

Recovery Plan Amendment for Pawnee Montane Skipper (*Hesperia leonardus montana*)
https://ecos.fws.gov/docs/recovery_plan/980921.pdf

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DRAFT AMENDMENT

We have identified information that indicates the need to amend the delisting recovery criteria for the Pawnee montane skipper (*Hesperia leonardus montana*; Pawnee montane skipper or skipper), which have been in place since the recovery plan was completed in 1998. In this proposed modification, we discuss the adequacy of the existing delisting recovery criteria, identify amended delisting recovery criteria, and present the rationale supporting the proposed recovery criteria modification. The proposed modification will be included as an appendix that supplements the existing recovery plan, superseding only the delisting recovery criteria in the Recovery (Part II) section (page 6 - 11) of the existing recovery plan (USFWS 1998).

BACKGROUND INFORMATION

Recovery plans should be consulted frequently and used to initiate recovery activities, and should be updated as needed. A review of a recovery plan and its implementation may show that the plan is out of date or that its usefulness is limited, and therefore warrants modification. Keeping recovery plans current ensures that the species benefits through timely, partner-coordinated implementation based on the best available information. The need for, and extent of, plan modifications will vary considerably among plans. Maintaining a useful and current recovery plan depends on the scope and complexity of the initial plan, the structure of the document, and the involvement of stakeholders.

An amendment to a recovery plan involves a substantial rewrite of a portion of a recovery plan that changes any of the statutory elements. The need for an amendment may be triggered when, among other possibilities: (1) the current recovery plan is out of compliance with regard to statutory requirements; (2) new information has been identified, such as population-level threats to the species or previously unknown life history traits, that necessitates new or refined recovery actions and/or criteria; or (3) the current recovery plan is not achieving its objectives. An amendment to a recovery plan replaces only that specific portion of the recovery plan, supplementing the existing recovery plan, but not completely replacing it. An amendment may be most appropriate if significant plan improvements are needed, but resources are too scarce to accomplish a full recovery plan revision in a short time.

Although it would be inappropriate for an amendment to include changes in the recovery program that contradict the approved recovery plan, it can incorporate study findings that

enhance the scientific basis of the plan, or that reduce uncertainties as to the life history, threats, or species' response to management. An amendment can serve a critical function while awaiting a revised recovery plan by: (1) refining and/or prioritizing recovery actions that need to be emphasized, (2) refining recovery criteria, or (3) adding a species to a multispecies or ecosystem plan. An amendment can therefore efficiently balance resources spent on modifying a plan against those spent on managing implementation of ongoing recovery actions.

In this recovery plan amendment, we are clarifying the existing recovery criteria for the Pawnee montane skipper. The 1998 recovery plan (USFWS 1998) does not include quantitative delisting recovery criteria. By modifying the existing recovery criteria to be objective and measurable, we will be able to clearly show when the criteria are met.

METHODOLOGY USED TO COMPLETE THE RECOVERY PLAN AMENDMENT

This amendment was prepared by the Colorado Ecological Services Field Office. We coordinated recovery review and criteria development with the species' experts in the U.S. Forest Service and Colorado Natural Heritage Program. We also reviewed recommendations for quantifiable demographic and threat-based recovery criteria (Doak *et al.* 2015); the 2008 5-year review for the Pawnee montane skipper; recent information on the species; recovery actions that have been taken since the development of the original plan; and monitoring data provided by the U.S. Forest Service and Colorado Natural Heritage Program.

The amended delisting recovery criteria will be peer reviewed in accordance with the Office of Management and Budget (OMB) Peer Review Bulletin following the publication of the Notice of Availability.

ADEQUACY OF RECOVERY CRITERIA

Section 4(f)(1)(B)(ii) of the Endangered Species Act (Act) requires that each recovery plan shall incorporate, to the maximum extent practicable, "objective, measurable criteria which, when met, would result in a determination...that the species be removed from the list." Legal challenges to recovery plans (see *Fund for Animals v. Babbitt*, 903 F. Supp. 96 (D.D.C. 1995)) and a Government Accountability Audit (GAO 2006) also have affirmed the need to frame recovery criteria in terms of threats assessed as categorized by the five factors to determine if the species meets the definition of threatened or endangered.

