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MACHAERANTHERA RESTIFORMIS (ASTERACEAE) A BIZARRE NEW GYPSOPHILE FROM NORTHCENTRAL MEXICO[1]

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ABSTRACT

A rayless, diploid ($n = 4$), shrubby, new species of *Machaeranthera* is described from gypsum dunes near Cuatro Ciénegas, Coahuila. It is most closely related to *M. johnstonii*, another rayless, shrubby, endemic gypsophile of this region. *Machaeranthera restiformis* often occurs with the wide-ranging, white-rayed species, *M. gypsophila* ($n = 4$) with which it occasionally hybridizes.

RECENT FIELD WORK in northcentral Mexico has continued to yield an abundance of new taxa, mostly from isolated gypsum ($CaSO_4$) outcrops previously poorly explored by naturalists (Turner, 1972b; etc.). One of the more remarkable, as to habit and restriction to habitat, is the species described below.

Diagnosis: Machaeranthera **restiformis** Turner, sp. nov.—Suffrutices dense lanuginosi ad 30 cm alti ramosi saepe rhixomatosi. Radix lignosa. Rhixomata lignosa elongata ad 100 cm longa. Rami restiformes foliis congestissimis Folia sessilia simplicia late ovata 2–5 mm longa 2–5 mm lata dense albidotomentosa interdum demum glabrata apice trichomate albo-ceracea margine obscure serrulata in quoque dente trichomate albo-ceracea. Capitula in quoque ramo solitaria sessilia in foliis supernis inclusa ca 30–50 flori. Involucrum late turbinatum. Bracteae 4–5 seriatae 3–7 mm longae apice distinctae albo-mucronatae. Receptaculum planum diametro ca 5 mm alveolatum pilis tenuibus albis squamulis interspersis. Flores radiati nulli. Flores disci corolla actinomorpha flava ca 5 mm longa lobis 5 lobis 5 acutis ca 1 mm longis. Rami styli plani uterque appendice actua dense pubescenti. Achenia prismatica ca 1.5 mm longa dense albopubescentia. Pappus setosus setis numerosis 3–5 mm longis. Chromosomatum numerus $n = 4$.

Suffruticose, densely woolly perennials, 30 cm tall or less from a tough, woody tap root, often forming elongate, woody, rhizomes up to 100 cm long. Leaves simple, with broadly ovate blades 2–5 mm long, 2–5 mm wide, sessile and mostly overlapping, giving the branches a ropey appearance; densely white tomentose (sometimes glabrate with age), ciliate with white waxy trichomes which terminate ill-defined serrations and the apex. Heads solitary, discoid, sessile and seemingly imbedded in the apices of rigid, rope-like branches. Involucre broadly turbinate, the bracts graduate, 3–7 mm long in ca. 4 or 5 series, usually terminated by a distinct white mucro. Receptacle flat, ca. 5 mm across, alveolate with interspersed, small scales and fine, white hairs. Florets yellow, 30–50 per head; corollar regular, ca. 5 mm long, 5-lobed, the lobes acute, ca. 1 mm long. Style branches flat with densely pubescent, acute appendages. Achenes prismatic, ca. 1.5 mm long, densely white pubescent; pappus of numerous stiff bristles, 3–5 mm long. Chromosome number, $n = 4$ pairs.

Holotype (TEX): Mexico. Coahuila. 2.4 mi SW of Cuatro Ciénegas along the highway to San Pedro de las Colonias. In gypsum soil. 11 April 1970. *B. L. Turner 6063* (*Isotypes*: MEXU; MICH).

Additional specimens examined (all at TEX): Mexico. Coahulia. 15 km SW Cuatro Ciénegas, *J. Marroquin 1354*; 15 mi E of Cuatro Ciénegas, *Powell & Turner 2772*; 2 mi W of Cuatro Ciénegas, *Sanderson 424*; 15 mi SW Cuatro Ciénegas, *Turner 6189*.

