# Black-footed Ferret (*Mustela nigripes*)
# Conservation Status Rank Summary

September 25, 2024

For details on assessment and ranking methodology, see: *Conservation Status Assessment Definitions, Process, Rank Factors, and Calculation of State Ranks for Montana Species*

## Rarity and Trends

| Rank Factor | Date Assessed | Value | Score | Data Source | Comments |
|---|---|---|---|---|---|
| **Rarity** | | | | | |
| **Range Extent** | 2024-09-25 | Y: 2906.4 km² | 2.360 | MTNHP Range Maps | None |
| *Area of Occupancy* | | | - | | *Factor not used in ranking.* |
| **Number of Occurrences** | 2024-09-25 | 4 | 0.000 | MTNHP Databases | None |
| *Population Size* | | | - | | *Factor not used in ranking.* |
| **# of Occurrences in Good Condition** | 2024-09-25 | 0 | 0.000 | Keuler at al. 2020; Cully et al. 2010; MTNHP data | Sylvatic Plague has impacted all current and former sites occupied by the species |
| *% of Area Occupied in Good Condition* | | | - | | *Factor not used in ranking.* |
| *Environmental Specificity* | *2024-09-25* | *Narrow* | - | | *Factor not used in ranking.* |
| Rarity is calculated by averaging weighted factor scores: **( (2.36 × 1) + (0.00 × 1) + (0.00 × 2) ) / 4 = 0.59** | | | | | |
| **Trends** | | | | | |
| **Short-term Trend** | 2024-09-25 | | -0.500 | | Recent efforts to establish self-sustaining populations in Montana have failed. 2019 surveys estimated 19 individuals from two sites |
| **Long-term Trend** | 2024-09-25 | -99.0% | -0.500 | Miller et al. 1996; Livieri et al 2022 | Species was extirpated from Montana and from most of their former large range mainly as a result of prairie dog and predator control programs. Reintroduction efforts have not been successful in establishing self-sustaining populations |
| Trends score is calculated by summing weighted short and long-term trend scores: **( (-0.50 × 2) + (-0.50 × 1) ) = -1.50** | | | | | |

# Threats

| Rank Factor | Date Assessed | Value | Score | Data Source | Comments |
|---|---|---|---|---|---|
| **Threats** | | | | | |
| **Overall Threat Impact** | | Very high | 0.000 | | None |
| *Intrinsic Vulnerability* | 2024-09-25 | *Moderately vulnerable* | - | *Hillman and Clark 1980;Forrest et al. 1988;Forrest et al. 1988* | **Factor not used in ranking.** Species breeds anually and has 1-5 kits. It has good dispersal capabilities where sufficent desnisties of prairie dogs exist |
| Threat score is calculated from Overall Threat Impact when available or Intrinsic Vulnerability if not: **( 0.00 ) = 0.00** | | | | | |

## Individual Threats Data

| Threat Category | Date Assessed | Impact Score | Scope | Severity | Immediacy | Comments |
|---|---|---|---|---|---|---|
| **Invasive & Other Problematic Species, Genes & Diseases** | 2024-09-25 | Very high | Pervasive | Extreme | High | Plague continues to impact reintroduced populations generally causing high mortality from indirect impacts on availability of prey and direct disease impacts |
| Threat Tally: 1 - Very High, 0 - High, 0 - Medium, 0 - Low<br>Overall Threat Impact* = Very high | | | | | | |

*See Conservation Status Assessment Definitions, Process, Rank Factors, and Calculation of State Ranks for Montana Species for calculation of Overall Threat Impact based on the number and impact of individual threats.

