Blue Sucker (*Cycleptus elongatus*)
Conservation Status Rank Summary

September 23, 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: 35043.3 km²	3.930	MTNHP Range Maps	None
Area of Occupancy	2024-02-23	3080 | 1km² cells	4.130	FWP Dish Distributio n	None
Number of Occurrences	2024-02-20	18	1.380	MTNHP Databases	None
Population Size			-		Factor not used in ranking.
# of Occurrences in Good Condition	2024-02-23		1.100		None
% 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 × 1) + (4.13 × 2) + (1.38 × 1) + (1.10 × 2)) / 6 = 2.63**					
Trends					
Short-term Trend	2024-02-20	[-13.0, 9.0%]	[-0.070, 0.000]	FWP Survey Data 2024	FWP Survey Data 2024; Data from FWP Survey data (2013-2023). I calculated the geometric mean of annual population rates for all sections that had conducted long-term monitoring surveys in consecutive years at any point from 2013-2023 (n=11). From those data I calculated the mean population trend for Montana (seen here as estimated trend) and the standard errors (95% confidence intervals). HOWEVER, I did not have data on effort for these surveys, so these are based solely on count data and therefore should be used with caution (perhaps not used at all). If I can get the effort data on these surveys I can redo these estimates with perhaps slightly more confidence. The population growth rate in parentheses uses catch per unit effort data from the Lower Yellowstone River section. The data came from a figure from Caleb Bollman, but only for one section, so I couldn't calculate confidence intervals.

Long-term Trend	2024-02-20		[-0.310, -0.070]	Coker 1930; Elstad and Werdon 1993 Pflieger 1997 via Neely et al. 2010	Used a broad range of declines as exact declines are uncertain; Coker 1930; Elstad and Werdon 1993 Pflieger 1997 via Neely et al. 2010; Many introductions to papers stated a widespread decline in blue sucker populations in comparison with historical levels, but I couldn't find a specific reference for this decline or any estimates of the size of the decline compared to today's populations throughout its range. The Coker (1930) paper gives pounds of blue sucker caught in the Mississippi drainage via commercial fishing during the late 1800's and early 1900's and talks about a decline at the time of publication. I couldn't find any specific numbers to Montana populations.
Trends score is calculated by summing weighted short and long-term trend scores: **(([-0.07, 0.00] × 2) + ([-0.31, -0.07] × 1)) = [-0.45, -0.07]**					

Threats

Rank Factor	Date Assessed	Value	Score	Data Source	Comments
Threats					
Overall Threat Impact		High	1.830		None
Intrinsic Vulnerability	2024-02-23	Moderately vulnerable	-		**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
Natural System Modifications	2024-02-20	High	Pervasive	Serious	High	Coker 1930; Elstad and Werdon 1993 Pflieger 1997 via Neely et al. 2010; Many introductions to papers stated a widespread decline in blue sucker populations in comparison with historical levels, but I couldn't find a specific reference for this decline or any estimates of the size of the decline compared to today's populations throughout its range. The Coker (1930) paper gives pounds of blue sucker caught in the Mississippi drainage via commercial fishing during the late 1800's and early 1900's and talks about a decline at the time of publication. I couldn't find any specific numbers to Montana populations. DAB edit: Ongoing impacts to recruitment from alterded hydrology may cause severe declines
Threat Tally: 0 - Very High, 1 - High, 0 - Medium, 0 - 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: (2.63 × 70%) + Threats: (1.83 × 30%) + Trends: ([-0.45, -0.07]) = [1.94, 2.32]

Calculated Rank: S2

Accepted Rank	S2
Date Approved	2024-09-30
Approval Authority	Montana Species of Concern Committee
Rank Justification	Species is distributed within river systems in eastern Montana. Although adult populations appear stable, breeding appears to be impacted by hydrologic changes to occupied systems which may lead to significant declines in population.

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=AFCJC04010

Predicted Suitable Habitat Model:
https://mtnhp.mt.gov/resources/models/?elcode=AFCJC04010

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 are generally available, but short-term trend has some uncertainty

Summary of Information Needs

Continued monitoring to establish more precise trend.

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
Agriculture & Aquaculture - 2.3 - Livestock Farming & Ranching	2024-02-20	None	None	Small	Unknown	High	Coker 1930; Elstad and Werdon 1993 & Pflieger 1997 via Neely et al. 2010; Many introductions to papers stated a widespread decline in blue sucker populations in comparison with historical levels, but I couldn't find a specific reference for this decline or any estimates of the size of the decline compared to today's populations throughout its range. The Coker (1930) paper gives pounds of blue sucker caught in the Mississippi drainage via commercial fishing during the late 1800's and early 1900's and talks about a decline at the time of publication. I couldn't find any specific numbers to Montana populations.
Natural System Modifications - 7.2 - Dams & Water Management/Use	2024-02-20	None	None	Pervasive	Serious	High	Coker 1930; Elstad and Werdon 1993 & Pflieger 1997 via Neely et al. 2010; Many introductions to papers stated a widespread decline in blue sucker populations in comparison with historical levels, but I couldn't find a specific reference for this decline or any estimates of the size of the decline compared to today's populations throughout its range. The Coker (1930) paper gives pounds of blue sucker caught in the Mississippi drainage via commercial fishing during the late 1800's and early 1900's and talks about a decline at the time of publication. I couldn't find any specific numbers to Montana populations. DAB edit: Ongoing impacts to recruitment from alterded hydrology may cause severe declines
Pollution - 9	2024-02-20	None	None	Restricted	Unknown	High	Carlson (2022) found that spawning and foraging opportunities declined under poor water quality conditions for blue sucker in the James River in South Dakota. I estimated 20% of the population could be affected by this because it's likely the only the areas around the dams in the Missouri River affected by this.
Climate Change & Severe Weather - 11.2 - Droughts	2024-02-20	None	None	Restricted	Unknown	Moderat e	Tornabene et al. (2020) found that a frequently dewatered tributary provided poor spawning habitat and Acre et al. (2023) found that mismatches in temperature and discharge affected spawning cues for blue sucker in the Colorado River in Texas.; I generally estimated 20% of the population could be affected by drought because they mainly inhabit large rivers (e.g., Yellowstone River and Missouri River) and therefore are more likely to be negatively

							affected in the smaller rivers/tributaries that may be more susceptible to drought.