



Photo by  
Michael  
Chapman

## Citizen science guide to the **GREAT BLUE HERON, *Ardea herodias***

The Great Blue Heron is North America's largest heron and a Montana avian species of concern. While herons nest in colonies, or rookeries, along major waterways, often in mature cottonwood galleries, Breeding Bird Survey data indicates that populations have declined every year from 1966 to 2015. A number of factors may be affecting the population's decline, including the decline of riparian cottonwood stands, increased urban sprawl and human disturbance, or changing conditions of the waterway. As conditions change, it is not uncommon for herons to abandon their nests and establish elsewhere. As a result, they may move to more remote and undisturbed areas making population monitoring difficult. To better track this iconic species, Montana Audubon has partnered with the Montana Natural Heritage Program to improve and support greater statewide inventory and monitoring.



A distant rookery, by Janice Miller

- Nesting is colonial: rookeries contain few to dozens of nests
- Nests are large: ~3-4' across and 1-2' deep
- Nests high in the canopy, rarely on wetland islands
- Nests primarily in cottonwoods or ponderosa pine



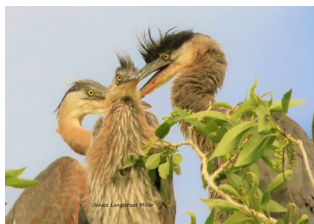
Juvenile herons, by Janice Miller

**Species Description:** The Great Blue Heron is large and majestic with a slate-gray to blue body, long sinuous neck, yellow bill, and striking black eyebrow that extends back to long plumes emerging from its crown. Very tall, and with an average wingspan of 6', the adult stands at a striking 3', though weighs only 5-6 pounds. In flight, wingbeats are slow, and wings are held slightly arched, while the neck may be extended or held close to the body. In flight, the blue of the back contrasts with darker toned flight feathers. Overall the blue color and large stature are unique, making the bird unmistakable. Herons are well adapted to their water-based habitats: Their long legs allow them to hunt in deep water or along shallow shores, and their special neck vertebra allows the neck to curl into an "S" shape for a quick strike at prey. Their diverse diet consists of fish, amphibians, reptiles, or small mammals. Nestlings grow quickly and may be visible as early as three weeks after hatching (see image below).

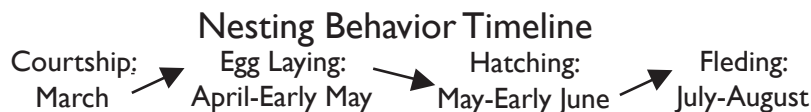


### Courtship behavior

- chest puffing & bill dualing
- exchange of nesting material
- shared nest building (up to 2 weeks!)
- shared preening

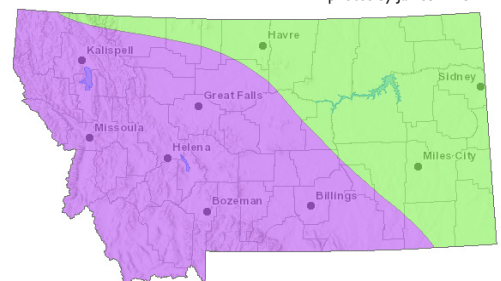


Courtship and Nesting  
photos by Janice Miller



To participate, please contact:

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Year-round

Summer



## Citizen Science guide to the GREAT BLUE HERON Survey Protocol



### Protocol

- This survey is designed to determine occupancy and distribution of Great Blue Heron rookeries in Montana by visiting historic and newly found rookeries, and estimating both nest occupancy and adult heron numbers. Surveys take place from May 1 through June 30, during daylight hours (preferably morning hours, avoiding the heat of the day). Monitoring after May will reduce our disturbance to birds during early nesting and egg-laying phases. Once on-site, each rookery survey takes 1 hour.
- Work with Montana Audubon staff to choose a rookery survey location. Sites exist state-wide and are chosen based on access, data needs, and site management/ownership.
- Surveys can be conducted in most weather conditions, even light drizzle or intermittent rain, but nothing more severe. Counts can be estimated from inside a vehicle, during bad weather, if visibility is uncompromised.
- Before conducting your survey, give yourself adequate time to find an observation point with good visibility. When doing this, look for nests or herons that may be hidden due to dense foliage. Pay close attention to deep or big nests as there may be a heron that is incubating. Some rookeries are accessed via a dirt road or may have multiple vantage points of variable quality. Always be careful to avoid private property.
- Minimize rookery disturbance: stay at least 300 meters from the rookery when on foot, and at least 200m when surveying from the road-side. Herons are very sensitive to human disturbance. Watch the bird's behavior – if they act disturbed (alarm calling, adults flushing or moving around when incubating or feeding) move further away.
- Bring binoculars, and a scope if possible. Though large, it can be hard to count nests high in the canopy.

### At each rookery observation site, using the Heritage Obs. Collector 2.0 on Survey 123:

- Record the **Observer's name**. The **Date and time** are automatically recorded. Start and **End date** are the same.
- Use the Survey 123 map to record the **Location of organisms**, i.e. the rookery. If you have high confidence in the rookery location, record **Spatial precision** as '50m'. **\*\*NOTE:** If you cannot map the rookery location, record your **Survey location** as the **Location of organisms**; Record Spatial precision as the estimated distance to the rookery. **Spatial precision** should be greater than 200 or 300m).
- Record **Habitat notes**. Indicate the dominant tree species in the rookery (e.g cottonwoods, ponderosa, Russian olive, etc.), keeping in mind nests can be in standing dead timber. Describe the vegetative structure. Things like: Have the leaves emerged? Is the foliage obstructing the observation of the rookery? Are there multiple ages of trees present? Do beavers or pests seem to be taking a toll on the local trees?
- Add a **Location description** for the location you are observing from (e.g a road pullout on I-90). Make this detailed enough so that another observer can find that same location at a future time.
- In the **Taxonomic group** drop-down menu scroll to 'Structured Surveys'. For the **Survey taxa group** select 'Bird'.
- For **Survey protocol** select 'B - Great Blue Heron Rookery'.
- Indicate your **Mapped location type** as an **exact** or **approximate** rookery or survey location.
- Record the Total number of nests that can be seen in the colony, regardless of activity level. **\*\*NOTE** – even if birds are not present at the rookery, a 'nest only' observation can be recorded.
- Record **Active heron nests**. A nest is considered active when: there is fresh white-wash on the edge of the nest, adults are on or directly next to the nest, an adult is incubating, or nestlings or juveniles are present in the nest. Large nestlings can be seen in the nest at ~3 weeks old.
- At this point, the 1-hour survey begins. Set a 15- minute timer and restart the timer for each increment.
- Record the **Highest # of adults** seen each 15-minute increment of the survey under each of four boxes labeled **Highest # of adults 0-15**, etc. Then record the **Maximum adult heron count** for the 1 hour survey.
- If juveniles are present, record **Number of juveniles** for the entire survey.
- Record any **Survey Comments** (e.g interesting behaviors such as: pair bonding or mating, nest building, a nest exchange of incubating adults, young fighting or exercising their wings, etc.).
- Collect a **Photo of survey location**, including habitat features, for each rookery. This can be done directly with your phone or uploaded later. More than one photo can be included.