Owens Valley Checkerbloom *Sidalcea covillei*

Photo courtesy of Larry Blakely.

Legal Status

State: Endangered; S3[1]
California Rare Plant Rank: 1B.1[2]
Federal: Bureau of Land Management Sensitive
Critical Habitat: None
Recovery Planning: *Owens Basin Wetland and Aquatic Species Recovery Plan, Inyo and Mono Counties, California* (USFWS 2000)
Notes: Considered for federal listing (proposed as a candidate species) in 1985, it was removed from the candidate list in 1996 because the U.S. Fish and Wildlife Service (USFWS) determined that the species was more abundant or widespread than was previously thought, or the species was not subject to any identifiable threat.

Taxonomy

Owens Valley checkerbloom (*Sidalcea covillei*) was originally described by E. Greene in 1914 and the taxonomic status of Owens Valley checkerbloom has not changed since it was first described.

Owens Valley checkerbloom is a perennial herb with stems approximately 2 to 6 decimeters (7.9 to 24 inches) in length. A full physical description of the species can be found in the Jepson Flora Project (2011).

Distribution

General

Owens Valley checkerbloom is endemic to the southern Owens Valley in Inyo County, California (CNPS 2011; BLM 2011b). It grows only in alkali meadow and spring communities scattered along about 125 kilometers (77.7 miles) of the Owens River drainage (Halford 1994). The California

[1] **S3:** Vulnerable.
[2] **1B:** Rare, threatened, or endangered in California and elsewhere; **X.1:** Seriously endangered in California.

Natural Diversity Database (CNDDB) includes 42 occurrences of Owens Valley checkerbloom at 35 localities; 21 of these occurrences are in the Plan Area at 30 localities.

Distribution and Occurrences within the Plan Area

Historical

Owens Valley checkerbloom was first collected in 1891 in an extensive alkali meadow known as Haiwee Meadows, Inyo County, and was not collected again until 1952, when it was found north of Lone Pine in Inyo County. The species was extirpated from its type locality when the Haiwee Reservoir was formed, and by 1978, local botanist Mary DeDecker considered it to be on the brink of extinction (DeDecker 1978). Within the Plan Area, 5 of the 30 known localities are considered historical (i.e., pre-1990) and have not been recently observed. These populations are known to be either extirpated, possibly extirpated, or are presumed to be extant (CDFW 2013a).

Recent

The CNDDB includes 25 recent localities (i.e., since 1990) of Owens Valley checkerbloom in the Plan Area. All of these localities occur on lands owned by the LADWP (CDFW 2013a). All of the localities are generally along Highway 395 from the meadow above Tinemaha Creek south to the area 1 mile north of Olancha (Figure SP-P13; CDFW 2013a).

Natural History

Habitat Associations

Owens Valley checkerbloom grows in moist alkaline meadows and seeps at elevations of 3,580 to 4,650 feet (see Table 1; CNPS 2011; CDFW 2013a). Almost all occurrences grow in fine, sandy loam with alkaline crusts, but one occurrence is known to grow in stony, calcareous soil (CDFW 2013a).

Associated native grasses and herbs include saltgrass (*Distichlis spicata*), alkali sacaton (*Sporobolus airoides*), basin wildrye (*Elymus cinereus*), Baltic rush (*Juncus balticus*), and clustered field sedge

(*Carex praegracilis*). Associated shrubs at some sites include basin big sagebrush (*Artemisia tridentata* ssp. *tridentata*). The endemic Inyo County star-tulip (*Calochortus excavatus*) co-occurs with Owens Valley checkerbloom at some sites (Halford 1994).

Table 1. Habitat Associations for Owens Valley Checkerbloom

Land Cover Type	Habitat Designation	Habitat Parameters	Supporting Information
Meadows and seeps	Primary	Alkaline soils; 3,580–4,650 feet elevation	CDFW 2013a; CNPS 2011

Reproduction

Owens Valley checkerbloom flowers from April through June (BLM 2011b; CNPS 2011). The pink-lavender flowers are showy and Owens Valley checkerbloom is probably an outcrossing species that is pollinated by insects. Bees are major pollinators in other related *Sidalcea* species (summarized in Leong 2006). The breeding system of Owens Valley checkerbloom is not known, but research on related *Sidalcea* species has found that several species are gynodioecious, meaning that some plants bear hermaphrodite flowers and other plants bear female-only flowers (Leong 2006). Low seed germination rates in Owens Valley checkerbloom have been reported in one study, ranging from 1.6% to 12.5% (Halford 1994). The Halford (1994) study suggested that seed weight may influence germination rates, with heavier seeds producing higher germination rates; plants may produce larger seeds in favorable years. Plant reproduction was reduced by high rates of rabbit and rodent herbivory on study sites (Halford 1994). This study identified that germination rates for Owens Valley checkerbloom may be enhanced through minor treatments such as leaching or cold stratification and mild giberellic acid treatments.

