

**Amendment to the Recovery Plan for Pawnee Montane Skipper  
(*Hesperia leonardus montana*)**

[https://ecos.fws.gov/docs/recovery\\_plan/980921.pdf](https://ecos.fws.gov/docs/recovery_plan/980921.pdf)

Original Approved: September 2, 1998

Original Prepared by: Pawnee Montane Skipper Recovery Working Group, U.S. Fish and Wildlife Service, Interior Regions 5 & 7, Denver, Colorado

**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 (pages 6 - 11) of the existing recovery plan (USFWS 1998).

**For  
U.S. Fish and Wildlife Service  
Interior Regions 5 & 7  
Denver, CO 80225**

**September 2020**

**Approved:** \_\_\_\_\_ **Date:** \_\_\_\_\_  
Regional Director  
U.S. Fish and Wildlife Service  
Interior Regions 5 & 7

**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 A review of a recovery plan and its implementation may show that the plan is out of date or that its usefulness is limited, and therefore warrants modification.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 delisting recovery criteria that are quantitative. 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, Colorado Natural Heritage Program, and private consultants. 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 was 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 under the five delisting factors.

## 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](https://ecos.fws.gov/docs/recovery_plan/980921.pdf)

### Current Recovery Criteria

As provided in the 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 (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 (*Bouteloua gracilis*), as well as on forest overstory provided by 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. Skipper densities are positively correlated with prairie gayfeather densities. Skipper densities are greater on lower slopes (nearer water) than on higher sites on the same slope (USFWS 1998). 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 at breast height); 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 with the Buffalo Creek Fire and in 2002 with the Hayman Fire, which was the largest recorded wildfire in Colorado's history. The combined effects of wildfires since 1996 have burned more than 12,026 acres (48.3 percent) of skipper habitat in a combination of low severity and moderate-to-high severity burns (ENSR 2003b). 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 generally have 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.

Other threats identified at the time of listing included residential and commercial development and off-road vehicle 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. An additional threat not identified at the 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. Additional potential threats include effects from predation, competition, parasitization, and disease, as well as from other recreational disturbances, although none of these effects have been identified to date.

Population estimates were conducted in 1986, 1987, and 1988 as part of the environmental analyses for Denver Water Board's proposed Two Forks Dam. The 1986 population estimate was 80,000 to 140,000 skippers. The range in this population estimate relates to the use of both census survey data and distribution survey data to develop the total population estimate (ERT 1986b). The 1987 (ERT 1988) and 1988 (ENSR 1989) population estimates were based on sampling the portion of the skipper population located outside the Two Forks Reservoir inundation zone. These partial population estimates for the three sequential years are as follows: 1986 – 82,000; 1987 – 116,000; 1988 - 141,000. 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 (Natural Perspectives 2010; Colorado Natural Heritage Program 2013; Colorado Natural Heritage Program 2018). 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). Skippers have not repopulated areas of high severity burns where live forest overstory has been lost.

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 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) that 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. Conditions of suitable habitat must be maintained in each of the subpopulations equivalent to 75 percent or more of the area of the current habitat in each of the subpopulations. Suitable habitat includes interconnected areas that contain 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 subpopulations must maintain persistent habitat occupation for 6 years out of the most recent 10-year sequence across the majority (70 to 80 percent) of the historic range of the species.

*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 Pawnee montane skipper recovery is to ensure continued persistence within each of the three subpopulations.

At this time, the most significant potential threats 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 areas that have experienced low severity wildfires.

Quantitative measures for maintenance of suitable habitat conditions equivalent to 75 percent or more of the current habitat in each of the subpopulations and occupation for 6 years out of the most recent 10-year sequence is based on professional judgement and expertise with conditions that provide for maintenance of Pawnee montane skipper populations. Pawnee montane skipper habitat is considered to be connected if areas of non-habitat adjacent to skipper habitat are less than a distance of 0.5 miles. Regarding the connectivity of Pawnee montane skipper habitat, we base the distance of connectivity on a movement study conducted on the crystal skipper (Leidner and Haddad 2010; Leidner and Haddad 2011), a

similarly sized skipper in North Carolina present in an area with isolated patches of suitable habitat.

