U.S. Fish and Wildlife Service

Recovery Plan
for
Dakota skipper (*Hesperia dacotae*)

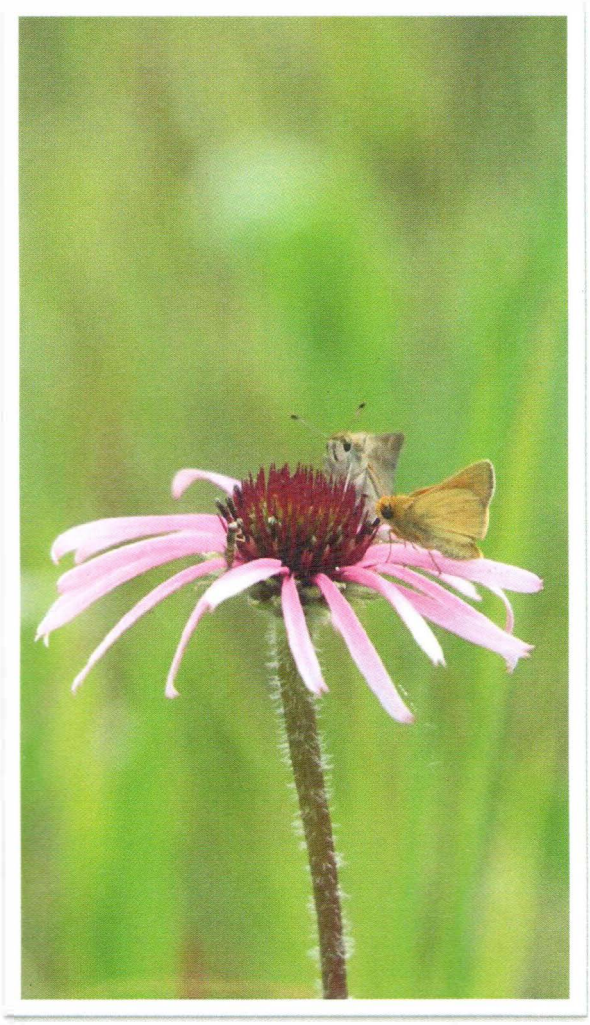

Photo: Andrew Horton, USFWS

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Approved: _____

Regional Director, Midwest Region 3
U.S. Fish and Wildlife Service

DISCLAIMER

The Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.), requires the development of recovery plans for listed species, unless such a plan would not promote the conservation of a particular species. 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, sometimes prepared with the assistance of recovery teams, contractors, State agencies and others. Recovery plans do not necessarily represent the views, official positions or approval of any individuals or agencies involved in the plan formulation, other than the U.S. Fish and Wildlife Service. They represent the official position of the U.S. Fish and Wildlife Service 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 information, changes in species status, and the completion of recovery actions. Please check for updates or revisions at the website below before using.

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This recovery plan can be downloaded free of charge from the U.S. Fish and Wildlife Service website: *https://ecos.fws.gov/ecp0/profile/speciesProfile?sId=2202*

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I. Introduction

The Dakota skipper, a small prairie butterfly, was listed as a threatened species under the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq; Act) on October 23, 2014 (79 FR 63672). The primary purpose of the Act is the conservation of endangered and threatened species and the ecosystems upon which they depend. The ultimate goal of such conservation efforts is the recovery of these listed species, so that they no longer need the protective measures of the Act. Subsection 4(f) of the Act requires the U.S. Fish and Wildlife Service (USFWS) to develop and implement recovery plans for the conservation of endangered and threatened species.

The USFWS recovery planning process entails developing a recovery plan and a recovery implementation strategy (*https://www.fws.gov/endangered/esa-library/pdf/RPI.pdf*). This document provides the recovery plan for the Dakota skipper. The plan describes the recovery vision, strategy, and the required elements per section 4(f)(1)(B) of the Act. These elements include a description of site-specific management actions; objective, measurable criteria; and estimates of the time and costs to carry out those measures needed to achieve recovery.

The recovery implementation strategy (RIS) is a separate document[1] from the recovery plan and is developed in close cooperation with partners. It is an operational plan for stepping down the higher-level recovery actions identified in the recovery plan into specific tasks and includes detailed plans for how the partners can work together to accomplish those tasks. The specifics of the RIS are updated as new information becomes available through recovery implementation. The RIS will be developed following publication of the final recovery plan and will be made available on the USFWS website.

