

Report on the Progress of Recovery Strategy Implementation for the Black-footed Ferret (*Mustela nigripes*) in Canada (2018 – 2022)

Black-footed Ferret



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Introduction

The final Recovery Strategy for the Black-footed Ferret (*Mustela nigripes*) in Canada was posted on the Species at Risk Public Registry on June 19, 2009. The recovery strategy included a goal and objectives for the species, and a description of activities required to meet the goal and objectives. Under section 46 of the *Species at Risk Act* (SARA), the competent minister is responsible for reporting on the implementation of the recovery strategy and on the progress towards meeting its objectives five years after it is included on the registry and in every subsequent five-year period, until its objectives have been achieved or the species' recovery is no longer feasible. A first implementation report (2009-2017) was published in 2018¹. This document reports on the implementation of the Recovery Strategy for the Black-footed Ferret in Canada from 2018 through 2022, and the progress towards meeting its goal and objectives. Actions had been re-directed to achieve objectives outlined in the Management Plan for the Black-tailed Prairie Dog in Canada, in order to aid in potential Black-footed Ferret releases in the future.

Implementation of the Recovery Strategy and Progress towards Meeting its Objectives

The Recovery Strategy for the Black-footed Ferret (*Mustela nigripes*) in Canada identified the goal “to establish a wild population of black-footed ferrets in Canada that has at least an 80 percent probability of persisting for 20 years (i.e. less than 20 percent probability of extinction in 20 years)”, and recovery objectives associated with species reintroduction that were required to achieve this goal.

The Black-footed ferret was reintroduced in Grasslands National Park in 2009, with subsequent releases in 2010, 2011 and 2012. The species has not been recorded at the site since 2013. Its absence is possibly due to a combination of the following factors. There was a decline in the Black-tailed Prairie Dog population in 2009-2013, the primary food source of the Black-footed Ferret. Sylvatic plague was found in the ecosystem (first detected in 2010), which can decimate Black-tail Prairie Dog colonies, and which Black-footed Ferrets are also susceptible. Finally, the cessation of further supplementation to the Black-footed Ferret population is likely a contributing factor. Supplementation is a practice likely required to prevent extirpation of the re-introduced population (Tuckwell and Everest 2009).

Although the conservation status of Black-footed Ferret in Canada remains *Extirpated*, Parks Canada's commitment have continued through active management and research programs to

¹ <https://www.canada.ca/en/environment-climate-change/services/species-risk-public-registry/report-progress-recovery-document/black-footed-ferret-2018.html>

help ensure the persistence of the Black-tailed Prairie Dog ecosystem² at levels that could potentially support and facilitate Black-footed Ferret recovery inside and/or outside Canada.

Two population and distribution objectives for the Black-footed Ferret were identified in the Multi-species Action Plan for Grasslands National Park of Canada (Parks Canada Agency 2016). The first one was to increase the amount of habitat occupied by the Black-tailed Prairie Dog to 900 hectares by 2019 and 1200 ha by 2025; this objective was met through a 5-year moving average of 972.2 ha and a 2021 measure of 1265.9 hectares. The second objective was to consider the reintroduction of ferrets when there were are a minimum of 10 prairie dogs per hectare, in addition to meeting the occupied habitat target. This objective was deemed not feasible or applicable at this time, based on newly acquired knowledge (Parks Canada Agency 2021; see next section).

Implementation of overarching broad strategies/objectives/actions outlined in the recovery strategy

Recovery of the Black-footed Ferret in North America is severely challenged by sylvatic plague, which prevents reintroduction sites from maintaining viable populations without continuous augmentations. Since 2010, Grasslands National Park has been implementing a surveillance and mitigation strategy for sylvatic plague (Parks Canada Agency 2011). In 2020, a revised plague management plan was developed to reflect the most recent data acquired on plague transmission ecology and Black-tailed Prairie Dog population dynamics in Grasslands National Park (Liccioli et al. 2020). Plague management actions entailed the strategic combination of a rotational panel for preventive burrow dusting in sections of selected prairie dog colonies, emergency dusting in response to detection of sylvatic plague, and distribution of sylvatic plague vaccine baits. Plague monitoring efforts continued with rapid plague surveillance coupled with the collection of fleas through burrow swabbing (April-September) and combing of animals handled for the purposes of capture-mark-recapture research. In coordination and collaboration with U.S. Fish and Wildlife, experimental use of orally-administered insecticides (Fip-bits) has been approved by the Public Health Agency of Canada and it is planned to commence in summer 2023.

The Black-tailed Prairie Dog population have been monitored regularly for both relative abundance (annual visual counts on a sub-sample of colonies) and area of occupancy (perimeter mapping of all colonies every two years).

