

**Siler Pincushion Cactus**  
*(Pediocactus sileri)*

**5-Year Review:  
Summary and Evaluation**



Photo: Vince Tepedino, USDA Agricultural Research Service

**U.S. Fish and Wildlife Service  
Arizona Ecological Services Office  
Flagstaff, Arizona  
June 2018**

**5-Year Review: Summary and Evaluation  
Short Template**

**Siler pincushion cactus (*Pediocactus sileri*)  
Current Classification: *Threatened***

**U.S. Fish and Wildlife Service  
Arizona Ecological Services Office  
Flagstaff, Arizona**

**1.0 GENERAL RECOMMENDATIONS**

**1.1 Reviewers:**

**Lead Field Office:** Arizona Ecological Services Office

Acting, Field Supervisor, 602-242-0210

Brenda Smith, Assistant Field Supervisor, Flagstaff Field Office, 928-556-2157

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**1.2 Purpose of 5-Year Reviews:**

The U.S. Fish and Wildlife Service (FWS) is required by section 4(c)(2) of the Endangered Species Act (Act) to conduct a status review of each listed species once every 5 years. The purpose of a 5-year review is to evaluate whether or not the species' status has changed since it was listed (or since the most recent 5-year review). Based on the 5-year review, we recommend whether the species should be removed from the list of endangered and threatened species, be changed in status from endangered to threatened, or be changed in status from threatened to endangered. Our original listing as endangered or threatened is based on the species' status considering the five threat factors described in section 4(a)(1) of the Act. These same five factors are considered in any subsequent reclassification or delisting decisions. In the 5-year review, we consider the best available scientific and commercial data on the species, and focus on new information available since the species was listed or last reviewed. If we recommend a change in listing status based on the results of the 5-year review, we must propose to do so through a separate rule-making process including public review and comment.

**1.3 Methodology used to complete the review:**

The review of the science assessing the current status of the Siler pincushion cactus (*P. sileri*; cactus) was conducted subsequent to the 5-year review published in November 18, 2008 (USDI FWS 2008). A complete list of listing and recovery-related documents pertaining to the Siler pincushion cactus can be found at [ECOS Listed Plants Website for Siler Pincushion Cactus](#).

Since the publication of the previous 5-year review, we conducted a review of past and recent literature, public comments, the listing rule, and the recovery plan. The Bureau of Land Management (BLM, Arizona Strip and Cedar City Field Offices) submitted status reports from 2008-2017. Much of the information in this 5-year review was derived from those reports. We prepared a draft review that was reviewed by the FWS Salt Lake City Ecological Services Office. We then incorporated comments and finalized the 5-year review.

#### **1.4 FR Notice citation announcing initiation of this review:**

We provided notice of this status review on May 14, 2014, via the Federal Register (79 FR 27632), requesting information on the status of the cactus. We received one comment letter referencing information regarding monitoring data and threats on BLM land in Arizona and Utah.

## **2.0 REVIEW ANALYSIS**

### **2.1 Application of the 1996 Distinct Population Section (DPS) Policy:**

The DPS policy is not applicable to the cactus as it is not a vertebrate.

### **2.2 Review Summary:**

#### **2.2.1 Most recent status review available:**

Please refer to the most recent 5-year review (USDI FWS 2008), the Siler Pincushion Cactus Recovery Plan (USDI FWS 1986), the final rule listing *P. sileri* as endangered published in the Federal Register on October 26, 1979 (44 FR 61786), and the revised final rule reclassifying the species as threatened published in the Federal Register on December 27, 1993 (58 FR 68476) for a complete status review of the species. The 2008 5-year review (USDI FWS 2008) provides the most recent 5-factor analysis and discussion of the species status, including biology and habitat, threats, management efforts, and meeting of recovery criteria.

#### **2.2.2 New information since previous status review:**

##### **2.2.2.1 Accomplishment of recovery criteria:**

As previously described in the 2008 5-year review, some of the recovery criteria are not measurable and objective, making it difficult to determine if recovery has been achieved. For instance, the criterion referring to long-term stability of the population does not include a time period, which populations, and a definition of stability. Following recovery criteria related to general species ecology, researchers at Utah State University conducted a study of population demographics of three historically monitored populations: Warner Ridge, Muggin's Flat, and Atkins Well. This study and its various aspects provided data that will help work towards recovery criteria associated with general ecology and management actions to reduce threats to the cactus (Sodja and Schupp 2016).

**2.2.2.2 New information on the species' biology, life history, habitat, and ecosystem:**

There is no new information regarding the species' biology, life history, and ecosystem.

