

Dakota skipper
(Hesperia dacotae)

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



**U.S. Fish and Wildlife Service, Midwest Region
Minnesota – Wisconsin Field Office
Bloomington, Minnesota**

5-YEAR REVIEW
Dakota skipper (*Hesperia dacotae*)

GENERAL INFORMATION

Species: Dakota skipper (*Hesperia dacotae*)

Date listed: October 24, 2014

FR citation(s): 79 FR63672 and 80 FR59248 (Designated Critical Habitat)

Classification: Threatened

Critical habitat/4(d) rule/Experimental population designation/Similarity of appearance listing: 4(d) rule to exempt some potential take associated with routine livestock operations and recreation trail maintenance on non-Federal lands

Methodology used to complete the review:

In accordance with section 4(c)(2) of the Endangered Species Act of 1973, as amended (Act), the purpose of a 5-year review is to assess each threatened or endangered species to determine whether its status has changed and it should be classified differently or removed from the Lists of Threatened and Endangered Wildlife and Plants. The U.S. Fish and Wildlife Service (Service) evaluated the biology and status of the Dakota skipper as part of a Species Status Assessment (SSA) to inform this 5-year review.

Staff from the Minnesota/Wisconsin Field Office, in coordination with the Midwest Regional Office Ecological Services staff, conducted this review. New material considered in this review includes relevant information generated since the October 24, 2014 Final Rule (79 FR63672) and was developed and described in the SSA report (USFWS 2018). Information contained herein is summarized from the Dakota Skipper (*Hesperia dacotae*) Report on the Species Status Assessment (USFWS 2018), which was developed by staff from the Minnesota – Wisconsin Field Office (lead office), Region 3 Office, Region 6 Office, Ecological Services Headquarters Office, and Region 3 and 6 Refuges. The SSA report represents our evaluation of the best available scientific information, including the resource needs and the current and future condition of the species. We looked at future scenarios of environmental and management conditions to discuss the viability of the species in the future, which were then evaluated by the SSA team. Independent peer reviewers and partner representatives reviewed the SSA report before we used it as the scientific basis to inform our 5-year review.

The Federal Register notice announcing initiation of this review: 83 FR 18075. April 25, 2018.

REVIEW ANALYSIS

Recovery Criteria

Recovery Plan or Outline: A draft recovery plan for the species is in development.

Updated Information and Current Species Status

Biology and Habitat:

Research and monitoring has provided new information since the Dakota skipper was listed as threatened; results are summarized in the 2018 SSA report.

The capacity for Dakota skipper populations to grow is limited by the quantity and quality of the habitat and by connectivity among habitat patches. The minimum extent of habitat that is sufficient to support a healthy local population is unknown, but discrete populations have been recorded in prairie remnant patches as small as one acre. Populations in patches this small likely rely heavily on the existence of populations in nearby patches to ensure their long-term persistence.

Status and Distribution:

Table 1: Status of Dakota skipper populations. Note: The methodology for delineating populations changed between 2013 and 2018; therefore, numbers in this table are not directly comparable between these 2 years.

	Populations at the time of listing proposal (2013)	Subpopulations at the time of this review (2018)
Present	91	67
Unknown	81	83
Extirpated	87	153
Total Known Populations (extant and historical)	259	303

The current distribution of Dakota skipper is depicted in Figure 4.1 of the SSA (USFWS 2018, p 37). In the early 2000s, an increase in the extirpation of Dakota skipper populations became evident, with drastic declines observed beginning around 2010. At the time of listing, we identified 91 populations to be present and 81 populations to have unknown status, both of which we considered to be extant (totaling 172). We have updated the definition of a “population” since the time of listing based on the dispersal distance between known observation points which has caused some observation points to be grouped into a single population, while other observation points have been split into multiple subpopulations. These adjustments have made it difficult to

account for and compare the status of some sites over time, however, we feel this species is better depicted as a metapopulation and subpopulation structure (USFWS 2018, pp. 5-7). As of 2018, we estimate there are 76 metapopulations consisting of 150 distinct subpopulations that persist (67 Present and 83 Unknown status subpopulations) across 3 states and 2 Canadian provinces (USFWS, Unpublished geodatabase). Using the methodology in the SSA and accounting for new populations, approximately 56 subpopulations have become extirpated since the time of listing, with the majority of subpopulations lost occurring in Minnesota. Many of the sites that became extirpated, however, were small and isolated populations where a low likelihood of persistence was anticipated based on poor habitat quality.

