or floral characters. Fortunately, so far as known, it is the only Mexican species of **Viguiera** with pubescent anther filaments. Nevertheless, occasional specimens of this or that taxon appear to have glabrous filaments, or nearly so (e.g., *Sharp 441041*, NY; etc.).

Blake (1918) recognized what he thought were 4, well-marked, varieties within **V. dentata**. I can recognize 3 of these, but they do not appear to be especially well-marked, since I find considerable intergradation among them. I have added a fourth varietal taxon (var. **longibracteata**) to the complex, plus a new species, **V. moreliana**, confined to north-central Michoacan, the latter having densely pubescent staminal filaments, but it does not grade into **V. dentata**.

#### Key to varieties

1. Outermost involucre bracts 1-3 cm long; mostly gyp soils  
of southwestern Coa .....var. **longibracteata**
1. Outermost involucre bracts mostly 0.5-1.0 cm long; widespread...(2)

2. Leaves lanciform, the petioles tapered-upon to the base or nearly so; capitulescence few-headed, the ultimate peduncles mostly 2-10 cm long; Sierra Madre Occidental, Son, Chi, Sin, Dur .....var. **lancifolia**
2. Leaves broader, ovate to deltoid, or if lanciform then densely pubescent beneath; capitulescence more compact, few- to numerous-headed on ultimate peduncles mostly 1-6 cm long; s Central Plateau and Gulf coastal slopes, Chi to Cps ...(3)
3. Leaves densely and softly pubescent beneath, usually winged; heads relatively large, Central Plateau (Zac, Agu south to Cps) .....var. **canescens**
3. Leaves otherwise; heads smaller; n and e Central Plateau and Gulf slopes (Chi, Nue s to Cps, Cam, Yuc, Qui) ..... var. **dentata**

var. **dentata**

*Encelia montana* Brandegee

*Helianthella latifolia* Scheele

*Helianthus dentatus* Cav.

*Helianthus triqueter* Ort.

*Viguiera brevipes* DC.

*Viguiera dentata* var. *brevipes* (DC.) Blake

*Viguiera grammatoglossa* DC.

*Viguiera helianthoides* H.B.K.

*Viguiera dentata* var. *helianthoides* (H.B.K.) Blake

*Viguiera laxa* DC.

*Viguiera laxa* var. *brevipes* (DC.) A. Gray

*Viguiera microcline* DC.

*Viguiera oppositipes* DC.

*Viguiera pedunculata* Seaton

*Viguiera sagraeana* DC.

*Viguiera texana* Torr. & Gray

**USA:** Ariz, N. Mex and Tex. **MEX:** Son, Chi, Coa, Nue, Tam, Sin, Dur, Zac, San, Nay, Jal, Col, Gua, Que, Hid, Mic, Mex, Pue, Ver, Gue, nw Oax, Cps, Yuc, Cam, Qui and Guatemala southwards, weedy along roadsides and in cleared fields, mostly dry shallow soils, 1000-2000 m; all seasons. **Map 1** Erect perennial herbs 50-150 cm high; leaves mostly alternate above, rarely opposite throughout, 5-15 cm long, 3-8 cm wide, petioles 1-5 cm long, taperingly-winged throughout or not; blades exceedingly variable as to shape, but mostly ovate to ovate-deltoid, very rarely 3-lobed, 3- or 5-nervate from, or above, the base, the margins entire to coarsely dentate, rather hispid or rough-pubescent beneath; heads radiate, few to numerous in terminal branched panicles; involucre campanulate to hemispheric, 3-4 seriate, the bracts graduate to subequal; rays 5-13, the ligules yellow, 8-20 mm long; achenes pubescent, pappose with 2 slender awns 2-3 mm long, the intervening scales mostly un-united, 0.5-1.0 mm long; chromosome number, n = 17 pairs.

This broad-ranging, highly variable, taxon grades into var. **lancifolia** in the southwestern USA and northwestern Mexico, into var. **canescens** along the western part of its range from s Zac to Cps and, more locally, into var. **longibracteata**. Occasional specimens of var. **dentata** may be found well within the range of var. **canescens** (e.g., Col), but these are believed to be recent introductions.

The inclusion of *V. grammatoglossa* as a synonym in the above is based upon Schilling and Panero (2010); I erred (Turner 2011) in treating the name within **Davilianthus** (as shown in my Map 1, but no such combination was made for the taxon).

var. **canescens** (DC.) Blake, Contr. Gray Herb. 54: 87. 1918.

*Viguiera canescens* DC.

*Viguiera longiligula* M.E. Jones

*Viguiera nelsonii* Rob. & Greenm.

