

COREOPSIS MUTICA VAR. *GUERREROANA* (ASTERACEAE), A NEW
TAXON FROM MEXICO

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ABSTRACT

A new variety, *Coreopsis mutica* var. *guerreroana* is described from Guerrero, México. It is distinguished by its solitary heads on short peduncles, and small, thin, subentire leaves. An overview to all of the varieties of this complex is provided, along with a key to taxa, nomenclatural notes, and a map showing their distribution.

KEY WORDS: Asteraceae, *Coreopsis*, México

Routine identification of Mexican Asteraceae has revealed the following novelty.

Coreopsis mutica A. DC. var. *guerreroana* B. Turner, var. nov. TYPE: MEXICO. Guerrero: 6 km E of Chatacachapa (a village between Chilapa and Tixtla along the road to Chilpancingo), 4 Sep 1991, José L. Panero 2281 (HOLOTYPE: MEXU!; Isotypes: MICH!, TEX!, US!).

Coreopsi muticae A. DC. var. *subvillosae* A. DC. similis sed caulibus ac foliis glabris, foliis tenuibus minoribus (plerumque 4.5-5.5 cm longis vs. 6-8 cm) subintegrisque, et capitulis solitariis differt.

Low suffruticose shrublets. Leaves mostly 4.5-5.5 cm long, 1.3-1.5 cm wide; petioles 4-10 mm long; blades narrowly elliptic, glabrous or nearly so. Heads solitary, the peduncles 1.0-1.5 cm long. Ray florets 8, the ligules 12-16 mm long, 5-7 mm wide. Disk florets ca. 20. Stamens purplish. Achenes elliptic to ovoid, 6-7 mm long, ca. 3 mm wide, glabrous, epappose.

Crawford (1970) provided an excellent study of the *Coreopsis mutica* complex, recognizing seven regional varieties. In 1981, he added an additional taxon, var. *simplicifolia* D. Crawford. The latter falls under my concept of *C.*

mutica var. *mutica*; additionally, Crawford also recognized the var. *leptomera* Sherff, which I also include in synonymy under var. *mutica*, as discussed below.

KEY TO THE *C. MUTICA* COMPLEX

1. Leaves thin, simple, entire or subentire; Guerrero. var. *guerreroana*
1. Leaves thick, subentire to 3 parted, mostly to some extent serrate; not in Guerrero. (2)
 2. Mature leaves densely and evenly hispidulo-puberulous above and below; southeastern Puebla. var. *holotricha*
 2. Mature leaves glabrous or subglabrous. (3)
3. New axillary stem growth and foliage densely subvillous, at maturity glabrate to subglabrate; central and northern Oaxaca. . . var. *subvillosa*
3. New axillary stem growth and foliage glabrous or merely sparsely sordid puberulent. (4)
 4. Heads solitary and terminal, hemispheric, involucre at maturity 2.0-2.5 cm across; se Oaxaca. var. *multiligulata*
 4. Heads borne 3-30 in terminal subfasciculate cymes, broadly turbinate to campanulate, involucre at maturity mostly 1-2 cm across. . (5)
5. Heads mostly 1-2 cm across the expanded rays; capitulescence mostly of numerous heads (20-60) arranged in rather flat topped cymose panicles; Chiapas and easternmost Oaxaca. var. *microcephala*
5. Heads mostly 2-4 cm across the expanded rays; capitulescence of mostly 1-10 heads in open or congested cymes. (6)
 6. Leaves, or their divisions, ovate, widest well below the middle; Guanajuato, Querétaro, Hidalgo, México State and n Puebla. var. *mutica*
 6. Leaves, or their divisions, elliptic, widest at or near the middle; s Puebla, Guerrero, and Oaxaca. var. *carnosifolia*

Coreopsis mutica A. DC. var. *carnosifolia* Crawford

This taxon is a relatively common shrub (1-3 m high) along highway 190 between Cd. Oaxaca and Tehuantepec, mostly occurring in pine-oak forests or semixerix woodlands between 1000-2100 meters. According to Crawford (1970) it is polyploid with $2n = \text{ca. } 112$. Var. *carnosifolia* is largely recognized by its relatively few large heads, and apparently grades into the mostly allopatric varieties *subvillosa* and *microcephala*, as discussed below.

