

# GOLDEN EAGLE - AQUILA CHRYSAETOS

**Taxonomy:** Kingdom: Animalia Phylum: Chordata Class: Aves Order: Accipitriformes Family: Accipitridae Genus: Aquila  
Species: A. chrysaetos

## **Habitat:**

**Biomes:** Golden Eagles live in open and semiopen country featuring native vegetation across most of the Northern Hemisphere. They avoid developed areas and uninterrupted stretches of forest. They are found primarily in mountains up to 12,000 feet, canyonlands, rimrock terrain, and riverside cliffs and bluffs. Golden Eagles nest on cliffs and steep escarpments in grassland, chaparral, shrubland, forest, and other vegetated areas.

## **Distribution:**

**In US:** These majestic birds range from Mexico through much of western North America as far north as Alaska; they also appear in the east but are uncommon. Golden eagles are also found in Asia, northern Africa, and Europe. Some golden eagles migrate, but others do not—depending on the conditions of their geographic location. Alaskan and Canadian eagles typically fly south in the fall, for example, while birds that live in the western continental U.S. tend to remain in their ranges year-round.

**In Other Countries:** Europe, Asia, North Africa, Siberia, Turkey, Israel, Saudi Arabia, Yemen, Oman, Afghanistan, Himalayas, China, Korea, Japan, Egypt, Ethiopia.

**Holistic Description:** The Golden Eagle is one of the largest, fastest, nimblest raptors in North America. Lustrous gold feathers gleam on the back of its head and neck; a powerful beak and talons advertise its hunting prowess. You're most likely to see this eagle in western North America, soaring on steady wings or diving in pursuit of the jackrabbits and other small mammals that are its main prey. Sometimes seen attacking large mammals, or fighting off coyotes or bears in defense of its prey and young, the Golden Eagle has long inspired both reverence and fear.

**Species Richness:** 6 SUBSPECIES

**Population Dynamic:** CHECK THREATS

## **Evolution and Systematics:**

**Evolution:** Pleistocene records of Golden Eagle in North America for Oregon, California, Nevada, New Mexico, Texas, Utah, and Mexico. Remains also found at archaeological sites inhabited by prehistoric Native Americans in Utah and New Mexico.

**Systematics:** Of 5 or 6 subspecies worldwide, only one occurs in North America: A. c. canadensis. No information on geographic or genetic variation within the North American subspecies. Individuals from ne. Asia may be the same subspecies, but are larger (female wing 690 vs. 650 mm for North America) and may represent a distinct subspecies, A. c. kamtschatica.

**Number of Species:** 6 SUBSPECIES

**Number of Genera:** 6 SUBSPECIES

## **Physical Characteristics:**

**Size and Length:** Length: 27.6-33.1 in (70-84 cm) Weight: 105.8-216.1 oz (3000-6125 g)

**Wingspan:** 72.8-86.6 in (185-220 cm)

**Coloration:** Adult Golden Eagles are dark brown with a golden sheen on the back of the head and neck. For their first several years of life, young birds have neatly defined white patches at the base of the tail and in the wings.

**General Body Features:** Golden Eagles are one of the largest birds in North America. The wings are broad like a Red-tailed Hawk's, but longer. At distance, the head is relatively small and the tail is long, projecting farther behind than the head sticks out in front.

**Special Features of the Body:** Rather than flying and striking quickly, like other birds of prey, eagles soar slowly above the ground, utilizing natural air currents. Extremely large wingspans -- sometime more than 7 1/2 feet -- allow them to easily catch the currents and drift through the air. This conserves a lot of energy, meaning they can stay up in the air looking for prey for a longer amount of time before tiring.

**Special Features of the Head and Sensory Organs:** Eagles also have a bony ridge above their eyes that minimizes glare from the sun. These adaptations greatly improve their hunting ability, helping them to find all the food they need.

**Dentition:** BEAK/LAMELLAE/GIZZARD

**Special Features of the Limbs and Digits:** Golden eagles use their agility and speed combined with powerful feet and massive, sharp talons to snatch up a variety of prey, mainly hares, rabbits, and marmots and other ground squirrels.

**Any Special Internal Anatomy:** In addition to talons, they use their sharp, pointed beaks to tear into and eat their meals. Their beaks are tough enough to tear and eat the flesh of larger prey bite by bite. When they catch a smaller dinner, they'll eat it in one sitting, but they'll regurgitate its bones and other indigestible parts.

