

Mojave Tarplant (*Deinandra mohavensis*)

Legal Status

State: Endangered; S2S3¹

California Rare Plant Rank:
1B.3²

Federal: Bureau of Land Management Sensitive; Sensitive Plant Species for Forest Service Region 5

Critical Habitat: N/A

Recovery Planning: N/A



Photo courtesy of Heath McAllister.

Taxonomy

Mojave tarplant was originally described by D.D. Keck (1935) as *Hemizonia mohavensis* and was reclassified as *Deinandra mohavensis* in 1999 (Baldwin 1999; IPNI 2005). The taxonomic revision was intended to more accurately reflect phylogenetic relationships within Madiinae (a subtribe within Asteraceae) (Baldwin 1999). Mojave tarplant is in the sunflower family (Asteraceae) (Jepson Flora Project 2011). The plant was thought to be extinct at one time but was rediscovered in 1994 by A. Sanders in the San Jacinto Mountains, in Riverside County (Sanders et al. 1997).

Mojave tarplant is an annual plant approximately 1 to 10 decimeters (3.9 to 39 inches) in height. A full physical description of the species can be found in the Jepson Flora Project (2011).

Distribution

General

There are a total of 69 occurrences in the California Natural Diversity Database (CNDDDB) (CDFG 2012). Mojave tarplant is known in Kern, Riverside, and San Diego counties (believed extirpated from San

¹ **S2:** Imperiled. **S3:** Vulnerable. S2S3 means the rank is somewhere between S2 and S3.

² **1B:** Rare, threatened, or endangered in California and elsewhere; **X.3:** Not very endangered in California.

Bernardino County) (CDFG 2012; Figure SP-P18). This species occurs at elevations of 640–1,600 meters (1,900–4,800 feet) (CNPS 2011). The distribution is discontinuous and possibly relictual.

Distribution and Occurrences within the Plan Area

Historical

Of the eight occurrences in the Plan Area, none date from 1990 or earlier (CDFG 2012). This species was not known to occur in the Plan Area prior to 1990.

Recent

Within the Plan Area, Mojave tarplant is known from the desert slope of the southern Sierra Nevada Mountains in Kern County (Sanders 2006a). There are eight occurrences in the Plan Area, all within Kern County. Four of the occurrences in the Plan Area are known from lands managed by the Bureau of Land Management (BLM); two are on private land, and ownership is unknown for two of the occurrences. The eight occurrences are located west of Highway 14 and east of the Sequoia National Forest, north of Interstate 40: near Cutterbank Spring, in Jawbone Canyon, near Short Canyon, in lower Esperanza Canyon, in lower Water Canyon, and in the vicinity of Cross Mountain (CDFG 2012; Figure SP-P18). Mojave tarplant may also occur at Red Rock Canyon in Red Rock Canyon State Park in Kern County (Faull, pers. comm. 1998, cited in Sanders 2006a).

Natural History

Habitat Requirements

The Mojave tarplant occurs in open moist sites in arid regions near the margins of the desert, within chaparral, coastal scrub, and riparian scrub (CNPS 2011; Sanders 2006a). Plants are typically observed at seeps and along grassy swales and intermittent creeks. The most suitable habitat occurs in mountainous areas within microhabitats of low gradient streams and on gentle slopes with few shrubs and trees. This species is associated with clay or silty soils that are saturated with water early in the year. Mojave tarplant prefers areas that are

dry at the surface but which have a substantial water source at depth through summer. Dwarfed plants occasionally are found in drier sites near occupied moist areas (Sanders et al. 1997). This cycle of early saturation with later desiccation may reduce competition from other plant species; dryness during drought years may further reduce competition (Sanders 2006a).

At the type locality, Mojave tarplant was known to occur along a sandy intermittent creek; however, this habitat is now believed to be atypical and not sufficient to maintain a permanent population. Sanders et al. (1997) does note that there are some occurrences of Mojave tarplant associated with sand, where the sand is adjacent to more typical habitat.

Table 1. Habitat Associations for Mojave Tarplant

Land Cover Type	Habitat Designation	Habitat Parameters	Supporting Information
Mesic chaparral, coastal scrub, and riparian scrub	Primary	Clay or silty soils; seasonally (winter and spring) saturated with water; 640–1,600 meters (1,900–4,800 feet)	CNPS 2011; Sanders et al. 1997; Sanders 2006a

Reproduction

Mojave tarplant and Red Rock tarplant (*Deinandra arida*) are the only two self-compatible species of *Hemizonia* (now *Deinandra*) (Tanowitz 1982; Baldwin pers. comm. 1997, cited in Sanders 2006b). This may be the result of genetic drift and/or the relative isolation of these two species, which occur on the edge of the desert as local populations (Sanders 2006b). Pollination studies have not been conducted for this Mojave tarplant; however, Faull (1987) has observed small beetles and honey bees visiting Red Rock tarplant flowers, a closely related species.