To develop the recovery plan for Dakota skipper, we conducted a species status assessment (referred to as an SSA) to evaluate the viability of the Dakota skipper. In that SSA we provide a summary of the species' biology at the individual, population, and species levels; describe the factors that have led to its current status and those that are likely to influence its status into the future; assess the current and future health of individual populations given these influences; and describe the implications of predicted health and distribution on the species' viability. A summary of the SSA analyses is documented in the Dakota Skipper (*Hesperia dacotae*) Report on the Species Status Assessment (USFWS 2018 (version 2); referred to as Dakota skipper SSA); *https://ecos.fws.gov/ecp/species/1028l*). This SSA report guided and supports the recovery planning process for the Dakota skipper.

The Dakota skipper (*Hesperia dacotae*) inhabits remnants of tallgrass prairie and mixed-grass prairie in the north-central United States and into southern Saskatchewan and Manitoba Provinces of Canada. Within the native prairie patches where it persists, the species relies on high-quality habitat conditions – diverse native grassland plant communities – and on natural or human disturbances that maintain the integrity of these plant communities while minimizing mortality to vulnerable life stages. Populations may also be influenced significantly (positively

[1] A RIS could be a single strategy covering the entire range of the species or could be multiple strategies. As explained below, we intend to develop multiple geographically-based RIS documents for the Dakota skipper.

or negatively) at local, landscape, regional, and continental scales by other activities such as grazing, haying, burning, pesticide use, and management (or lack of). Refer to the Dakota skipper SSA for a full discussion of the species' biology and threats.

All underlined words or phrases are defined in the glossary (pp.12–13).

A. Recovery Vision

The recovery vision for the Dakota skipper is founded on the principles of representation, resiliency, and redundancy (USFWS 2018, p. 28), which entails conserving a sufficient number and distribution of healthy populations and ameliorating threats (such as habitat loss) to ensure the species' long-term viability. The Dakota skipper needs a sufficient number of healthy populations distributed throughout its geographic range to withstand:
(1) environmental stochasticity and stressors (resiliency),
(2) catastrophes (redundancy), and
(3) novel changes in its biological and physical environment (representation).

The ability to adapt to novel changes in its physical (for example, habitat and climate) and biological (for example, predators, competitors, diseases) environment is influenced by its breadth of adaptive diversity and the functional state of the four evolutionary forces (natural selection, gene flow, mutation, and genetic drift). Preserving the breadth of variation and maintaining functional evolutionary processes as close to historical levels as possible will help the Dakota skipper to adapt to changing conditions over time (USFWS 2018, p. 3). Preserving healthy populations distributed within areas of adaptive capacity is intended to fulfill this need (USFWS 2018, pp. 28–31).

The species' ability to withstand catastrophes is influenced by the distribution and number of populations within areas of adaptive capacity. Having multiple, broadly distributed Dakota skipper populations guards against all populations in an adaptive capacity unit being simultaneously harmed by a catastrophic event (USFWS 2018, p. 28).

The Dakota skipper's ability to withstand natural, inherent variation in the species' environment, stochastic disturbances, and stressors is influenced by the health of its populations and the extent of heterogeneous conditions it occupies. For the Dakota skipper, this ability is enhanced when healthy populations occupy high quality habitat across the breadth of adaptive diversity and when current and future threats are adequately addressed (USFWS 2018, p. 28).

B. Recovery Strategy

Loss of native prairie and the degradation of remaining patches of habitat have led to the decline of the Dakota skipper and pose continuing threats to the species' continued existence. Factors responsible for habitat loss, fragmentation, and degradation include: conversion of native prairie for agriculture or urbanization; ecological succession of native prairie to habitats dominated by brush or trees; impacts from oil and gas development; invasive species; direct and indirect

effects of pesticides, including herbicides; flooding; and land management regimes (grazing, haying, or fire) if done in a fashion that degrades the species' habitat. Improving the status of the Dakota skipper will rely on the following: preservation and conservation of remaining habitat patches to prevent conversion or degradation; grassland management practices that mimic natural disturbance regimes along with enhancing high quality habitat suitable for all life stages and processes; minimization of mortality caused by land management; minimization of pesticide drift; restoration and maintenance of geographic distribution patterns that ensure that the species maintains its ability to persist in the face of stochastic variations in environmental conditions and to adapt to novel environmental changes. Novel environmental changes may include a shift to wetter and warmer conditions in all or a large portion of the species' range that could increase the threat posed by invasive cool-season grasses.