**Sexual Dimorphisms:** Females are larger than males, with a bigger difference in larger subspecies. Females of the large Himalayan golden eagles are about 37% heavier than males and have nearly 9% longer wings, whereas in the smaller Japanese golden eagles, females are only 26% heavier with around 6% longer wings.

**Differences Between Juvenile Stage and Adult:** Juvenile golden eagles are similar to adults but tend to be darker, appearing black on the back especially in East Asia. They have a less faded colour. Young birds are white for about two-thirds of their tail length, ending with a broad, black band. Occasionally, juvenile eagles have white patches on the remiges at the bases of the inner primaries and the outer secondaries, forming a crescent marking on the wings which tends to be divided by darker feathers.

#### **Behavior:**

**Diurnal, Nocturnal, or Crepuscular:** Diurnal

**Activity:** Golden Eagles possess astonishing speed and maneuverability for their size. Diving from great heights, they have been clocked at close to 200 miles per hour. In an undulating territorial and courtship display known as “sky-dancing,” a Golden Eagle performs a rapid series of up to 20 steep dives and upward swoops, beating its wings three or four times at the top of each rise. In “pendulum flight,” the eagle dives and rises, then turns over to retrace its path. Single birds and pairs engage in aerial play with objects such as sticks or dead prey, carrying these items high into the sky, then dropping and retrieving them. In addition to attacking prey from the air, Golden Eagles sometimes hunt on the ground, wildly flapping as they run. Mated pairs hunt jackrabbits cooperatively during breeding season—one eagle diverting the animal’s attention while the second makes the kill.

**Locomotion:** Walks with awkward gait. May land and walk when approaching carrion during winter; also walks uphill when crop is full to gain elevation for flight. Often runs along ground, flapping wings, prior to flight; flapping always accompanies running. Unsuccessful aerial attempts to capture prey often followed by flapping and running wildly in an attempt to catch prey on ground.

**Communication and Perception:** Golden Eagles are not big talkers. Their occasional calls tend to be high, weak, and whistled. You’re most likely to hear these birds during breeding season, when nestlings’ high-pitched begging calls can travel a mile or more, and adults announce food deliveries with a wip or a wonk. Soars with outstretched wings and tail held in one plane, although wings sometimes held in a slight dihedral; primary tips spread fingerlike. Two types of soaring flight: slow gliding flight, which includes parachuting, and fast gliding flight. May glide in high winds on partially folded wings. Glides can be 190 km/h. Parachutes with wings and tail elevated and spread; legs dangling. Suggested functions of soaring include gaining height for gliding to other areas, hunting, territorial advertisement, courtship, migration, and exploration. Swims only when necessary; one waded in water toward duck decoy.

**Home Range:** NONE

**Degree of Sociality:** Typically solitary or in pairs. Occasionally bathes in groups and roosts communally in unique circumstances (rarely; e.g., extremely cold weather and abundant prey); maximum of 124 roosted along a stretch of 85 power poles on a very cold night in e. Idaho.

**Level of Aggression:** Territorial defense usually accomplished adequately by undulating flight and occasionally chase behaviors. In Europe, physical contact during territory defense uncommon; individuals sometimes killed or wounded by other Golden Eagles in a saturated population in the Alps. Three resident adults and a floater apparently killed by other eagles in California and Scotland. Aggressive behavior toward nonbreeders by territorial adults may involve a steep dive followed by a chase after the intruder. Flights sometimes preceded or followed by intense bouts of undulating displays. Invader often responds by rolling over and presenting talons to the aggressor. Rarely, lock talons and tumble through the air; sometimes fall several revolutions and other times tumble to the ground before releasing grip. Talon-grappling probably most often an aggressive encounter, rather than courtship.

**Migration:** Short- to medium-distance migrant. Northern breeders (in Alaska and Canada) migrate up to thousands of miles to wintering grounds; southern pairs tend to be resident year-round. Departure from northern breeding areas coincides with the first lasting snowfall, freeze-up, north winds, or decreasing prey abundance. Golden Eagles migrate during the day.

#### **Predators:**

**Predators:** Wolverines, Grizzly Bears, Corvids, Raptors.

**Anti-Predator Defenses:** Nest defense is mainly passive. Rarely defends nest against other avian species but agonistic encounters with corvids and other raptors common during the nesting season.