Mojave tarplant is known to reproduce easily in cultivation (B. Baldwin, pers. comm. 1998, cited in Sanders 2006a) and at a botanical garden has been known to escape into disturbed places (S. Boyd, pers. comm. 1998, cited in Sanders 2006a).

Mojave tarplant blooms from June through January (CNPS 2011). Flowering peaks between August and October. Once flowering has begun, it continues until the plants begin to senesce. Fruit maturity and dispersal are continuous as well. Seed dispersal vectors have not been reported for this species; however, the seeds are relatively heavy and may just fall to the ground around the source plant. The seeds are not armed with any obvious mechanisms, such as hooks or wings, for long-distance dispersal (Sanders 2006a). Bruce Baldwin (in personal communication to Andy Sanders, cited in Sanders 2006b) reports that *Hemizonia* (now *Deinandra*) ray achenes maintain some degree of dormancy while the disk achenes freely germinate.

Ecological Relationships

As described in Habitat Requirements, Mojave tarplant is associated with seasonally saturated clay or silty soils on gentle slopes or low gradient streams, with few shrubs and trees. These saturated areas are typically dry at the surface but provide a substantial water source at depth through summer (Sanders et al. 1997). This species has a discontinuous and possibly relictual distribution (Sanders 2006a), and little is known of its life history and ecological relationships. Although pollination studies have not been conducted for Mojave tarplant, Faull (1987) has observed small beetles and honey bees visiting Red Rock tarplant flowers, a closely related species. Information on seed germination has not been reported for this species, although Mojave tarplant is known to be self-compatible (B. Baldwin, pers. comm. 1998, cited in Sanders 2006a). Seed dispersal vectors have not been reported for this species; however, the seeds are relatively heavy and may just fall to the ground around the source plant. The seeds are not armed with any obvious mechanisms, such as hooks or wings, for long-distance dispersal (Sanders 2006a). Mojave tarplant is threatened by grazing, recreational activities, development, hydrological alterations, road maintenance, and vehicles (CNPS 2011). Within the Plan Area, intense cattle grazing and trampling may be the most significant threats.

Population Status and Trends

Global: Imperiled (NatureServe 2010)

State: Same as above

Within Plan Area: Same as above

Because this species was only recently rediscovered (in 1994) there is little information available on population trends. Of the six occurrences in the Plan Area, three are known from BLM land, one is on private land, and ownership is unknown for two of the occurrences. The occurrence on private land numbered 14 individuals in 2003. Of the two occurrences for which ownership is unknown, one numbered in the thousands in 1998 and the other numbered 109 individuals in 2003. Of the three occurrences on BLM land, one numbered 50,000 in 2003 (with 30 rosettes observed very early in the year in 2004), one numbered in the several hundreds in 2008, and one numbered 5,000 in 1998 (and was locally common in 2001 and numbered 3,000 in 2003). Overall, there are 66 occurrences in Kern, Riverside, and San Diego counties (CDFG 2011) and most of these appear to have number of individuals estimated once, making it difficult to discern a population trend.

Threats and Environmental Stressors

Mojave tarplant is threatened by grazing, recreational activities, development, hydrological alterations, road maintenance, and vehicles (CNPS 2011). The type locality was modified by construction of the Mojave River Forks Dam. Within the Plan Area, cattle grazing occurs at some of the Mojave tarplant occupied areas, and in some areas is locally intense and may pose a threat. However, plants of the genus *Hemizonia* (now *Deinandra*) may not be palatable to cattle, so grazing may not be a major threat. Trampling by cattle may be a threat around limited watering sources in dry areas (Sanders 2006a).

Conservation and Management Activities

Three of the occurrences are known from BLM land, one is on private land, and ownership is unknown for two of the occurrences (CDFG 2011). No conservation or management activities have been identified currently for Mojave tarplant.

Data Characterization

The general distribution of Mojave tarplant is discontinuous and patchy. Sanders (2006a) recommends that additional surveys be conducted in the southern Sierra Nevadas and along the north foot of the Transverse Range, particularly the San Gabriel Mountains. Within the Plan Area, three of the occurrences are known from BLM land, one is on private land, and ownership is unknown for two of the occurrences. Many of the known occurrences outside the Plan Area occur within the San Bernardino and Cleveland National Forests and therefore receive some protection (Sanders 2006a). The species is known to be self-compatible (B. Baldwin, pers. comm. 1998, cited in Sanders 2006a) and a related species (Red Rock tarplant) is known to be insect-pollinated (Faull 1987). Little is known regarding the species' seed dispersal and recruitment.

Management and Monitoring Considerations

Because the general distribution of Mojave tarplant is discontinuous and patchy, Sanders (2006a) recommends that additional surveys be conducted in the southern Sierra Nevadas and along the north foot of the Transverse Range, particularly the San Gabriel Mountains. Additional surveys may identify new occurrences.

Mojave tarplant is threatened by grazing, recreational activities, development, hydrological alterations, road maintenance, and vehicles (CNPS 2011). Measures to control these threats should be considered.

Predicted Species Distribution in Plan Area

Species model summary and results will be provided following model development.

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