Recovery Criteria

As described in the 1998 recovery plan, the recovery objective for the Pawnee montane skipper is to remove the species from the list of threatened species by ensuring the protection of the species' habitat for the foreseeable future, as described on page 6 of the 1998 recovery plan. The delisting criteria are identified on pages 6 - 11. The 1998 recovery plan is available online here: https://ecos.fws.gov/docs/recovery_plan/980921.pdf

Current Recovery Criteria

As provided in the 1998 recovery plan, the Pawnee montane skipper will be considered for delisting when it is demonstrated that:

1. There is a high probability of long-term persistence of the species and its preferred habitat. Because a twenty-fold fluctuation in butterfly numbers is commonly encountered, the focus for recovery must be on habitat protection, not population numbers, at any given time.
2. Skipper habitat on public land is protected and maintained within defined habitat of the South Platte River. Fragmentation of habitat must be avoided and skippers must be distributed throughout the range. Populations in both the South and North Forks must be protected to buffer against a single event that might eliminate the butterfly from one of those areas.

Synthesis

The Pawnee montane skipper is a small brownish-yellow butterfly with a wing span slightly greater than 1 inch. Small distinct yellow spots are present near the outer margins of the upper and lower wing surfaces. The range of the skipper is restricted to four Colorado counties (Teller, Park, Jefferson, and Douglas) within an area approximately 23 miles long and 5 miles wide along the South Platte River drainage system (Environmental Research and Technology, Inc. [ERT] 1986a). The total area of skipper habitat is approximately 25,044 acres, of which 13,826 acres occur on the Pike National Forest (Sovell 2019, pers. comm.).

The skipper is dependent on two host plants, namely the prairie gayfeather (*Liatris punctata*) and blue grama grass (*Buteloua gracilis*), within a ponderosa pine (*Pinus ponderosa*) woodland. The prairie gayfeather is the primary nectar plant for adult skippers while blue grama grass is the primary plant for ovipositing (egg laying), larvae feeding, larvae overwintering, and pupation. The prairie gayfeather generally occurs in open ponderosa pine and Douglas-fir forests and within small openings in the forest. The skipper's narrow range is inherently restricted by the area of overlap between the northern extension of the ponderosa pine/blue grama grass community and the southern extension of the prairie gayfeather (USFWS 1998).

Based on quantitative skipper occurrence studies (ERT 1986a), general characteristics of Pawnee montane skipper habitat include:

- Tree canopy cover of 30 percent;
- Ponderosa pine cover of 25 percent, Douglas-fir cover of 5 percent;
- Tree density of less than 120 trees/acre in the smallest size class (0 to 5 ft. diameter breast high); overall tree density of less than 200/acre;
- Shrub and grass cover generally less than 10 percent;
- Prairie gayfeather flower stem density ranging from 50 to 500/acre; and
- Blue grama cover 5 percent or less, present nearly everywhere.

Three skipper subpopulations are present: Mainstem South Platte (12,787 acres of skipper habitat); Cheesman (5,972 acres of skipper habitat); and North Fork of South Platte (6,285 acres

of skipper habitat) (Banks 2009, pers. comm.; Sovell 2019, pers. comm.). The Mainstem South Platte and Cheesman subpopulations are contiguous in the area of Cheesman Dam, and there appears to be some opportunity for exchange of individuals in this area. Likewise, the Mainstem South Platte and North Fork subpopulations are contiguous at the confluence of the North Fork with the Mainstem of the South Platte River, providing a similar opportunity for some exchange of individuals between the subpopulations.

The flight period for adult skippers (August and September) closely corresponds with the main flowering time of the prairie gayfeather, with the primary flight period occurring from late August to early September.

The primary threat identified at the time of listing in 1987 was the construction of the proposed Two Forks Dam and Reservoir (1.1 million acre-feet), which would have resulted in the inundation and destruction of 22 percent of the skipper's habitat and the loss of 23 to 42 percent of the population (USFWS 1998), primarily in the North Fork and Mainstem areas. While this larger dam was not constructed as proposed, the potential remains for a smaller Two Forks dam to be constructed. The smaller Two Forks Dam and Reservoir (345,000 acre-feet) would also inundate large areas of skipper habitat, although a specific estimate has not been calculated at this time. Denver Water Board has voluntarily placed a moratorium on applications for development of the smaller Two Forks Dam and Reservoir through 2024 (USFS 2004).