**2.2.2.3 New information on trends in population, demography, and spatial distribution:**

**Arizona Information:** Measurement data collected between 2008 and 2015 used different size class categories than previous years; therefore, we cannot directly compare the data collected prior to the 2008 5-Year review to the most recent data. Fatality in all of the plots continues to be attributed to rabbit/rodent predation or other natural causes (drought, age-related death). Decreases in number of cacti were observed in the Yellowstone, Atkin Well (outside the livestock enclosure), and Warner Ridge plots. The Atkin Well Enclosure plot showed a strong increase in numbers and there was a small increase at the Johnson Spring West plot; however, the numbers of plants are still decreasing overall. The number of individuals within the Atkin Well livestock enclosure is getting close to the high of 81 cacti it had in 1995. Warner Ridge enclosure is still maintaining over 100 cacti, which is similar to the high of 130 cacti it had in 1986. From the limited habitat data we have in our files, it does not appear that habitat conditions have changed since the 2008 5-year review; however, we are not aware of a recent comprehensive, range-wide habitat evaluation for the cactus.

**Utah information:** The number of live cactus plants ranged from 10 to 60 plants/hectare on cactus plots within one population. The proportion of cacti flowering also was high; 89%, or 100 of 112 total plants encountered on plots were flowering. There were 17 dead cacti encountered, but these individuals were scattered among plots and were generally large plants (The Nature Conservancy 2014).

**2.2.2.4 New information on genetics and taxonomic classification:**

There is no new information regarding genetics and taxonomic classification.

**2.2.2.5 New information about conservation measures:**

Conservation efforts for this species in Utah have focused on protection of the area near St. George, known as White Dome. The Nature Conservancy (TNC), School and Institutional Trust Lands Administration (SITLA), BLM, Utah Department of Transportation (UDOT), FWS, and the City of St. George have collaborated on plans to create the White Dome Nature Preserve (York 2007). The Preserve has been established and encompasses approximately 800 acres of habitat, protecting habitat for several rare species including the endangered dwarf bearclaw poppy and the cactus. The area is managed by TNC. Habitat for both species occurs throughout the preserve. Monitoring plots were established in the White Dome Nature Preserve in 2014 for long-term monitoring trends of both dwarf bearclaw poppy and the cactus. The number of live cactus plants ranged from 10 to 60 plants per hectare within four large plots on cactus plots (Abella 2014). Approximately 70 plants are known to

occur on SITLA lands. Discussions are occurring to transplant those plants from SITLA lands to the preserve in the future.

### **2.2.3 Threats analysis:**

#### **2.2.3.1 Present or threatened destruction, modification or curtailment of its habitat or range:**

**Uranium mining and prospecting:** Since the 2008 5-year review, the threat of uranium mining has decreased due to the 2012 Secretary of the Interior's decision to withdraw more than one million acres of land surrounding the Grand Canyon from mining for locatable minerals, including uranium. This withdrawal is valid for 20 years and will expire in 2032. When the mineral withdrawal was implemented, there were only four uranium mines that had valid existing rights and were operational or were expected to become operational. None of those mines are near cactus populations.

**Oil and gas leases:** We have no new information regarding the threat of oil and gas lease development.

**Gypsum mining:** We have no new information regarding the threat of gypsum mining.

**Livestock trampling:** We have no new information regarding the threat of trampling due to livestock grazing.

**Off-highway Vehicle (OHV) use:** In 2014, the Arizona Strip BLM office completed a consultation and associated Environmental Assessment for a travel management plan that included habitat for the cactus. The route system has been designed and implemented to create a range of recreation opportunities while protecting resources. To meet this objective, some routes identified during the route inventory have been closed, others are reserved for administrative or authorized access only, and the remaining routes remain open for public use. Routes include primitive roads, motorized single-track trails, non-motorized single track trails for mountain bikes, and non-motorized trails. The travel management plans have closed some routes; however, it is assumed that the amount of off-highway vehicle (OHV) use will not change greatly. Rather, the OHV use will shift and concentrate on the routes designated "open."

**Lake Powell pipeline:** In the 2008 5-year review, we discussed the Lake Powell Pipeline water pipeline project. One of the alignments was proposed to cross through the northern portion of BLM-managed land on the Arizona Strip, which would go through cactus habitat. Preliminary engineering studies were started in the summer of 2007. Planning for this pipeline is still taking place and, depending on the selected route, may affect the cactus and its habitat.

