Short-eared Owl (*Asio flammeus*)
Conservation Status Rank Summary

September 30, 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	2024-09-30	Y: 380530.8 km²	4.710	MTNHP Range Maps	None
Area of Occupancy	2024-09-30	17785 | 4km² cells	5.500	MTNHP Modeling	None
Number of Occurrences			-		**Factor not used in ranking.**
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	2011-12-21	Moderate	-	MTNHP Species Rank Data Table	**Factor not used in ranking.** Moderate Generalist. Uses a broad variety of grassland/steppe cover types. | Methodology: NS (2003) | Original Score: C
Rarity is calculated by averaging weighted factor scores: **((4.71 × 1) + (5.50 × 2)) / 3 = 5.24**					
Trends					
Short-term Trend	2023-12-20	[-32.7, 29.3%]	[-0.140, 0.140]	IMBCR	IMBCR trend in population estimates for Montana. "- 95% CI"
Long-term Trend	2011-12-21		[-0.070, 0.070]	MTNHP Species Rank Data Table	Grassland habitats have been heavily impacted since European arrival, but populations are probably within +/- 25% of their historic levels. | Methodology: NS (2003) | Original Score: E
Trends score is calculated by summing weighted short and long-term trend scores: **(([-0.14, 0.14] × 2) + ([-0.07, 0.07] × 1)) = [-0.35, 0.35]**					

Threats

Rank Factor	Date Assessed	Value	Score	Data Source	Comments
Threats					
Overall Threat Impact		High	1.830		Habitat loss is undoubtedly the greatest threat to the species, but nest predation by skunks, foxes, and raccoons may also represent a threat.
Intrinsic Vulnerability	2011-12-21	Not intrinsically vulnerable	-	MTNHP Species Rank Data Table	**Factor not used in ranking.** Not Intrinsically Vulnerable. Species matures quickly, reproduces frequently, and/or has a high fecundity such that populations recover quickly (5 years or 2 generations) from decreases in abundance. Species has good dispersal capabilities such that extirpated populations generally become reestablished through natural recolonization. | 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
Agriculture & Aquaculture	None	Medium	Large	Moderate	High	Warning: Auto-rolled multiple Level 2 threats to Level 1
Transportation & Service Corridors	2024-09-30	Low	Restricted	Moderate	High	Vehicle collisions
Pollution	2024-09-30	Medium	Restricted	Serious	High	Rodenticide application and subsequent impacts to owls consuming poisoned rodents
Climate Change & Severe Weather	2024-09-30	Medium	Pervasive	Moderate	Moderate	Models predict a significant loss of habitat for this species in Montana
Threat Tally: 0 - Very High, 0 - High, 3 - Medium, 1 - 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: (5.24 × 70%) + Threats: (1.83 × 30%) + Trends: ([-0.35, 0.35]) = [3.87, 4.57]

Calculated Rank: S4?

Accepted Rank	S4
Date Approved	2024-09-30
Approval Authority	Heritage Program
Rank Justification	Species is widely distributed across steppe and grassland habitats in Montana. In contrast to other areas of North America it appears stable (BBS, IMBCR, Project WAfLS data). It faces numerous threats from habitat degradation including loss from row crop conversion, excessive grazing, and general habitat change as well as direct mortality from vehicle strikes and poisoning from rodenticide application.

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=ABNSB13040

Predicted Suitable Habitat Model:
https://mtnhp.mt.gov/resources/models/?elcode=ABNSB13040

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

All information to assess status are available.

Summary of Information Needs

Species should continue to be monitored as it faces significant threats.

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
Agriculture & Aquaculture - 2.1 - Annual & Perennial Non-Timber Crops	2024-09-30	Dan Bachen	Expert Opinion	Restricted	Moderate	High	Conversion of native steppe to row crop agriculture
Agriculture & Aquaculture - 2.3 - Livestock Farming & Ranching	2024-09-30	Dan Bachen	Miller et al. 2020	Large	Moderate	High	Owls appear to have an aversion to sites that are activly being grazed (cows present)
Transportation & Service Corridors - 4.1 - Roads & Railroads	2024-09-30	Dan Bachen	Miller et al. 2020	Restricted	Moderate	High	Vehicle collisions
Pollution - 9.7 - Pesticide/Herbicide/Insecticide Application	2024-09-30	Dan Bachen	Miller et al. 2020	Restricted	Serious	High	Rodenticide application and subsiquent impacts to owls consuming poisoned rodents
Climate Change & Severe Weather - 11.1 - Habitat Shifting & Alteration	2024-09-30	Dan Bachen	Miller et al. 2020	Pervasive	Moderate	Moderate	Models predict a significnt loss of habitat for this species in Montana