

BLACK-FOOTED FERRET REINTRODUCTION SITE RAPID ASSESSMENT TOOL

February 2022

Created by the Great Plains Conservation Network Prairie Dog Working Group¹

The purpose of this document is to provide a rapid assessment planning tool to determine whether black-footed ferret (“ferret”) reintroduction is feasible at a given site and to assess whether it can contribute to ferret recovery. This entails consideration of biological, financial, social, and regulatory opportunities and challenges for ferret reintroduction and survival.

The ferret has been listed as endangered under the Endangered Species Act since its inception in 1973. The US Fish and Wildlife Service (FWS) has a recovery plan in place for the species, the goals of which are to:

- Establish free-ranging black-footed ferrets totaling at least 3,000 breeding adults, in 30 or more populations, with at least one population in each of at least 9 of 12 States within the historical range of the species. There must be no fewer than 30 breeding adults in any population, at least 10 populations with 100 or more breeding adults, and at least 5 populations within colonies of Gunnison’s and white-tailed prairie dogs. (See 2013 [recovery plan](#).)

Ferret recovery depends on healthy prairie dog populations. This tool is intended for owners or managers of private, public or tribal land to determine whether voluntary participation in ferret reintroduction and maintenance of sufficient prairie dog populations is a practical goal. The survey below will help you to decide that answer.

QUICK SURVEY

1. Do you have at least 1,500 acres of black-tailed prairie dogs or 3,000 acres of white-tailed or Gunnison’s prairie dogs on your property or property you manage, alone or in combination with an adjacent landowner?
2. Are you willing to manage those prairie dogs in ways that advance ferret recovery?
3. Are you willing to help fund monitoring and management of those prairie dogs to benefit ferrets? (There are often agency programs and incentives available to support these actions but adequate staffing and funding are important for a successful reintroduction site).
4. Are you willing to enroll into applicable, voluntary black-footed ferret agreements and management plans with cooperating agencies if they approve your site for ferret reintroduction?

¹As of February 10, 2022, the members of the Prairie Dog Working Group are:

- Nicole J. Rosmarino (chair), Southern Plains Land Trust
- Chamois Anderson, Defenders of Wildlife
- Kristy Bly, World Wildlife Fund
- Ana Davidson, Colorado State University
- Lauren McCain, Defenders of Wildlife
- Patty Knupp, Natural Resources Conservation Service
- Tara Stephens, Wilder Institute/Calgary Zoo
- Lindsey Sterling Krank, Humane Society of the United States

We appreciate the helpful and informative input received from the Conservation Subcommittee of the Black-footed Ferret Recovery Implementation Team, which we used to refine this tool.

A yes answer to all of these questions means your site may be a candidate for ferret reintroduction, and we encourage you to contact the FWS ferret recovery coordinator or a representative from your state wildlife agency. Note that 1,500 acres of black-tailed prairie dogs or 3,000 acres of white-tailed or Gunnison's prairie dogs should be considered a starting point, as it is unlikely that reintroduction sites of this size could meet the minimum recovery criteria of 30 breeding adults. As noted by Luce (2006), these minimums may be sufficient to begin management planning or possible experimental release of ferrets, and site proponents should take steps toward expanding potential habitat to meet recovery goals.

The remainder of this document will provide you with information on the various aspects of suitable ferret reintroduction sites. If it gets too technical, know that you do not have to go it alone: FWS and state wildlife agency personnel can help you throughout the process.

I. Biological factors

Ferrets require:

- Large areas of occupied prairie dog colony habitat
- Prairie dogs distributed in large complexes of multiple, closely spaced colonies
- High and naturally occurring densities of prairie dogs and prairie dog burrows, as well as sites where prairie dog habitat has been created or expanded through human intervention
- Annual sylvatic plague mitigation for both ferrets and prairie dogs
- Limits on threats that reduce prairie dog populations, occupied areas, or densities below those required by ferrets
- Regular ferret and prairie dog population monitoring and health checks

BASELINE CONDITIONS & METHODOLOGIES

To determine whether a site is or can be biologically suitable for ferret reintroduction, identify baseline conditions.

