

Sicklefin Chub (*Macrhybopsis meeki*) Conservation Status Rank Summary

March 7, 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	2024-02-29	Y: 11012.4 km ²	3.140	MTNHP Range Maps	None
Area of Occupancy			-		Factor not used in ranking.
Number of Occurrences	2024-02-29	3	0.000	MTNHP Databases	None
Population Size	2024-02-29	826	1.570	USFWS 2023	Estimated at 826 in the Upper Missouri River (USFWS 2023)
# of Occurrences in Good Condition	2024-02-29	2	1.100	USFWS 2023	3 areas are currently occupied. Ft. Peck Dam likely degrades habitat downstream by altering water temperatures and turbidity
% 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: $((3.14 \times 1) + (0.00 \times 1) + (1.57 \times 2) + (1.10 \times 2)) / 6 = 1.41$					
Trends					
Short-term Trend	2024-02-29	[-50.0, 0.0%]	[-0.220, 0.000]	Grisak, G. G. 1996., FWP Monitoring Data	Trawling data above Fort Peck shows stable population, no trend data on Yellowstone River, most catches are low numbers (FishMT data). The appearance of declining population or low numbers could be due to the gear type, most sampling is done with seines on shallower waters, but Grisak 1996 found more individuals in deeper water with trawls than seining and recommends more sampling efforts should be done with trawls to accurately determine the population trends. 9 states lists this species as critically imperiled and 2 lists this species as imperiled. Only Missouri lists this species as secure. SD lists this species as endangered
Long-term Trend	2024-02-29		-0.140	Expert Opinion	Loss of habitat with creation of Ft. Peck Reservoir
Trends score is calculated by summing weighted short and long-term trend scores: $((-0.22, 0.00) \times 2) + (-0.14 \times 1) = [-0.58, -0.14]$					



Threats

Rank Factor	Date Assessed	Value	Score	Data Source	Comments
Threats					
Overall Threat Impact		Low/No Threats	5.500		None
Intrinsic Vulnerability			-		Factor not used in ranking.
Threat score is calculated from Overall Threat Impact when available or Intrinsic Vulnerability if not: (5.50) = 5.50					

Individual Threats Data

Threat Category	Date Assessed	Impact Score	Scope	Severity	Immediacy	Comments
Transportation & Service Corridors	2024-02-29	Low	Large	Slight	High	Oil Pipeline rupture and spill, Contamination of water from coal transport
Natural System Modifications	2024-02-29	Low	Pervasive	Slight	High	Restricted to large turbid rivers, dams and intakes alter flow, macro habitat, and water temperature. Water temperature influences life history characteristics (e.g. growth) (Braaten and Guy 2011) Irrigation withdrawal, entrainment
Climate Change & Severe Weather	2024-02-29	Low	Pervasive	Slight	High	Drought – reduced water and flow, exacerbates issues listed above in natural systems modifications
Threat Tally: 0 - Very High, 0 - High, 0 - Medium, 3 - Low Overall Threat Impact* = Low/No Threats						

*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: $(1.41 \times 70\%)$ + Threats: $(5.50 \times 30\%)$ + Trends: $([-0.58, -0.14]) = [2.06, 2.50]$

Calculated Rank: S2

Accepted Rank	S2
Date Approved	2024-09-30
Approval Authority	Montana Species of Concern Committee
Rank Justification	species is uncommon but faces low level threats and is stable to 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=AFCJB53030>

Predicted Suitable Habitat Model:

<https://mtnhp.mt.gov/resources/models/?elcode=AFCJB53030>

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

Information to assess status is available

Summary of Information Needs

No further information is needed

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
Transportation & Service Corridors - 4.2 - Utility & Service Lines	2024-02-29	Dan Bachen	USFWS 2023; Expert Opinion	Large	Slight	High	Oil Pipeline rupture and spill, Contamination of water from coal transport
Natural System Modifications - 7.2 - Dams & Water Management/Use	2024-02-29	Christina Stuart	Braaten and Guy 2011	Pervasive	Slight	High	Restricted to large turbid rivers, dams and intakes alter flow, macro habitat, and water temperature. Water temperature influences life history characteristics (e.g. growth) (Braaten and Guy 2011) Irrigation withdrawal, entrainment
Climate Change & Severe Weather - 11.1 - Habitat Shifting & Alteration	2024-02-29	Christina Stuart	Expert Opinion	Pervasive	Slight	High	Drought – reduced water and flow, exacerbates issues listed above in natural systems modifications