To recover the Dakota skipper we plan to work with our public, tribal, and private partners to design and implement habitat management and restoration, population management, habitat conservation, monitoring, research and other recovery actions to attain the three objectives described below.

1) Maintain gene flow and adaptive capability among populations. To increase gene flow, actions will be implemented that emphasize conservation of key population centers across the range of adaptive diversity. We identified four conservation areas, referred to in this plan as Conservation Units (CU), which closely align with four of the adaptive capacity units (ACUs) described in the SSA, to focus and manage our recovery efforts (Figure 1.1). (An additional ACU described in the SSA, but not included as a CU, contains only two outlier locations that are extremely isolated, historical, and questionable in their accuracy.)

2) Ensure Dakota skipper's ability to withstand environmental stochasticity, stressors, and catastrophes by maintaining and increasing healthy (genetically and demographically) populations. Healthy populations need to be supported by native prairie habitats typified by plant communities that reflect historical conditions and that contain a low abundance of non-native species. Maintaining the species' native prairie habitat requires preventing destruction and fragmentation and requires management regimes that are compatible with Dakota skipper long-term persistence[2]. To foster the Dakota skipper's ability to withstand regional environmental stochasticity (for example, variation in temperatures and precipitation), recovery actions should also focus on ensuring healthy populations are distributed across heterogeneous conditions (for example, diversity of slopes, aspects, habitat types) within each CU. This will safeguard against multiple populations experiencing similar and simultaneous responses to normal environmental variation. Similarly, to minimize the chance of near- or entire extirpation of a CU due to a catastrophic event, such as extreme droughts and widespread response to large-scale pest invasions, recovery efforts should include protecting or restoring multiple healthy populations broadly distributed across heterogeneous habitats within its natural range.

[2] Compatible or targeted management includes actions and management regimes that maintain suitable habitat while ensuring unavoidable Dakota skipper mortality is minimized.

Additionally, the species now persists in a set of population centers or "hot spots." Although it is unknown whether these remaining population centers represent historical areas of high abundance for Dakota skippers, they are well-distributed geographically and are areas with significant prairie landscapes remaining (Figure 1.2). These population centers are, therefore, critical for the long-term persistence of the species and provide unique opportunities for restoration of extensive and diverse habitats that formerly benefited the species throughout its large historical range. Thus, these population centers will be the focus of our conservation efforts to achieve the recovery criteria and delist the species. Given the extent of loss that has occurred, restoration of native prairie and reconstruction of former cropland to prairie will also be important for the species' conservation.

3) Increase understanding of some fundamental aspects of Dakota skipper ecology. Employing a well-designed adaptive management and monitoring framework for recovery implementation will allow us to better manage for suitable habitat conditions, protect against wide-ranging and simultaneous population declines due to environmental stochasticity and catastrophes, and respond to adverse effects of climate change. This will ensure the recovery strategy, criteria, and actions are based on a sound scientific and information foundation.

Achieving the objectives above is highly dependent on the cooperation and contributions of conservation partners. Specifically, attaining recovery will need the cooperation and dedication of native prairie managers, conservationists, ranchers, farmers, agencies, and those with expertise needed to design and evaluate the effects of land management actions on the species. This will require clear communication about the species' needs, where it occurs, its conservation plight, and the potential implications and locations of recovery activities. It will be critical to ensure that recovery goals are met in a manner that is in concert with the missions, objectives, and aspirations of our conservation partners. We plan to work with our partners to achieve these needs as we develop the CU-specific recovery implementation strategies.