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

**Adult Diet:** Golden Eagles prey mainly on small to medium-sized mammals, including hares, rabbits, ground squirrels, prairie dogs, and marmots. Black-tailed jackrabbits are a key prey species throughout much of their range. These eagles are also capable of taking larger bird and mammal prey, including cranes, swans, deer, and domestic livestock. They have even been

observed killing seals, mountain goats, bighorn sheep, pronghorn, coyotes, badgers, and bobcats. In addition to live prey, Golden Eagles often feed on carrion, following crows and other scavengers to a meal. They also catch fish, rob nests, and steal food from other birds.

Juvenile Diet: ^^^^^

Special Adaptations for Getting Prey: CHECK FEATURES.

### **Reproduction:**

Mode of Reproduction: Monogamous, but sometimes Polygynous.

Mating System: Usually monogamous, but 2 males copulated with 1 female in central California, and the trio successfully raised young. ASSUMED TO MATE FO LIFE.

Mating Season: May to June

Courtship: NONE

Territoriality: NONE

Mating: Copulation most frequent before egg-laying, but occurs year-round and may function in pair-bond maintenance outside breeding season. Copulation usually occurs on a conspicuous perch or at the nest and may be followed and/or preempted by mutual soaring, rolling and foot-touching, cliff-racing, and extended periods of perching close together; occasionally accompanied by food transfer. Undulating flight by male sometimes follows copulation. Prior to copulation, female leans forward with bill in line with body axis and nearly touches substrate; vocalizes prior to, during, and after coition. Droops wings laterally, possibly to balance; often deflects tail slightly to one side. Male either alights on female from flight or climbs upon her back from behind; drops to tarsi with feet closed and lowers tail under female's for cloacal contact. Male usually flaps wings to maintain balance but does not vocalize. Average time for copulation 11 s; occasionally followed by preening and Ruffle-Shaking.

Nesting: Golden Eagles usually nest on cliffs. They may also build nests in trees, on the ground, or in human-made structures, including windmills, observation towers, nesting platforms, and electrical transmission towers. Constructed near hunting grounds, Golden Eagle nests often command a wide view of their surroundings. Starting 1–3 months before egg-laying, a Golden Eagle pair builds a nest of sticks and vegetation—sometimes also including bones, antlers, and human-made objects such as wire and fence posts. They line the nest with locally available vegetation, such as yucca, grasses, bark, leaves, mosses and lichens, or conifer boughs. They often include aromatic leaves, possibly to keep insect pests at bay. Resident birds continue adding nest material year-round, reusing the same nest for multiple seasons and sometimes alternating between two nests. Nests are huge, averaging some 5-6 feet wide, and 2 feet high, enclosing a bowl about 3 feet by 2 feet deep. The largest Golden Eagle nest on record was 20 feet tall, 8.5 feet wide.

Egg-Laying: Clutch Size: 1-3 eggs Number of Broods: 1 brood Egg Length: 2.7-3.4 in (6.8-8.6 cm) Egg Width: 1.9-2.5 in (4.9-6.4 cm) Incubation Period: 41-45 days Nestling Period: 45-81 days Egg Description: White to cream or pale pink, usually with small brown blotches.

Hatching and Incubation/Gestation: Weak, weighing about 3 oz; partially covered with grayish-white down; eyes partially open. ALTRICIAL

Development: NONE

Parental Care: Males in Idaho spent 74% of perched time at locations away from nest. Male almost never broods; female broods and shades young from hatch to about 45 d of age. Both parents bring prey to nest, but male rarely feeds young directly. Adults may not feed young on hatch day; mean number of adult-fed meals/d increased rapidly during week 1 and decreased significantly during the nesting season (n = 10 broods). Biomass fed directly by female increased until fifth week; then decreased with linear increase of self-fed meals by young. Young begin self-feeding at 34–37 d old, and successfully tear carcasses at 45–55 d; by week 8, young consume more by self-feeding than fed by adults; increases in self-feeding coincide with development of standing behavior. No direct feeding after fledging.

Lifespan: Around 13 years.

