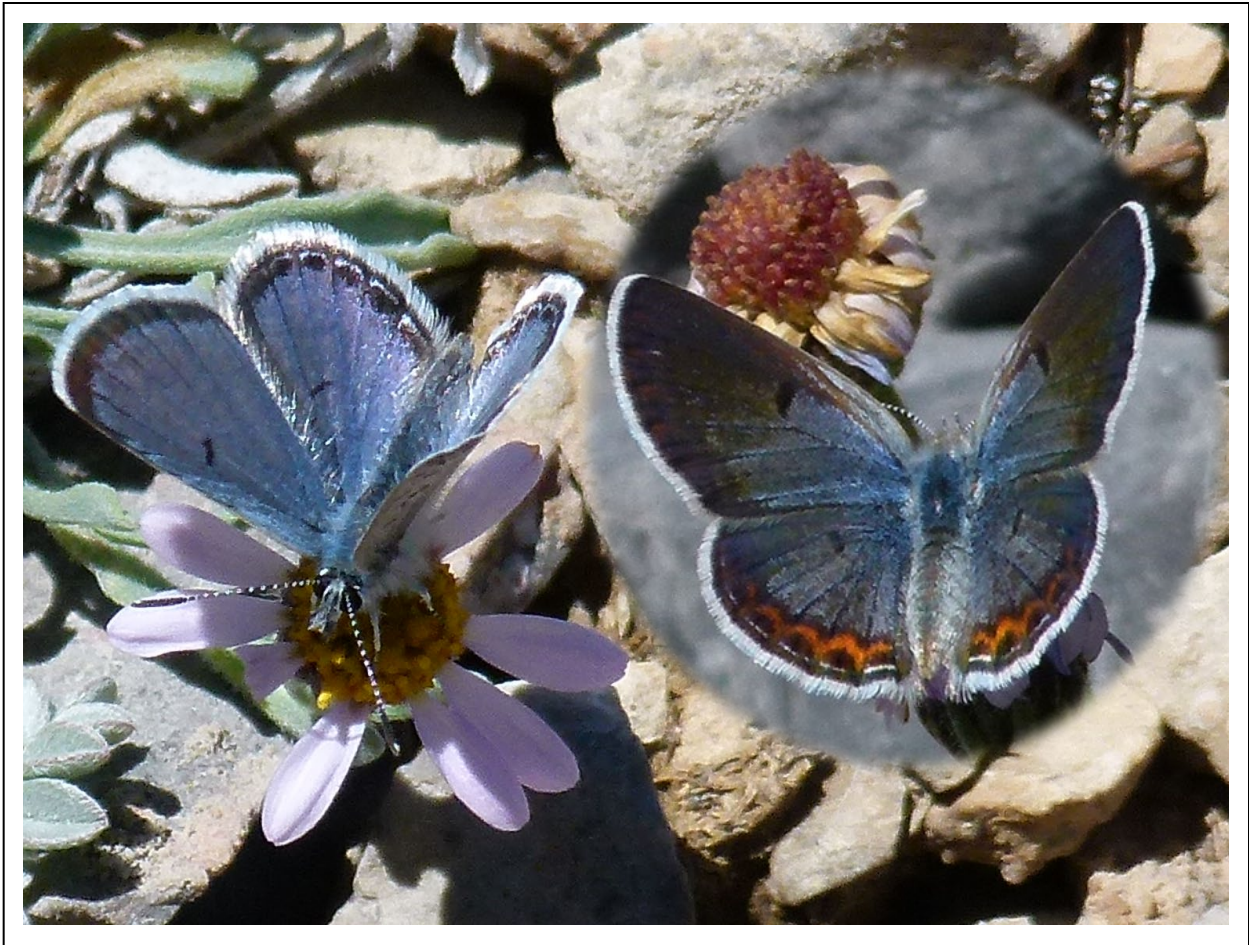


## Recovery Plan for Mount Charleston Blue Butterfly (*Icaricia shasta charlestonensis*)



Photos of male (left) and female (right) Mount Charleston blue butterflies courtesy of Corey Kallstrom, U.S. Fish and Wildlife Service.

