

# Plains Minnow (*Hybognathus placitus*)

## Conservation Status Rank Summary

March 5, 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	2024-03-05	Y: 180102.4 km <sup>2</sup>	3.930	MTNHP Range Maps	None
Area of Occupancy	2024-03-05	9160   1km <sup>2</sup> cells	4.130		From FWP 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: $((3.93 \times 1) + (4.13 \times 2)) / 3 = 4.06$					
<b>Trends</b>					
Short-term Trend	2024-03-05	[-30.0, -10.0%]	[-0.140, -0.070]		monitoring sites on a watershed scale show declines in numbers (BLM surveys) FishMT survey and inventory data did not have many sites with multiple samples for trends (that were not the BLM data) WY study shows WSMN to be decreasing (Patton et al. 1998) Declining in Oklahoma (Taylor 2010, Taylor and Miller 1990) KS lists this species at Threatened
Long-term Trend			-		Factor not used in ranking.
Trends score is calculated by summing weighted short and long-term trend scores: $((-0.14, -0.07) \times 2) = [-0.28, -0.14]$					

## Threats

Rank Factor	Date Assessed	Value	Score	Data Source	Comments
<b>Threats</b>					
<b>Overall Threat Impact</b>		Medium	3.670		None
<b>Intrinsic Vulnerability</b>			-		Factor not used in ranking.
Threat score is calculated from Overall Threat Impact when available or Intrinsic Vulnerability if not: ( 3.67 ) = 3.67					

### Individual Threats Data

Threat Category	Date Assessed	Impact Score	Scope	Severity	Immediacy	Comments
<b>Natural System Modifications</b>	2024-03-05	Low	Restricted	Slight	High	Reservoirs, diversion dams, and freshwater withdrawal reduce sediment loads and alter flow regimes, may be cause of declines in some streams (Taylor 2010, Patton et al. 1998, Dodds et al. 2004) Taylor describes this species as intolerant to severely modified flow regimes. Where human population centers continue to grow, demands for freshwater will continue to grow adding to water withdrawals
<b>Invasive &amp; Other Problematic Species, Genes &amp; Diseases</b>	2024-03-05	Low	Pervasive	Slight	High	Common Carp may impact feeding and spawning as they uproot vegetation (Carp in North America) Predation by Northern pike, walleye (FWP field guide) possibly smallmouth bass. As proper hydrologic processes are lost due to stream channel modifications (impact listed above) predation impacts will increase as well – less habitat types for species to hide from predators.
<b>Pollution</b>	2024-03-05	Low	Small	Slight	High	Poorly managed livestock grazing – reduces riparian vegetation which reduces food source, thermal refuge, filtration of overland flow, increased sedimentation, excess nutrients, etc. Streams flowing through oil and gas fields periodically have high conductivity levels to a lethal point (all personal observations)
<b>Climate Change &amp; Severe Weather</b>	2024-03-05	Low	Pervasive	Slight	Moderate	Drought and water withdrawal could affect spawning as this species is a pelagic-broadcast spawner (Taylor 2010)

Threat Tally: 0 - Very High, 0 - High, 0 - Medium, 4 - Low  
Overall Threat Impact\* = Medium

\*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:  $(4.06 \times 70\%)$  + Threats:  $(3.67 \times 30\%)$  + Trends:  $([-0.28, -0.14]) = [3.67, 3.81]$

Calculated Rank: S4

<b>Accepted Rank</b>	S4
<b>Date Approved</b>	2025-02-03
<b>Approval Authority</b>	Montana Natural Heritage Program Staff
<b>Rank Justification</b>	Species is widely distributed, may be undergoing minor declines and faces numerous low severity threats

## 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=AFCJB16050>

Predicted Suitable Habitat Model:

<https://mtnhp.mt.gov/resources/models/?elcode=AFCJB16050>

## 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
<b>General Status</b>	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)
<b>Rarity</b>	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
<b>Threats</b>	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
<b>Trends</b>	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

None

### 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	Immediacy	Comments
<b>Natural System Modifications - 7.2 - Dams &amp; Water Management/Use</b>	2024-03-05	Christina Stuart	None	Restricted	Slight	High	Reservoirs, diversion dams, and freshwater withdrawal reduce sediment loads and alter flow regimes, may be cause of declines in some streams (Taylor 2010, Patton et al. 1998, Dodds et al. 2004) Taylor describes this species as intolerant to severely modified flow regimes. Where human population centers continue to grow, demands for freshwater will continue to grow adding to water withdrawals
<b>Invasive &amp; Other Problematic Species, Genes &amp; Diseases - 8.1 - Invasive Non-Native/Alien Species/Diseases</b>	2024-03-05	Christina Stuart	None	Pervasive	Slight	High	Common Carp may impact feeding and spawning as they uproot vegetation (Carp in North America) Predation by Northern pike, walleye (FWP field guide) possibly smallmouth bass. As proper hydrologic processes are lost due to stream channel modifications (impact listed above) predation impacts will increase as well – less habitat types for species to hide from predators.
<b>Pollution - 9.3 - Agricultural &amp; Forestry Effluents</b>	2024-03-05	Christina Stuart	Expert Opinion	Small	Slight	High	Poorly managed livestock grazing – reduces riparian vegetation which reduces food source, thermal refuge, filtration of overland flow, increased sedimentation, excess nutrients, etc. Streams flowing through oil and gas fields periodically have high conductivity levels to a lethal point (all personal observations)
<b>Climate Change &amp; Severe Weather - 11.2 - Droughts</b>	2024-03-05	Christina Stuart	Taylor 2010	Pervasive	Slight	Moderate	Drought and water withdrawal could affect spawning as this species is a pelagic-broadcast spawner (Taylor 2010)