- A. Determine the occupied prairie dog area (per Biggins et al. 2006b; U.S. Fish and Wildlife Service 2016)
 - Map all active prairie dog colonies at the site regularly, preferably annually but at least once every three years.
 - Satellite and aerial imagery may assist in this effort but still requires ground-truthing to determine if prairie dogs are present.
- B. Identify complexes and subcomplexes (per Biggins et al. 1993, 2006a)
 - Determine complex configuration (colonies within 4.4 mi/7km of each other).
 - Determine subcomplex configuration (colonies within 0.9 mi/1.5km).
- C. Assess prairie dog density via counts of prairie dog burrows (per Biggins et al. 1993, 2006a, 2006b) or through the use of visual counts (Severson and Plumb 1998)
 - Estimate prairie dog densities at colonies within the potential site. Studies by Livieri (2007) and Eads (2009) indicate ferret females center their territories on high density black-tailed prairie dog areas ranging from 16-27 prairie dogs per acre/41-68 prairie dogs per hectare (or 34-85 active burrows per acre/84-210 active burrows per hectare per Jachowski 2007 and Livieri 2007). Prairie dog densities may be averaged based on samples across colonies on the site.

- Calculate the acreage/hectares with high prairie dog density.

Based on A-C, assess the number of adult females that may be reintroduced to or sustained at site, considering:

- If a colony is too far from another colony to be within the same complex (i.e., 4.4 mi/7km) or subcomplex (i.e., 0.9 mi/1.5km) its acreage should be removed from analysis.
- If a colony or portion of a colony has low prairie dog density, the number of acres in high density areas versus low density areas should be delineated.
- A minimum of 225 acres/90 hectares of black-tailed prairie dogs may be required for each adult female ferret (U.S. Fish and Wildlife Service 2013).
- A minimum of 375 acres/150 hectares of white-tailed or Gunnison's prairie dogs may be required for each adult female ferret (U.S. Fish and Wildlife Service 2013).

Determine:

- Does the site contain adequate prairie dog acreage/hectares to sustain 30 breeding adults (20 females, 10 males)?
- Does the site contain adequate prairie dog acreage/hectares to sustain 100 breeding adults (67 females, 33 males)?

→ Note: Generally, to qualify for an allocation of ferrets from the FWS the site must have a minimum of 1,500 acres/607 hectares of black-tailed prairie dogs or 3,000 acres/1,215 hectares of white-tailed or Gunnison's prairie dogs. To meet the 30-ferret adult minimum, there should be at least 4,500 acres/1,820 hectares of black-tailed prairie dogs or 7,500 acres/3,035 hectares of white-tailed or Gunnison's prairie dogs (U.S. Fish and Wildlife Service 2019). These must occur in complex and subcomplex configurations discussed above.

MANAGEMENT PRACTICES

Assess whether management practices are facilitating or impeding the site's prairie dog acreage/hectares and therefore capacity for ferrets. These include:

- A. Sylvatic plague: is the threat of plague to both prairie dogs and ferrets proactively addressed? Best practices include:
 - Annual prophylactic control for prairie dogs and vaccine for ferrets.
 - Alternate application of DeltaDust, Fipronil, or other effective tools to control plague in prairie dogs.
 - When possible, testing of prairie dog carcasses for plague.
- B. Direct threats: are prairie dogs lethally controlled at the site? Agreements for ferret reintroduction usually entail:
 - The delineation of a conservation area within which lethal control is prohibited.
 - The delineation of a management area that allows some lethal control but prohibits anticoagulant rodenticides such as Rozol ® or Kaput ®. Use of lead ammunition should be avoided.
 - Where lethal control is prohibited or restricted, those measures should be monitored and enforced.

