Phlox missoulensis (Missoula Phlox)
Conservation Status Rank Summary

January 30, 2025

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	2024-12-06	Y: 14.0 km²	0.000	Convex Hull Polygon	Calculated in Arc-GIS.
Area of Occupancy			-		**Factor not used in ranking.**
Number of Occurrences	2024-12-06	4	0.000	MTNHP Databases	None
Population Size			-		**Factor not used in ranking.**
# of Occurrences in Good Condition	2024-12-09		1.100		Two SOs with good plant populations are under land management designed for conservation.
% of Area Occupied in Good Condition			-		**Factor not used in ranking.**
Environmental Specificity	2024-12-09	Narrow	-	Lesica et al. 2022; CPNWH database	**Factor not used in ranking.** Plants are known to occur in Missoula County. Some specimens with intermediate characteristics may extend the distribution east to Meagher County.
Rarity is calculated by averaging weighted factor scores: **((0.00 × 1) + (0.00 × 1) + (1.10 × 2)) / 4 = 0.55**					
Trends					
Short-term Trend	2024-12-09		[0.000, 0.070]	P24JOH03 MTUS	Trends are being studied in some locations, but data is inconclusive. In one portion of an SO plants have re-colonized a gravel quarry.
Long-term Trend			-		**Factor not used in ranking.**
Trends score is calculated by summing weighted short and long-term trend scores: **(([0.00, 0.07] × 2)) = [0.00, 0.14]**					

Threats

Rank Factor	Date Assessed	Value	Score	Data Source	Comments
Threats					
Overall Threat Impact		Very high - high	[0.000, 1.830]		Reported threats to Montana's populations of Missoula Phlox include residential and recreational trail development, recreation use of trails and roads, utility and service line activities (MTNHP 2024a). Potential threats include improperly applied herbicide applications and fire suppression (MTNHP 2024a). An overall State Threat Score of "high to very high" is assigned to Missoula Phlox.
Intrinsic Vulnerability	2013-03-29	Not intrinsically vulnerable	-	MTNHP Species Rank Data Table	**Factor not used in ranking.** Methodology: MTNHP (2012) | Original Score: 0
Threat score is calculated from Overall Threat Impact when available or Intrinsic Vulnerability if not: **([0.00, 1.83]) = [0.00, 1.83]**					

Individual Threats Data

Threat Category	Date Assessed	Impact Score	Scope	Severity	Immediacy	Comments
Residential & Commercial Development	None	High - Low	Large	Serious-Slight	High	Multiple Level 2 threats - see Additional Threat Details table.
Transportation & Service Corridors	None	High	Large	Serious	High	Multiple Level 2 threats - see Additional Threat Details table.
Human Intrusions & Disturbance	2024-12-09	High - Low	Large-Restricted	Serious-Slight	High	Threat of plants being trampled and damaged applies to 3 or 4 Species Occurrences.
Natural System Modifications	2024-12-09	Low	Large	Slight	High	Threat of Fire Fire Suppression applies to 4 of 4 Species Occurrences.
Invasive & Other Problematic Species, Genes & Diseases	2024-12-09	High - Medium	Large-Restricted	Extreme-Serious	High	Threat of Invasive Non-Native Plants applies to 3 of 4 Species Occurrences.
Pollution	2024-12-09	Low	Large	Slight	High	Threat of Pollution from excessive Dog Waste applies to 1 of 4 Species Occurrences.
Other Threats	2024-12-09	Medium - Low	Large-Restricted	Moderate-Slight	High	Threat of Herbicide Application applies to 2 of 4 Species Occurrences.
Threat Tally: 0 - Very High, [1,4] - High, 1 - Medium, [2,5] - Low Overall Threat Impact* = Very high - 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: (0.55 × 70%) + Threats: ([0.00, 1.83] × 30%) + Trends: ([0.00, 0.14]) = [0.39, 1.07]