Coreopsis mutica A. DC. var. *holotricha* (S.F. Blake) S.F. Blake

Because of its small, usually 3 parted leaves and uniformly pubescent, markedly persistent, vestiture, this is the most readily distinguished taxon of the *Coreopsis mutica* complex. Known to Crawford (1970) only by the type, several additional collections, all from southern Puebla (*Tenorio 594, 7646, 12113*, TEX), have come to the fore. Label data describe the taxon as a low shrub or suffruticose subshrub 0.4-1.5 meters high, said to be abundant in places and occurring in xeric shrublands from 1800-2300 meters. I detect no intergradation of this taxon with yet other members of the *C. mutica* complex.

Coreopsis mutica A. DC. var. *microcephala* Crawford

This is a common shrub in Chiapas and Guatemala, extending eastward into Honduras and El Salvador, and westward near the border regions into the Oaxaca. For the most part it is readily distinguished from the largely allopatric var. *carnosifolia* by its smaller, more numerous heads, and persistently pubescent foliage (the vestiture usually persisting along the major veins on the under side of leaves). Nevertheless, the two varieties appear to intergrade along the Oaxaca-Chiapas border regions as deduced from the following intermediates (Oaxaca: *Trigos 2262*, [TEX] 19 km SW of San Juan Juguila; and Chiapas: *Breedlove 28896*, [TEX] 30 km NW of Ocozocoautla).

According to Crawford (1970), a chromosome count of $2n = 56$ has been determined for this taxon (vs. $2n = \text{ca. } 112$ in var. *carnosifolia*).

Coreopsis mutica A. DC. var. *mutica*, *Prodr.* 5:571. 1836.

Coreopsis mexicana A. DC. var. *mexicana*.

Coreopsis mutica A. DC. var. *leptomera* Sherff

Coreopsis mutica A. DC. var. *simplicifolia* Crawford

Electra mexicana (A. DC.) Hemsl.

Crawford (1970, 1981) treated var. *leptomera* and var. *simplicifolia* as distinct from var. *mutica*, relegating *Coreopsis mexicana* to synonymy under var. *leptomera* (if the latter taxon is accepted, sensu Crawford, then the correct name for this variety would be *C. mutica* var. *mexicana*, the latter varietal name being established with the publication of *C. mexicana* (A. DC.) Hemsl. var. *hyperdasys* S.F. Blake. I cannot find sufficient geomorphological evidence to distinguish among these.

The type of *Coreopsis mutica* var. *mutica* (Tlapujahua, Keerl s.n., BR), if correct, is from the state of Michoacán. According to Shinnars (1946, p. 117), Keerl's "Tlapujahua" is doubtless the modern town of Tlapujahua in Michoacán." However, Crawford (1970, 1981) maps var. *mutica* as occurring only in the state of Hidalgo. While *Coreopsis mutica* var. *mutica* is seemingly a very distinct taxon, readily distinguished from its more southern cohorts by its largely ovate leaves or leaflets, I cannot distinguish infraspecific categories under this wide ranging variable complex.

The type of var. *mexicana* is from the state of Guanajuato, near Villalpando beyond Cd. Guanajuato (*Mendez s.n.*, Isotype: GH). The type of var. *leptomera* Sherff is from eastern Hidalgo (*Pringle 9895*, HOLOTYPE: F). Crawford mapped var. *mexicana* (i.e., his var. *leptomera*) as occurring in Guanajuato, Querétaro, western Hidalgo, and western México State. Crawford distinguished his var. *leptomera* from var. *mutica* by its 3 parted leaves ("except in Guanajuato plants") vs. leaves simple, lobed, or 3 parted, all types occurring on the same plant. Examination of a wide range of collections show that leaf shape is exceedingly variable in the group, as may be inferred from Crawford's rather difficult couplet to distinguish between these.