Additional large-scale threats have surfaced that were not identified at the time of listing; these large-scale threats are related to less suitable forest conditions and wildfires. Fire suppression over the past 100 years has created more uniform and denser forest conditions in the lower montane forest, resulting in an increased risk of large-scale, stand-replacing fires and a reduced quality of habitat for the skipper (USFS 2000). Concerns over the risk of such wildfires in the lower montane forests in Colorado were realized in 1996 due to the Buffalo Creek Fire and in 2002 due to the Hayman Fire, which was the largest recorded wildfire in Colorado's history. The 2002 Hayman/Schoonover Fires burned more than 36 percent of the skipper's habitat in a combination of low severity and moderate-to-high severity burn areas in the Cheesman and Mainstem areas. While skipper populations and habitat have generally recovered in the low severity burn areas, the future of the skipper is uncertain in the moderate-to-high severity burn areas due to the loss of overstory forest canopy cover. Skippers have generally not reoccupied areas of high severity burns and may be absent from these areas until the ponderosa pine overstory is re-established. Skipper populations were also affected range-wide by the severe drought of 2002.

An additional threat not identified at time of listing is the effect of climate change, which has the potential to result in increased periods of drought and a higher intensity and frequency of wildfires, both of which are likely to negatively affect the skipper. Other threats identified at the time of listing included residential and commercial development and ORV use. These threats have not resulted in significant impacts to skipper populations or habitat, and are not expected to do so in the near future given the current levels of development.

Population estimates were conducted in 1985, 1986, and 1987 as part of the environmental analyses for Denver Water Board's proposed Two Forks Dam. Studies were based on census

survey transects and distribution survey counts (ERT 1986a, 1986b, 1988). The 1985 total population estimate was 80,000 to 140,000 adult skippers; in 1986, the estimate was 67,900 to 166,100; and in 1987, the estimate was 116,000. The range in the population estimate relates to the use of both census survey data and the distribution survey data to develop the total population estimate (ERT 1986b). These population estimates correlate to skipper densities of 2.1 to 3.6 per acre (ERT 1986b, 1988; ENSR 1989). More recent population estimates for the period from 2012 to 2016 range from 9,136 to 24,042 total skippers (Sovell 2019, pers. comm).

Two long-term skipper monitoring studies provide information on skipper abundance and population trends. These studies monitor the effects of: 1) the 2002 Hayman/Schoonover Fires and drought; and 2) a large-scale forest restoration and fuels reduction project. Both of these studies are continuing at the present time.

Following the 2002 drought and Hayman/Schoonover Fires, average skipper densities remained quite low, typically in the range of 0.20 to 0.89 skippers per acre, even in unburned areas, and densities did not return to pre-listing levels until 2010 (2.83 skippers per acre). Within areas of high severity burns, where the forest overstory has been lost, skippers have not repopulated these areas.

In areas not affected by fires, recent fuels reduction projects by land management agencies have demonstrated that skipper habitat and skipper densities can be improved by forest thinning treatments (Natural Perspectives 2008). A total of at least 27 percent of the skipper habitat has received fuels reduction treatments, with additional forest thinning planned on 4 percent of skipper habitat.

In conclusion, the Pawnee montane skipper continues to have a high vulnerability to a variety of threats and continues to warrant listing as a threatened species. Recent fires have severely altered a large amount of its habitat, fire suppression within the skipper's range has reduced the quality of its habitat, skipper population numbers are generally lower than at the time of listing, and the potential remains for a smaller Two Forks Dam and Reservoir to be constructed. Furthermore, the potential impacts of climate change, if realized, could result in additional impacts to the skipper's habitat. In the absence of listing, threats to the skipper would likely be greater than presently experienced.

AMENDED RECOVERY CRITERIA

Recovery criteria serve as objective, measurable guidelines to assist in determining when an endangered species has recovered to the point that it may be downlisted to threatened, or that the protections afforded by the Act are no longer necessary and a threatened species may be delisted. Downlisting is the reclassification of a species from endangered to threatened. Delisting is the removal of a species from the Federal Lists of Endangered and Threatened Wildlife and Plants. The term "endangered species" means any species (species, sub-species, or Distinct Population Segment) which is in danger of extinction throughout all or a significant portion of its range. The term "threatened species" means any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

Revisions to the Lists, including delisting or downlisting a species, must reflect determinations made in accordance with sections 4(a)(1) and 4(b) of the Act. Section 4(a)(1) requires that the Secretary determine whether a species is an endangered species or threatened species (or not) because of threats to the species. Section 4(b) of the Act requires that the determination be made “solely on the basis of the best scientific and commercial data available.” Thus, while recovery plans provide important guidance to the Service, States, and other partners on methods of minimizing threats to listed species and measurable objectives against which to measure progress towards recovery, they are guidance and not regulatory documents.

