

# Brewer's Sparrow (*Spizella breweri*) Conservation Status Rank Summary

December 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
<b>Rarity</b>					
Range Extent	2023-12-27	S: 380530.8 km <sup>2</sup>	4.710	MTNHP Range Maps	None
Area of Occupancy	2024-12-04	18072   4km <sup>2</sup> cells	5.500	MTNHP Modeling	None
Number of Occurrences	2024-12-04	4928	5.500	MTNHP Databases	None
Population Size			-		Factor not used in ranking.
# of Occurrences in Good Condition	2024-12-04		4.400	MTNHP Data	The majority of occurrences are impacted by threats
% of Area Occupied in Good Condition			-		Factor not used in ranking.
Environmental Specificity	2011-12-20	Narrow	-	MTNHP Species Rank Data Table	Factor not used in ranking. Narrow Specialist. Species is a sagebrush obligate.   Methodology: NS (2003)   Original Score: B
Rarity is calculated by averaging weighted factor scores: $((4.71 \times 1) + (5.50 \times 2) + (5.50 \times 1) + (4.40 \times 2)) / 6 = 5.00$					
<b>Trends</b>					
Short-term Trend	2023-12-20	[-5.5, 6.4%]	0.000	IMBCR	IMBCR trend in population estimates for Montana. "- 95% CI"
Long-term Trend	2011-12-20		-0.140	MTNHP Species Rank Data Table	Sagebrush cover drastically reduced in Montana (25-50% decline) since European arrival.   Methodology: NS (2003)   Original Score: D
Trends score is calculated by summing weighted short and long-term trend scores: $((0.00 \times 2) + (-0.14 \times 1)) = -0.14$					

## Threats

Rank Factor	Date Assessed	Value	Score	Data Source	Comments
<b>Threats</b>					
Overall Threat Impact		Very high	0.000		Habitat loss from agriculture, energy development and increased fire frequency resulting from weeds probably represent the greatest threats to the species.
Intrinsic Vulnerability	2011-12-20	Not intrinsically vulnerable	-	MTNHP Species Rank Data Table	Factor not used in ranking. Not Intrinsicly 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: ( 0.00 ) = 0.00					

### Individual Threats Data

Threat Category	Date Assessed	Impact Score	Scope	Severity	Immediacy	Comments
Agriculture & Aquaculture	2023-12-27	Medium	Pervasive	Moderate	High	habitat loss through conversion of habitat to crops
Energy Production & Mining	2023-12-27	Low	Restricted	Moderate	High	habitat loss to energy development
Invasive & Other Problematic Species, Genes & Diseases	2023-12-27	Medium	Pervasive	Moderate	High	Habitat loss due to invasion of nonnative plant species
Climate Change & Severe Weather	2024-12-04	High	Large	Serious	Moderate	Audubon's survival by Degrees project predicts significant habitat loss in southern Montana under 2-3 degree warming.
Threat Tally: 0 - Very High, 1 - High, 2 - Medium, 1 - Low 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:  $(5.00 \times 70\%)$  + Threats:  $(0.00 \times 30\%)$  + Trends:  $(-0.14) = 3.36$

Calculated Rank: S3

<b>Accepted Rank</b>	S3B
<b>Date Approved</b>	0024-07-01
<b>Approval Authority</b>	Montana Species of Concern Committee
<b>Rank Justification</b>	Species is relatively common within steppe, valley bottoms and other grasslands and shrubland ecosystems across the state. Populations appear stable, but it faces significant threats from habitat loss due to energy development, conversion of native habitats to agriculture, invasive grasses, and a warming climate.

## 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](https://mtnhp.mt.gov/docs/Montana_State_Rank_Criteria_20211201.pdf)

Montana Field Guide Species Account:

<https://fieldguide.mt.gov/speciesDetail.aspx?elcode=ABPBX94040>

Predicted Suitable Habitat Model:

<https://mtnhp.mt.gov/resources/models/?elcode=ABPBX94040>

## 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 data to assess status are available.

### Summary of Information Needs

No additional data are needed at this time, but given the high level of threats for this species, monitoring should continue.

## 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
<b>Agriculture &amp; Aquaculture - 2.1 - Annual &amp; Perennial Non-Timber Crops</b>	2023-12-27	Dan Bachen	MTNHP Data and WWF Plowprint tool	Pervasive	Moderate	High	habitat loss through conversion of habitat to crops
<b>Energy Production &amp; Mining - 3</b>	2023-12-27	Dan Bachen	Expert Opinion	Restricted	Moderate	High	habitat loss to energy development
<b>Invasive &amp; Other Problematic Species, Genes &amp; Diseases - 8.1 - Invasive Non-Native/Alien Species/Diseases</b>	2023-12-27	Dan Bachen	Expert Opinion	Pervasive	Moderate	High	Habitat loss due to invasion of nonnative plant species
<b>Climate Change &amp; Severe Weather - 11</b>	2024-12-04	Dan Bachen	Audubon Survival by Degrees Project	Large	Serious	Moderate	Audubon's survival by Degrees project predicts significant habitat loss in southern Montana under 2-3 degree warming.