

# GREAT BLUE HERON - ARDEA HERODIAS

**Taxonomy:** Kingdom: Animalia Phylum: Chordata Class: Aves Order: Pelecaniformes Family: Ardeidae Genus: Ardea  
Species: A. herodias

## **Habitat:**

**Biomes:** Great Blue Herons live in both freshwater and saltwater habitats, and also forage in grasslands and agricultural fields, where they stalk frogs and mammals. Most breeding colonies are located within 2 to 4 miles of feeding areas, often in isolated swamps or on islands, and near lakes and ponds bordered by forests.

## **Distribution:**

**In US:** Common near the shores of open water and in wetlands over most of North America and Central America, as well as the Caribbean and the Galápagos Islands. It is a rare vagrant to coastal Spain, the Azores, and areas of far southern Europe. An all-white population found only in south Florida and the Florida Keys is known as the great white heron.

**In Other Countries:** ^^^^^

**Holistic Description:** Whether poised at a river bend or cruising the coastline with slow, deep wingbeats, the Great Blue Heron is a majestic sight. This stately heron with its subtle blue-gray plumage often stands motionless as it scans for prey or wades belly deep with long, deliberate steps. They may move slowly, but Great Blue Herons can strike like lightning to grab a fish or snap up a gopher. In flight, look for this widespread heron's tucked-in neck and long legs trailing out behind.

**Species Richness:** 5 SUBSPECIES

**Population Dynamic:** NONE

## **Evolution and Systematics:**

**Evolution:** Large herons referable to the living genus Ardea have been in existence since the middle Miocene and probably before, although the phylogenetic relationships of fossil species to living species is still not clear.

**Systematics:** Subspecific variation is contentious, given Oberholser's recognition of ten subspecies and both Palmer's and Hancock and Elliot's support for at least seven subspecies. Yet Payne recognized just four subspecies, although he provided few data to support his treatment. Dickerman's comprehensive revision concluded there were four subspecies in North America; his conclusions are followed herein. He did not consider A. h. cognata, but it is recognized here tentatively. That subspecies is said to differ from A. h. wardi slightly in bill and wing measurements, but it may not be diagnosably distinct; more data are needed.

**Number of Species:** 5 SUBSPECIES

**Number of Genera:** 5 SUBSPECIES

## **Physical Characteristics:**

**Size and Length:** Length: 38.2-53.9 in (97-137 cm) Weight: 74.1-88.2 oz (2100-2500 g)

**Wingspan:** 65.8-79.1 in (167-201 cm)

**Coloration:** Great Blue Herons appear blue-gray from a distance, with a wide black stripe over the eye. In flight, the upper side of the wing is two-toned: pale on the forewing and darker on the flight feathers. A pure white subspecies occurs in coastal southern Florida.

**General Body Features:** Largest of the North American herons with long legs, a sinuous neck, and thick, daggerlike bill. Head, chest, and wing plumes give a shaggy appearance. In flight, the Great Blue Heron curls its neck into a tight "S" shape; its wings are broad and rounded and its legs trail well beyond the tail.

**Special Features of the Body:** NONE

**Special Features of the Head and Sensory Organs:** The ability of Great Blue Herons to strike at prey with incredible speed is due to the structure of their neck bones. A modification of the sixth cervical vertebrae allows the bird to draw its neck into an S shape and then shoot its head and bill forward with lightening speed. Their bill is adapted for probing, grasping, and on occasion spearing prey.

**Dentition:** Beak/Lamellae/Gizzard

**Special Features of the Limbs and Digits:** This adaptation combined with long legs and a long neck allows these herons to forage successfully in a variety of aquatic environments and on an extensive menu of prey. Serrated talons are useful in preening.

**Any Special Internal Anatomy:** Herons have large wing spans, also used in hunting. Flicking the wings back and forth, extending and retracting, and raising and lowering the wings stirs prey into activity. Wings are obviously used in low flight forays, catching insects and hovering and diving. Other adaptations of the heron in hunting are its large eyes, which give it binocular vision and its S-shaped neck for greater striking strength.

**Sexual Dimorphisms:** Males are slightly larger than females, but no further sexual dimorphism exists in this species.

*Differences Between Juvenile Stage and Adult:* Juvenile great blue herons have darker plumage overall. They have a dark crown and feature significantly darker coloration on their face and neck.. Young herons lack the long, thin plume feathers of adults. Their necks are heavily streaked with dark gray which may extend through the chest and belly as well.

