

A NEW SPECIES OF *ARIDA* (*MACHAERANTHERA*  
SECT. *ARIDA*—ASTERACEAE: ASTEREAE)  
FROM TRANS-PECOS, TEXAS

B.L. Turner

*Plant Resources Center  
The University of Texas  
Austin, TX 78713, U.S.A.*

Guy L. Nesom

*Botanical Research Institute of Texas  
509 Pecan Street  
Fort Worth, TX 76102-4060, U.S.A.*

ABSTRACT

***Arida mattsurneri*** Turner & Nesom, sp. nov., is described from collections made near Ruidosa in Presidio County, Texas. The plants are perennial, lavender-rayed, and occur in gypseous soils along shallow perennial streams and seeps. It is a member of *Machaeranthera* sect. *Arida*, now segregated as the genus *Arida*, and is similar to *Arida turneri* in significant respects, especially the bipinnately parted leaves. The new species is illustrated by photographs.

RESUMEN

Se describe ***Arida mattsurneri*** Turner & Nesom, sp. nov., a partir de colecciones hechas cerca de Ruidosa, en Presidio County, Texas. Las plantas son perennes, rayadas de lavanda, y aparecen en suelos yesosos a lo largo de arroyos permanentes poco profundos y lugares rezumantes. Es un miembro de *Machaeranthera* sect. *Arida*, ahora segregado como género *Arida*, y es semejante a *Arida turneri* en aspectos importantes, especialmente en las hojas bipinnado-partidas. La nueva especie se ilustra mediante fotografías.

In the spring of 2001, Ms. Charmaine Delmatier of the U.S. Fish and Wildlife Service, Austin, Texas, collected sterile material of plants occurring along the gypseous, seepy walls of a canyon near Ruidosa, Texas (Presidio County), on the property of James Blumberg. She asked the senior author to identify the material concerned and, because of its peculiar habitat, there was little problem in tentatively identifying it as *Machaeranthera gypsitherma* Nesom, Vorobik, and Hartman (1990), a rare species previously unknown to Texas—it now apparently is extinct at its type locality in southern New Mexico and otherwise known from only a single population in Chihuahua, Mexico.

In a later visit to the Presidio County site (spring of 2003), to collect flowering material of this remarkable discovery, the present authors encountered essentially sterile material of yet another *Machaeranthera*, which is the subject of the present paper. The senior author, along with his son Matt and James Blumberg, revisited the site in the ensuing summer, at which time abundant flowering material of the plants concerned was collected. Examination of the material clearly indicates its status as a previously undescribed species.

We follow recent morphological and molecular studies and taxonomy of Ronald Hartman and David Morgan, as well as their forthcoming treatments



for the Flora of North America volumes of Asteraceae, in dividing the species of *Machaeranthera* (sensu Hartman 1990) among four segregate genera, including *Machaeranthera* sensu stricto but not including *Psilactis* (sensu Morgan 1993). Nomenclatural combinations to formally effect these taxonomic changes are in this current issue of Sida (Morgan & Hartman 2003).

**Arida mattturneri** B.L. Turner & G. Nesom, sp. nov. (**Figs. 1, 2**). TYPE: UNITED STATES. TEXAS: Presidio Co.: ca. 2.2 mi NNW of Ruidosa in 'Blumberg Canyon,' growing along perennial sulphur streams and around tinajas (ca. 30° 00' 00" N, 104° 44' 00" W), 20 Jul 2003, Matt W. Turner 100 (HOLOTYPE: TEX; ISOTYPES: NY, SRSC).

*Aridae turneri* (Arnold & Jackson) Morgan & Hartman similis vestimento glanduloso, foliis bipinnatifidis lobis mucronatis, flosculis radii lavandulaceis, acheniis 1.0–1.5 mm longis nervis tenuibus numerosis, et pappo brevi, sed differt plantis perennibus foliis basalibus persistentibus, capitulis minoribus flosculis radii paucioribus, phyllariis oblongi-lanceolatis apicibus rotundati-acutis, et flosculis disci pappo carenti.