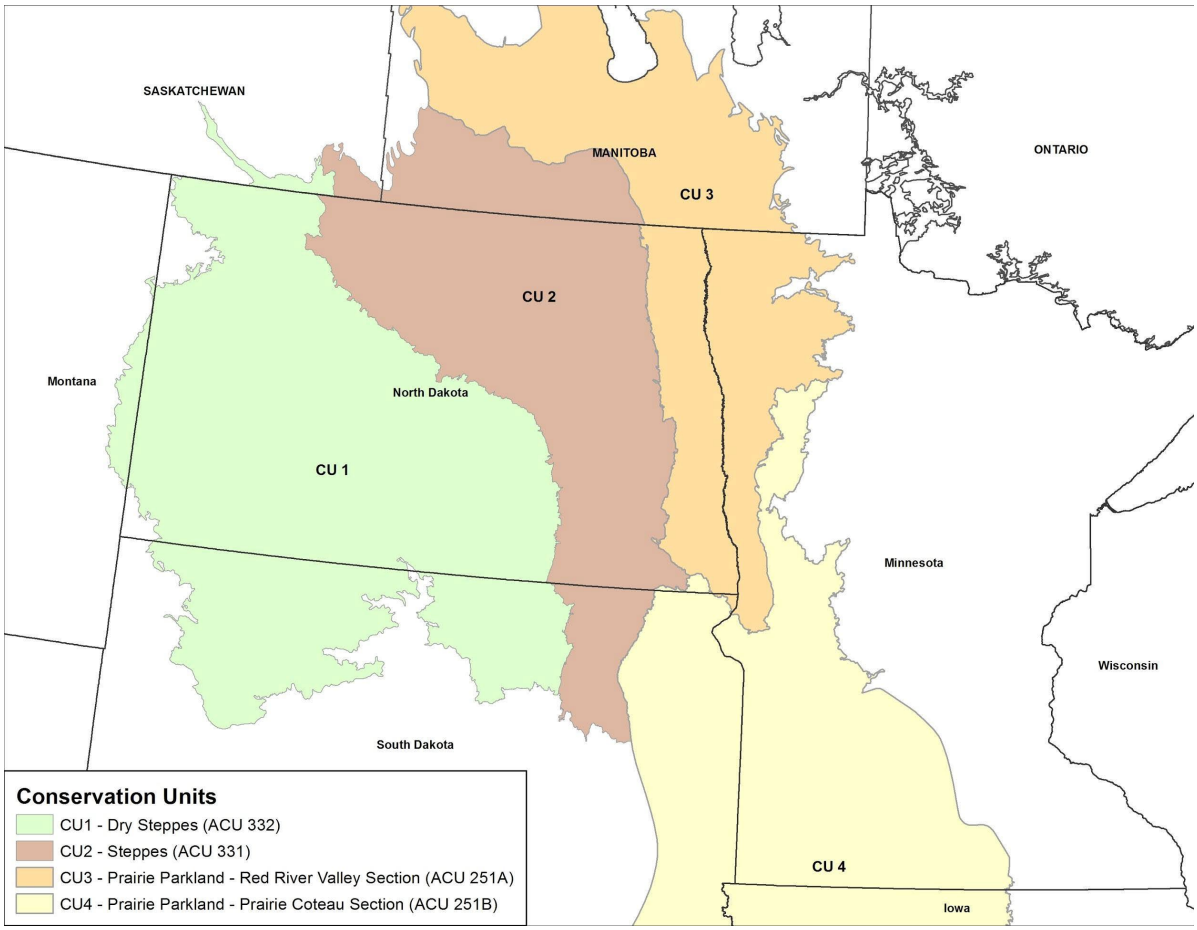

Figure 1.1 The four Conservation Units [from West to East]: CU 1: Dry Steppes Ecoregion Province (ACU 332), CU 2: Steppes Ecoregion Province (ACU 331), CU 3: Red River Valley Ecoregion Section (ACU 251A), and CU 4: Prairie Coteau Ecoregion Section (ACU 251B). ACUs refer to units in the SSA Report (USFWS 2018).

