Harlequin Duck (*Histrionicus histrionicus*)
Conservation Status Rank Summary

October 21, 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	2024-10-21	S: 150524.9 km²	3.930	MTNHP Range Maps	None
Area of Occupancy	2024-10-21	1844 | 4km² cells	4.130	MTNHP Modeling	None
Number of Occurrences	2024-10-21	42	2.750	MTNHP Databases	None
Population Size			-		**Factor not used in ranking.**
# of Occurrences in Good Condition	2024-10-21		0.000		None
% of Area Occupied in Good Condition			-		**Factor not used in ranking.**
Environmental Specificity	2008-09-15	Narrow	-	MTNHP Species Rank Data Table	**Factor not used in ranking.** Mountain streams. | Methodology: NS (2003) | Original Score: B
Rarity is calculated by averaging weighted factor scores: **((3.93 × 1) + (4.13 × 2) + (2.75 × 1) + (0.00 × 2)) / 6 = 2.49**					
Trends					
Short-term Trend	2024-10-21		-		**Factor not used in ranking.**
Long-term Trend	2008-09-15		-0.140	MTNHP Species Rank Data Table	A number of streams surveyed relatively recently (1980s and 1990s) no longer have breeding pairs or the number of breeding pairs are reduced. | Methodology: NS (2003) | Original Score: D
Trends score is calculated by summing weighted short and long-term trend scores: **((-0.14 × 1)) = -0.14**					

Threats

Rank Factor	Date Assessed	Value	Score	Data Source	Comments
Threats					
Overall Threat Impact		Very high - high	[0.000, 1.830]		Climate change impacts to stream flow, human encroachment and activity on breeding streams
Intrinsic Vulnerability	2008-09-15	Moderately vulnerable	-	MTNHP Species Rank Data Table	**Factor not used in ranking.** Methodology: NS (2003) | Original Score: B
Threat score is calculated from Overall Threat Impact when available or Intrinsic Vulnerability if not: **([0.00, 1.83]) = [0.00, 1.83]**					

Individual Threats Data

Threat Category	Date Assessed	Impact Score	Scope	Severity	Immediacy	Comments
Human Intrusions & Disturbance	2024-10-21	High - Medium	Large	Serious-Moderate	High	Disturbance by boaters on rivers and streams. The ultimate scope and severity of this threat is unstudied and based on anecdotal observations of ducks avoiding boaters during the breeding period.
Climate Change & Severe Weather	2024-10-21	High	Pervasive	Serious	High	increase in the magnitude of flood events. These appear to have significant impacts on nest success during the breeding season.
Threat Tally: 0 - Very High, [1,2] - High, [0,1] - Medium, 0 - Low Overall Threat Impact* = Very high - 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: (2.49 × 70%) + Threats: ([0.00, 1.83] × 30%) + Trends: (-0.14) = [1.60, 2.15]

Calculated Rank: S2

Accepted Rank	S2B
Date Approved	2024-10-21
Approval Authority	Montana Species of Concern Committee
Rank Justification	Species is a summer breeding resident of swift-flowing streams and rivers across montane regions of western Montana. It has undergone declines over the past decades and the current trend of the population is unknown. It faces threats from increased flooding events during the nesting season and disturbance from recreational boating.

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=ABNJB15010

Predicted Suitable Habitat Model:
https://mtnhp.mt.gov/resources/models/?elcode=ABNJB15010

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 range and the historic occupancy of many breeding streams is well recorded. Recent trend in occupancy or abundance across the species range are not well studied. Threats are known but their scope and magnitude are uncertain.

Summary of Information Needs

A range-wide assessment of site occupancy and repeated surveys of select breeding streams is needed to determine short-term trend. Study of boating impacts and better quantification of impacts of flood events and the magnitude of risk this presents will better inform assessment of 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
Human Intrusions & Disturbance - 6.1 - Recreational Activities	2024-10-21	Dan Bachen	Expert Opinion	Large	Serious-Moderate	High	Disturbance by boaters on rivers and streams. The ultimate scope and severity of this threat is unstudied and based on anacdotal observations of ducks avoiding boaters during the breeding period.
Climate Change & Severe Weather - 11.4 - Storms & Flooding	2024-10-21	Dan Bachen	Glacier National Park monitoring data	Pervasive	Serious	High	increase in the magnitude of flood events. These appear to have significant impacts on nest success during the breeding season.