Calculated Rank: S1

Accepted Rank	S1
Date Approved	2025-01-30
Approval Authority	Andrea Pipp
Rank Justification	*Phlox missoulensis* (Missoula Phlox) is a state endemic known from a small number of occurrences in Missoula County, Montana. Since 1944 *Phlox missoulensis* has been recognized as unique, and taxonomically classified as a species (Wherry 1944), variety (Cronquist 1959), or subspecies (Campbell 1992), and recently returned to species status (Locklear 2009). The State's occurrences are managed entirely or through partnership by the City of Missoula, Missoula County, Five Valleys Land Trust, and private landowners. Populations occur in areas used for public recreation, residential development, and road and utility service corridors (MTNHP 2024). At all known occurrences, populations face on-going threats from habitat encroachment, noxious weed invasion, trampling, and mortality from ground disturbing activities. Other potential threats to the plants or its habitat include fire suppression, excessive dog waste accumulation, and improperly timed or applied herbicide treatments. On-going monitoring by Missoula Parks and Recreation is helping to assess and mitigate the impacts of these threats. Conservation projects with the City of Missoula, Missoula County, land trusts, and private landowners are helping to conserve land for multiple purposes, including the protection of *Phlox missoulensis*. Continued implementation of land conservation practices and monitoring that evaluates these efforts are needed to track the long-term status and population trends of *Phlox missoulensis*.

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=PDPLM0D190

Predicted Suitable Habitat Model:
https://mtnhp.mt.gov/resources/models/?elcode=PDPLM0D190

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

City of Missoula and Missoula County have great data on population mapping, habitat quality, threat reporting, and is monitoring to inform on trends.

Summary of Information Needs

None

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
Residential & Commercial Development - 1.1 - Housing & Urban Areas	2024-12-09	Andrea Pipp	D22JOH03 MTUS; P24JOH03 MTUS	Restricted -Small	Serious-Slight	High	Threat of Housing & Urban Areas applies to 2 of 4 Species Occurrences.
Residential & Commercial Development - 1.3 - Tourism & Recreation Areas	2024-12-09	Andrea Pipp	D22JOH03 MTUS; P24JOH03 MTUS	Large	Slight	High	Trail development has increased use at 2 of 4 Species Occurrences.
Transportation & Service Corridors - 4.1 - Roads & Railroads	2024-12-09	Andrea Pipp	D22JOH03 MTUS; P24JOH03 MTUS	Large-Restricted	Serious-Slight	High	Threat of Roads & Railroads applies to 1 of 4 Species Occurrences.
Transportation & Service Corridors - 4.2 - Utility & Service Lines	2024-12-09	Andrea Pipp	D22JOH03 MTUS; P24JOH03 MTUS	Large	Serious	High	Threat of Utility & Service Lines applies to 1 of 4 Species Occurrences.
Human Intrusions & Disturbance - 6.1 - Recreational Activities	2024-12-09	Andrea Pipp	D22JOH03 MTUS; P24JOH03 MTUS	Large-Restricted	Serious-Slight	High	Threat of plants being trampled and damaged applies to 3 or 4 Species Occurrences.
Natural System Modifications - 7.1 - Fire & Fire Suppression	2024-12-09	Andrea Pipp	D22JOH03 MTUS; P24JOH03 MTUS	Large	Slight	High	Threat of Fire & Fire Suppression applies to 4 of 4 Species Occurrences.
Invasive & Other Problematic Species, Genes & Diseases - 8.1 - Invasive Non-Native/Alien Species/Diseases	2024-12-09	Andrea Pipp	D22JOH03 MTUS; P24JOH03 MTUS	Large-Restricted	Extreme-Serious	High	Threat of Invasive Non-Native Plants applies to 3 of 4 Species Occurrences.
Pollution - 9.1 - Domestic & Urban Waste Water	2024-12-09	Andrea Pipp	D22JOH03 MTUS; P24JOH03 MTUS	Large	Slight	High	Threat of Pollution from excessive Dog Waste applies to 1 of 4 Species Occurrences.
Other Threats - 12.1 - Other Threat	2024-12-09	Andrea Pip	D22JOH03 MTUS; P24JOH03 MTUS	Large-Restricted	Moderate-Slight	High	Threat of Herbicide Application applies to 2 of 4 Species Occurrences.