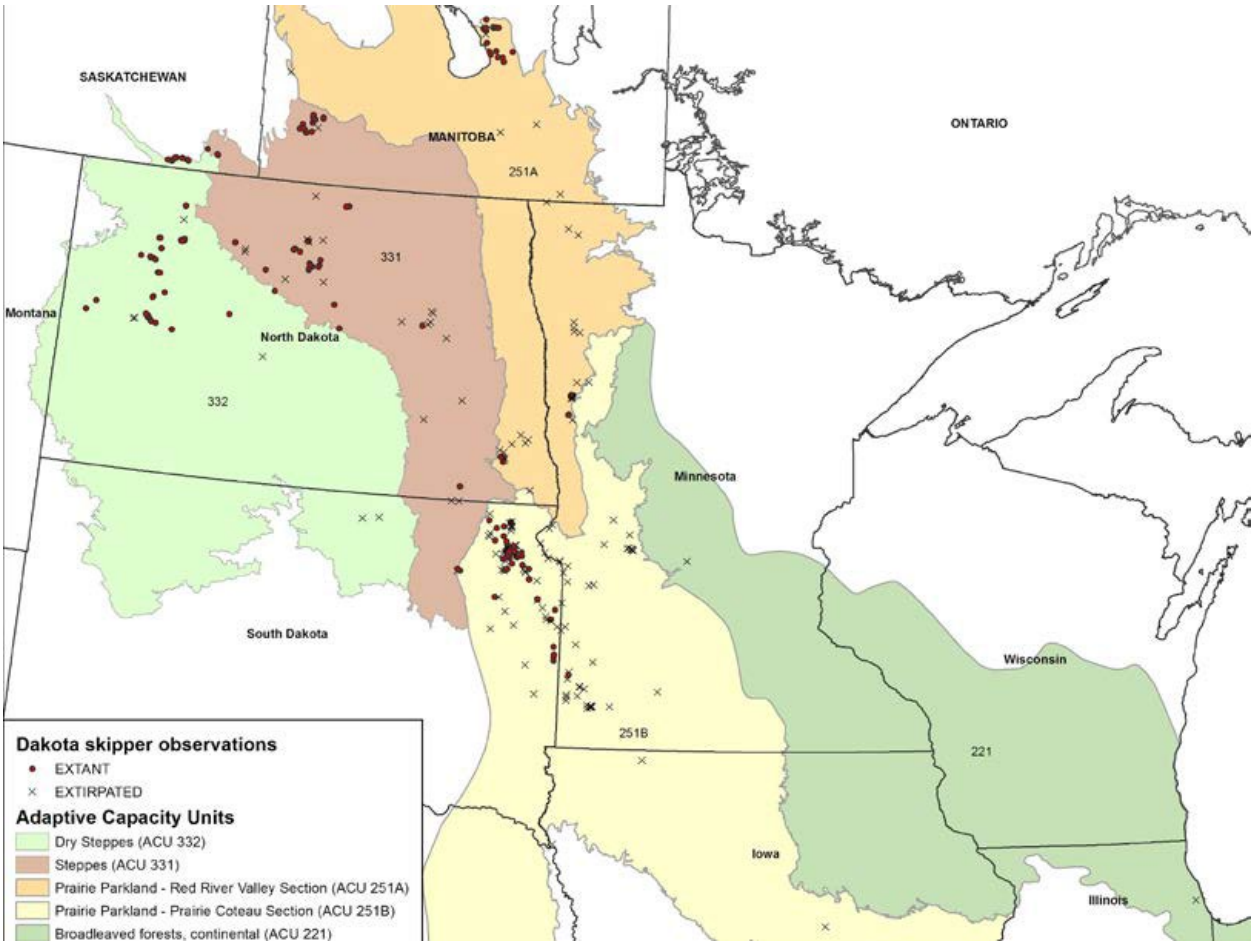

Figure 1.2. The distribution of Dakota skipper from Dakota skipper SSA (USFWS 2018, Figure 4.1). *Red circles represent Dakota skipper sites where presence is extant or unknown, black X's represent sites where the species is no longer present (as of 2018).*

II. Recovery Criteria

Recovery criteria provide objective, measurable benchmarks to indicate when recovery may have been achieved. These criteria are founded on the best scientific information available for the species and may require modification as key uncertainties are resolved.

Criterion 1: A minimum of 50 healthy populations spread throughout the range with at least 5 healthy populations in each of the 4 conservation units (Figure 1.1).

Criterion 2: Each healthy population considered under Criterion 1 has a management plan in place that promotes healthy populations considering ongoing threats for the foreseeable future.

Criterion 1

A healthy population has a stable or increasing population trend as evidenced by natural recruitment (with no augmentation) and continued occupancy (documented in a minimum of 5 of the past 10 years, with at least one documentation within the most recent 2–3 years) and presence of high quality habitat (see USFWS 2018, pp. 17-21 for a description of high quality habitat).