#### **Behavior:**

*Diurnal, Nocturnal, or Crepuscular:* Diurnal

*Activity:* Great Blue Herons forage, usually alone, across much of the U.S. This largest of the North American herons wades slowly or stands stock still, peering into the water for prey. In flight the Great Blue Heron folds its neck into an “S” shape and trails its long legs behind, dangling them as it prepares to land or when courting. Breeding birds nest in colonies that can number several hundred pairs, where they build stick nests in trees, on bushes, or on the ground. If you visit a colony, look for elaborate courtship and pair-bonding displays that include a ritualized greeting, stick transfers, and nest relief ceremony in which the birds erect their plumes and “clapper” their bill tips. Pairs are mostly monogamous during a season, but they choose new partners each year. Away from the colony, Great Blue Herons defend feeding territories from other herons with dramatic displays in which the birds approach intruders with their head thrown back, wings outstretched, and bill pointing skyward. Gulls and even humans may also be a target of this defensive maneuver.

*Locomotion:* Walks erect with long strides and wades in water, often up to its belly or nearly so; spreads its toes as the foot is placed on the ground. Folds its neck in an S-shape and extends its legs along the body axis on long flights. Neck is extended and legs are dangled when preparing to land, when chasing other herons, when startled. Flies with deep, slow wingbeats at 2.3 to 3.2 beats/s; flight speed 30 to 46 km/h. Can soar to great heights and occasionally glides, and is capable of evasive maneuvers when pursued.

*Communication and Perception:* Great Blue Herons are most vocal on the breeding grounds, where they greet their partner with squawking roh-roh-rohs in a “landing call” when arriving at the nest. A disturbance can trigger a series of clucking go-go-gos, building to a rapid fawnk squawk that can last up to 20 seconds. If directly threatened, birds react with a screaming awk lasting just over 2 seconds. Chicks give a tik-tik-tik call within minutes of hatching.

*Home Range:* Adult Great Blue Herons defend territories along rivers, creeks, mudflats, and lografts during the day and at night. Territories are maintained by displays, threats, and chases. Territorial herons rest in exposed sites from where they display and launch chases of approaching herons.

*Degree of Sociality:* Great Blue Herons forage alone or in loose flocks throughout the year. They roost alone or in loose flocks, on the ground during the day and above ground at night. The hypothesis that colonies serve as information centres for location of food patches is not well supported.

*Level of Aggression:* Individual Great Blue Herons erect their crests and fly toward conspecifics that approach within about 2 m of nests and nest sites. They also jab such intruders with their bills during courtship, and thrust their bills at herons that approach nests after eggs are laid.

*Migration:* Partial migrant. Great Blue Herons generally move away from the northern edge of their breeding range in winter, with some flying as far south as the Caribbean. Populations in the Pacific Northwest and south Florida are present year-round.

#### **Predators:**

*Predators:* Bald Eagles, Common Ravens, American Crows, Raccoons, Bears, Turkey Vultures, Red-tailed Hawks, Fire Ants, Humans, Eagles, Harris’s Hawk.

*Anti-Predator Defenses:* NONE

#### **Diet and Nutrition:**

*Adult Diet:* Great Blue Herons eat nearly anything within striking distance, including fish, amphibians, reptiles, small mammals, insects, and other birds. They grab smaller prey in their strong mandibles or use their dagger-like bills to impale larger fish, often shaking them to break or relax the sharp spines before gulping them down.

*Juvenile Diet:* NONE

*Special Adaptations for Getting Prey:* CHECK SPECIAL FEATURES

#### **Reproduction:**

*Mode of Reproduction:* Monogamous

*Mating System:* Great Blue Herons are mostly monogamous. One study concluded that most birds choose new mates each year.

*Mating Season:* March to June

*Courtship:* Elaborate courtship displays that have variation among individuals and in the sequence of displays. (Stretch, Snap, Wing Preen, Circle Flights, Landing Call, Twig Shake, Crest Raising, Fluffed Neck, Upright Display, Arched Neck, Forward Display, Bill Duels, and Bill Clapping)

**Territoriality:** HOME RANGE

**Mating:** For Great Blue Herons, copulation occurs mostly in the morning and evening because females generally are away from nests at midday. Few or no displays occur with copulation, which occurs mostly on the nest. During copulation, the male places one foot gently in the centre of the female's back. The female leans forward, bends her ankles slightly, and holds her wings slightly away from her sides. The male then grasps the female's humeri with his toes and lowers himself onto his tarsi, often while flapping his wings. The female then moves her rectrices to one side while the male wags his lowered tail over her cloaca. The male grasps her head or neck while copulating, then steps off the female. Extra-pair copulations are considered to occur only rarely.

**Nesting:** Great Blue Herons nest mainly in trees, but will also nest on the ground, on bushes, in mangroves, and on structures such as duck blinds, channel markers, or artificial nest platforms. Males arrive at the colony and settle on nest sites; from there, they court passing females. Colonies can consist of 500 or more individual nests, with multiple nests per tree built 100 or more feet off the ground. Male Great Blue Herons collect much of the nest material, gathering sticks from the ground and nearby shrubs and trees, and from unguarded and abandoned nests, and presenting them to the female. She weaves a platform and a saucer-shaped nest cup, lining it with pine needles, moss, reeds, dry grass, mangrove leaves, or small twigs. Nest building can take from 3 days up to 2 weeks; the finished nest can range from a simple platform measuring 20 inches across to more elaborate structures used over multiple years, reaching 4 feet across and nearly 3.5 feet deep. Ground-nesting herons use vegetation such as salt grass to form the nest.