Perennial herbs from a thick, lignescent taproot, caudex simple, stems, leaves, and phyllaries sticky-viscid from resin globules exuded by sessile or minutely stipitate glands, without other kinds of hairs; leaves and phyllaries with indurate mucros but not bristle-tipped. **Stems** erect, 50–80 cm tall. **Leaves** basal and cauline, basal in persistent rosettes, bipinnately parted, abruptly passing into merely pinnately parted lower and midcauline, gradually reduced upwards into entire, scale-like bracts; basal 4–6 cm long, 1.5–3.5 cm wide, broadly obovate in outline, ultimate segments ovate to linear-lanceolate or linear. **Heads** ca. 10–13, terminal on elongate bracteate peduncles 5–10 cm long, collectively forming a broad, open capitulescence; involucre campanulate, 5–6 mm high, 6–8 mm wide, phyllaries in 5–6 graduate series, oblong-lanceolate, 1.0–1.5 mm wide, outermost 1–2 mm long, innermost 5–6 mm long, distal 1/3–1/2 slightly widened then rounded-acute, green and slightly turgid-thickened; receptacles plane, ca. 5 mm wide, glabrous. **Ray florets** 9–13, pistillate, fertile, tubes ca. 1.5 mm long, ligules 9–10 mm long, lavender, markedly drooping in full bloom, tightly coiling during fruit maturity. **Disc florets** 40–100, fertile, corollas narrowly cylindric, yellow, 3.5–4.5 mm long, tubes 1.2–1.5 mm long, grading into the nearly glabrous throats 2.0–2.8 mm long, lobes 5, narrowly deltoid, erect, 0.3–0.5 mm long. **Achenes** 1.0–1.5 mm long, obovate-oblong in outline, 8–12 nerved, compressed but more or less 3(–4) sided, densely sericeous; pappus of disc achenes of numerous whitish bristles mostly 3–4 mm long, in 2–3 series and variable in length on a single achene, absent on ray achenes. Chromosome number,  $2n = 10$  (Powell 2003, this issue).

The species is named for the senior author's son, Matt Warnock Turner, who participated in collection of type materials. Matt once confided to his father that if ever a plant were to be named for him, he would like it to be very distinct, relatively rare, and confined to Texas. With such a pitch, the senior Turner de-



spaired of ever finding a plant with such stringent 'cultural' parameters. The present novelty fulfills all such requirements, and with considerable filial pride, he has proposed the name concerned. The name also is appropriate, since its close relative, *Arida turneri* (Arnold & Jackson) Morgan & Hartman, is named for his father, thus both the plants and their eponymy bear a genetic connection. We also note that Matt is a first-rate systematist, evidenced by his account of the southwestern U.S.A. species of *Baileya* (Turner 1993) and the more eastern *Brazoria* (Turner 1996).

Following Hartman's conspectus (1990) of the genus *Machaeranthera*, the features of *Arida mattsurneri* place it as a member of sect. *Arida* R.L. Hartman (now genus *Arida* (R.L. Hartman) Morgan & Hartman): leaves without bristle-tipped lobes, ray corollas lavender, achenes 1.5–3 mm long with thin walls and numerous, thin, superficial nerves, and pappus of disc achenes of relatively short bristles, absent on ray achenes. The chromosome number of *A. mattsurneri* is  $n = 5$  (from plants at the type locality; Powell 2003), which is constant for other species of *Arida*. All other species of *Machaeranthera* (sensu Hartman 1990) have chromosome numbers based on  $x = 4$ .