While the number of known Dakota skipper subpopulations is in decline, new subpopulations have been discovered in areas not previously surveyed at the far western edge of its range. A total of 36 new subpopulations have been found, 34 in North Dakota and 2 in South Dakota (Table 2), and the full extent of similar habitat in these areas have not been fully surveyed.

Table 2: Number and location of newly discovered subpopulations since listing.

Year	Number of Subpopulations	County Location
2014	3	McKenzie and Mountrail Counties, ND
2015	16	Dunn, Mountrail, and Ward Counties, ND, and Day County, SD
2016	7	McHenry, McKenzie, and Mountrail Counties, ND, and Grant County, SD
2017	5	McKenzie, Renville, and Stutsman Counties, ND
2018	5	Dunn, McKenzie and Ward Counties, ND

The health of many of the remaining metapopulations is low, with 56% of the metapopulations having a probability of persistence of less than 0.50. Furthermore, the health of these metapopulations may be overstated, as many of them are highly fragmented (USFWS 2018, pp. 42-43).

The Minnesota Zoo has been involved with maintaining stable insurance populations of Dakota skippers, which has led to the reintroduction at one extirpated site in Minnesota and has provided research opportunities to learn more about life history, survivorship, and recovery needs for the species. Additional reintroductions are planned, as well as a thorough survey effort at the original reintroduction site to verify survivorship and determine how well the population has become established. The results of this effort may ultimately determine if this species warrants a change in listing status.

Threats Analysis:

The SSA report includes a detailed discussion of the threats that may affect the resiliency of the Dakota skipper (USFWS 2018, pp. 42-54). Factors responsible for habitat loss, fragmentation, and degradation considered in the SSA include: conversion of native prairie (e.g. from

agriculture, urbanization, and oil & gas development); ecological succession of native prairie to habitats dominated by brush or trees; invasive species; direct and indirect effects of pesticides, including herbicides; flooding; climate change; and incompatible land management regimes that degrade the species' habitat. The scale of habitat impacts from gas and oil development may have been understated in the listing decision, particularly in the western portion of the range where new populations have been discovered (USFWS 2018, pp. 49-50). Since listing, proposed construction for pipelines and oil well pads resulted in the discovery of 9 new Dakota skipper metapopulations made up of 27 subpopulations; in some cases, suitable habitat has been impacted (USFWS 2019, Unpublished geodatabase). Other new potential threats have been identified through research, such as a slower growth rate for Dakota skippers forced to feed on sub-optimum larval food plants such as invasive Kentucky bluegrass and smooth brome. If developing larvae are unable to find suitable high quality food sources in the wild, they will likely have reduced fitness and survivorship (Runquist et. al 2017, pp. 4-8).

Management regimes, such as grazing, haying, fire, or even the lack of management may reduce resiliency if it is conducted too frequently or too broadly within the available habitat and the species is unable to recover from yearly losses. If local populations are reduced or habitat continues to degrade to where it is no longer suitable, the ability of adjacent populations to disperse, interact, and replenish genetic stock become less likely and this may result in a total loss of the populations.

Prairie conversion, a market driven factor that may continue into the future at current rates, appears to be the greatest within portions of the Canadian provinces of Manitoba, Saskatchewan, and Alberta (16.44% loss in the region between 2011-2015). Similarly, the Prairie Pothole Joint Venture region, which includes the remaining U.S. populations of Dakota skipper, have had a 10% loss of grasslands during that same 5-year period (Gage et al. 2016, as cited in USFWS 2018, p. 50). While the loss of suitable Dakota skipper habitat is unknown, the decrease of grasslands increases fragmentation and the potential for pesticide drift and exacerbates the spread of invasive species into natural habitats.

We are just starting to understand the complexity of the influences of climate change on the Dakota skipper. One of the likely effects of climate change that is emerging is the lengthening of the growing season, which allows invasive species, such as Kentucky bluegrass and smooth brome, to get a stronger foothold on remaining prairie remnants (USFWS 2018, p. 51). As mentioned above, these sub-optimum food plants have been shown to affect Dakota skipper development. Climate change factors such as these are subjects we need to explore more in the recovery stage to better understand the potential effects on the species, especially with regards to invasive species and prairie quality. In addition, under a RCP8.5 climate model analyzed in the SSA, increased annual precipitation across the range of Dakota skipper is projected and could result in increased woody encroachment leading to the continued degradation of native prairie ecosystems, if not managed (USFWS 2018, pp. 52-53).

