# Great Blue Heron (*Ardea herodias*)
# Conservation Status Rank Summary

December 12, 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** | 2024-10-04 | S: 380530.8 km² | 4.710 | MTNHP Range Maps | None |
| Area of Occupancy | | | - | | **Factor not used in ranking.** |
| **Number of Occurrences** | 2024-10-04 | 782 | 5.500 | MTNHP Databases | None |
| Population Size | | | - | | **Factor not used in ranking.** |
| **# of Occurrences in Good Condition** | 2024-12-12 | | 3.300 | | None |
| % of Area Occupied in Good Condition | | | - | | **Factor not used in ranking.** |
| Environmental Specificity | 2011-12-22 | Narrow | - | MTNHP Species Rank Data Table | **Factor not used in ranking.** Narrow Specialist. Dependent on large mature stands of riparian cottonwoods for nesting colonies. \| Methodology: NS (2003) \| Original Score: B |
| Rarity is calculated by averaging weighted factor scores: **( (4.71 × 1) + (5.50 × 1) + (3.30 × 2) ) / 4 = 4.20** | | | | | |
| **Trends** | | | | | |
| **Short-term Trend** | 2024-12-12 | | 0.000 | | None |
| **Long-term Trend** | 2011-12-22 | | -0.070 | MTNHP Species Rank Data Table | Deciduous and mixed deciduous riparian forests have been relatively stable since European arrival. \| Methodology: NS (2003) \| Original Score: E |
| Trends score is calculated by summing weighted short and long-term trend scores: **( (0.00 × 2) + (-0.07 × 1) ) = -0.07** | | | | | |

# Threats

| Rank Factor | Date Assessed | Value | Score | Data Source | Comments |
|---|---|---|---|---|---|
| **Threats** | | | | | |
| **Overall Threat Impact** | | High | 1.830 | | Loss of cottonwood forests due to altered hydrology and grazing. |
| **Intrinsic Vulnerability** | 2011-12-22 | Moderately vulnerable | - | MTNHP Species Rank Data Table | **Factor not used in ranking.** Moderately Vulnerable. Species exhibits moderate age of maturity, frequency of reproduction, and/or fecundity such that populations generally tend to recover from decreases in abundance within 5-20 years or 2-5 generations. Species has good dispersal capabilities such that extirpated populations generally become reestablished through natural recolonization. \| Methodology: NS (2003) \| Original Score: B |
| 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 |
|---|---|---|---|---|---|---|
| **Residential & Commercial Development** | 2026-03-09 | Low | Small | Slight | High | Housing and subdivision development along major rivers could eliminate large cottonwoods or disturb heron rookeries. |
| **Agriculture & Aquaculture** | None | High | Large | Serious | High | Multiple Level 2 threats - see Additional Threat Details below. |
| **Human Intrusions & Disturbance** | 2026-03-09 | Low | Restricted | Slight | High | River recreationists may disturb rookeries and increase potential for nest abandonment or nest predation by Bald Eagles if adults flush. |
| **Natural System Modifications** | 2024-12-12 | Low | Restricted | Moderate | High | Ongoing impacts of dams on cottonwood recruitment and general riparian forest health leading to a loss of these forests |
| **Invasive & Other Problematic Species, Genes & Diseases** | 0026-03-09 | Low | Restricted | Slight | High | Increasing Bald Eagle populations increase depredation on heron nests |
| **Climate Change & Severe Weather** | 2026-03-09 | Low | Small | Slight | Moderate | Severe weather events (i.e. violent storms/high wind) could bring down dead and dying cottonwoods. This could accelerate the loss of nest trees more quickly that natural succession. |
| Threat Tally: 0 - Very High, 1 - High, 0 - Medium, 5 - Low<br>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: (4.20 × 70%) + Threats: (1.83 × 30%) + Trends: (-0.07) = 3.42

Calculated Rank: S3

| | |
|---|---|
| **Accepted Rank** | S3 |
| **Date Approved** | 2009-05-01 |
| **Approval Authority** | Montana Species of Concern Committee |
| **Rank Justification** | Species is common to uncommon across much of the state and nests in colonies which are less common on the landscape. Trend is uncertain, with previous evidence of declines in the early 2010s, but more recent evidence of stability or possibly increasing populations. Threats include loss of forests along rivers that support rookeries due to agricultural conversion and the altered hydrology of systems leading to a lack of cottonwood recruitment. |

## 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=ABNGA04010

Predicted Suitable Habitat Model:
https://mtnhp.mt.gov/resources/models/?elcode=ABNGA04010

# 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 species status are generally available, but short-term trend is available but uncertain.

Summary of Information Needs

Clarity on the species current trend are necessary to inform the status rank. Independent of any apparent change in habitat over the last decade, assessments of the species trend have gone from moderate decline to moderate increase. More research on this is needed to determine the validity of the current trend. Additionally, trend in rookeries should be considered to explore if trend in birds observed is equivalent to trend in nests.

# 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 |
|---|---|---|---|---|---|---|---|
| **Residential & Commercial Development - 1.1 - Housing & Urban Areas** | 2026-03-09 | Dan Bachen | SWAP Assessment | Small | Slight | High | Housing and subdivision development along major rivers could eliminate large cottonwoods or disturb heron rookeries. |
| **Agriculture & Aquaculture - 2.1 - Annual & Perennial Non-Timber Crops** | 2024-12-12 | Dan Bachen | Expert Opinion | Large | Serious | High | Removal of riparian forest for agriculture is a high threat for the species. Floodplains along rivers are often privately owned and well suited for row crop agriculture or hay production. |
| **Agriculture & Aquaculture - 2.3 - Livestock Farming & Ranching** | 2026-03-09 | Dan Bachen | SWAP Assessment | Large | Moderate | Moderate | Overgrazing by cattle can degrade riparian habitat, limit recruitment of new cottonwood trees and other vegetation. |
| **Biological Resource Use - 5.1 - Hunting & Collecting Terrestrial Animals** | 0026-03-09 | Dan Bachen | SWAP Assessment | Negligible | Slight | High | Legal, permitted take at airports and fish hatcheries |
| **Human Intrusions & Disturbance - 6.1 - Recreational Activities** | 2026-03-09 | Dan Bachen | SWAP Assessment | Restricted | Slight | High | River recreationists may disturb rookeries and increase potential for nest abandonment or nest predation by Bald Eagles if adults flush. |
| **Natural System Modifications - 7.2 - Dams & Water Management/Use** | 2024-12-12 | Dan Bachen | Expert opinion | Restricted | Moderate | High | Ongoing impacts of dams on cottonwood recruitment and general riparian forest health leading to a loss of these forests |
| **Invasive & Other Problematic Species, Genes & Diseases - 8.2 - Problematic Native Species/Diseases** | 0026-03-09 | Dan Bachen | SWAP Assessment | Restricted | Slight | High | Increasing Bald Eagle populations increase depredation on heron nests |
| **Climate Change & Severe Weather - 11.4 - Storms & Flooding** | 2026-03-09 | Dan Bachen | SWAP Assessment | Small | Slight | Moderate | Severe weather events (i.e. violent storms/high wind) could bring down dead and dying cottonwoods. This could accelerate the loss of nest trees more quickly that natural succession. |