Mostly w part of Central Plateau, n Jal, s Zac, Agu, Gua, Que, Mic, Mex, Mor, Gue, Oax, Cps and Guatemala, roadsides and old fields, 1000-2200 m; all seasons. **Map 2**

Much-resembling var. **dentata**, but the leaves lanceolate and densely soft-canescens beneath, the blades usually tapering upon the petioles as a distinct wing; chromosome number, n = 17 pairs.

This taxon grades into var. **dentata** to the north and east.

var. **lancifolia** Blake, Contr. Gray Herb. 54: 86. 1918.

Son, w Chi, n Sin, n w Dur and adjacent USA, dry hills and roadsides, 1000-2200 m; all seasons.

**Map 1**

Much-resembling var. **dentata** but the leaves mostly lanceolate; chromosome number, n = 17 pairs.

The var. **lancifolia** is a weakly differentiated taxon but clearly a regionally defined gene-pool of the Sonoran Desert regions within which forms referable to either var. **dentata** and var. **cinerascens** are largely excluded; nevertheless, occasional intergrades with var. **dentata** occur, as noted in Map 1.

var. **longibracteata** B.L. Turner, var. nov. **Fig. 1**

Much-resembling var. **dentata** but readily recognized by its 10, elongate, outermost, involucre bracts, these up to up 3 cm long.

Perennial herbs or shrublets, 0.8-1.0 m high. Leaves (larger) 8-12 cm long, 3-6 cm wide; petioles 2-5 cm long; blades broadly lanceolate to broadly ovate, moderately appressed-pubescent above and beneath, 3-nervate from or near the base. Heads 1-4, arranged in terminal cymes, the peduncles 2-10 cm long, pubescent with upwardly appressed hairs. Involucres 2-4 seriate, imbricate, the outermost series of ca 10 lanceolate bracts, 1-3 cm long. Pales rigid, 5-7 mm long, their apices 2-4 mm long, indurate, yellow. Ray florets 8, sterile; ligules yellow, 8-12 mm long. Disc florets numerous, yellow, 4.5-6.0 mm long; corollas ca 5 mm long. Anthers brown; filaments sparsely pubescent. Achenes 3-4 mm long, the two lateral awns deciduous, between these, 2-4 persistent, membranous scales ca 0.5 mm high.

TYPE: **MEXICO. COAHUILA:** “in gypsum outcropping, on north side of Sierra de los Organos, about 5 air milles SW of Cuesto de Gallo,” 4400 ft, 26 44 N, 103 03 W, 8 Aug 1973, *J. Henrickson 12111* (Holotype: LL-TEX). **Map 1**

ADDITIONAL SPECIMENS EXAMINED: **MEXICO: COAHUILA:** ca 10 mi W of Ejido Providencia, 19 Oct 1971, *Bacon 1240* (TEX); Sierra Mojada, just S of Esmeralda, 1 Sep 1972, *Chiang et al. 9081* (LL-TEX); 1.5 mi SW of Las Delicias, 3900 ft, gypsum outcrops, 15 Aug 1973, *Henrickson 12453a* (LL-TEX); 1 mi SW of Las Delicias, 3560 ft, 27 Aug 1971, *Henrickson 6048* (LL-TEX); 1.5 mi SW of Las Delicias, 3600 ft, in gypsum, 12 Aug 1973, *Henrickson 12274* (LL-TEX); E of Cinco De Mayo “gypsum ravine,” 22 Sep 2006, *Hinton et al. 28471* (TEX); N of Laguna del Rey, 1094 m, 26 Sep 2009, *Hinton et al. 28848* (TEX); SW end of Sierra de la Fragua, “near crest, one colony,” 2 Sep 1941, *I.M. Johnston*

8752 (LL-TEX); 9.5 mi E of Puerto del Gallo in “pure gypsum,” 8 Aug 1973, *M.C. Johnston et al. 12138a* (LL-TEX); ca 1 km W of Las Delicias, gyp soils, 24 Mar 1973, *M.C. Johnston et al. 10389c* (LL-TEX);

As indicated in the above key, var. **longibracteata** is readily distinguished by its outermost, elongate, involucre bracts. Considering its geographic restriction and proclivity to gypseous soils, the populations concerned seem worthy of varietal rank. It appears to grade into populations of var. **dentata** along its perimeters, especially in northern Zac.

**VIGUIERA MORELIANA** B.L. Turner, **sp. nov.** Fig. 2

Perennial herbs or shrublets 1-2 m high. Leaves (larger) 6-18 cm long, 4-9 cm wide; petioles 3-4 cm long, unwinged, pubescent with mostly spreading hairs, 1.0-1.5 mm long, not at all upwardly appressed; blades broadly ovate to deltoid or subcordate, sparsely pubescent above, pubescent below with mostly spreading trichomes mainly along the venation, 3-nervate from or near the base, the margins serrate. Heads terminal, arranged 1-8 in terminal cymes, the ultimate peduncles 2-10 cm long, pubescent like the petioles. Involucres 2-4 seriate, scarcely imbricate, 8-10 mm high. Pales 8-9 mm long, purplish, their apices apiculate for ca 1 mm. Ray florets ca 15; ligules yellow, 10-20 mm long, 5-10 mm wide. Disc florets numerous; corollas yellow, ca 4.5 mm long; throat ca 0.5 mm long; lobes ca 1 mm long. Stamens brown, the filaments markedly pilose. Achenes ca 3 mm long, appressed-pubescent; pappus of two lateral awns, 2-3 mm long, between these 2-4 membranous scales ca 1 mm long.