Crawford (1981) described the var. *simplicifolia*, comparing this with var. *leptomera*. He based his assessment of var. *simplicifolia* upon four collections of simple leaved variants occurring in the vicinity of Cd. Guanajuato, which is also the immediate area from which the type of var. *mexicana* was obtained. According to Crawford (1981), "leaf flavonoid chemistry clearly distinguishes var. *leptomera* and the [simple leaved] plants from Guanajuato." Additionally, a single chromosome count of the simple leaved variant revealed a count of $2n = 56$, the same as reported for his var. *leptomera*. Crawford (1981, Fig. 2) showed the distribution of var. *simplicifolia* to be confined to the vicinity of Guanajuato, that of var. *mutica* to Querétaro, western Hidalgo, and the western state of México, but as noted in the above, the type of var. *mexicana* (the earliest available name for Crawford's concept of var. *leptomera*) is from near Cd. Guanajuato. The type of var. *leptomera* is from Hidalgo. In my opinion, however, as shown in Fig. 1, the var. *mutica* seems best treated as a single, widespread, highly variable taxon until more definitive studies are done. If Crawford's infraspecific delineation of this complex is accepted the following names would apply: var. *mexicana* to populations about Guanajuato, var. *mutica* to populations occurring in Querétaro, western Hidalgo and western

México; material referred by him to "var. *mutica*" from southeasternmost Hidalgo, if recognized, does not have a varietal name. In short, on present data, it would seem best to recognize but a single variable taxon, var. *mutica* with variable foliage, flavonoids and chromosome numbers ($2n = 56$ and 112), at least until additional populations are studied in more detail.

Coreopsis mutica A. DC. var. *multiligulata* Crawford

This variety is known by only two collections, both obtained from along Highway 190 ca. 42 km W of Tehuantepec, Oaxaca. It is readily distinguished from the closely allopatric (if not sympatric) varieties *microcephala* and *carnosifolia* by its large single heads with 8-11 ray florets. In total characters, however, it seems closest to the var. *carnosifolia*, possessing the glabrous foliage and relatively few headed capitulescence of that taxon.

According to Crawford, var. *carnosifolia* has a chromosome count of $2n = 112$ while var. *multiligulata* has a count of $2n = 56$.

Coreopsis mutica A. DC. var. *subvillosa* A. DC.

Coreopsis galeottii (A. Gray) Hemsl.

Coreopsis mexicana (A. DC.) Hemsl. var. *hyperdasys* S.F. Blake forma
hyperdasys
item index *Electra galeottii* *Electra galeottii* A. Gray

This is an extremely variable taxon and is largely recognized by its relatively large heads and subvillose vestiture. It apparently grades into var. *carnosifolia* in the southern portion of its range (e.g., Turner 80A-9 TEX; 35 mi E of Ejutla, Oaxaca). I have obtained a count of $2n = ca. 84$ or $n = ca. 42$ pairs for this taxon (Turner 0-36, TEX); this is an apparent hexaploid, assuming an ancestral base number of $x = 14$, as suggested by Crawford (1981, 1982). Specimens collected along the Oaxaca-Puebla border (e.g., Oaxaca: Cronquist 10404 TEX; Puebla: Tenorio 7339 TEX) are relatively more glabrous and appear to vary in the direction of var. *mutica* and these two specimens might be equally well positioned in the latter, possessing well defined lanceolate leaves or divisions thereof.

SUMMARY

With the description of *Coreopsis mutica* var. *guerreroana*, *C. mutica* is treated as having seven infraspecific taxa: var. *mutica* (including varieties *leptomera*, *mexicana*, and *simplicifolia*) of north central México; var. *guerreroana* from Guerrero; var. *holotricha* from southeastern Oaxaca; var. *subvillosa* from

