

# Greater Short-horned Lizard (*Phrynosoma hernandesi*)

## Conservation Status Rank Summary

October 23, 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	2024-10-23	Y: 305255.2 km <sup>2</sup>	4.710	MTNHP Range Maps	None
Area of Occupancy	2024-10-23	13890   4km <sup>2</sup> cells	5.500	MTNHP Modeling	None
Number of Occurrences	2024-10-23	1806	5.500	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	2018-05-03	Moderate	-	MTNHP Species Rank Data Table	Factor not used in ranking. Found most commonly in shrub and grasslands with friable soils suitable for burrowing   Methodology: NS (2003)   Original Score: C
Rarity is calculated by averaging weighted factor scores: $((4.71 \times 1) + (5.50 \times 2) + (5.50 \times 1)) / 4 = 5.30$					
<b>Trends</b>					
Short-term Trend	2018-05-03		-	MTNHP Species Rank Data Table	Factor not used in ranking. No data on trends available   Methodology: NS (2003)   Original Score: U
Long-term Trend	2018-05-03		[-0.400, -0.310]	MTNHP Species Rank Data Table	Based on anecdotal reports this species is much less common than it previously was. The exact extent of these declines is unknown but if the reports are correct, the decline is substantial and could be over 75%   Methodology: NS (2003)   Original Score: B
Trends score is calculated by summing weighted short and long-term trend scores: $((-0.40, -0.31) \times 1) = [-0.40, -0.31]$					

## Threats

Rank Factor	Date Assessed	Value	Score	Data Source	Comments
<b>Threats</b>					
Overall Threat Impact		Very high	0.000		Degradation/ development of sagebrush steppe ecosystems
Intrinsic Vulnerability	2018-05-03	Moderately vulnerable	-	MTNHP Species Rank Data Table	Factor not used in ranking. Moderately Vulnerable. Species exhibits moderate age of maturity, frequency of reproduction, and/or fecundity such that populations generally tend to recover from decreases in abundance within 5-20 years or 2-5 generations. Species has good dispersal ca   Methodology: NS (2003)   Original Score: B
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	2024-10-23	High	Large	Serious	High	Conversion of native habitat to row crop agriculture
Invasive & Other Problematic Species, Genes & Diseases	2024-10-23	High	Large	Serious	High	Invasion of cheatgrass causing loss of basking habitat and increased predation rates through impediment of escape behavior
Threat Tally: 0 - Very High, 2 - High, 0 - Medium, 0 - 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:  $(5.30 \times 70\%)$  + Threats:  $(0.00 \times 30\%)$  + Trends:  $([-0.40, -0.31]) = [3.31, 3.40]$

Calculated Rank: S3

<b>Accepted Rank</b>	S3
<b>Date Approved</b>	2003-01-01
<b>Approval Authority</b>	Montana Species of Concern Committee
<b>Rank Justification</b>	This species is found across much of eastern and central Montana. It is uncommon in grasslands, shrublands, and badlands. There is anecdotal evidence of significant declines, likely from habitat loss through land use changes. It faces threats from continued habitat loss and invasion of non-native plant species.

## 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=ARACF12080>

Predicted Suitable Habitat Model:

<https://mtnhp.mt.gov/resources/models/?elcode=ARACF12080>

## 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

Range in numeric values stems for uncertainty in the magnitude of historic declines. Rarity data is of good quality and threats are understood. Trend data is uncertain.

### Summary of Information Needs

Baseline surveys and subsequent monitoring of populations across Montana will allow better understanding of the species status and population trajectory.

## 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
Agriculture & Aquaculture - 2.1 - Annual & Perennial Non-Timber Crops	2024-10-23	Dan Bachen	NHP Data and WWF Plowprint tool	Large	Serious	High	Conversion of native habitat to row crop agriculture
Invasive & Other Problematic Species, Genes & Diseases - 8.1 - Invasive Non-Native/Alien Species/Diseases	2024-10-23	Dan Bachen	Newbold 2005, Blakemore 2018	Large	Serious	High	Invasion of cheatgrass causing loss of nesting habitat and increased predation rates through impediment of escape behavior