In addition, the following hybrids or hybrid derivatives between this species and *M. gypsophila* were collected: Coahuila. Cuenca de Cuatro Ciénegas, *J. Marroquin 1350*; ca. 15 mi E of Cuatro Ciénegas, *Powell & Turner 2274*; 2.4 mi SW of Cuatro Ciénegas, *Turner 6066*; 3 mi SW of Cuatro Ciénegas, *Turner 6175*.

The species name, *restiformis* (rope-like), refers to the remarkable, sprawling stems which, with their closely ranked, overlapping leaves and cottony pubescence, resemble pieces of worn, sun-dried lariats (Fig. 1).

Machaeranthera restiformis often occurs with another quite different, recently described species, *M. gypsophila* Turner (In press) and forms local

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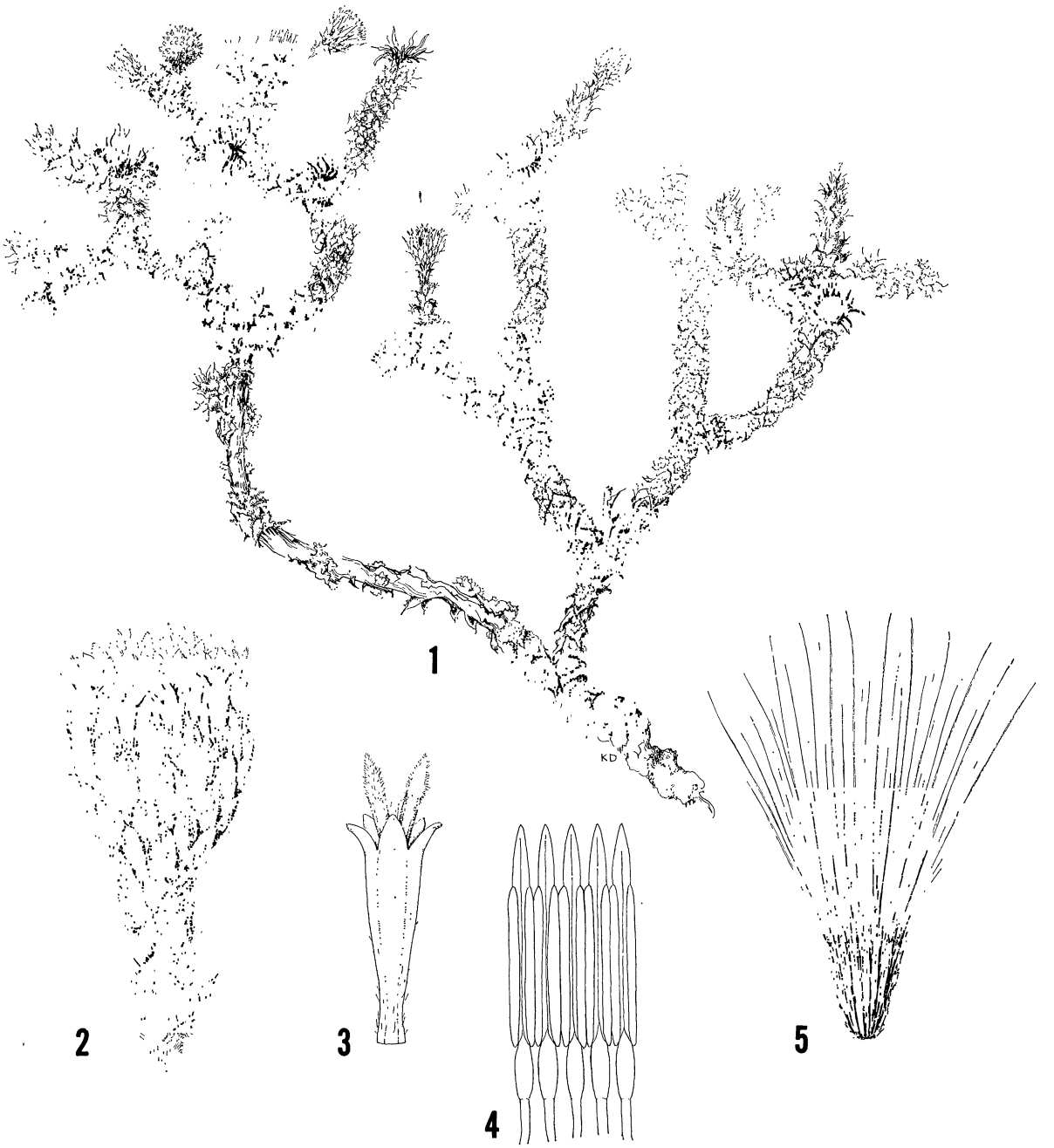

