

Piping Plover (*Charadrius melodus*) Conservation Status Rank Summary

October 22, 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: 47067.1 km ²	3.930	MTNHP Range Maps	None
Area of Occupancy	2024-10-21	534 4km ² cells	4.130	MTNHP Modeling	None
Number of Occurrences	2024-10-21	28	2.750	MTNHP Databases	None
Population Size			-		Factor not used in ranking.
# of Occurrences in Good Condition	2024-10-22		0.000		None
% of Area Occupied in Good Condition			-		Factor not used in ranking.
Environmental Specificity	2009-02-06	Narrow	-	MTNHP Species Rank Data Table	Factor not used in ranking. Dependent on barren shoreline habitats. Methodology: NS (2003) Original Score: B
Rarity is calculated by averaging weighted factor scores: $((3.93 \times 1) + (4.13 \times 2) + (2.75 \times 1) + (0.00 \times 2)) / 6 = 2.49$					
Trends					
Short-term Trend	2024-10-22		-	Expert Opinion	Factor not used in ranking. No monitoring results published for the last decade.
Long-term Trend	2009-02-06		-0.140	MTNHP Species Rank Data Table	Barren sand and gravel beach habitats have declined significantly since European arrival. Species was widely hunted for feather trade after European arrival. Methodology: NS (2003) Original Score: D
Trends score is calculated by summing weighted short and long-term trend scores: $((-0.14 \times 1)) = -0.14$					

Threats

Rank Factor	Date Assessed	Value	Score	Data Source	Comments
Threats					
Overall Threat Impact		High	1.830		Altered hydrology, climate change, nest site disturbance, and nest predators from human commensals are probably the 3 greatest threats.
Intrinsic Vulnerability	2009-02-06	Not intrinsically vulnerable	-	MTNHP Species Rank Data Table	Factor not used in ranking. Methodology: NS (2003) Original Score: C
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
Energy Production & Mining	2024-10-22	Low	Restricted	Moderate	High	Development of oil and natural gas in proximity to breeding sites, risk of spills
Human Intrusions & Disturbance	2024-10-22	Medium	Pervasive	Moderate	High	Recreation on Ft Peck reservoir and the Missouri River leading to disturbance of nesting pairs
Natural System Modifications	2024-10-22	High	Pervasive	Serious	High	Damming of the Missouri River leading to ongoing changes in hydrology, loss of gravel bar habitat, decrease in prey abundance, more stable reservoir levels.
Climate Change & Severe Weather	2024-10-22	Low	Pervasive	Slight	High	Climate related factors are predicted to decrease population growth, but overall have little impact on future viability
Threat Tally: 0 - Very High, 1 - High, 1 - Medium, 2 - 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: $(2.49 \times 70\%)$ + Threats: $(1.83 \times 30\%)$ + Trends: (-0.14) = 2.15

Calculated Rank: S2

Accepted Rank	S2B
Date Approved	TBD
Approval Authority	Montana Species of Concern Committee
Rank Justification	Species is an uncommon to rare breeding resident within the Missouri river drainage along and downstream of Fort Peck Reservoir and within isolated areas of Northeast Montana. It is currently listed as Threatened under the Endangered Species Act due to historic declines. It faces ongoing threats from the altered hydrology of the Missouri River due to the Fort Peck Dam, and disturbance of nesting sites by recreationists. It faces lower level threats from oil and gas development and climate change.

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=ABNNB03070>

Predicted Suitable Habitat Model:

<https://mtnhp.mt.gov/resources/models/?elcode=ABNNB03070>

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

All data to assess status except for short-term trend are available.

Summary of Information Needs

Species has been monitored in the past, but current monitoring data appear to be unavailable. Given the species federal and state status, if these data are being collected they should be submitted to NHP or if not structured surveys following historic protocols should be implemented to assess change in abundance or continued site occupancy.

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
Energy Production & Mining - 3.1 - Oil & Gas Drilling	2024-10-22	Dan Bachen	USFWS 2016	Restricted	Moderate	High	Development of oil and natural gas in proximity to breeding sites, risk of spills
Human Intrusions & Disturbance - 6.1 - Recreational Activities	2024-10-22	Dan Bachen	USFWS 2016	Pervasive	Moderate	High	Recreation on Ft Peck reservoir and the Missouri River leading to disturbance of nesting pairs
Natural System Modifications - 7.2 - Dams & Water Management/Use	2024-10-22	Dan Bachen	USFWS 2016	Pervasive	Serious	High	Damming of the Missouri River leading to ongoing changes in hydrology, loss of gravel bar habitat, decrease in prey abundance, more stable reservoir levels.
Climate Change & Severe Weather - 11.1 - Habitat Shifting & Alteration	2024-10-22	Dan Bachen	Swift et al. 2023	Pervasive	Slight	High	Climate related factors are predicted to decrease population growth, but overall have little impact on future viability