Synthesis

The Dakota skipper is still relatively widespread and persists in a variety of ecological settings, both of which confer resiliency, redundancy, and representation benefits. The frequency and

intensity of droughts, for example, likely vary across the many different ecological settings and landscapes that the species still inhabits. The species' current widespread distribution thus provides some buffer against rangewide-scale catastrophes. Newly discovered populations have been found in areas not previously considered. Additional populations are anticipated to be found in these areas and this will lead to a better understanding of the full range of habitat availability for the species. Despite these new observations, however, the species overall status remains relatively unchanged since it was listed, as additional subpopulations have been extirpated and the health of many of the remaining populations is low (USFWS 2018, pp. 42-44). Many of the subpopulations that reached "extirpated" status since listing were very small and isolated populations where species experts believed the species had little chance of persistence given the observed habitat conditions and decline across the range. Therefore, no change in status is recommended at this time.

RESULTS

Recommended Classification:

No change is needed

Recovery Priority Number: 8

Brief Rationale: A Recovery Priority Number of 8 indicates that the species has a moderate degree of threat and high recovery potential (48 FR 43104). Given the analysis that has been conducted in the SSA, while the species continues to decline, the rate for all populations across the range do not appear to be in steep decline and additional populations are being found. Thus, the species is experiencing a moderate degree of threat. The species has a high potential for success because the biological and ecological limiting factors and threats to the species are relatively well understood and the management actions required for recovery are largely known.

RECOMMENDATIONS FOR FUTURE ACTIONS

The results of our 2018 SSA indicate that Dakota skipper viability continues to decline at a low to moderate rate from historical conditions. Both near-term and long-term efforts are required to achieve recovery and will be addressed in the Recovery Plan. Several recommendations designed to halt this downward trajectory and ultimately reverse it, so that the Dakota skipper can recover and persist into the future, are provided below.

Near-term Recovery Actions:

- Conduct standardized population and habitat monitoring
- Implement actions to maintain and restore sufficient quality and quantity of habitat by:
 - Implementing habitat management such as targeted/compatible grazing, fire, and haying regimes

- Developing habitat management plans that include contingencies for threats and catastrophes
- Conducting habitat restoration/enhancement within priority areas
- Continue conservation propagation methods such as augmentation/enhancement, reintroduction, insurance populations, and translocation
- Protect sufficient quality and quantity of habitat from destruction through various mechanisms, including short-term conservation programs, incentivizing other conservation programs, and land acquisition
- Work with our partners to improve awareness of the Dakota skipper and its habitat needs

Long-term Recovery Actions:

- Conduct 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

Research Needs:

- Understand key aspects of Dakota skipper life history, including:
 - minimum effective population size, N_e
 - the structure and functioning of populations, including the importance of gene flow between populations
 - dispersal ability and behavior
 - larval life history and specific habitat needs of both immature and adult stages
 - the sensitivity of population numbers to environmental stochasticity
- Understand the effects of non-native species on habitat quality, and the species' response to varying levels of habitat quality and quantity
- Understand key sources of mortality, which may include natural enemies, pesticides, drought conditions, and management practices
- Understand Dakota skipper use of and viability in reconstructed prairies
- Understand the effects of climate change on Dakota skipper life stages

REFERENCES

- Runquist, E. and C. Nordmeyer. 2017. Minnesota Zoo Prairie Butterfly Conservation Program 2017 Annual Report. Apple Valley, MN, Minnesota Zoo: 44pp.
- U.S. Fish and Wildlife Service. 2018. Species status assessment report for the Dakota skipper (*Hesperia dacotae*). 97 pp.
- U.S. Fish and Wildlife Service. 2019. Unpublished ESRI ArcGIS geodatabase for Dakota skipper (*Hesperia dacotae*).

**U.S. FISH AND WILDLIFE SERVICE
5-YEAR REVIEW of the Dakota skipper**

Current Classification: Threatened

Recommendation resulting from the 5-Year Review:

- Downlist to Threatened
- Uplist to Endangered
- Delist (Indicate reasons for delisting per 50 CFR 424.11):
 - Extinction
 - Recovery
 - Original data for classification in error
- No change needed

Appropriate Listing/Reclassification Priority Number, if applicable: Not applicable

FIELD OFFICE APPROVAL:


Lead Field Supervisor, Fish and Wildlife Service

Approve KENNETH FOWLER Digitally signed by KENNETH FOWLER
Date: 2019.08.16 09:30:35 -05'00' Date 8/16/2019

The lead Field Office must ensure that other offices within the range of the species have been provided adequate opportunity to review and comment prior to the review's completion. The lead field office should document this coordination in the agency record.

REGIONAL OFFICE APPROVAL:

Lead Assistant Regional Director, Fish and Wildlife Service

Approve  Date Sept 17, 2019