Verification of habitat occupation would be based on a set of permanent transects or plots that would be monitored across the full range of the skipper, as well as in areas that were historically occupied but are currently unoccupied because of habitat unsuitability (e.g., high severity burns with no live tree overstory). While individuals could be counted for population estimates, the main objective is to determine presence or absence. If occurrence measurements drop below the target frequency (i.e., 6 years out of most recent 10 years), then further investigations may be necessary to determine the reasons why on a local basis, rather than the population as a whole. This approach would also provide a means for systematically documenting re-occupation of formerly suitable habitat. In order to address potential shifts in habitat occupancy as a result of climate change, habitat occupancy monitoring needs to occur throughout the known elevation range of the species, as well as above the known elevation range in areas of suitable vegetation conditions, to potentially detect shifts in the population as a whole over time.

Criterion 3: Each subpopulation 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 (e.g., elevation, aspect) to buffer against local scale stochastic and catastrophic events;
- b. Address current and foreseeable future stressors, including climate change;
- c. Specify compatible management practices, including trails and other recreation activities;
- d. Include a new skipper occupied habitat map generated from population surveys that include burned areas, forest thinning areas, and areas outside the current range, including higher elevation areas;
- e. Include a genetic health management strategy;
- f. Development of management plans will include consolidation of the two long-term skipper monitoring studies (post-fire and fuels reduction) into a reference bibliography; and
- g. 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 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, and management plans will be available for public review prior to finalization.

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 maintaining habitat and occupancy, maintaining genetic diversity, and reducing threats to the species, and also 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 under 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.

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## **APPENDIX A – SUMMARY OF PUBLIC, PARTNER, AND PEER REVIEW COMMENTS RECEIVED**

### **Summary of Public Comments**

We published a notice of availability in the Federal Register on August 6, 2019 (84 FR 38288-38291) to announce that the draft amendment for the Pawnee montane skipper (*Hesperia leonardus montana*) Recovery Plan (Recovery Plan) was available for public review, and to solicit comments by the scientific community, State and Federal agencies, Tribal governments, and other interested parties on the general information base, assumptions, and conclusions presented in the draft amendment. An electronic version of the draft recovery plan amendment was also posted on our Species Profile website ([Pawnee Montane Skipper Revision](#)).

We also developed and implemented an outreach plan that included: (1) publishing a news release on our national webpage (<https://www.fws.gov/news/>) on August 5, 2019; (2) sending specific notifications to Congressional contacts in appropriate Districts; and (3) sending specific notifications to key stakeholders in conservation and recovery efforts. These outreach efforts were conducted in advance of the Federal Register publication to ensure that we provided adequate notification to all potentially interested audiences of the opportunity to review and comment on the draft amendment.

We received no responses to the request for public comments.

### **Summary of Peer Review Comments**

In accordance with the requirements of the Act, we solicited independent peer review of the draft amendment from biologists with the U.S. Forest Service, Colorado College in Colorado Springs, Colorado, and a private consultant who have in-depth field expertise with the Pawnee montane skipper. Peer review was conducted concurrent with the Federal Register publication. Criteria used for selecting peer reviewers included their demonstrated expertise and specialized knowledge related to the species. The qualifications of the peer reviewers are in the decision file and the administrative record for this Recovery Plan amendment.

In total, we solicited review and comment from three peer reviewers. We received comments from all three peer reviewers. In general, the draft amendment was well-received by the peer reviewers and garnered constructive suggestions for improvements and modifications to the draft amendment.

We considered all substantive comments, and to the extent appropriate, we incorporated the applicable information or suggested changes into the final Recovery Plan amendment. Below, we provide a summary of specific comments received from peer reviewers with our responses. We appreciate the input from all commenters, which helped us to consider and incorporate the best available scientific and commercial information during the development and approval of the final Recovery Plan amendment.

*Peer Review Comment (1):* Overall, the description and analysis of the species' needs, biology, habitat, and historic distribution in the draft amendment were considered to be generally accurate. Assumptions and definitions of suitable habitat were logical and adequate because the definitions are based on extensive habitat measurements correlated with skipper occurrence and oviposition observations. However, our description of population trends and current population extent was found to not be correctly summarized, and a corrected summary of population trends and extent was provided by the commenter.

