

Golden Eagle (*Aquila chrysaetos*)

Conservation Status Rank Summary

October 4, 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	2024-10-04	Y: 380530.8 km ²	4.710	MTNHP Range Maps	None
Area of Occupancy			-		Factor not used in ranking.
Number of Occurrences	2024-10-04	1700	5.500	MTNHP Databases	None
Population Size			-		Factor not used in ranking.
# of Occurrences in Good Condition	2024-10-04		2.200		None
% of Area Occupied in Good Condition			-		Factor not used in ranking.
Environmental Specificity			-		Factor not used in ranking.
Rarity is calculated by averaging weighted factor scores: $((4.71 \times 1) + (5.50 \times 1) + (2.20 \times 2)) / 4 = 3.65$					
Trends					
Short-term Trend	2023-12-20	[-35.1, 29.6%]	[-0.140, 0.140]	IMBCR	IMBCR trend in population estimates for Montana. "- 95% CI"
Long-term Trend	2011-12-22		-0.140	MTNHP Species Rank Data Table	Long-term declines since European arrival due are likely due to persecution of predators and small mammal prey. Methodology: NS (2003) Original Score: D
Trends score is calculated by summing weighted short and long-term trend scores: $((-0.14, 0.14) \times 2) + (-0.14 \times 1) = [-0.42, 0.14]$					

Threats

Rank Factor	Date Assessed	Value	Score	Data Source	Comments
Threats					
Overall Threat Impact		High	1.830		Collisions, human persecution, and nest site disturbance all represent threats to the species.
Intrinsic Vulnerability			-		Factor not used in ranking.
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
Energy Production & Mining	2024-10-04	Low	Restricted	Moderate	High	Mortality at wind energy facilities in Montana is poorly characterized. Mitigation effort through preconstruction scoping seek to reduce mortality, but studies in other areas suggest that mortality is additive and wind energy facilities can create population sinks.
Biological Resource Use	2024-10-04	High	Pervasive	Serious	High	Consumption of lead bullet fragments from harvested ungulates. Lethal and sublethal effects have high potential to drive populations declines and interact with other threats. Ultimate impacts are poorly characterized at the local scale, but there is evidence of widespread exposure and prediction of impacts on demographics from direct mortality and well as sublethal effects that may reduce survival.
Pollution	2024-10-04	Low	Restricted	Moderate	High	Consumption of poisoned rodents (rodenticide)
Threat Tally: 0 - Very High, 1 - High, 0 - Medium, 2 - 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: $(3.65 \times 70\%)$ + Threats: $(1.83 \times 30\%)$ + Trends: $([-0.42, 0.14])$ = $[2.69, 3.25]$

Calculated Rank: S3

Accepted Rank	S3
Date Approved	2009-05-01
Approval Authority	Montana Species of Concern Committee
Rank Justification	Species is uncommon across much of Montana. Population estimates are not of good quality and the species may be declining. It faces significant threats to persistence from lead poisoning through consumption of bullet fragments in gut piles and wind energy development.

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=ABNKC22010>

Predicted Suitable Habitat Model:

<https://mtnhp.mt.gov/resources/models/?elcode=ABNKC22010>

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 well studied but short-term trend data have some degree of uncertainty.

Summary of Information Needs

Continued monitoring of short-term trend. If trend continues to decline, more specific monitoring methods may be necessary to produce better estimates

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	Immediacy	Comments
Energy Production & Mining - 3.3 - Renewable Energy	2024-10-04	Dan Bachen	Katzner et al. 2017	Restricted	Moderate	High	Mortality at wind energy facilities in Montana is poorly characterized. Mitigation effort through preconstruction scoping seek to reduce mortality, but studies in other areas suggest that mortality is additive and wind energy facilities can create population sinks.
Biological Resource Use - 5.1 - Hunting & Collecting Terrestrial Animals	2024-10-04	Dan Bachen	Kelley et al. 2011; Ecke et al. 2017; Slabe et al. 2024; Garth and Eagles-Smith 2024	Pervasive	Serious	High	Consumption of lead bullet fragments from harvested ungulates. Lethal and sublethal effects have high potential to drive population declines and interact with other threats. Ultimate impacts are poorly characterized at the local scale, but there is evidence of widespread exposure and prediction of impacts on demographics from direct mortality and well as sublethal effects that may reduce survival.
Pollution - 9.7 - Pesticide/Herbicide/Insecticide Application	2024-10-04	Dan Bachen	Expert opinion	Restricted	Moderate	High	Consumption of poisoned rodents (rodenticide)