White-tailed Ptarmigan (*Lagopus leucura*)
Conservation Status Rank Summary

October 22, 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	2024-10-22	Y: 20850.0 km²	3.930	MTNHP Range Maps	None
Area of Occupancy	2024-10-22	624 | 4km² cells	4.130	MTNHP Modeling	None
Number of Occurrences	2024-10-22	123	4.130	MTNHP Databases	None
Population Size			-		**Factor not used in ranking.**
# of Occurrences in Good Condition			-		**Factor not used in ranking.**
% of Area Occupied in Good Condition			-		**Factor not used in ranking.**
Environmental Specificity	2009-01-22	Narrow	-	MTNHP Species Rank Data Table	**Factor not used in ranking.** Dependent on alpine and subalpine willow for winter forage | Methodology: NS (2003) | Original Score: B
Rarity is calculated by averaging weighted factor scores: **((3.93 × 1) + (4.13 × 2) + (4.13 × 1)) / 4 = 4.08**					
Trends					
Short-term Trend	2024-10-22		-		**Factor not used in ranking.**
Long-term Trend	2024-10-22		0.000	MTNHP data	Alpine habitat has probably changed less than 10% since European arrival
Trends score is calculated by summing weighted short and long-term trend scores: **((0.00 × 1)) = 0.00**					

Threats

Rank Factor	Date Assessed	Value	Score	Data Source	Comments
Threats					
Overall Threat Impact		High	1.830		Climate change may be the biggest overall threat to the species, but grazing by native ungulates and winter recreation may also be a threat in some areas.
Intrinsic Vulnerability	2009-01-22	Not intrinsically vulnerable	-	MTNHP Species Rank Data Table	**Factor not used in ranking.** Methodology: NS (2003) | Original Score: C
Threat score is calculated from Overall Threat Impact when available or Intrinsic Vulnerability if not: **(1.83) = 1.83**					

Individual Threats Data

Threat Category	Date Assessed	Impact Score	Scope	Severity	Immediacy	Comments
Climate Change & Severe Weather	2024-10-22	High	Pervasive	Serious	High	Warming temperatures and habitat loss across the species range in Montana are a substatial threat to persistance. A subspecies was recently listed as Threatened by the USFWS (2024) due to climate impacts, and significant reductions in populaitons are predicted in British Columbia, Washinton, and Colorado. Montana impacts are unstudied, but likley.
Threat Tally: 0 - Very High, 1 - High, 0 - Medium, 0 - Low Overall Threat Impact* = 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: (4.08 × 70%) + Threats: (1.83 × 30%) + Trends: (0.00) = 3.41

Calculated Rank: S3

Accepted Rank	S3
Date Approved	2001-08-01
Approval Authority	Montana Species of Concern Committee
Rank Justification	Species is an alpine specialist found across the northern Rocky Mountains. Trends are unknown and it faces substantial threats from warming temperatures and loss of habitat.

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=ABNLC10030

Predicted Suitable Habitat Model:
https://mtnhp.mt.gov/resources/models/?elcode=ABNLC10030

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

Species is sparsely documented through suitable habitat within the state. Baseline surveys have not been conducted and trend is unavailable. Threats are known but impacts are not well studied in the state.

Summary of Information Needs

Surveys to establish a monitoring baseline are needed, followed by regular resurvey to determine trend. Climate threats need to be modeled to explore how vulnerable the species.

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
Human Intrusions & Disturbance - 6.1 - Recreational Activities	2026-03-17	Dan Bachen	SWAP Assessment	Restricted	Unknown	High	Disturbance from recreation during sensitive times of year. Disturbance from recreation can negatively impact ptarmigan by causing movement and behavioral shifts and impacting habitat via trampling or compaction of snow. Disturbance during sensitive breeding and wintering periods where recreation induced avoidance of preferred habitat, flushing from thermal cover, flushing from nest, or increased stress are especially detrimental to overwinter survival and reproduction. Off leash, uncontrolled pet dogs likely elevate disturbances from recreation. In Colorado dogs have been observed to chase and kill ptarmigan. In Europe, human development attracted an influx of crows and predation drove a decline in reproduction. Motorized over snow recreation may limit roost sites via snow compaction, destroy willow habitat, and create compacted trails for predators to reach ptarmigan habitat. Outdoor recreation is increasing due to growing popularity of recreational activities and growing numbers of residents and visitors in Montana. Recreational pressure across ptarmigan range is varied. Populations in Glacier National Park receive heavy recreation pressure during summer and fall but very little pressure during winter due to access. Populations along the edges of the Bob Marshall Wilderness and in the and Mission Mountain Wildernesses likely receive the most pressure during summer from hikers and backpackers but still experience some winter recreation from backcountry skiers. Populations in the interior of the Bob Marshall Wilderness Complex likely receive very little recreation pressure. The Whitefish range is likely the only part of the range to experience significant winter motorized pressure.
Climate Change & Severe Weather - 11.1 - Habitat Shifting & Alteration	2024-10-22	Dan Bachen	Jackson et al. 2015, Scridel et al. 2021, Wang et al. 2022, USFWS 2024	Pervasive	Serious	High	Warming temperatures and habitat loss across the species range in Montana are a substatial threat to persistance. A subspecies was recently listed as Threatened by the USFWS (2024) due to climate impacts, and significant reductions in populaitons are predicted in British Columbia, Washinton, and Colorado.

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