

Spiny Softshell (*Apalone spinifera*) Conservation Status Rank Summary

January 2, 2025

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	2025-01-02	Y: 44358.8 km ²	3.930	MTNHP Range Maps	None
Area of Occupancy	2025-01-02	1685 1km ² cells	3.440	MTNHP Modeling	1684 km of occupied rivers
Number of Occurrences	2025-01-02	26	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	2018-05-03	Narrow	-	MTNHP Species Rank Data Table	Factor not used in ranking. Species is highly aquatic and is dependent on medium to large rivers that have sand/gravel bars and islands that can be used for nesting. These sand/gravel bars are probably a limiting factor, but are still reasonably common. Methodology: NS (2003) Original Score: B
Rarity is calculated by averaging weighted factor scores: $((3.93 \times 1) + (3.44 \times 2) + (2.75 \times 1)) / 4 = 3.39$					
Trends					
Short-term Trend	2025-01-02		-	MTNHP Data	Factor not used in ranking. No data on trends available
Long-term Trend	2018-05-03		-0.140	MTNHP Species Rank Data Table	Damming of the Missouri River may have eliminated significant habitat and created isolated populations in the Missouri and Yellowstone River drainages. 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		Medium	3.670		None
Intrinsic Vulnerability	2018-05-03	Highly vulnerable	-	MTNHP Species Rank Data Table	Factor not used in ranking. Species has a very high age of maturity, and although a moderate number of eggs are produced relatively few young make it through their first winter. Methodology: NS (2003) Original Score: A
Threat score is calculated from Overall Threat Impact when available or Intrinsic Vulnerability if not: (3.67) = 3.67					

Individual Threats Data

Threat Category	Date Assessed	Impact Score	Scope	Severity	Immediacy	Comments
Biological Resource Use	2025-01-02	Low	Pervasive	Slight	High	Species is commonly captured by anglers. While many apparently release captured individuals, it is apparently common to cut the line leaving the hook in the mouth, which may impact fitness of these individuals. Impacts to populations are uncharacterized.
Human Intrusions & Disturbance	2025-01-02	Medium	Pervasive	Moderate	High	Species can be directly impacted by disturbance at basking sites by boaters and other recreationists along the shoreline of rivers. They are also vulnerable to being hit by boat propellers. Impacts to populations are unknown but may be slight to moderate.
Natural System Modifications	2025-01-02	Low	Restricted	Moderate	High	As the species nests on gravel bars, hydrological changes to dammed rivers may impact suitability of habitat.
Threat Tally: 0 - Very High, 0 - High, 1 - Medium, 2 - Low Overall Threat Impact* = Medium						

*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: $(3.39 \times 70\%)$ + Threats: $(3.67 \times 30\%)$ + Trends: (-0.14) = 3.33

Calculated Rank: S3

Accepted Rank	S3
Date Approved	Date Unknown
Approval Authority	Legacy Assessment: MTNHP Staff
Rank Justification	Species is uncommon along river systems east across central and eastern Montana. The current population trend is unknown. It faces threats from ongoing impacts of damming of some of these systems which alter the historic flood periods as well as impacts from disturbance by recreational activities such as boating and fishing.

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=ARAAG01030>

Predicted Suitable Habitat Model:

<https://mtnhp.mt.gov/resources/models/?elcode=ARAAG01030>

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

Data to assess status are generally available, but threat impacts are poorly described, and short-term trend is unknown.

Summary of Information Needs

Further exploration of both short-term trend and threat impacts are necessary to improve the quality of this species rank. As the species is uncommon and has several documented threats, quantifying how these threats impact the species is necessary. Establishing a monitoring program to determine population trend should also be considered.

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
Biological Resource Use - 5.4 - Fishing & Harvesting Aquatic Resources	2025-01-02	Dan Bachen	Tornabene 2014	Pervasive	Slight	High	Species is commonly captured by anglers. While many apparently release captured individuals, it is apparently common to cut the line leaving the hook in the mouth, which may impact fitness of these individuals. Impacts to populations are uncharacterized.
Human Intrusions & Disturbance - 6.1 - Recreational Activities	2025-01-02	Dan Bachen	Tornabene 2014, Expert Opinion	Pervasive	Moderate	High	Species can be directly impacted by disturbance at basking sites by boaters and other recreationists along the shoreline of rivers. They are also vulnerable to being hit by boat propellers. Impacts to populations are unknown but may be slight to moderate.
Natural System Modifications - 7.2 - Dams & Water Management/Use	2025-01-02	Dan Bachen	Tornabene 2014, NHP Data	Restricted	Moderate	High	As the species nests on gravel bars, hydrological changes to dammed rivers may impact suitability of habitat.