Torrent Sculpin (*Cottus rhotheus*)
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	2024-02-20	Y: 8691.8 km²	3.140	MTNHP Range Maps	None
Area of Occupancy			-		Factor not used in ranking.
Number of Occurrences	2024-03-07	45	2.750	MTNHP Databases	None
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: **((3.14 × 1) + (2.75 × 1)) / 2 = 2.95**					
Trends					
Short-term Trend	2024-02-20		-		**Factor not used in ranking.** There are no trend estimates - Species is severely data deficient
Long-term Trend	2024-02-20	-19.0%	-0.070		Relatively stable. Little data is available to assess trends, but scattered surveys in both the 1990's (Gangemi 1992) and 2020's (Clancy, unpublished) found them to be broadly distributed. They were likewise considered abundant in a recent survey of Idaho streams (Higens and Scarnecchia 2021). However, lacustrine habitat is unsuitable for TCOT and none are known from Lake Koocanusa despite almost certainly having historically occurred in that section of river. FWP estimates are that 194 river miles are currently occupied by TCOT (FishMT website) and there would have been an additional 46 river miles occupied before the creation of Lake Koocanusa (81% of 240 historically occupied river miles).
Trends score is calculated by summing weighted short and long-term trend scores: **((-0.07 × 1)) = -0.07**					

Threats

Rank Factor	Date Assessed	Value	Score	Data Source	Comments
Threats					
Overall Threat Impact			-		Factor not used in ranking.
Intrinsic Vulnerability			-		Factor not used in ranking.
No threat or vulnerability data used in ranking this species					

Individual Threats Data

Threat Category	Date Assessed	Impact Score	Scope	Severity	Immediacy	Comments
No individual threats data used in ranking this species						

Conservation Status Rank Calculation

Raw score

Rarity: (2.95 × 100%) + Threats: (0.00) + Trends: (-0.07) = 2.88

Calculated Rank: S3

Accepted Rank	S3
Date Approved	1987-04-22
Approval Authority	Montana Natural Heritage Program Staff
Rank Justification	It appears that the species is somewhat rare, but it is also severely data deficient

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=AFC4E02220

Predicted Suitable Habitat Model:
https://mtnhp.mt.gov/resources/models/?elcode=AFC4E02220

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 lacks data on threats and a recent trend

Summary of Information Needs

Targeted monitoring of this species would help establish trend and provide better insight into 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	2024-02-20	None	None	Pervasive	Unknown	Insignific ant	no reports of Torrent Sculpin from Lake Koocanusa are available but they almost certainly inhabited the section of river now underwater (present in many tributaries to Koocanusa). It is possible that construction of the reservoir made habitats in this portion of the river less suitable for Torrent Sculpin because they prefer coarser substrates.
No threats data available for this species							