Abundance for a healthy population varies by the specific characteristics of a site. As listed in detail below, a healthy population can be a single population if it is sufficiently abundant and occupies a sufficiently large, continuous site with high habitat heterogeneity or it could be a metapopulation comprised of multiple subpopulations within dispersal distance (<1 km,(0.62 mi)) in a suitable habitat matrix (grassland complex with patches of high quality habitat with no major barriers to dispersal). Thus, below are examples of how the healthy population standard in criterion 1 may be achieved:

1. A metapopulation comprised of 5 or more subpopulations that each meet the following criteria:
   1.1. The number of individuals is common, as measured by observing 5–9 individuals/hour based on standardized survey and;
   1.2. Occupies a medium area (>10 acres) of high quality habitat

2. A metapopulation comprised of 3 or more subpopulations that each meet the following criteria:
   2.1. The number of individuals is abundant, as measured by observing 10 or more individuals/hour based on standardized survey and;
   2.2. Occupies a large area (>160 acres) of high quality habitat

3. A single large population that is:
   3.1. Highly abundant (>1,000 individuals) and
   3.2. Occupies a large, continuous area (2,000–3,000 acres) with high habitat heterogeneity.

Criterion 2

Population management plans should consider the following components:

a. Promotion and protection of within-population habitat heterogeneity, including a diversity of site types based on biophysical properties (for example, soil characteristics, hydrology, vegetation) and landscape position (for example, elevation, aspect) to buffer against local-scale environmental stochasticity.
b. Current and foreseeable future stressors.
c. Compatible management practices specific to the population(s).
d. Genetic health management strategy, which may include a plan for maintaining gene flow and connectivity.
e. Contingency plan for catastrophes.

A single management plan could cover multiple populations. The USFWS will review these management plans when considering whether the species is recovered, but plans do not require formal USFWS approval or signature.

Criteria Rationale:

The life history strategy of the Dakota skipper includes a high abundance and broad distribution across a diversity of ecological communities (the species historically occurred throughout the vast grasslands of the north-central United States and south-central Canada, extending from Illinois to Saskatchewan (USFWS 2018, pp. 33-35)). While restoring all its historical occurrences is unnecessary for recovery, restoring the natural high abundance and broad distribution to a certain level are needed for the species to withstand environmental stochasticity (for example, annual differences in temperature and precipitation), stressors (for example, invasive species; effects of herbicides; flooding; and incompatible land management regimes), and catastrophes (for example, drought), and adapt to changing environmental conditions over time. Thus, the number and distribution of populations in criterion 1 considers the normal cyclical nature of the Dakota skipper and buffers against the following components of viability (USFWS 2018, pp. 28-29):

- environmental stochasticity (for example, annual differences in temperature and precipitation),
- stressors (for example, invasive species; effects of herbicides; flooding; and land management regimes such as grazing, haying, or fire if done in a manner that degrades the species' habitat), and
- catastrophes (for example, drought).

To capture the landscape-level factors that inherently contributed to the species' viability when it was broadly distributed and highly abundant, recovery criterion number one also includes a minimum number of populations (5) to be conserved in each of the four conservation units. Maintaining populations in all four conservation units preserves both ecological and genetic diversity needed to adapt to changing environmental conditions across its range (Figure 1.1). This aspect of the criterion--having multiple healthy populations distributed among the four units--works in concert to ensure landscape-level factors are conserved. Having a total of 50

healthy populations, with at least 5 in each of the 4 conservation units, provides the species with the ability to withstand stochastic fluctuations, catastrophes, and novel changes in its environment.

Achieving Criterion 2 will help ensure that there is an organizational commitment to support each population. The nature and severity of stressors as well as land-use needs vary geographically. We plan to work with stakeholders, including local landowners and species' and habitat experts to identify the limits and opportunities relevant for each population. This will result in well-distributed, healthy populations while ensuring management is based on robust and best available scientific methods and information.

III. Recovery Actions

This section describes the broad categories of the actions necessary to achieve the recovery vision for the Dakota skipper. These actions apply across all populations in each of the four CUs (Red River Valley Section; Prairie Coteau Section, Steppes Ecoregion, and Dry Steppes Ecoregion), but specific implementation may differ geographically (specific tasks will be population-specific). These broad categories of actions will be used to develop step-down, recovery implementation strategies with tasks that are prioritized specific to each geographic area's (CU) needs. Those recovery implementation strategies will be developed in coordination with our conservation partners, include adaptive management prescriptions, and be updated on an as needed basis. Since ownership, as well as landscape content and context vary by population, no one plan will accommodate the needs of all populations. Therefore, creating recovery implementation strategies at the CU level may address coarse-level differences in both land ownership and land use.