*Response:* We incorporated by reference the summary of population trends and current population information that was provided (i.e., ERT 1986b, ERT 1988, and ENSR 1989).

*Peer Review Comment (2):* Comment that the habitat description should include the clarification that the skipper is dependent on two host plants, namely the prairie gayfeather and blue grama grass, as well as on forest overstory provided by ponderosa pine woodland, to better express the requirement of the woodland overstory component.

*Response:* We have revised the plan amendment to clarify this habitat description to underscore the importance of the ponderosa pine overstory.

*Peer Review Comment (3):* The peer reviewers were in general agreement with Criterion 1 and provided several constructive recommendations. The goal of reducing the risk of high severity fires is considered to be compatible with the continued existence and enhancement of skipper populations. The boundaries between the subpopulations are appropriate from a management perspective between land managed by Denver Water and the U.S. Forest Service. The definition of high quality habitat in Criterion 1 in the draft amendment was somewhat vague and the definition used conflated habitat characteristics and threat assessments. Use of interconnected areas was not clearly defined or explained. Aspects of skipper distribution, such as a higher density of skipper numbers towards the bottom of slopes and closer to the water, were not captured by the existing definitions and descriptions of habitat.

*Response:* We have revised the habitat descriptions and the term "suitable habitat" has been defined to describe areas that contain the habitat characteristics and also have reduced threats from high-severity fires and/or reservoir inundation. The use of interconnected areas has been explained as relating to relatively similar habitat connectivity conditions of another skipper species occurring in an area with a mosaic of habitat and non-habitat conditions. The correlation of higher skipper densities on lower slopes (near water) has been included. Furthermore, as recovery progresses, periodic evaluation of the species status through the Five Year Review process may reveal that the barriers to achieving certain criteria have been removed or that circumstances or our understanding of the species have evolved. In that event, the Service can revise recovery criteria to ensure that they reflect the strategy most likely to succeed in the goal of recovery.

*Peer Review Comment (4):* The description of the effects of wildfires on skipper populations was accurate, but a current assessment of the amount of suitable habitat remaining after these major fires was incomplete. The total burned skipper habitat should have included impacts from all large high severity fires in order to more fully state the impact that high severity fires have had on skipper habitat.

*Response:* Survey crews continue to monitor post-fire populations and habitat, and the Service will evaluate expanding the range of the post-fire surveys. We have revised the text to include the acres of skipper habitat burned in the high severity fires.

*Peer Review Comment (5):* Description of factors that affect skipper populations and habitat should include a statement about how competition, predation, parasitization, or disease could affect Pawnee montane skippers. At this time, there is not any information about these potential pressures on the skipper population, and there is not necessarily any reason to expect these factors to change, but it is worth acknowledging the lack of information on this part of the Pawnee montane skipper's existence. Similarly, although other threats identified at the time of listing, such as residential and commercial development and ORV use, have not resulted in significant impacts to skipper populations or habitat, it is important to note that recreational uses of public lands are increasing and have the potential to impact skipper habitat.

*Response:* We have revised the text to include the potential for impacts to skippers relating to competition, predation, parasitization, and disease, and the increasing pressures on public lands, and potentially on skipper habitat, from increasing recreational use.

*Peer Review Comment (6):* In the draft amendment, Criterion 2 previously contained the requirement that subpopulations should achieve a positive population trend over time. A comment was provided that a criterion based on population trends may not be the most feasible way to make recovery decisions for the skipper. Obtaining accurate population estimates is affected by: 1) the very large skipper study area in difficult-to-access terrain; 2) the need for large numbers of transects to make statistically valid estimates and comparisons; 3) the inherent difficulty of identifying and counting fast-flying butterflies; and 4) the very high year-to-year variation in population sizes in response to year-to-year climate variability. The commenter recommended that an alternative criterion would be: persistent (6 out of 10 years) habitat occupation (distribution) across the majority (70 to 80 percent) of the historic range of the species over a defined period of time. An assumption for this criterion is that a mobile insect species is capable of occupying its historical habitat (as measured in 1986 plus small increases) unless: 1) there is an external factor (such as a fire, construction of a reservoir) that changes habitat availability; 2) there is a short-term climatic factor (e.g., drought) that affects the availability of nectar sources and food plants; and 3) there are climatic factors that affect habitat use and skipper reproduction without visibly changing the key vegetation components. Verification would be based on a set of permanent transects or plots that would be monitored across the full range of the butterfly, as well as in areas that were historically occupied, but are not currently because of habitat unsuitability (e.g., high severity burn areas with no tree overstory).