This novelty is readily separated from **V. dentata** by the characters given in the above key, and by yet other features such as the short, flattened, apices of its pales (vs cylindrical and elongate), and subcordate leaf blades, the petioles lacking wings.

TYPE: **MEXICO. MICHOACAN: Mpio. de Morelia**, Cerrito Estiladero, al N de Buenavista, 2580 m, 17 Nov 1998, *Sergio Zamudio R. 10917* (Holotype: TEX)

According to the collector, the plant was a perennial herb ca 2 m tall and “abundante” in oak forests growing among igneous rocks. **Map 3**

ADDITIONAL SPECIMENS EXAMINED: **MEXICO. MICHOACAN: Mpio. de Morelia**, “Cinco Cerritos cerca de Tancitaro,” 2100 m, 8 Jul 1992, *Escobedo Garcia 2307* (TEX); **Mpio. la Piedad**, “Parte mas alta del Cerro Grande de Cujarurato, al SW de la Piedad,” 2500 m, 16 nov 1971, *Rzedowski & Mcvaugh 526* (TEX). **Mpio. Zacapu**, “2 km de Zacapu, sobre la carretera a Zamora...encinar perturbado sobre corriente de lava basaltica,” 2100 m, 23 Oct 1987, *Diaz Barriga 4545* (TEX).

To judge from label data, the species occurs in oak forests among lava rocks in the vicinity of recent and ancient volcanic activity.

The several cited specimens are remarkable uniform and are readily distinguished from all of the named varieties of **V. dentata**; Blake (1918) does not cite specimens of the latter from the state of Michoacan, nor have yet other workers. I consider the taxon to be an edaphic endemic, confined to lava outcrops in the region concerned.

The species is named for the Municipio de Morelia, whence the type.

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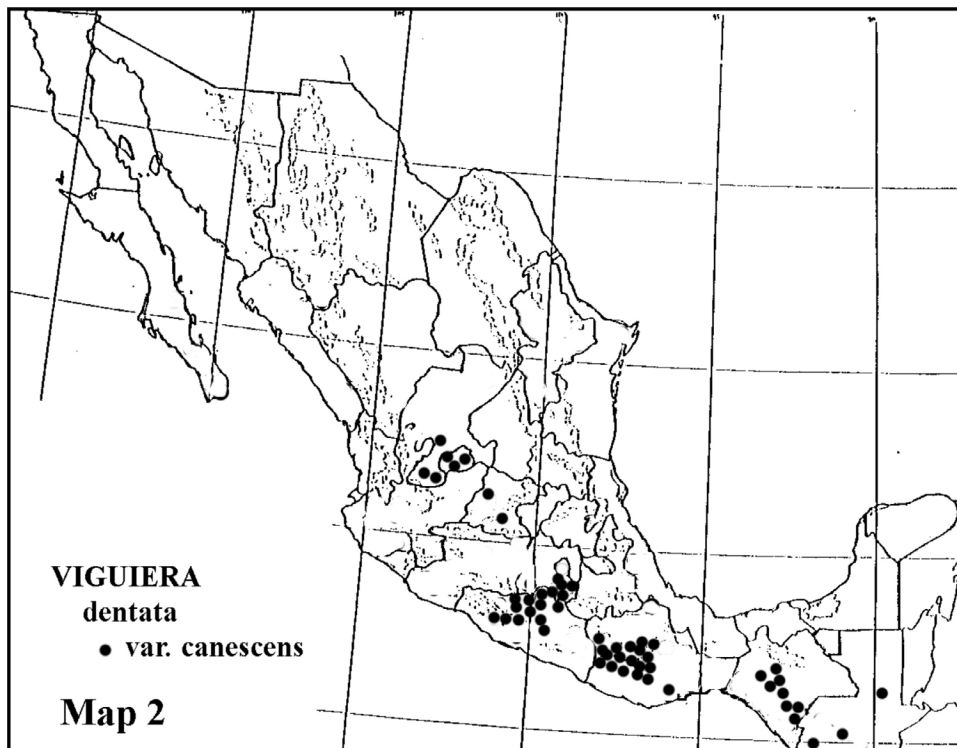
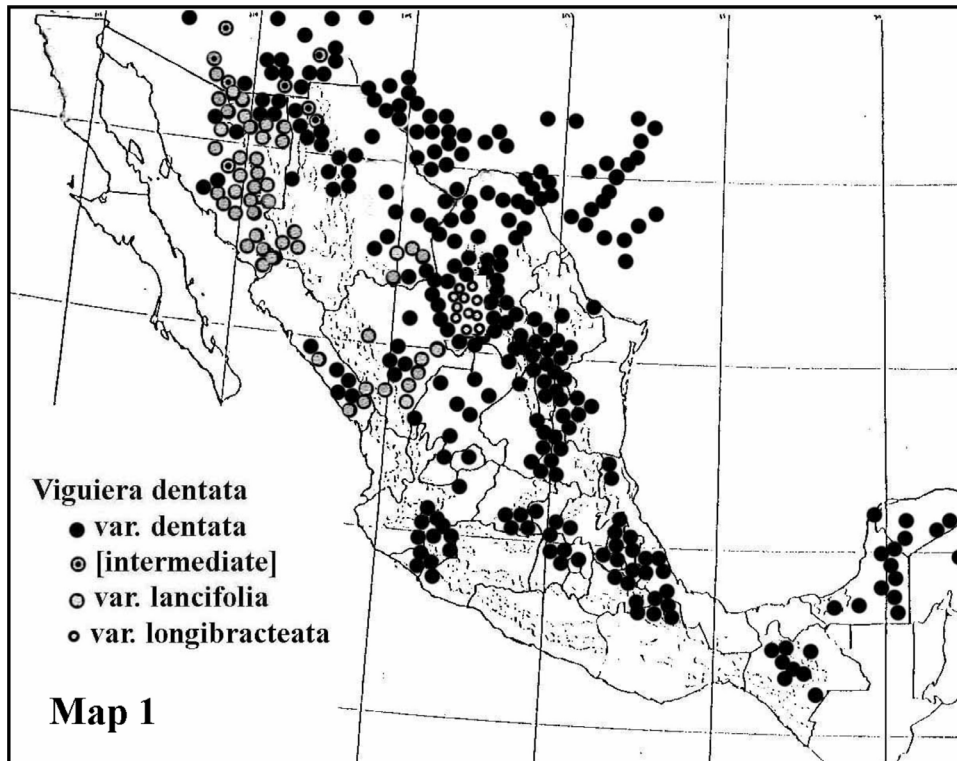