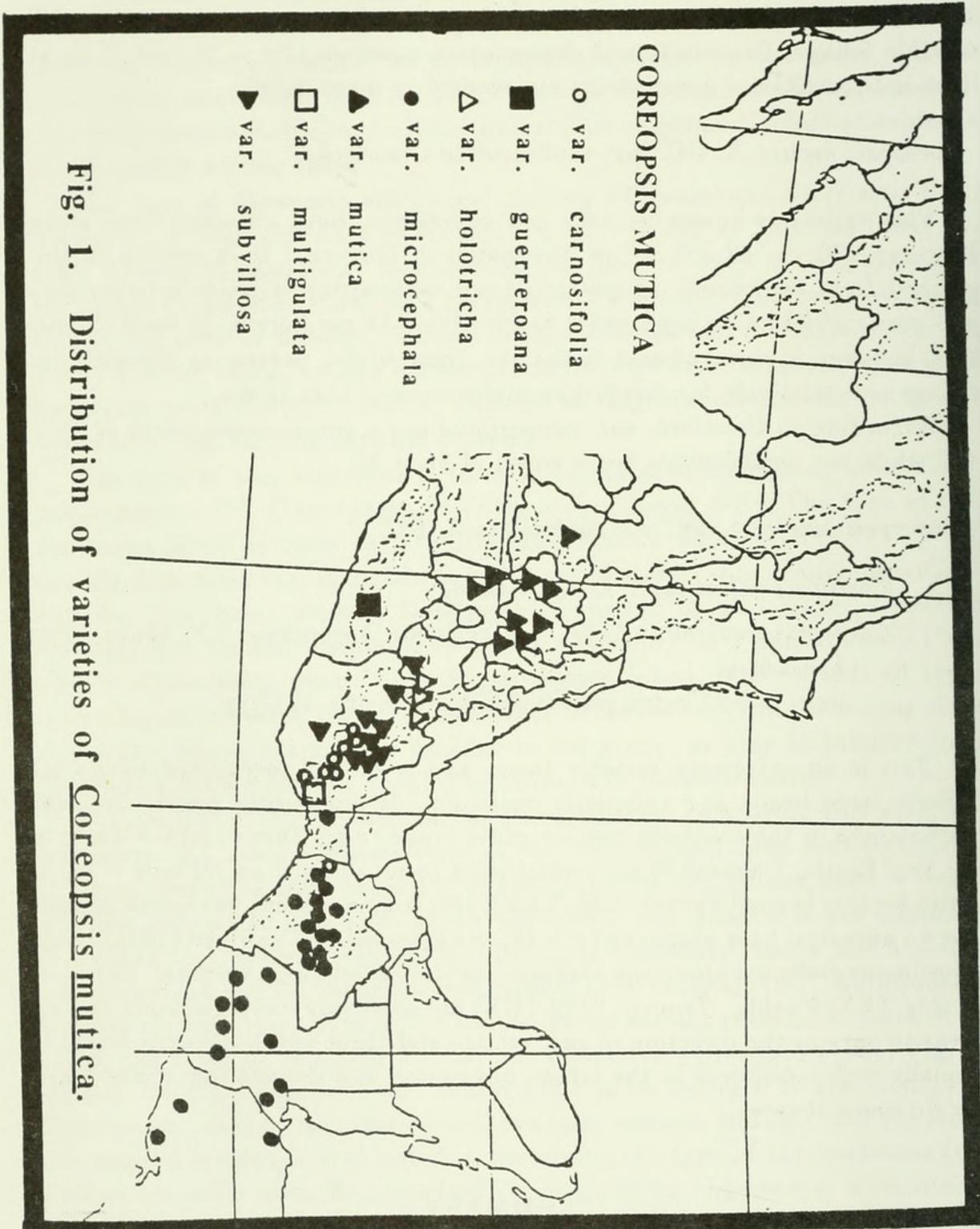


Fig. 1. Distribution of varieties of *Coreopsis mutica*.

central and northern Oaxaca and closely adjacent Puebla; var. *multiligulata*, a localized endemic of southeastern Oaxaca; var. *carnosifolia* from southeastern Oaxaca and closely adjacent Chiapas; and var. *microcephala*, a widespread taxon of easternmost Oaxaca, central Chiapas, extending through Guatemala to Honduras and El Salvador.

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