Ecological Relationships

Owens Valley checkerbloom occurs solely in mesic high-elevation alkaline meadows habitats in the Owens Valley River drainage. This species is highly restricted to a specialized habitat with very limited distribution.

The Owens Valley checkerbloom may be highly sensitive to drought conditions, although DeDecker (1978) suggested that the fleshy roots might help it survive normal drought cycles; individuals observed during the low rainfall years of 1993 and 1994 yielded low weight seeds with low viability (Halford 1994). In addition, local drought conditions may result in more browsing by rabbits and rodents, which in turn can reduce seed set and reproduction of the species (Halford 1994).

Population Status and Trends

Global: G3, Vulnerable (NatureServe 2011, Conservation Status last reviewed 2006)
State: S3, Vulnerable (CDFW 2013b)

The very restricted range and few population occurrences of Owens Valley checkerbloom make it vulnerable to declines from a variety of threats, including natural and anthropogenic sources described under Threats and Environmental Stressors. Due to the lack of long-term surveys, censuses, and/or monitoring studies, population trends of the species are unknown.

Threats and Environmental Stressors

The diversion of the Owens River and cattle grazing were the main causes of this species' decline to near extinction (DeDecker 1978). Halford (1994) reported that low annual precipitation, improper timing and intensity of cattle grazing, increased competition from rhizomatous grass species and upland shrubs, and diversions or depletions of naturally occurring water sources are all threats to the species. Lowering of the local water table by pumping and drainage for water diversion, and the resultant invasion of non-native plants, or heavy grazing and associated meadow succession may be a major threat (Hill 1993). Elmore et al. (2006), for example, reported that alkali meadow vegetation in the Owens Valley is groundwater-dependent and plant cover at groundwater-depleted sites is only weakly correlated with precipitation. Grazing, mostly by cattle, is the most frequently mentioned threat in CNDDB records (CDFW 2013a). Noxious weeds such as Russian olive (*Elaeagnus angustifolia*) and knapweed (*Centaurea* spp.) occur at a couple of occurrences, and invasion of rubber rabbitbrush (*Ericameria nauseosa*) may result from lowering of the water table.

Conservation and Management Activities

According to the CNDDB, Owens Valley checkerbloom is restricted to approximately 42 occurrences in Inyo County, of which 22 are in the Plan Area (CDFW 2013a). A cooperative project was initiated in 1994 by the BLM, the California Department of Fish and Wildlife, and The Nature Conservancy to test the long-term survivorship of reintroduced Owens Valley checkerbloom. Seeds were collected from several populations, subjected to several experimental treatments, and sown at a local nursery, and the seedlings (136 in total) were reintroduced back into sites from which the seed was collected. All plants had a minimum of a 30-centimeter (12-inch) root system when planted in October 1994, and survivorships of 50% and 85% were reported from the two sites afterwards (BLM 1994). The success of this project demonstrates that the species can be successfully propagated and transplanted, allowing some flexibility in the response of management activities to suitable habitat areas disturbed by grazing or other surface disturbing threats. However, as noted above under Threats and Environmental Stressors, groundwater management is likely a key consideration for successfully conserving and managing this species.

In 2011, the Bishop Paiute received a $200,000 grant from the USFWS to reintroduce, sustain, and nurture populations of several rare plants, including Owens Valley checkerbloom on tribal lands in the Owens Valley (USFWS 2011).

Data Characterization

An information gap extends from the mid-1990s through today. Long-term surveys, censuses, and/or monitoring studies have not been conducted on Owens Valley Checkerbloom since the mid-1990s.

Management and Monitoring Considerations

As identified under Threats and Environmental Stressors, cattle grazing, groundwater depletion, and the associated invasion by competing species are probably the main threats to Owens Valley checkerbloom. Further study regarding the response of Owens Valley

checkerbloom to these factors is needed (Halford 1994). There is no specific information available on pollinators or breeding system.

Species Modeled Habitat Distribution

This section provides the results of habitat modeling for Owens Valley checkerbloom, using available spatial information and occurrence information, as appropriate. For this reason, the term "modeled suitable habitat" is used in this section to distinguish modeled habitat from the habitat information provided in Habitat Requirements, which may include additional habitat and/or microhabitat factors that are important for species occupation, but for which information is not available for habitat modeling.