- C. Habitat suitability: are any factors limiting prairie dog area expansion? Best practices to expand prairie dog acreage include:
- Managing livestock grazing to ensure adequate forage and avoid shrub encroachment.
 - Keeping native prairie intact.
 - Removing shrubs or tall vegetation curtailing prairie dog colony expansion.
 - Prairie dog translocation.
 - Climatic conditions such as drought or flooding, and whether these can be mitigated.
- D. Monitoring & Mapping:
- Frequent (every one to three years) monitoring of prairie dog colony area, population density, and other factors that could adversely affect prairie dog or ferret populations (e.g., plague epizootics, illegal shooting/poisoning, drought, catastrophic events).
 - Estimating ferret numbers if present (both breeding adults and total individuals).
 - Long-term monitoring of prairie dog and ferret populations to determine changes over time.

II. Financial factors

Financial considerations for ferret reintroduction include funding for all aspects of planning and managing for prairie dogs and ferrets. While these are important to consider, there are programs available, through wildlife agencies and non-profit organizations, to underwrite some of these expenses.

- A. Staff and/or contract labor. Personnel are required:
- To conduct the baseline analysis detailed above.
 - To implement the management practices detailed above and below.
- B. Annual plague control materials. The cost of plague mitigation is often substantial. In addition to the personnel cost, materials are required:
- DeltaDust, Fipronil, or any other effective plague control products that become available.
 - DeltaDust or Fipronil disbursement mechanisms (i.e., dusters, ATV triple-shooters, etc.).
 - Personal protective equipment.
- C. Land management costs. These may include:
- Adequate signage and fencing to prevent trespass or poaching.
 - Prevention of prairie dog passage onto adjacent lands where necessary to reduce human conflict.
- D. Travel expenses. Sites are usually rural across large distances.
- Adequate resources for gas, lodging, and other travel expenses may be required.
- E. Financial incentives. These may include governmental or non-governmental funding for:
- Leasing adjacent properties to expand the site.
 - Permit or land buyout opportunities.
 - Financial incentives per acre/hectare for hosting prairie dogs and ferrets.
 - Land acquisition by private or public entities to further ferret recovery.

- F. Communication/Outreach expenses, which may be particularly important in public lands contexts and/or where significant conflict exists.

III. Social factors

Social factors may impact a ferret reintroduction site, and they are often context-specific. The situation for a landowner in an area where there is strong support among neighbors for species conservation is different than for a public land manager faced with low support among stakeholders for species conservation. Recognizing these social elements can help you to work within your community to address wildlife conflicts before they arise. Social support for a site is one criteria FWS considers prior to allocating ferrets for reintroduction. The following three categories may be particularly important.

- A. Land ownership
 - a. Private land
 - b. Public land (federal and state)
 - c. Tribal land
- B. Support or opposition from neighbors or stakeholders
- C. Resources
 - a. Support by landowner or land management authority for ferret reintroduction, for example, a black-footed ferret conservation plan or a tribal council resolution of support.
 - b. Adequate funding (see above)
 - c. Opportunities to qualify and apply for financial and social incentives (if available) and participate in collaborations. These could include tax credits from conservation easements, conservation leases, and/or funding from non-profits or government agencies to provide financial assistance in creating and maintaining a ferret population.

IV. Regulatory framework

A favorable regulatory framework and land management or species protection mandates for native wildlife will generally increase the feasibility of ferret reintroduction at a given site.

- A. Federal, state, tribal, or local laws and regulations as they relate to wildlife reintroduction, translocation, and plague mitigation.
- B. Other policies that favor or disfavor prairie wildlife conservation.
- C. Ferret reintroductions occur through partnerships with the FWS, applicable State and Tribal land agencies, and landowners and managers. Various tools available allow for management flexibility for participating landowners and land managers and involve agreements and/or land management plans. These agreements typically fall under Section 10 of the ESA, and include experimental, non-essential population designations, Safe Harbor Agreements, and other tools.