Fig. 1–5. *Machaeranthera restiformis.* **1.** Habit. × 0.75. **2.** Capitulum. × 2.5. **3.** Floret. × 5. **4.** Anthers. × 10. **5.** Achene. × 7.5. Drawn from the holotype.

hybrid swarms with that taxon. Both are diploids with $2n = 8$, and while there is reduced fertility in putative natural hybrids, as judged by stainability of pollen (Sanderson, unpublished), there appears to be sufficient compatability in the F_1 for backcrossing to occur (Turner and Sanderson, 1971).

With age, some of these hybrids superficially resemble *Machaeranthera johnstonii*[2], another shrubby gypsophile, which is known only from two sites: the type locality (Hermanas, Coahuila,

[2] *Machaeranthera johnstonii* (Blake) Turner, comb. nov.—based upon *Haplopappus johnstonii* Blake, Proc. Biol. Soc. Wash. 54: 18. 1941. All of the species mentioned in this paper presumably belong to the Section Blepharodon of *Machaeranthera* (Turner, 1973).

ca. 100 km ENE from Cuatro Ciénegas) and another recently discovered site about 200 air-line km SE of this locale (*Turner 6364*, TEX). In fact, Johnston (1941), in his account of Mexican gypsophily, cites one of the hybrid plants from Cuatro Ciénegas (discussed above) as belonging to *M. johnstonii*. In spite of the superficial appearance of some of these hybrids to *M. johnstonii*, I am inclined to believe that this latter species, which is also diploid with $n = 4$, arose directly out of some ancestral, rayed species not too unlike *M. gypsophila*.

In view of its shrubby habit and restriction to blowing dune sand (to which it is well adapted through its capacity to develop long, prostrate, woody stems which readily give rise to new plant shoots), *M. restiformis* presumably evolved relatively recently from populations not too unlike those comprising *M. johnstonii*. The blowing dunes about Cuatro Ciénegas are apparently the result of relatively recent climatic changes, to judge from faunal remains in the area, for caves in the surrounding mountains have a wealth of animal fossils such as elk and the yellow porcupine, suggesting that the dune region was perhaps not so well developed until about 500 years ago (Gilmore, 1947).

Whatever the age of the gypsum dunes, it seems clear that their development in the relatively large, isolated valley of Cuatro Ciénegas has provided a habitat upon which a number of endemic taxa have developed or became habituated to, such as *Gaillardia gypsophila* Turner, and *Dyssodia gypsophila* Turner, taxa which are presently known only from this immediate locality (Turner, 1972a; 1972c).

LITERATURE CITED

GILMORE, R. M. 1947. Report on a collection of mammal bones from archeologic cave-sites in Coahuila, Mexico. J. Mammal. 48: 147–165.

JOHNSTON, I. M. 1941. Gypsophily among Mexican desert plants. J. Arnold Arboretum 22: 145–170.

TURNER, B. L. 1972a. A new species of *Dyssodia* (Compositae) from north central Mexico. Madroño 21: 421–422.

———. 1972b. *Strotheria* (Compositae-Tageteae) a new monotypic genus from north-central Mexico. Amer. J. Bot. 59: 180–182.

———. 1972c. Two new gypsophilous species of *Gaillardia* (Compositae) from northcentral Mexico. Southwest. Nat. 17: 181–190.

———. 1973. Two new gypsophilous species of *Machaeranthera* (Asteraceae-Astereae) from north-central Mexico. Phytologia 26: 116–120.

———, AND S. SANDERSON. 1971. Natural hybridization between the Compositae "genera" *Machaeranthera* and *Haplopappus* (Sect. Blepharodon). Amer. J. Bot. 58: 467. (Abstr.)