#### **2.2.3.2 Disease or predation:**

We have no new information regarding the threat of disease or predation.

#### **2.2.3.3 Inadequacy of existing regulatory mechanisms:**

We have no new information regarding the threat of the inadequacy of existing regulatory mechanisms.

#### **2.2.3.4 Other natural or manmade factors affecting its continued existence:**

We have no new information regarding the threat of other natural or manmade factors.

### **2.2.4 Summary of status review:**

We acknowledge that the BLM (in Arizona and Utah) has made significant efforts to conserve the cactus. They have expended resources to survey habitat and document locations outside of plots throughout the range of the species (BLM 2009, 2012a, 2012b, 2013). They have refined the species' range and established long-term monitoring plots. They have used their authorities, within the section 7 process of the Endangered Species Act and the 1872 Mining Law, to conserve Siler pincushion cactus and its habitat. They have established Areas of Critical Environmental Concern (ACECs) for this species, which establishes management of these areas to conserve the cactus and its habitat, as described above. All of these conservation actions have benefited the species by implementing management actions to protect habitat and reduce the threats to the species. The majority of the habitat for this species occurs on BLM-administered lands, but there are populations on private, State, and tribal lands that, to our knowledge, are not protected.

As described above, changes in land management policies on Federal lands have reduced or eliminated many of the threats on these lands. Threats related to livestock grazing and OHV use may still occur on State and private lands in Arizona and Utah; however, we do not know to what extent they are occurring. Many of the objectives outlined in the 1986 Recovery Plan (FWS 1986) have been met or progress is being made to meet them. Mining has been reduced throughout much of the range of the cactus, and livestock management has been improved to promote the conservation and recovery of the species. Data (provided by the BLM from their monitoring plots) do not demonstrate long-term population stability; however, plots are not monitored consistently, not all populations are monitored, and some of the plots were established to determine the impacts of livestock grazing and OHV use on cacti and do not aid in population monitoring. It is difficult to make determinations regarding long-term population trends for the species based on these data. At the same time, increased urban development in Utah and threats from natural events remain. We think the most significant remaining threats to the cactus throughout its range are drought and natural predation. The long-term status of this species could also be affected by regional climate change, especially if frequency and duration of dry periods increase. It is possible that increased drought throughout the range of the cactus could cause declines in populations; however, we cannot predict the severity of the droughts and whether or not they will actually affect these arid-environment plants. For these reasons, the cactus should remain classified as threatened.

### 3.0 RESULTS

#### 3.1 Recommended Classification:

- Downlist to Threatened
- Uplist to Endangered
- Delist:
- Extinction
- Recovery
- Original data for classification in error
- No change is needed

#### 3.2 New Recovery Priority Number:

Currently classified as 8 (moderate degree of threat/high recovery potential). No change is recommended at this time.

#### Brief Rationale:

Many of the threats have been removed or reduced since the 2008 5-year review; however, the threat of urban development in Utah and the uncertainty of regional climate change remain. Because of this, the recovery priority number should remain unchanged; however, discussions regarding possible delisting or reclassification of the recovery priority number should occur.

### 4.0 RECOMMENDATIONS FOR FUTURE ACTIONS

The following recommendations for future actions are carried forward from the 2008 5-year review.

- A recovery team should be reconvened and the 1986 Recovery Plan should be updated. The recovery criteria need revision to be measurable and threats-based. In addition, the BLM has better maps and location information that should be referenced in the Plan.
- Assistance (technical and monetary) should be provided to the Kaibab-Pauite Indian Tribe to conduct surveys and develop conservation measures for the cactus on their lands.
- The BLM monitoring protocol should be revised in order to quantify seedling survivorship. Random plots/transects should be used in order to make estimates for the population as a whole.
- Monitoring plots should be established in additional populations throughout the range of the cactus.
- The cactus population in Utah should be monitored on a regular basis.
- The BLM should close areas that support dense concentrations of cacti to OHV use.
- Research to examine insect predators on the cactus should be conducted and to assess how the drought is impacting predation behavior or mammalian predators.

## 5.0 LITERATURE CITED

- Abella, S.R. 2014. 2014 Field monitoring and reporting for dwarf bearpoppy (*Arctomecon humilis*) and Siler pincushion cactus (*Pediocactus sileri*) at the White Dome Nature Preserve, a Nature Conservancy Property in Washington County, Utah. 20 pp.
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- U.S. Fish and Wildlife Service. 1986. Siler Pincushion Cactus (*Pediocactus sileri*) Recovery Plan. 57 pp.
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