Black-tailed Prairie Dog population-level research led by the Wilder Institute/Calgary Zoo in Grasslands National Park has been conducted in partnership and collaboration with Parks Canada to better understand the relationship between climate, survival and reproduction in Canadian Black-tailed Prairie Dogs, and to illustrate how key vital rates for population dynamics (i.e., survival and female reproduction) are negatively affected by drought conditions during the preceding summer (Stephens et al. 2018). Furthermore, individual-level research has been conducted by the University of Saskatchewan (Dr. Jeff Lane) in 2014-2018 to collect data on

² <https://www.canada.ca/en/environment-climate-change/services/species-risk-public-registry/recovery/black-tailed-prairie-dog-recovery-strategy-action-plan-final-2021.html>

demographic rates and life history patterns, as well as describe the winter torpor phenology (i.e., emergence and entrance dates) and expression (i.e., body temperatures) within one colony (Walker). This research increased the understanding of the ecology of the Black-tailed Prairie Dog in Canada and factors limiting the population (Kush et al. 2020, Kush et al. 2021a, Kush et al. 2021b).

Data gathered were instrumental to develop a structured population viability analysis (PVA) in support of the Recovery Strategy and Action Plan for the Canadian Black-tailed Prairie Dog (Parks Canada Agency 2021). Specifically, the PVA estimated the relative risk of extirpation while accounting for possible future scenarios involving two major threats to the Canadian prairie dog population: climate change and sylvatic plague. The PVA suggest that there is currently a window of opportunity to develop management strategies to mitigate the potential impacts of drought and plague on the persistence of the Black-tailed Prairie Dog in Canada (Calgary Zoo Foundation and Grasslands National Park 2021, unpublished report). These results have been used to inform both Black-tailed Prairie Dog and Black-footed Ferret recovery.

Habitat management strategies have been implemented in 2016-2022 to remove non-native and invasive alien plant species, reduce vegetation height and increase density of native plant species over 85 hectares within a former cultivated field. Habitat assessment work has continued through ongoing research conducted by the Wilder Institute/Calgary Zoo, which resulted in the development of a Habitat Suitability Index, integrating abiotic and biotic factors. This tool will help identify priority sites for projected expansion of currently occupied Black-tailed Prairie Dog colonies within the West Block of Grasslands National Park to meet prairie dog habitat objectives (i.e. colonies are large enough, burrows are numerous enough) required to consider the re-introduction of the Black-footed Ferret.

As a reintroduction site, Grasslands National Park, although currently unoccupied, has been continuously coordinating and collaborating with U.S. government agencies and partners. The park is an active member of the Black-footed Ferret Conservation Subcommittee, and a representative for Black-footed Ferret recovery at the Trilateral Committee for Wildlife and Ecosystem Conservation and Management (<https://www.trilat.org/>).

To date, only large reintroduction sites (i.e., prairie dog complexes > 4,000 hectares) that were able to manage plague over a vast proportion of their land have succeeded in sustaining Black-footed Ferrets and meeting requirements for species recovery identified by the U.S. Fish & Wildlife Service (i.e., > 30 breeding adult ferrets). Because of these challenges, criteria for species recovery are evolving, and new knowledge needs to be obtained to inform conservation management of Black-footed Ferrets and Black-tailed Prairie Dogs. While small reintroduction sites would likely require frequent supplementation to maintain ferrets on the ground, they are still valuable to the species recovery process. Even without a substantial increase in the habitat occupied by Black-tailed Prairie Dogs and a self-sustained Black-footed Ferret population, Grasslands National Park can test hypotheses and gather knowledge and data that will help inform and contribute to Black-footed Ferret recovery at the continental scale.

Multi-species Action Plan for Grasslands National Park

The Multi-species Action Plan for Grasslands National Park (Parks Canada Agency 2016) and the Action Plan for Multiple Species at Risk in Southwestern Saskatchewan: South of the Divide (Environment and Climate Change Canada 2016) describe the recovery measures needed to support Black-tailed Prairie Dog and Black-footed Ferret recovery. These complementary action plans incorporated all species at risk found within the respective geographical ranges that required an action plan under the SARA s.47, plus additional species of conservation concern, working towards achieving a holistic approach to species at risk recovery. Where possible, actions that are beneficial to multiple species were identified and prioritized, maximizing benefits to and recovery of species at risk. Details on the recovery actions conducted within Parks Canada land can be found within the Grasslands National Park 2016-2021 action plan Implementation Report (Parks Canada Agency 2021).

Literature associated with implementation of the recovery strategy for the Black-footed Ferret in Canada

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