# Conservation Status Rank Calculation

**Raw score**

Rarity: (0.59 × 70%) + Threats: (0.00 × 30%) + Trends: (-1.50) = 0.00

Calculated Rank:         S1

| Accepted Rank | S1 |
|---|---|
| Date Approved | 1985-01-01 |
| Approval Authority | Montana Species of Concern Committee |
| Rank Justification | Species was previously extirpated from the state due to direct and indirect persecution and prairie dog eradication efforts. Reintroduction efforts have largely been unsuccessful to Sylvatic Plague with only a handful of captive reared individuals remaining at reintroductions sites. |

# Supplementary Information

Montana Natural Heritage Program. 2021. Conservation Status Assessment Definitions, Process, Rank Factors, and Calculation of State Ranks for Montana Species. 18 p.
https://mtnhp.mt.gov/docs/Montana_State_Rank_Criteria_20211201.pdf

Montana Field Guide Species Account:
https://fieldguide.mt.gov/speciesDetail.aspx?elcode=AMAJF02040

Predicted Suitable Habitat Model:
https://mtnhp.mt.gov/resources/models/?elcode=AMAJF02040

# Information Needs

Information needs are assessed by considering the availability of factors used to assess species status as well as the quality of these assessments. Current information availability and quality to inform Conservation Status Rank for this species are highlighted.

| Rank Factor | Assessment Category | Value | Criteria |
|---|---|---|---|
| **General Status** | Status Quality | Adequate | Calculated rank has low uncertainty and is represented by a single rank (e.g. S3); accepted rank may be adjusted to a range rank (e.g. S2S3) |
| | | Poor | Rank assessed as SU or calculated rank has notable uncertainty and corresponds to a range rank with 2 or more values (e.g. S2?, S1S3, or S4S5) |
| **Rarity** | Range Quality | Adequate | Range polygon adequately represents area of probable occupancy and does not include substantial unoccupied areas; range may be adequately defined and still include areas of unsuitable habitat (e.g. mountain ranges for plains species) |
| | | Marginal | Range polygon defined, but may include or exclude notable areas where the species may or may not occur on the landscape |
| | | Poor | Range polygon not defined |
| | Habitat Quality | Adequate | Species-habitat relationship is well-defined (e.g. relevant literature or robust habitat model available) |
| | | Marginal | Understanding of species-habitat relationship is adequate among some but not all habitats (e.g. literature covers similar habitats outside of Montana or habitat model performance is only somewhat adequate) |
| | | Poor | Species-habitat relationship is not well understood |
| **Threats** | Threat Quality | Adequate | Threat Impact is a single value (including "Unthreatened") |
| | | Marginal | Threat Impact assessed at more than one value (e.g. "High - Medium") |
| | | Poor | Threat Impact is Unknown but Intrinsic Vulnerability is assessed |
| | | Unknown | Threat Impact is Unknown and Intrinsic Vulnerability is not assessed |
| **Trends** | Recency | Current | Short-term Trend assessment date less than 10 years old |
| | | Out of Date but Adequate | Short-term Trend assessment date is more than 10 years old or Unknown, but species is Unthreatened |
| | | Out of Date | Short-term Trend assessment date more than 10 years old |
| | | Not Available | Short-term Trend data are not available |
| | Trend Quality | Sufficient | Short-term Trend assessed at a single value or multiple values with a minimum trend greater than -10% (stable or increasing) |
| | | Unknown but Sufficient | Short-term Trend is Unknown, but species is Unthreatened |
| | | Poor | Short-term Trend is less than -10% (in decline) with two or more values selected |
| | | Unknown | Short-term Trend is Unknown |

## Summary of Information Availability
Data to assess status are available

## Summary of Information Needs
No additional information are needed at this time.

# Additional Threat Details

The table below contains the complete threats assessment for this species. While the Conservation Status Rank Calculation is based on cumulative, broadly categorized (Level 1) threats data, threats are assessed and tracked for more specifically categorized (Level 2) threats when available.

| Threat Category | Date Assessed | Assessed By | Data Source | Scope | Severity | Imme-diacy | Comments |
|---|---|---|---|---|---|---|---|
| **Invasive & Other Problematic Species, Genes & Diseases - 8.1 - Invasive Non-Native/Alien Species/Diseases** | 2024-09-25 | Dan Bachen | Livieri et al. 2022 | Pervasive | Extreme | High | Plague continues to impact reintroduced populations generally causing high mortality from indirect impacts on availablity of prey and direct disease impacts |
| | | | | | | | |