Reflection on all of the factors above should help you to decide whether or when to contact FWS or your state wildlife agency about participating in ferret reintroduction efforts. Recovery of this charismatic carnivore is an exciting effort that will require widespread participation from owners and managers of both private and public land throughout the Great Plains.

LITERATURE CITED & HELPFUL RESOURCES

- Biggins, D.E., B.J. Miller, L.R. Hanebury, B Oakleaf, A.H. Farmer, R. Crete, and A. Dood. 1993. A technique for evaluating black-footed ferret habitat. Management of prairie dog complexes for the reintroduction of the black-footed ferret. US Fish and Wildlife Service Biological Report, 13. pp.73-88.
- Biggins, D.E., J.L. Godbey, M.R. Matchett, and T.M. Livieri. 2006a. Habitat preferences and intraspecific competition in black-footed ferrets. Pages 129-140 in J.E. Roelle, B.J. Miller, and D.E. Biggins, editors. Recovery of the black-footed ferret – progress and continuing challenges. U.S. Geological Survey Scientific Investigations Report 2005-5293.
- Biggins, D.E., J.M. Lockhart, and J.L. Godbey. 2006b. Evaluating habitat for black-footed ferrets: revision of an existing model. Recovery of the Black-footed Ferret - Progress and Continuing Challenges. E. Roelle, B.J. Miller, J.L. Godbey, and D.E. Biggins (eds). U.S. Geological Survey Scientific Investigations Report 2005-5293. pp. 143-150.
- Eads, D.A. 2009. Evaluation and development of black-footed ferret resource selection models. MS thesis. University of Missouri, Columbia, MO. 70p.
- IUCN/SSC (2013). Guidelines for Reintroductions and Other Conservation Translocations. Version 1.0. Gland, Switzerland: IUCN Species Survival Commission, viiii + 57 pp. Available [online](#).
- Jachowski, D.S. 2007. Resource selection by black-footed ferrets in relation to the spatial distribution of prairie dogs. Doctoral Dissertation. University of Missouri-Columbia.
- Livieri, T.M. 2007. Black-footed ferret spatial use of prairie dog colonies in South Dakota. MS Thesis. University of Wisconsin-Stevens Point, Stevens Point, WI. 72p.
- Luce, R.J. 2006. Areas where habitat characteristics could be evaluated to identify potential black-footed ferret reintroduction sites and develop conservation partnerships. Recovery of the Black-footed Ferret - Progress and Continuing Challenges. E. Roelle, B.J. Miller, J.L. Godbey, and D.E. Biggins (eds). U.S. Geological Survey Scientific Investigations Report 2005-5293. pp. 69-88.
- Severson, K.E. and G.E. Plumb. 1998. Comparison of methods to estimate population densities of black-tailed prairie dogs. Wildlife Society Bulletin 26:859-866.
- U.S. Fish and Wildlife Service. 2013. Recovery plan for the black-footed ferret (*Mustela nigripes*). U.S. Fish and Wildlife Service, Denver, Colorado. 157 pp. Available [online](#).
- U.S. Fish and Wildlife Service. 2013. Black-footed Ferret Safe Harbor Agreement. U.S. Fish and Wildlife Service, Denver, Colorado. 54 pp. Available <https://www.fws.gov/mountain-prairie/es/species/mammals/blackfootedferret/BFF%20FO%20Fnl%20SHA%20102313.pdf>.
- U.S. Fish and Wildlife Service, Black-footed Ferret Recovery Program. 2016. Black-footed Ferret Field Operations Manual. U.S. Fish and Wildlife Service, Denver, Colorado. 85 pp. Available [online](#).
- U.S. Fish and Wildlife Service. 2019. Species Status Report for the Black-footed Ferret (*Mustela nigripes*). Version 1.0, U.S. Fish and Wildlife Service, Denver, Colorado. 134 pp. Available [online](#).