Plains Sucker (*Pantosteus jordani*)
Conservation Status Rank Summary

March 6, 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	2024-02-14	Y: 211637.5 km²	4.710	MTNHP Range Maps	None
Area of Occupancy	2024-03-06	10946 | 1km² cells	4.810	MTFWP Fish Distribution Layer	Km from MT Fish Distribution Layer
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			-		Factor not used in ranking.
Rarity is calculated by averaging weighted factor scores: **((4.71 × 1) + (4.81 × 2)) / 3 = 4.78**					
Trends					
Short-term Trend	2025-02-03	-40.0%	-0.140	Niall Clancy	Resurvey of historic sites by Clancy found a 40% decline for the species over the past 20 years
Long-term Trend	2024-03-06	[-52.0, -27.0%]	[-0.220, -0.070]		Data from Montana is not available. Study comparisons in Wyoming and the Black Hills (primarily SD) to data from the 1960's found 0.73 site occupancy (into 1990s in WY) and 0.226 remaining distribution in Black Hills (2009/10). The average of these two numbers may a reasonable estimate for MT. Patton et al. (1998) similarly found a 27% decline in stream occupancy from the 1960's to 1990s
Trends score is calculated by summing weighted short and long-term trend scores: **((-0.14 × 2) + ([-0.22, -0.07] × 1)) = [-0.50, -0.35]**					

Threats

Rank Factor	Date Assessed	Value	Score	Data Source	Comments
Threats					
Overall Threat Impact		High	1.830		None
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
Invasive & Other Problematic Species, Genes & Diseases	2024-03-06	Low	Large	Slight	High	Identified as a threat by Dauwalter and Rahel (2008). Proportional loss is 1 minus the likelihood of finding Plains Sucker given presence of trout in the Black Hills (from Schultz et al. 2016, figure 2). 46% of HUC12s occupied by PLSU in MT have Non-Native Trout (calculated from Clancy et al. in review dataset) R Code available
Climate Change & Severe Weather	2024-03-06	High	Pervasive	Serious	High	Clancy et al. in review. Fopma (2020) identified temperature as a top predictor of PLSU distribution in the Black Hills.
Threat Tally: 0 - Very High, 1 - High, 0 - 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: (4.78 × 70%) + Threats: (1.83 × 30%) + Trends: ([-0.50, -0.35]) = [3.39, 3.54]

Calculated Rank: S3S4

Accepted Rank	S5
Date Approved	2024-09-30
Approval Authority	Montana Species of Concern Committee
Rank Justification	Species is widely distributed but May be facing significant threats and is declining.

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=AFCJC02320

Predicted Suitable Habitat Model:
https://mtnhp.mt.gov/resources/models/?elcode=AFCJC02320

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

Rarity data are sufficent, but threats are poorly characterized.

Summary of Information Needs

Targeted and regular monitoring are needed to assess ongoing declines in trend and explore 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
Natural System Modifications - 7.2 - Dams & Water Management/Use	2024-03-06	Niall Clancy	Belica and Nibbelink (2006)	Unknown	Unknown	High	Sedimentation identified as a threat by Belica and Nibbelink (2006).
Invasive & Other Problematic Species, Genes & Diseases - 8.1 - Invasive Non-Native/Alien Species/Diseases	2024-03-06	Niall Clancy	None	Large	Slight	High	Identified as a threat by Dauwalter and Rahel (2008). Proportional loss is 1 minus the likelihood of finding Plains Sucker given presence of trout in the Black Hills (from Schultz et al. 2016, figure 2). 46% of HUC12s occupied by PLSU in MT have Non-Native Trout (calculated from Clancy et al. in review dataset) R Code available
Climate Change & Severe Weather - 11.1 - Habitat Shifting & Alteration	2024-03-06	Niall Clancy	Clancy et al. in review	Pervasive	Serious	High	Clancy et al. in review. Fopma (2020) identified temperature as a top predictor of PLSU distribution in the Black Hills.