**Recovery Plan for  
Mount Charleston Blue Butterfly  
(*Icaricia shasta charlestonensis*)**

**Region 8  
U.S. Fish and Wildlife Service**

**Sacramento, California**

Approved: \_\_\_\_\_

Regional Director, Pacific Southwest Region, Region 8,  
U.S. Fish and Wildlife Service

Date: \_\_\_\_\_

## Disclaimer

Recovery plans delineate such reasonable actions as may be necessary, based upon the best scientific and commercial data available, for the conservation and survival of listed species. Plans are published by the U.S. Fish and Wildlife Service (USFWS), sometimes prepared with the assistance of recovery teams, contractors, State agencies, and others. Recovery plans do not necessarily represent the view, official positions or approval of any individuals or agencies involved in the plan formulation, other than the USFWS. They represent the official position of the USFWS only after they have been signed by the Regional Director. Recovery plans are guidance and planning documents only; identification of an action to be implemented by any public or private party does not create a legal obligation beyond existing legal requirements. Nothing in this plan should be construed as a commitment or requirement that any Federal agency obligate or pay funds in any one fiscal year in excess of appropriations made by Congress for that fiscal year in contravention of the Anti-Deficiency Act, 31 U.S.C. 1341, or any other law or regulation. Approved recovery plans are subject to modification as dictated by new findings, changes in species status, and the completion of recovery actions.

### Literature Citation Should Read as Follows:

U.S. Fish and Wildlife Service. 2023. Recovery Plan for Mount Charleston blue butterfly (*Icaricia shasta charlestonensis*). U.S. Fish and Wildlife Service, Pacific Southwest Region, Sacramento, California. iv + 6 pp.

An electronic copy of this recovery plan is available at:

<http://www.fws.gov/endangered/species/recovery-plans.html>

## **Acknowledgements**

The recovery planning process has benefitted from the advice and assistance of many individuals, agencies, and organizations. We thank the following individuals for their contributions and assistance and apologize to anyone whose name was omitted inadvertently from this list:

### **Lead Author:**

Corey Kallstrom, Southern Nevada Fish and Wildlife Office

### **Other Contributors:**

Susan Cooper, Southern Nevada Fish and Wildlife Office

Bjorn Erickson, Pacific Southwest Regional U.S. Fish and Wildlife Service Office

Michael Senn, Pacific Southwest Regional U.S. Fish and Wildlife Service Office

Daniel Thompson, University of Nevada, Las Vegas

Charles Woodard, United States Department of Agriculture Forest Service

## Introduction

This document presents the U.S. Fish and Wildlife Service's (USFWS) plan for the conservation and recovery of Mount Charleston blue butterfly (*Icaricia (Plebejus) shasta charlestonensis*). Pursuant to section 4(f) of the Endangered Species Act (Act), a recovery plan must, to the maximum extent practicable, include (1) a description of site-specific management actions as may be necessary to achieve the plan's goals for the conservation and survival of the species; (2) objective, measurable criteria which, when met, would support a determination under section 4(a)(1) that the species should be removed from the List of Endangered and Threatened Species; and (3) estimates of the time and costs required to carry out those measures needed to achieve the plan's goal and to achieve intermediate steps toward that goal. This recovery plan is based on the Species Biological Report for Mount Charleston blue butterfly (*Icaricia shasta charlestonensis*), which describes the life history and biology of the species, the current status of the species, and the threats that impact the species. The Species Biological Report is briefly summarized below. Those specific activities necessary for implementing this plan's proposed recovery actions are described in the Recovery Implementation Strategy. Both the Species Biological Report and the Recovery Implementation Strategy are available at <https://ecos.fws.gov>, and will be updated as necessary.

The Mount Charleston blue butterfly was federally listed as endangered under the Endangered Species Act of 1973, as amended (16 U.S.C. § 1531 *et seq.*) (Act) in 2013 (USFWS 2013). The USFWS designated critical habitat for the species in 2015 (USFWS 2015). The Mount Charleston blue butterfly is endemic to the Spring Mountains in southern Nevada. Evidence of decreasing range and population size and the presence of ongoing threats to the Mount Charleston blue butterfly resulted in its listing as endangered. The majority of the historic range and all currently occupied locations of the Mount Charleston blue butterfly are on lands managed by the Spring Mountains National Recreation Area, Humboldt-Toiyabe National Forest, United States Department of Agriculture Forest Service (Forest Service). Therefore, close coordination and cooperation will need to occur between the USFWS and Forest Service for recovery to be successful. This recovery plan describes the goals for the conservation and survival of the Mount Charleston blue butterfly.

