

5-YEAR REVIEW

Ash Meadows milk-vetch (*Astragalus phoenix*)

GENERAL INFORMATION

Species: Ash Meadows milk-vetch (*Astragalus phoenix*)

Date listed: May 20, 1985

FR citation: 50 FR 20777

Classification: Threatened

BACKGROUND

Most recent status review

The status of Ash Meadows milk-vetch was last reviewed on September 30, 2020, in a 5-year review (Service 2020a).

FR Notice citation announcing this status review

89 FR 83510, Endangered and Threatened Wildlife and Plants; Initiation of 5-Year Status Reviews for 59 Pacific Southwest Species. Published on October 16, 2024.

ASSESSMENT

Information acquired since the last status review

This 5-year review was conducted by the U.S. Fish and Wildlife Service's (Service) Southern Nevada Fish and Wildlife Office. Data for this review were solicited from interested parties through a Federal Register notice announcing this review on October 16, 2024. We did not receive any information from the public in response to our Federal Register Notice announcing this 5-year review. We also contacted the Nevada Division of Forestry, the Nevada Natural Heritage Program, the United States Bureau of Land Management (BLM) Southern Nevada District Office, the United States Geological Survey Boulder City Field Office, the Clark County Desert Conservation Program, the Rancho Santa Ana Botanic Garden, and the Desert Research Institute to request any data or information we should consider in our review. Additionally, we conducted a literature search and a review of information in our files.

After review, the Service has concluded that limited new information has become available since the most recent status review. Since the 2020 5-yr review, there has been additional population monitoring and grant specific research conducted. We have provided summaries for this new information below.

Summary of population monitoring

At the time of listing, it was estimated that there were 1,000 Ash Meadows milk-vetch individuals (Reveal 1978). In 2001, the population was estimated to be approximately 1,943 individuals (Morefield 2001). From 2007–2010, Ash Meadows National Wildlife Refuge (Refuge) rare plant survey estimated that 15,606 individuals were present on the Refuge (Bio-West 2011). From 2014-2021, five sites within the Refuge were selected to be monitored more frequently. These sites were surveyed six times during that period (2014-2016 & 2019-2021; Table 1). The sites monitored do not represent the full extent of the range for the species. During

the monitoring period, the total number of Ash Meadows milk-vetch identified during surveys increased by approximately 20 percent with population increases in four of the five monitored sites (Pyramid Botanical 2021). Additional surveys of these five sites has occurred but data for these surveys is currently under review.

Table 1. Ash Meadows milk-vetch counts from 2014-2016 & 2019-2021 for five sites within Ash Meadows National Wildlife Refuge.

Site Name	2014 count	2015 count	2016 count	2019 count	2020 count	2021 count
Bill Copeland	206	187	188	249	239	247
Crystal Reservoir	73	95	81	62	68	82
Peterson Road North	59	79	85	86	96	92
Purgatory Spring East	32	56	41	52	48	49
Purgatory Spring West	50	57	31	44	19	33
Cumulative	420	474	426	493	470	503

Additional surveys were also performed in 2024 during a vegetation inventory for the Upper Carson Slough within the Refuge (Miller and Boes 2025a). As part of the inventory, 263 occurrences were mapped with a total of 4,826 individuals. Of the 263 occurrences, 236 of these were new occurrences. Previous surveys from 2007-2010 identified 125 occurrences with a total of 3,991 individuals (Bio-West 2011; Miller and Boes 2025a). Of the 125 occurrences identified previously, only 27 occurrences had observations in 2024, suggesting the species’ distribution may shift in relation to available resources (Miller and Boes 2025a). Invasive plants were listed as a threat for two occurrences and significant herbivory was recorded at four occurrences (Miller and Boes 2025a). Overall, the results of the 2024 inventory show an increase in occurrences and individuals since the 2007-2010 monitoring period and suggest the species’ population in the Upper Carson Slough area of Refuge is increasing in size and the species is capable of migrating into new areas.

In summary, although the locations of many species’ occurrences has changed since the 2007-2010 monitoring period, our understanding of the species’ distribution remains largely the same (within the boundaries of the Refuge), as described in our most recent 5-year review (Service, 2020a). Therefore, this information does not alter our understanding of the species’ current range. However, the recent 2024 survey of the Upper Carson Slough does highlight the limitations of smaller, site-specific surveys, such as those performed from 2014-2021 (Pyramid Botanical 2021), when making inferences about the range-wide status of Ash Meadows milk-vetch.

Research and/or grant supported activities

- I. *Inventory of Moisture and Salt Distribution in Soils and Sediments that Support Threatened and Endangered Plants in the Ash Meadows National Wildlife Refuge* (Breit 2019):

Auger holes and excavations were used to inventory the vertical and lateral distribution of salts in soils and sediment at twenty sites known to contain protected plant species and at eight sites lacking those plants. Two sites were instrumented with soil moisture sensors so that Refuge staff can monitor long-term change. Information from this project will help to identify suitable sites for expansion and restoration of threatened and endangered plants as well as provide baseline data on the full extent of impacts from water extraction within the Amargosa Desert Hydrographic Basin.

Project Status: Completed.