Recovery criteria should help indicate when we would anticipate that an analysis of the species’ status under section 4(a)(1) would result in a determination that the species is no longer an endangered species or threatened species. A decision to revise the status of or remove a species from the Federal Lists of Endangered and Threatened Wildlife and Plants, however, is ultimately based on an analysis of the best scientific and commercial data then available, regardless of whether that information differs from the recovery plan, which triggers rulemaking.

All classification decisions consider the following five factors: (1) is there a present or threatened destruction, modification, or curtailment of the species’ habitat or range; (2) is the species subject to overutilization for commercial, recreational scientific or educational purposes; (3) is disease or predation a factor; (4) are there inadequate existing regulatory mechanisms in place outside the ESA (taking into account the efforts by states and other organizations to protect the species or habitat); and (5) are other natural or manmade factors affecting its continued existence.

When changing the status of a species, we first propose the action in the *Federal Register* to seek public comment and peer review, followed by a final decision announced in the *Federal Register*.

Delisting Recovery Criteria

In this amendment, we provide amended delisting criteria for the Pawnee montane skipper, which would supersede those included in the 1998 Pawnee montane skipper recovery plan, while generally maintaining the basic intent of the original criteria. The amended delisting recovery criteria provide a quantifiable and objective approach to determining when the Pawnee montane skipper has recovered to the point that it would be considered for delisting.

Amended or Clarified Delisting Recovery Criteria

The Pawnee montane skipper will be considered for delisting when it is demonstrated that:

Criterion 1. Management of the three subpopulations has been established to address threats to the species and ensure persistence of the subpopulations. 75 percent or more of area of the current habitat in each of the 3 subpopulation must be in the condition of high quality. High quality habitat includes interconnected areas that contain the general skipper habitat characteristics within the range of the species and are at low risk of catastrophic, stand-replacing wildfires, low risk of inundation, and low risk of other processes that could eliminate or degrade the quality of skipper habitat.

Criterion 2. Each of the 3 subpopulations must maintain stable or increasing population trends for 6 years out of the most recent 10-year sequence.

Justification: Criterion 1 and 2 are needed to preserve the breadth of the species' genetic and ecological diversity, thereby maintaining the species' ability to adapt to a changing environment. Thus, the focus of the Pawnee montane skipper recovery is to ensure continued persistence within each of the three subpopulations.

The most significant potential threats at this time to the Pawnee montane skipper include the risk of high severity, stand-replacing wildfires that result in long-term alteration of suitable habitat conditions, and the risk of inundation by a potential smaller Two Forks Dam and Reservoir (if proposed in the future). We consider areas of suitable skipper habitat that have a low fire risk to have a sufficiently reduced risk of stand-replacing fires. Low fire risk conditions can exist through a combination of factors, including naturally low fuels conditions in open forest conditions, fuels reduction treatments, and may include areas that have experienced low severity wildfires.

Pawnee montane skipper habitat is considered to be connected if areas of non-habitat adjacent to skipper habitat are less than a distance of 0.8 km. Regarding the connectivity of skipper habitat, we base the distance of connectivity of Pawnee montane skipper habitat on analysis conducted on the crystal skipper (Leidner and Haddad 2010; Leidner and Haddad 2011), which evaluated areas of non-habitat, including ocean and urban developments.

Criterion 3: Each population has a written management plan for federal, county, and municipal lands that promotes population persistence.

Population management plans should:

- a. Focus on promoting and protecting habitat quality, heterogeneity, connectivity, and landscape position (for example, elevation, aspect) to buffer against local scale stochastic and catastrophic events.
- b. Address current and foreseeable future stressors.
- c. Specify compatible management practices.
- d. Include a genetic health management strategy.
- e. Include contingency plan for catastrophes.

Justification: Achieving Criterion 3 will help ensure that there is an organizational commitment to support each subpopulation. The nature and severity of stressors as well as the land-use needs vary geographically within and between the subpopulations. Thus, we plan to work with local land managers/owners and species' experts to identify the limits and opportunities relevant for each population. This effort will enable us and our conservation partners to better achieve the recovery needs of well-distributed, healthy subpopulations and to ensure management plans are based on robust up-to-date scientific methods and information while accommodating landowner objectives. At a minimum, we anticipate developing management plans with the U.S. Forest Service, Denver Water Board, Bureau of Land Management, and Jefferson County.