Threats facing the Mount Charleston blue butterfly increase the risk of extinction of the subspecies, given its few occurrences in a small area. The largest threats to the Mount Charleston blue butterfly are the loss and degradation of habitat due to changes in natural fire regimes and succession, the implementation of recreational development projects and fuels reduction projects, and the increases in nonnative plants. Unpermitted and unlawful collection is a threat to the subspecies due to the small number of discrete populations, overall small metapopulation size, close proximity to roads and trails, and restricted range. These threats are likely to be exacerbated by the impact of climate change, which is anticipated to increase drought and extreme precipitation events.

## Recovery Strategy

The recovery strategy presents the overall approach we are taking to achieve the recovery of the species. The primary threats to be addressed through this recovery strategy are the loss and

degradation of habitat due to changes in natural fire regimes and succession, the implementation of recreational development projects and fuels reduction projects, feral horses, and the increases in nonnative plants. Habitat for Mount Charleston blue butterfly may be increased through properly sited and implemented management actions to favor optimal habitat quantity, quality, and patch arrangement. Where appropriate, habitat that once existed may be restored; habitat that currently exists should be protected and may be enhanced or augmented; and where conditions are suitable, new habitat may be created. After an evaluation is completed, population growth and connectivity may be assisted with translocation, if necessary, to ensure conservation and expedite recovery of the Mount Charleston blue butterfly. Evaluations, monitoring, and research will be implemented to inform decisions towards the recovery goal.

To downlist to threatened status and ultimately delist the Mount Charleston blue butterfly, will require active and ongoing protection of existing occupied habitat and newly discovered or established new populations of habitat which becomes occupied. These discovered or established habitats will ensure that life history processes, population growth, and connectivity will occur, thereby ensuring the genetic diversity of the species, sufficiently large populations to withstand stochastic events, and a sufficiently large number of populations to provide a safety margin to withstand catastrophic events. For this plan, we define “known occupied” as locations where habitat is present, and the Mount Charleston blue butterfly has been observed in successive years. Observations of butterflies in successive years indicates that habitat is consistently providing for the needs of reproducing pairs of breeding individuals.

## **Recovery Goal**

The ultimate goal of this recovery plan is to downlist and eventually delist the subspecies. The recovery goal will be reached by meeting the conditions identified in the recovery objectives.

## **Recovery Objectives**

Recovery objectives describe the conditions necessary for achieving the recovery goal. To meet the recovery goal, the following objectives have been identified:

- Protect existing habitat by reducing tree and shrub density and cover, reducing non-native plant species density and cover, reducing recreation associated impacts to habitat and individuals, reducing or removing feral horse impacts, and managing erosion.
- Improve Mount Charleston blue butterfly population status by connecting populations and increasing the number of known occupied locations.
- Address information gaps relevant to life history, habitat, restoration, populations, and land management through research and monitoring to guide informed adaptive management decisions for Mount Charleston blue butterfly.

## **Recovery Criteria**

An endangered species is defined in the Act as a species that is in danger of extinction throughout all or a significant portion of its range. A threatened species is one that is likely to

become an endangered species within the foreseeable future throughout all or a significant portion of its range. When we evaluate whether or not a species warrants downlisting or delisting, we consider whether the species meets either of these definitions. A recovered species is one that no longer meets the Act's definitions of threatened or endangered due to amelioration of threats. Determining whether a species should be downlisted or delisted requires consideration of the same five categories of threats that were considered when the species was listed, and which are specified in section 4(a)(1) of the Act.

Recovery criteria are conditions that, when met, indicate that a species may warrant downlisting or delisting. Thus, recovery criteria are mileposts that measure progress toward recovery. Because the appropriateness of delisting is assessed by evaluating the five categories of threats identified in the Act, the recovery criteria below pertain to and are organized by these categories. These recovery criteria are our best assessment at this time of what needs to be completed to recover the species so it may be removed from the list of threatened and endangered species. Because we cannot envision the exact course that recovery may take, and our understanding of the vulnerability of a species to threats is likely to change as more is learned, it is possible that a status review may indicate that delisting is warranted although not all recovery criteria are met. Conversely, it is possible that the recovery criteria could be met, and a status review may indicate that downlisting or delisting is not warranted. For example, a new threat may emerge that is not addressed by the current recovery criteria below and causes the species to remain threatened or endangered.

Mount Charleston blue butterfly recovery occurs when threats are ameliorated sufficiently, or conditions improve to permit the population to increase based on the criteria enumerated below. Recovery in this case is not defined in terms of absolute numbers of individuals but by the achievement of sustained resilient, well represented, and redundant populations as determined through monitoring. The recovery criteria presented below represent our best estimate for measuring when recovery goals and objectives have been met. Downlisting and delisting of the Mount Charleston blue butterfly will be considered when all the criteria listed below have been met.