A. Habitat Conservation

Conserving sufficient quality and quantity of habitat (threshold for "sufficient" will be further explored in the RIS) from destruction or degradation through various mechanisms, including short-term conservation programs (for example, U.S. Fish and Wildlife Service Partners for Fish and Wildlife agreements, U.S. Dept. of Agriculture-Natural Resources Conservation Service's (NRCS) Conservation Reserve Program, U.S. Fish and Wildlife Service Safe Harbor agreements); incentivizing other conservation programs (for example, include ranking criteria under the NRCS Environmental Quality Incentives Program actions that promote Dakota skipper persistence); and land acquisition (for example, fee title, conservation easements). In many cases, active habitat management will be necessary to ensure habitat suitability (see below for additional information on habitat management actions).

Estimated cost: $5,200,000

B. Habitat Management and Restoration

Implement actions to maintain and restore sufficient quality and quantity of habitat rangewide by:

- Collaboratively planning and prioritizing management actions.
- Implementing habitat management such as targeted or compatible grazing, fire, or haying regimes.
- Developing habitat management plans that include contingencies for threats and catastrophes.
- Restoring or enhancing habitat within priority areas (to be identified in the recovery implementation strategies).
- Conducting habitat reconstruction to provide buffer from threats, act as potential dispersal corridors, and to set the stage for full habitat suitability if research determines that Dakota skippers will respond positively to reconstruction efforts.
- Working with partners to identify or develop voluntary programs for private landowners to enhance, restore, and reconstruct Dakota skipper habitat on their property.

Estimated cost: $10,750,000

C. Population Management

Develop and implement population management strategies that ameliorate stressors. This may include conservation propagation methods such as augmentation or enhancement in areas where populations exist, but may need to be increased to improve their health; reintroduction or translocations to areas where populations are extirpated and where the number of populations needs to be increased; or insurance populations to maintain genetic diversity in case of catastrophic loss in the wild.

Estimated cost: $8,530,000

D. Population and Habitat Surveys and Monitoring

Conduct standardized population and habitat surveys and monitoring rangewide. This entails developing standardized protocols, monitoring at extant sites, conducting surveys at potential new and historical sites, and data sharing among partners.

Estimated cost: $3,750,000

E. Education and Outreach

Develop and foster partnerships to support the conservation of the Dakota skipper, while seeking to understand stakeholders' interests. Work with our partners to improve awareness of the Dakota skipper and its habitat. Also, provide technical assistance to private landowners, land managers, and other parties to conserve the species and its prairie habitat, while allowing for continued operation and management on the ground.

Estimated cost: $600,000

F. Research

Conduct critical research needed for improved conservation of the Dakota skipper across all populations. Priority research includes:

- Understanding key aspects of Dakota skipper life history, including: 1) minimum effective population size (Ne); 2) the structure and functioning of populations, including the importance of gene flow between populations; 3) dispersal ability and behavior; 4) larval life history and specific habitat needs of both immature and adult stages, and 5) the sensitivity of population numbers to environmental stochasticity.
- Understanding the effects of non-native species on habitat quality, and the species' response to varying levels of habitat quality and quantity.
- Understanding key sources of mortality, which may include pesticides, pathogens, drought conditions, and unsuitable management practices.
- Identifying and delineating the underlying variation in adaptive diversity
- Understanding the effects of climate change on Dakota skipper life stages
- Understanding sources, exposure, and impacts of pesticides.
- Understanding Dakota skipper use of and viability in reconstructed and restored prairies
- Developing CU-level and population-level viability analyses

Estimated cost: $4,100,000

IV. Estimated Time and Costs to Achieve Recovery

The estimates of the time needed to implement recovery actions is a guide for meeting the recovery goals, objectives, and criteria discussed in this plan. The initiation and completion of recovery actions are subject to the availability of funds, as well as other constraints affecting the parties involved. The total cost of recovery is only an estimate and may change substantially as efforts to recover the species continue. Thus, detailed cost breakdowns for each conservation unit, with expected annual costs are not known at this time. While we have the statutory responsibility for developing and implementing this recovery plan, recovery of Dakota skipper across a large portion of the species' historical range will necessitate the involvement of Federal, Tribal, State, private, and local interests. The continued expertise and contributions of these, and additional agencies and interested parties, is needed to implement the recovery actions identified in this plan. To enhance the effectiveness of this recovery plan, we intend to develop a recovery implementation strategy as a flexible way to implement the recovery actions in this plan (as discussed above).