Among taxa of *Arida*, the only previously described species with bipinnatifid leaves is *A. turneri*, which is here hypothesized to be a close relative of the new species. Both species also occur in close proximity to saline or gypseous seeps and springs. The two are distinguished as follows:

1. Plants perennial; basal leaves persistent; involucre 6–8 mm wide, receptacles ca. 5 mm wide; phyllaries oblong-lanceolate, 1.0–1.5 mm wide, distal 1/3–1/2 slightly widened, then with rounded-acute apices; ray florets 9–13, corollas 10–12 mm long, achenes epappose; disc corollas 3.5–4.5 mm long \_\_\_\_\_ ***Arida mattsurneri***
1. Plants annual; basal leaves deciduous before flowering; involucre 12–17 mm wide, receptacles 8–11 mm wide; phyllaries linear-lanceolate, 0.8–1.0 mm wide inner with narrowly acute to acuminate apices; ray florets 41–59, corollas 11–15 mm long, achenes pappose; disc corollas 4.5–6.0 mm long \_\_\_\_\_ ***Arida turneri***

Arnold and Jackson (1978), as well as Hartman (1990), observed that the closest relative of *Arida turneri* is *A. (Machaeranthera) parviflora* (A. Gray) Morgan & Hartman. As in *A. turneri*, plants of *A. parviflora* are annual with basal leaves deciduous before flowering, but the latter differs primarily in its smaller and less dissected leaves and smaller heads (shorter and narrower involucre and fewer and shorter ray and disc florets). Ray achenes in some populations of *A. parviflora* are epappose but pappose in others. Differences between the two species appear to be mainly quantitative, but they have been collected in close proximity apparently without intergrades. Even so, morphological evidence is equivocal in suggesting relationships among the three species under consideration, and it remains to be discovered whether the two annuals (*A. turneri* and *A. parviflora*) or the two with bipinnatifid leaves (*A. turneri* and *A. mattsurneri*) are more closely related.





FIG. 1. Upper photo: four plants of *Arida mattsurneri* at the type locality, April 2003. Lower photo: same plants in flower at same site, July 2003.



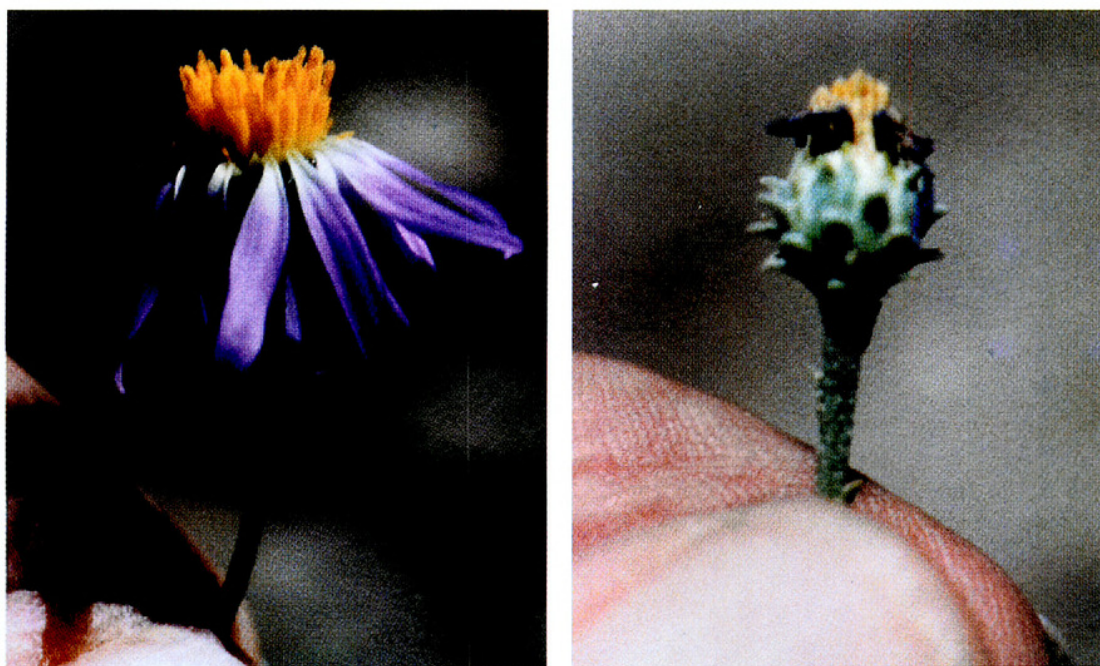


FIG. 2. Flowering heads showing (left, at anthesis) drooping ray corollas and (right, during fruit maturation) tightly coiled ray corollas and phyllaries with turgid, spreading apices.