### **Downlisting Criteria**

- a. Known occupied locations from the time of listing (i.e., Bonanza, South Loop Trail, and Lee Canyon Ski Area) persist as known occupied or are replaced by other known occupied locations. (Factor E)
- b. At least two additional known occupied locations are discovered, or habitat is augmented or established, and subsequently colonized so that it can be categorized as known occupied, bringing the total number of known occupied locations to at least five. This criterion will increase redundancy by replacing the majority of locations that have a historically documented and consistent butterfly presence (e.g., Foxtail, Lee Meadow, and Old Town) but which are now unoccupied. (Factors A and E)
- c. Occupied (including newly established or discovered) sites are monitored and adaptively managed to ensure their protection into the future.
  - i. A habitat improvement plan prescription (Thompson and Abella 2016) has been completed and is being implemented by the Forest Service, in cooperation with USFWS, to manage recreational uses, reduce or minimize impacts from feral

- horses, and enhance habitat for populations at the following locations located in the Lee Canyon area: Gary Abbott; Bristlecone Trail; and Bonanza Trail. (Factor A)
- ii. A habitat improvement plan prescription (Thompson and Abella 2016) has been completed and is being implemented by the Forest Service, in cooperation with the USFWS, to manage recreational uses, remove impacts from feral horses, and enhance and restore habitat for populations at the Lee Canyon Ski Area and Lower Parking locations. (Factor A)
  - d. Standards that protect the Mount Charleston blue butterfly and its habitat are incorporated into the Forest Service Land and Resource Plan for the Spring Mountains National Recreation Area. (Factor D)

**Delisting Criteria**

- a. At least four additional known occupied locations are discovered, or habitat is augmented or established, and subsequently colonized at four additional locations so that it can be categorized as known occupied, bringing the total number of known occupied locations to at least seven. (Factors A and E). Having seven known occupied locations will provide sufficient redundancy to allow the species to withstand potential catastrophic events that could impact multiple populations, such as fire or extreme drought.
  - i. At least five of the seven known occupied locations are within the estimated dispersal distance of another known occupied location. (Factors A and E)
- b. Habitat at seven known occupied sites is managed successfully such that threats to habitat have been reduced or removed through active implementation of management plans to support Mount Charleston blue butterflies. (Factors A and E)

**Recovery Actions**

The recovery actions identified in Table 1 are those that, based on the best available science, we believe are necessary to recover the Mount Charleston blue butterfly and ensure its long-term conservation. However, these recovery actions are subject to modification as suggested by new information, changes in species status, and the completion of other recovery actions. Implementation of the recovery actions will require close coordination and cooperation with the Forest Service because the Mount Charleston blue butterfly occurs entirely on land managed by the Forest Service.

Table 1. Actions and estimated costs to recover the Mount Charleston blue butterfly

Recovery Action	Estimated Cost
1. Protect existing Mount Charleston blue butterfly populations and habitat as appropriate, enhance and manage existing and new habitat, and manage existing and new populations.	\$2,189,000



2. Perform research to improve ecological knowledge of the Mount Charleston blue butterfly and its interrelationships to improve recovery efforts.	\$1,000,000
3. Develop and implement public education and outreach programs.	\$7,000
4. Annually review and monitor recovery implementation and progress to apply adaptive management as needed.	\$25,000

The estimated cost of completing the recovery actions such that the criteria have been met and the species may be considered for delisting is \$3,221,000. We estimate that these actions could be accomplished in 25 years, assuming effective coordination with necessary partners and stakeholders.

## Literature Cited

- Thompson, D., and S. Abella. 2016. Spring Mountains butterfly life history and autecology studies: phase III baseline habitat conditions and prescriptions for habitat enhancement, restoration, and augmentation. School of Life Sciences, University of Nevada, Las Vegas. Prepared for Forest Service, Spring Mountains National Recreation Area in cooperation with U.S. Fish and Wildlife Service, Southern Nevada Fish and Wildlife Office, Las Vegas, Nevada.
- (USFWS) U.S. Fish and Wildlife Service. 2013. Endangered and threatened wildlife and plants; determination of endangered species status for Mount Charleston blue butterfly. Federal Register 78:57750–57775.
- (USFWS) U.S. Fish and Wildlife Service. 2015. Endangered and threatened wildlife and plants; designation of critical habitat for Mount Charleston blue butterfly (*Icaricia (Plebejus) shasta charlestonensis*). Federal Register 80:37404–37430.