Total Estimated Cost of the Recovery Actions identified above: $32,930,000

We do not anticipate that recovery of the Dakota skipper will be achieved sooner than 2051, due to the widespread threats, uncertainty about cost/benefit trade-offs to the species from specific

management techniques, likely availability of funds, and limiting biological characteristics of the species (for example, its short flight season and low dispersal ability). If all actions are fully funded and implemented as outlined, including full cooperation of all partners needed to achieve recovery, recovery criteria for delisting could be met as soon as 2051. Although in some cases actions will be ongoing (for example, habitat management actions such as prescribed fire and brush removal to maintain high quality prairie), even following potential delisting, the costs calculated here are for the thirty years we estimate it will take to achieve the recovery criteria.

GLOSSARY

Adaptive capacity units – Biogeographic regions used in the Species Status Assessment that capture the diversity of genetic and environmental conditions, which serve as indicators of potential sources of unique adaptive capacity.

Catastrophe – Infrequent but highly consequential events for which adaptation is unlikely and for which population extirpation is likely to occur. This may include environmental factors (for example, drought, flooding, large-scale prairie conversion, new pesticides or diseases).

Conservation units – Geographical regions identifying recovery focus areas.

Effective population size - The size of an idealized population that would function in the same way with respect to genetic drift and inbreeding as the population of interest.

Environmental stochasticity – Natural, unpredictable spatio-temporal fluctuation in environmental conditions, often resulting from weather, disease, and predation or other factors external to the population.

Healthy populations – Elaborated on in the criteria of the recovery plan, but generally defined as a population that is demographically and genetically robust and occupies areas of high quality habitat.

High quality habitat – Typically a diverse native grassland community. Specific description of suitable native plant species for the Dakota skipper can be found in the SSA and under the definition for suitable habitat.

Insurance population – A healthy functioning population of Dakota skippers managed in captivity to maintain genetic diversity in case of catastrophic loss in the wild.

Metapopulation – A group of subpopulations that are linked through occasional dispersal of individuals. A metapopulation is considered more secure over the long term than several isolated populations containing the same total number of individuals. A metapopulation is more secure because adverse effects experienced by one of its subpopulations resulting from genetic drift, demographic shifts, and local environmental fluctuations can be countered by occasional influxes

of individuals and their genetic diversity from the other subpopulations within the metapopulation.

Native prairie – Tallgrass or mixed-grass prairie that has never been tilled and still retains the overall vegetative and hydrologic characteristics of the typified vegetation community.

Population – Reproductively isolated unit that may or may not have the same structure as a metapopulation.

Population centers – Geographical clusters of extant metapopulations in relatively close proximity when compared to the total distribution of all populations. The "hot spots" of where the species still exists.

Reconstruction – Planting of a native seed mixture composed of multiple prairie species (graminoids, forbs and small shrubs) in an area where the land has been cultivated or anthropogenically disturbed.

Restoration – Using treatments, such as prescribed burning and grazing, to increase the biodiversity of native plant populations within native prairie or land areas with no cultivation history.

Stressors – Factors that cause a negative effect to individuals directly (for example, insecticides) or indirectly (for example, habitat loss). For more details on the specific stressors acting on Dakota skipper populations see USFWS 2018, pp. 42-53.

Subpopulation – A smaller cluster of inter-breeding individuals, generally with low rates of dispersal. A group of inter-connected subpopulations makes up a metapopulation.

Suitable habitat –High-quality prairie dominated by native grasses and with a high diversity of native forbs (flowering herbaceous plants). More specifically, suitable Dakota skipper habitat falls into two main types. Type A habitat includes wet-mesic (low) prairie with little topographic relief. These habitats typically occur on near-shore glacial lake deposits with little bluestem as the dominant grass (*Schizachyrium scoparium*) and with wood lily (*Lilium philadelphicum*), bluebell bellflower (*Campanula rotundifolia*), and mountain death camas (smooth camas; *Zigadenus elegans*) likely present. Type B habitat includes rolling native-prairie terrain over gravelly glacial moraine deposits dominated by bluestems and needlegrasses (*Hesperostipa* spp.) with the likely presence of bluebell bellflower, wood lily, purple coneflower (*Echinacea angustifolia*), upright prairie coneflower (*Ratibida columnifera*), and blanketflower (*Gaillardia aristata*).

LITERATURE CITED

U. S. Fish and Wildlife Service. 2018. Dakota Skipper (*Hesperia dacotae*) Report on the Species Status Assessment. Version 2. 97 pp.