When originally described, *Arida turneri* (as *Machaeranthera turneri*; Arnold and Jackson 1978) was primarily known by material from the vicinity of Meoqui, Chihuahua, Mexico, but subsequent collections have been made in Mpio. Julimes, Chihuahua, in the vicinity of Baños de San Diego (McDonald 2549, BRIT, TEX); Nesom & Vorobik 5479, TEX; and Nesom 6543b, TEX). The only other known extant locality for *Arida blepharophylla* (A. Gray) Morgan & Hartman (= *Machaeranthera gypsitherma*) also is Baños de San Diego, thus all three species in the discussion are rare and have similar ranges. *Arida matturneri* is now the only one of the three known from only a single locality.

#### ACKNOWLEDGMENTS

We are grateful for the assistance of Mr. James Blumberg; he not only gave us free access to his property, he also accompanied the two Turners in their acquisition of type material. Thanks also to Mike Powell for providing the chromosome count and to Ron Hartman for review comments.

#### REFERENCES

- ARNOLD, M.L. and R.C. JACKSON. 1978. Biochemical, cytogenetic and morphological relationships of a new species of *Machaeranthera* sect. *Arida* (Compositae). *Syst. Bot.* 3: 208–217.
- HARTMAN, R.L. 1990. A conspectus of *Machaeranthera* (Asteraceae: Astereae). *Phytologia* 68:439–465.

- MORGAN, D.R. 1993. A molecular systematic study and taxonomic revision of *Psilactis* (Asteraceae: Astereae). Syst. Bot. 18:290–308.
- MORGAN, D.R. and R.L. HARTMAN. 2003. A synopsis of *Machaeranthera* (Asteraceae: Astereae). Sida 20:1387–1416.
- NESOM, G.L., L.A. VOROBİK, and R.L. HARTMAN. 1990. The identity of *Aster blepharophyllus* A. Gray (Astereae: Asteraceae). Syst. Bot. 15:638–642.
- POWELL, A.M. 2003. Documented chromosome numbers 2003:2. Chromosome numbers of two rare species of *Machaeranthera* sect. *Arida* (Asteraceae: Astereae). Sida 20: 1663.
- TURNER, M.W. 1993. Systematic study of the genus *Baileya* (Asteraceae: Helenieae). Sida 15:491–508.
- TURNER, M.W. 1996. Systematic study of the genus *Brazoria* (Lamiaceae), and *Warnockia* (Lamiaceae), a new genus from Texas. Pl. Syst. Evol. 203:65–82.



Turner, B. L. and Nesom, Guy L. 2003. "A NEW SPECIES OF ARIDA (MACHAERANTHERA SECT. ARIDA-ASTERACEAE: ASTEREAE) FROM TRANS-PECOS, TEXAS." *SIDA, contributions to botany* 20, 1417–1422.

**View This Item Online:** <https://www.biodiversitylibrary.org/item/34584>

**Permalink:** <https://www.biodiversitylibrary.org/partpdf/162542>

**Holding Institution**

Missouri Botanical Garden, Peter H. Raven Library

**Sponsored by**

Missouri Botanical Garden

**Copyright & Reuse**

Copyright Status: In copyright. Digitized with the permission of the rights holder.

License: <http://creativecommons.org/licenses/by-nc-sa/3.0/>

Rights: <https://biodiversitylibrary.org/permissions>

This document was created from content at the **Biodiversity Heritage Library**, the world's largest open access digital library for biodiversity literature and archives. Visit BHL at <https://www.biodiversitylibrary.org>.