

Margaritifera falcata (Western Pearlshell)

Conservation Status Rank Summary

October 9, 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	2024-09-12	Y: 100511.1 km ²	3.930	MTNHP Range Maps	None
Area of Occupancy	2024-09-12	1440 4km ² cells	4.130	MTNHP Modeling	None
Number of Occurrences	2024-09-12	141	4.130	MTNHP Databases	None
Population Size			-		Factor not used in ranking.
# of Occurrences in Good Condition	2024-09-12		1.100		None
% of Area Occupied in Good Condition			-		Factor not used in ranking.
Environmental Specificity	2015-01-10	Very narrow	-	MTNHP Species Rank Data Table	Factor not used in ranking. Methodology: NS (2003) Original Score: A
Rarity is calculated by averaging weighted factor scores: $((3.93 \times 1) + (4.13 \times 2) + (4.13 \times 1) + (1.10 \times 2)) / 6 = 3.09$					
Trends					
Short-term Trend	2015-01-10		-0.070	MTNHP Species Rank Data Table, Methodology: NS (2003) Original Score: D	Mussel surveys conducted since 2004 suggests a moderate (20-30%) decline in most metrics analyzed. Form the 2014 revisits, 19 streams (25%) are now considered to be extirpated, 19% of populations have declined, 26% of streams experienced loses, 27% decline of individuals (Stagliano 2015). But we also added important viable population extensions of ~ 30km that have added significant numbers of individuals in 2014.
Long-term Trend	2015-01-10		-0.220	MTNHP Species Rank Data Table, Methodology: NS (2003)	Populations and occupancy have been impacted by mining impacts (all of Clark Fork mainstem, Flint Creek, Blackfoot, Nine Mile Creek, Fisher River), warming water temperatures, dams, loss of host fish species, and some dewatering (all of the Beaverhead, Jefferson, Smith, lower Gallatin, Missouri mainstem

				Original Score: C	
Trends score is calculated by summing weighted short and long-term trend scores: $((-0.07 \times 2) + (-0.22 \times 1)) = -0.36$					

Threats

Rank Factor	Date Assessed	Value	Score	Data Source	Comments
Threats					
Overall Threat Impact		High	1.830		Climate Change, increasing stream temperatures and lower snowpack could seriously impact the habitat that this species exists in
Intrinsic Vulnerability	2015-01-10	Highly vulnerable	-	MTNHP Species Rank Data Table, Methodology: NS (2003) Original Score: A	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
Agriculture & Aquaculture	2015-01-10	Medium	Restricted	Serious	High	Degradation of riparian areas
Invasive & Other Problematic Species, Genes & Diseases	2015-01-10	Low	Pervasive	Slight	High	Introduced nonnative salmonid species
Pollution	2015-01-10	Medium	Large	Moderate	High	Run-off from mining, agriculture and other sources
Climate Change & Severe Weather	2015-01-10	Medium	Pervasive	Moderate	High	Species requires cold water
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: $(3.09 \times 70\%)$ + Threats: $(1.83 \times 30\%)$ + Trends: (-0.36) = 2.35

Calculated Rank: S2

Accepted Rank	S2
Date Approved	2015-01-10
Approval Authority	Montana Species of Concern Committee
Rank Justification	Species is found across western and isolated portions of west central Montana in cold streams and rivers. Populations are currently declining. It faces threats related to degradation of riparian areas including runoff and pollution, invasive salmonid species and warming water temperatures.

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=IMBIV27020>

Predicted Suitable Habitat Model:

<https://mtnhp.mt.gov/resources/models/?elcode=IMBIV27020>

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

Species is well studied and all categories have sufficient data to inform status ranking efforts.

Summary of Information Needs

No additional information needs are recognized at this time. To monitor declines and inform management actions and recovery, monitoring of populations should continue.