The amended recovery criteria are based on our understanding of the species' needs and requirements. This understanding includes information gathered since the original recovery plan was published, such as more recent information about population status and trends, along with an updated understanding of the threats acting on the species. The amended criteria are based on increasing the population trend and population size, maintaining genetic diversity, reducing threats to the species, and include a temporal aspect to ensure the species is resilient to expected variations within a reasonable timeframe. We have amended the recovery criteria for the Pawnee montane skipper to include quantitative delisting criteria that incorporate the biodiversity principles of representation, resiliency, and redundancy (Wolf et al. 2015) and threats addressed as categorized by the five factors in the latest 5-year review (USFWS 2008).

ADDITIONAL SITE SPECIFIC RECOVERY ACTIONS

No additional site-specific recovery actions are necessary for this species; therefore, this is not applicable.

COSTS, TIMING, PRIORITY OF ADDITIONAL RECOVERY ACTIONS

No additional site-specific recovery actions are necessary for this species; therefore, this is not applicable.

LITERATURE CITED

Banks, B. 2009. Personal communication. Email provided regarding U.S. Forest Service, Pike and San Isabel National Forests GIS analysis of Pawnee montane skipper habitat burned in recent fires. July 23, 2009.

Doak, D.F., G.K. Himes Boor, V.J. Bakker, W.F. Morris, A. Louthan, S.A. Morrison, A. Stanley, and L.B. Crowder. 2015. Recommendations for Improving Recovery Criteria under the US Endangered Species Act. *Bioscience* 65(2): 189 – 199.

ENSR International Corporation. 1989. Pawnee montane skipper 1988 field studies. Prepared for Denver Water Department, Denver, Colorado. Prepared by ENSR Corporation, Fort Collins, CO. 44 pp.

ERT (Environmental Research and Technology, Inc.). 1986a. 1986 Pawnee montane skipper field studies. Prepared for the Denver Water Department, Denver, CO. 40 pp.

ERT (Environmental Research and Technology, Inc.). 1986b. Status report on the Pawnee montane skipper (*Hesperia leonardus montana*_Skinner). Prepared for the Denver Water Department, Denver, CO. 45 pp.

ERT (Environmental Research and Technology, Inc.). 1988. Pawnee montane skipper 1987 field studies. Prepared for the Denver Water Department, Denver, CO. 22 pp.

- Leidner, A.K., and N.M. Haddad. 2010. Natural, not urban, barriers define population structure for a coastal endemic butterfly. *Conservation Genetics* (2010)11:2311-2320.
- Leidner, A.K., and N.M. Haddad. 2011. Conservation measures of dispersal to identify conservation strategies in fragmented landscapes. *Conservation Biology*, Volume 25, No. 5, 1022-1031.
- Natural Perspectives. 2008. Pawnee montane skipper monitoring study for the Upper South Platte Watershed Protection and Restoration Project – August 2007. Prepared for the U.S. Forest Service. 50 pp.
- Sovell, J. 2019. Personal communication. Email provided regarding update on skipper population numbers and other comments. Colorado Natural Heritage Program. February 15, 2009.
- U.S. Fish and Wildlife Service. 1998. Pawnee montane skipper butterfly recovery plan. Prepared by the Pawnee Montane Skipper Recovery Working Group for Region 6, U.S. Fish and Wildlife Service, Denver, CO. 16 pp.
- U.S. Fish and Wildlife Service. 2008. 5-Year Reviews of three wildlife species and eight plant species in the Mountain-Prairie Region. 73 FR 58261 58262.
- U.S. Forest Service. 2000. Environmental assessment for the Upper South Platte Watershed Protection and Restoration Project. USDA Forest Service, Pike National Forest, South Platte Ranger District, Morrison, CO. 188 pp. + appendices.
- U.S. Forest Service. 2004. Wild and scenic river study report and final environmental impact statement. Appendix A, South Platte protection plan. North Fork of the South Platte and the South Platte Rivers. Administered by the Pike and San Isabel National Forest, Comanche and Cimarron National Grasslands. USDA Forest Service, Rocky Mountain Region, Denver, CO. 171 pp.
- Wolf, S., B. Hartl, C. Carrol, M.C. Neel, and D.N. Greenwald. 2015. Beyond PVA: why recovery under the Endangered Species Act is more than population viability. *BioScience* 65:200-207.