II. *Protocol Survey Report 2014-2021: Monitoring of Nine Endemic Rare Plants* (Pyramid Botanical Consulting, 2021)

The objectives of this project were: (1) Summarize the existing dataset and evaluate the status of the nine endemic plant species using the established viability analysis; (2) Examine how climate has influenced plant abundance for each species; and (3) Evaluate management objectives for nine endemic plant species at the refuge.

Project Status: Completed.

III. *Ash Meadows National Wildlife Refuge Natural Resource Management Plan* (Service 2020b)

The objectives of this plan were: (1) Identify natural resource conservation priorities for resources of concern (ROC); (2) Define priority ROC objectives; (3) Identify key ecological attributes of each priority ROC and provide a framework for tracking their status and response to change; (4) Identify and rank threats to priority ROC; (5) Select the highest priority management strategies; (6) Identify the highest priority surveys; and (7) Establish a regular practice of evaluation, learning, and adaptation through annual work planning and evaluation. Priority ROC include desert springs and spring outflows, spring-fed emergent marsh and wet meadows, alkali meadows, seeps and shallow groundwater-fed uplands, and Ash Meadows woodlands.

Project Status: Completed.

IV. *Ash Meadows National Wildlife Refuge Inventory and Monitoring Plan* (Service 2021)

The objectives of this plan were: (1) Document Refuge resources of concern (ROC) and identify highest priority ROC; (2) Develop and document specific, measurable, achievable, results-oriented, and time-bound management objectives for the highest priority ROC; and (3) Select natural resource surveys conducted at the refuge to manage its highest priority ROC.

Project Status: Completed.

V. *Site specific protocol for Ash Meadows National Wildlife Refuge, Upper Carson Slough management unit vegetation inventory* (Miller and Boes 2025a)

The general objective of this protocol is to provide standardized methods to complete and report on invasive and listed plant (*Astragalus phoenix*, *Mentzelia leucophylla* and *Nitrophila mohavensis*) inventory in the Upper Carson Slough management unit at the Refuge. The survey effort can be adjusted to allow for budget and time constraints, or to address specific management questions.

Project Status: In prep.

VI. *Ash Meadows National Wildlife Refuge Upper Carson Slough Management Unit, 2024-2025 Invasive and Rare Plant Inventory* (Miller and Boes 2025b)

The objectives of this project were: (1) Document the distribution and abundance of priority invasive plant species on the refuge within the Upper Carson Slough management unit; (2) Document the distribution and abundance of *Astragalus phoenix*, *Mentzelia leucophylla* and *Nitrophila mohavensis* within the Upper Carson Slough management unit; and (3) Implement annual monitoring of *Nitrophila mohavensis* abundance and plant traits within *Nitrophila mohavensis* monitoring macroplots (Nitrophila South, Crystal Nitrophila, and Crystal Pipeline), including data archiving, analysis and reporting, following the protocol from Moore-O’Leary *et al.* 2022.

Project Status: Draft report is in review.

VII. *Inventory and Mapping of Select Invasive and Rare Endemic Plants at Ash Meadows National Wildlife Refuge* (Service 2025)

The overall goal of the project is the continuation of a previously implemented rotational invasive plant inventory and management strategy for the refuge whereby a management unit is surveyed for invasive plants and rare, endemic plants. The resulting information is used to establish control priorities for that unit, and control efforts are then planned and implemented in subsequent years. The current unit being surveyed in 2025 is the Crystal Spring Management Unit.

Project Status: Project implemented in 2025.

Conclusion

After reviewing the best available scientific information, we conclude that Ash Meadows milk-vetch (*Astragalus phoenix*) remains a threatened species. The evaluation of threats affecting the species under the factors in 4(a)(1) of the Endangered Species Act and analysis of the status of the species in our most recent 5-year review (Service 2020a) remains an accurate reflection of the species’ current status.

RECOMMENDATIONS FOR FUTURE ACTIONS

1. Monitor compliance with the January 12, 2018, Nevada Revised Statute Order 1197A, Curtailment of New Appropriations of Groundwater within the Amargosa Valley Hydrographic Basin 230, to ensure groundwater levels in Devils Hole can support the population (Nevada State Engineer 2018). Order 1197 is no longer in effect. Water levels in Devils Hole are affected by pumping centers in Amargosa Desert and the Ash Meadows groundwater basins (Halford and Jackson 2020);
2. Collaborate with the Refuge to implement the Desert National Wildlife Refuge Complex – Ash Meadows, Desert, Moapa Valley, and Pahranaagat National Wildlife Refuges Final Comprehensive Conservation Plan and Environmental Impact Statement, Volume I – August 2009 (Service 2009) and the Ash Meadows Natural Resource Management Plan (Service 2020b);

3. Support Ash Meadows milk-vetch (*Astragalus phoenix*) research at the Refuge to monitor the population as identified in the Recovery Plan for the Endangered and Threatened Species of Ash Meadows (Service 1990); and
4. Monitor the future activity of mineral rights in the Ash Meadows area. The BLM Area of Critical Environmental Concern surrounding the refuge is withdrawn from mining and entry until 2029 (PLO# 7737, signed November 2nd, 2009), but requires renewal every 20 years. Mining can still occur on private inholdings within the Refuge, but no active mining permits exist at this time.

Lead Field Supervisor, U. S. Fish and Wildlife Service

Approve _____ Date _____

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