*Response:* We have revised Criterion 2 such that it is based on persistence of occupation for each of the subpopulations and must maintain persistent habitat occupation for 6 years out of the most recent 10-year sequence across the majority (70 to 80 percent) of the historic range of the species.

*Peer Review Comment (7):* Both of the quantitative measures (Criterion 1 and 2) in the draft amendment for subspecies recovery seemed reasonable, but it was not stated how those figures

were created, and if there is literature to support them, or were they based on the professional experience and judgment of the amendment writers.

*Response:* We have revised these quantitative measures from the plan amendment and Criterion 1 now includes suitable habitat conditions, as opposed to high quality habitat, and Criterion 2 now includes population persistence for 6 out of 10 years over the majority of the historic range, as opposed to increasing population numbers. These measures are based on professional judgement and include experience gained from the two long-term, post-fire and forest thinning studies that have occurred for the past 20 years. In developing recovery criteria specifically, we attempt to establish criteria that are both scientifically defensible and achievable to the greatest extent possible based on our Interim Endangered and Threatened Species Recovery Plan Guidance (National Marine Fisheries Service and U.S. Fish and Wildlife Service 2010). At times, however, the feasibility of achieving certain criteria can be, or appear to be, constrained by the particular, difficult circumstances that face a species. Even in such cases, criteria serve to guide recovery actions and priorities for the species. Furthermore, as recovery progresses, periodic evaluation of the species status through the Five Year Review process may reveal that the barriers to achieving certain criteria have been removed or that circumstances or our understanding of the species have evolved. In that event, the Service can revise recovery criteria to ensure that they reflect the strategy most likely to succeed in the goal of recovery.

*Peer Review Comment (8):* Climate change is described in the draft amendment as a potential threat to the persistence of skipper populations because of increased drought and higher frequency of wild fires. Other effects from climate change include shifts in vegetation flowering phenology and growth, and potentially greater seasonal temperature variability. The implication for the Pawnee montane skipper is that monitoring needs to occur throughout the known elevation range of the species (and above) to potentially detect shifts in the population as a whole over time.

*Response:* In order to address potential shifts in habitat occupancy as a result of climate change, we have added the requirement that habitat occupancy monitoring needs to occur throughout the known elevation range of the species, as well as above the known elevation range in areas of suitable vegetation conditions, to potentially detect shifts in the population as a whole over time.

*Peer Review Comment (9):* The peer reviewers had a general agreement with Criterion 3, which requires the preparation of written management plan for federal, county, and municipal lands that promotes population persistence, and provided the recommendation that the management plans be built around a common set of criteria that apply to all land jurisdictions. Commenters also questioned how threats will be addressed in the management plans.

*Response:* We will ensure that the management plans provide for a common set of guidance for management of skipper habitat that is consistent throughout the range of land ownership within the range of the skipper. We will also strive to develop guidance that addresses all threats, including related to climate change, to the degree possible, and will include plans to survey and evaluate threats for skipper populations at elevations above the current range. Management plans will be available for public review prior to finalization.

*Peer Review Comment (10):* Recommendation that the reports for the two long-term skipper monitoring studies (post-fire and fuels reduction) be consolidated into a reference bibliography that would provide a benchmark to justify and evaluate the proposed Recovery Plan amendment. Additionally, citations were not included in the draft amendment for the two long-term skipper monitoring studies (post-fire and fuels reduction).

*Response:* We have revised Criterion 3 to include the preparation of a reference bibliography that consolidates the two long-term skipper monitoring studies (post-fire and fuels reduction). Citations were also added for the long-term, post-fire and fuels reductions skipper monitoring studies.