There are 147,869 acres of modeled suitable habitat for Owens Valley checkerbloom in the Plan Area. Appendix C includes a figure showing the modeled suitable habitat in the Plan Area.

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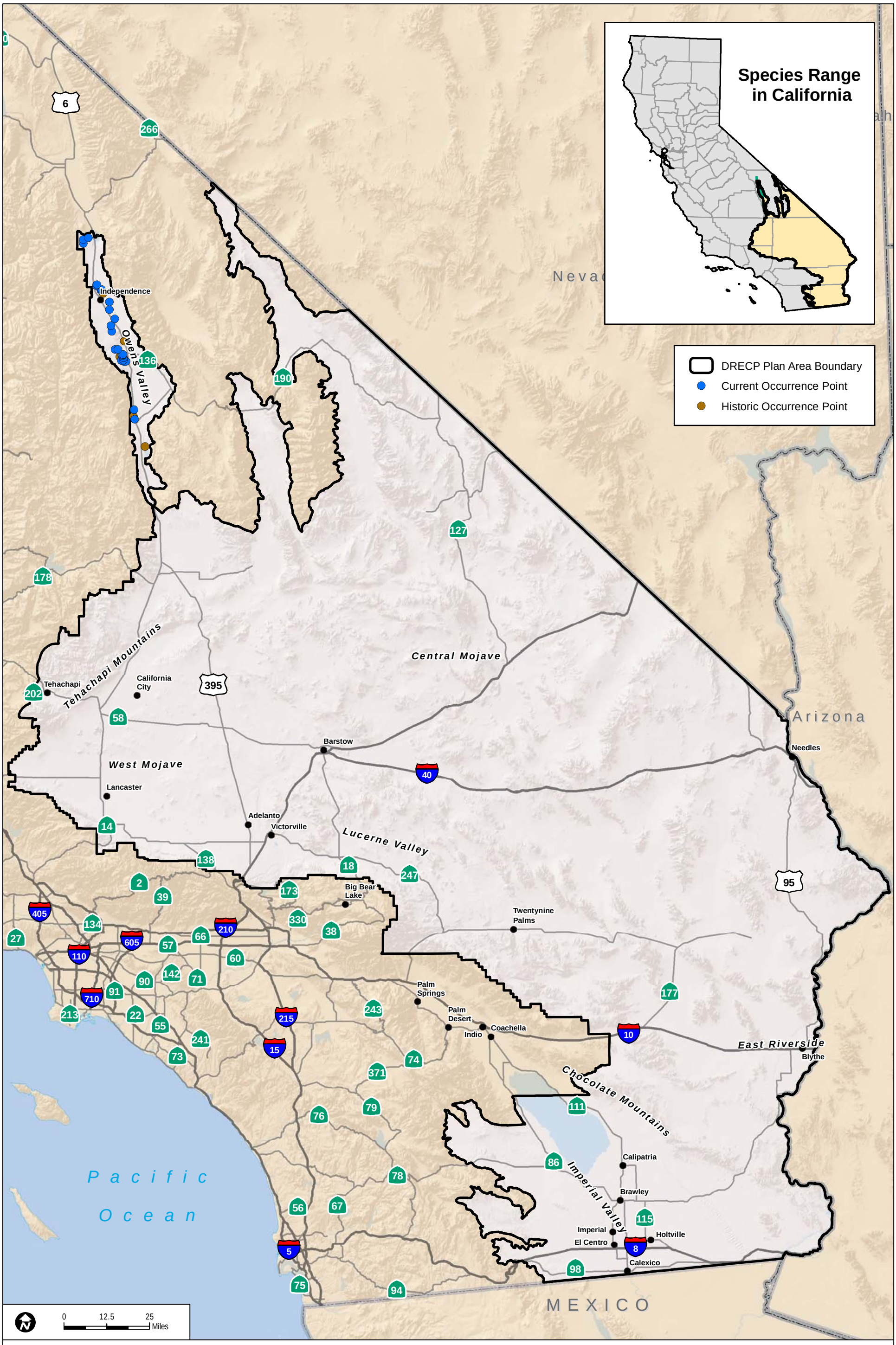

Sources: ESRI (2014); DRECP Species Occurrence Database (2013), CWHR (2008)

FIGURE SP-P08

Ownes Valley Checkbloom Occurrences in the Plan Area