**Egg-Laying:** Clutch Size: 2-6 eggs Number of Broods: 1-2 broods Egg Length: 2.4-3.0 in (6.1-7.6 cm) Egg Width: 1.8-2.0 in (4.5-5 cm) Incubation Period: 27-29 days Nestling Period: 49-81 days Egg Description: Pale blue, fading slightly with age.

**Hatching and Incubation/Gestation:** Bluish eyes open, chick covered in pale gray down, able to vocalize. Semi-altricial; back, head, and sides of chicks are covered in pale gray down that is especially bushy on the crown. Wings, bill, and legs are pinkish gray and mostly unfeathered. Eyes are bluish and open. Calling (sounds like tik-tik-tik) commences within minutes of leaving the egg.

**Development:** NONE

**Parental Care:** Both parents brood nestlings; begins immediately after hatching and lasts 3 to 4 wk. Both parents feed chicks. Newly hatched chicks have been seen to peck at an adult's bill, the nest, and each other. When arriving to feed chicks, an adult stands on the rim of the nest and places/regurgitates food into the open bill of the chicks.

**Lifespan:** Around 15 years.

**Conservation:**

**Official Federal Status:** Least Concern

**Special Statuses in Individual States:** NONE

**Threats:** Great Blue Heron numbers are stable and increased in the U.S. between 1966 and 2014, according to the North American Breeding Bird Survey. However, notable population declines have occurred in some areas, particularly in the “great white heron” group in southern Florida, where elevated mercury levels in local waterways may be a factor. The North American Waterbird Conservation Plan estimates a continental population of 83,000 breeding birds, and rates the species an 8 out of 20 on the Continental Concern Score. The Great White form of Great Blue Heron is on the 2014 State of the Birds Watch List, which lists birds that are at risk of becoming threatened or endangered without conservation action. Great Blue Herons can be found throughout the year all over North America, though most populations in Canada are present only during the breeding season, and most populations in Mexico are only present during the winter. Because Great Blue Herons depend on wetlands for feeding and on relatively undisturbed sites for breeding, they are vulnerable to habitat loss and to impacts such as traffic, logging, motorboats, and other human intrusions that can disrupt nesting colonies. Other threats include chemical pollutants or other causes of reduced water quality. Although contaminant levels have declined in many areas, pollutants such as PCBs and DDT and newer types of industrial chemicals continue to affect heron habitats and can contribute to factors such as reduced nest site attendance.

**Conservation Efforts:** ^^^^

**Extra Facts:**

1. Despite their impressive size, Great Blue Herons weigh only 5 to 6 pounds thanks in part to their hollow bones—a feature all birds share.
2. Great Blue Herons in the northeastern U.S. and southern Canada have benefited from the recovery of beaver populations, which have created a patchwork of swamps and meadows well-suited to foraging and nesting.
3. Along the Pacific coast, it's not unusual to see a Great Blue Heron poised atop a floating bed of kelp waiting for a meal to swim by.

4. The white form of the Great Blue Heron, known as the "great white heron," is found nearly exclusively in shallow marine waters along the coast of very southern Florida, the Yucatan Peninsula, and in the Caribbean. Where the dark and white forms overlap in Florida, intermediate birds known as "Wurdeemann's herons" can be found. They have the body of a Great Blue Heron, but the white head and neck of the great white heron.
5. Great Blue Herons have specialized feathers on their chest that continually grow and fray. The herons comb this "powder down" with a fringed claw on their middle toes, using the down like a washcloth to remove fish slime and other oils from their feathers as they preen. Applying the powder to their underparts protects their feathers against the slime and oils of swamps.
6. Great Blue Herons can hunt day and night thanks to a high percentage of rod-type photoreceptors in their eyes that improve their night vision.
7. Great Blue Herons congregate at fish hatcheries, creating potential problems for the fish farmers. A study found that herons ate mostly diseased fish that would have died shortly anyway. Sick fish spent more time near the surface of the water where they were more vulnerable to the herons.
8. The oldest recorded Great Blue Heron was found in Texas when it was at least 24 years, 6 months old.
9. Thanks to specially shaped neck vertebrae, Great Blue Herons can quickly strike prey at a distance.

**Notable Species:**

1. *A. h. herodias* Linnaeus, 1758, most of North America, except as below
2. *A. h. fannini* Chapman, 1901, the Pacific Northwest from southern Alaska south to Washington; coastal
3. *A. h. wardi* Ridgway, 1882, Kansas and Oklahoma to northern Florida, sightings in southeastern Georgia
4. *A. h. occidentalis* Audubon, 1835, southern Florida, Caribbean islands, formerly known as a separate species, the great white heron
5. *A. h. cognata* Bangs, 1903, Galápagos Islands