Figure 1. *Viguiera dentata* var. *longibracteata*.

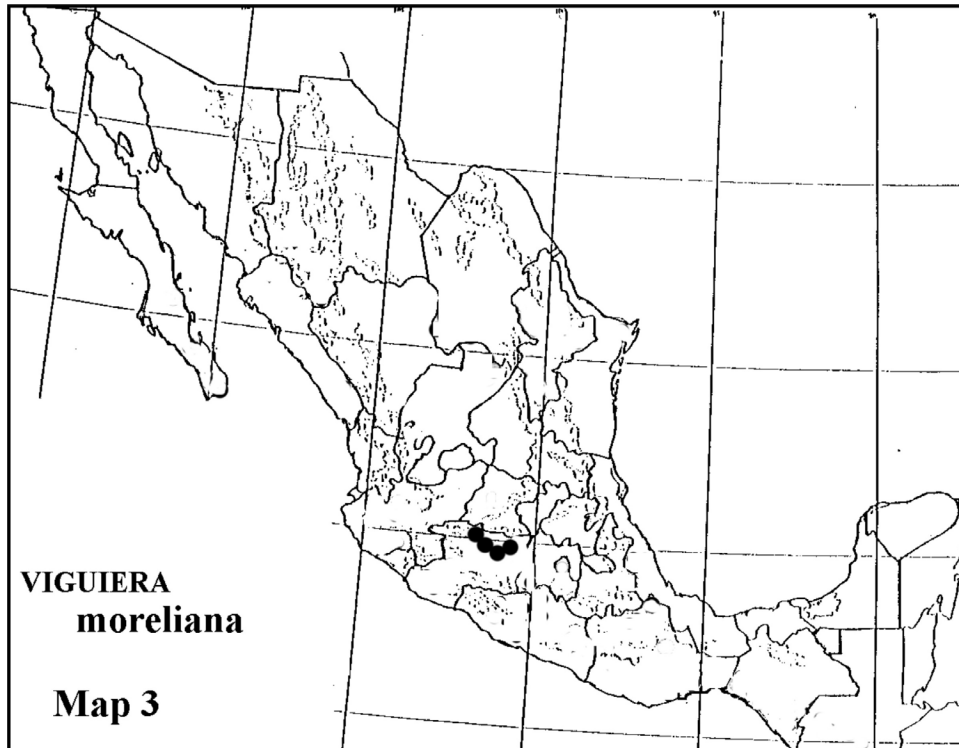




Figure 2. *Viguiera moreliana*.