### **Conservation:**

Official Federal Status: Least Concern

Special Statuses in Individual States: NONE

Threats: Golden Eagle populations appear to have been stable between 1966 and 2015, according to the North American Breeding Bird Survey. Partners in Flight estimates their global breeding population to be 300,000 with 35% spending some part of the year in the U.S., 15% in Canada, and 3% in Mexico. The species rates a 10 out of 20 on the Continental Concern Score and is not on the 2016 State of North America's Birds' Watch List. In 1962, the U.S. Bald and Golden Eagle Protection Act outlawed harming these birds, their eggs, and their nests. Although this legislation remains in effect, humans are still Golden Eagles' greatest threat: it's estimated that more than 70 percent of recorded Golden Eagle deaths are attributable to

human impact, either intentional or inadvertent. Some sheep ranchers trapped, shot, or poisoned the birds into the 1980s. Some eagles have died after eating poisoned prey animals set out to control coyotes. Others succumb to lead poisoning from ammunition in hunter-shot prey. Most recorded deaths are from collisions with vehicles, wind turbines, and other structures or from electrocution at power poles (newer designs have been developed that, if used, can greatly reduce this risk). Urbanization, agricultural development, and changes in wildfire regimes have compromised nesting and hunting grounds in southern California and in the sagebrush steppes of the inner West. Golden Eagles did not prove as susceptible to poisoning from the pesticide DDT as other large raptors, probably because of their diet of mammals.

Conservation Efforts: ^^^^^

**Extra Facts:**

1. Although capable of killing large prey such as cranes, wild ungulates, and domestic livestock, the Golden Eagle subsists primarily on rabbits, hares, ground squirrels, and prairie dogs.
2. The amount of white in the wings of a young Golden Eagle varies among individuals, and a few lack white in the wings entirely.
3. The Golden Eagle is the most common official national animal in the world—it's the emblem of Albania, Germany, Austria, Mexico, and Kazakhstan.
4. Because their common prey animals (mammals) don't tend to ingest pesticides, Golden Eagles have escaped the harm sustained by fish-eating or bird-eating raptors from DDT and related chemicals. When these pesticides thinned the eggshells of many birds of prey, Golden Eagles' shells retained normal thickness. Pesticide concentrations in their blood stayed below levels known to cause reproductive problems.
5. Biologists, engineers, and government officials have cooperated in developing and publicizing power-pole designs that reduce raptor electrocutions—caused when the large birds' wings or feet accidentally touch two lines and form a circuit. Since the early 1970s, utility companies have modified poles to prevent eagle electrocutions. And some new power lines in nonurban areas have been built to “raptor-safe” construction standards.
6. “Hacking,” an age-old falconry technique, is helping rebuild Golden Eagle populations. Humans feed caged, lab-reared nestlings at a nestlike hack site until the birds reach 12 weeks old, when the cage is opened and they begin feeding themselves. The fledglings continue to receive handouts from their hack-site caretakers for several weeks, until they gain full independence in the wild.
7. The Rough-legged Hawk, the Ferruginous Hawk, and the Golden Eagle are the only American raptors to have legs feathered all the way to the toes.
8. The oldest recorded Golden Eagle was at least 31 years, 8 months old, when it was found in 2012 in Utah. It had been banded in the same state in 1980.

**Notable Species:**

1. *Aquila chrysaetos chrysaetos* (Linnaeus, 1758) – sometimes referred to as the European golden eagle. This is the nominate subspecies.
2. *Aquila chrysaetos homeyeri* Severtzov, 1888 –This subspecies occurs in almost the entirety of the Iberian peninsula as well as the island of Crete, though is absent from the rest of continental Europe.
3. *Aquila chrysaetos daphanea* Severtzov, 1888 – known variously as the Asian golden eagle, Himalayan golden eagle or berkut. This subspecies is distributed in central Kazakhstan, eastern Iran, and the easternmost Caucasus, distributed to Manchuria and central China and along the Himalayas from northern Pakistan to Bhutan and discontinuing in northeastern Myanmar
4. *Aquila chrysaetos japonica* Severtzov, 1888 – the common name is the Japanese golden eagle. This subspecies is found in northern Japan (the islands of Honshu, Hokkaido and discontinuously in Kyushu) and undefined parts of Korea.
5. *Aquila chrysaetos canadensis* (Linnaeus, 1758) – Commonly known as the American golden eagle. Occupies the species' entire range in North America, which comprises the great majority of Alaska, western Canada and the Western United States. The species is found breeding occasionally in all Canadian provinces but for Nova Scotia. It is currently absent in the Eastern United States as breeding species east of a line from North Dakota down through westernmost Nebraska and Oklahoma to West Texas.
6. *Aquila chrysaetos kamtschatica* Severtzov, 1888 – sometimes is referred to as the Siberian golden eagle or the Kamchatka golden eagle. This subspecies ranges from Western Siberia (where overlap with *A. c. chrysaetos* is probable), across most of Russia, including the Altay (spilling over into Northern Mongolia), to the Kamchatka Peninsula and the Anadyrsky District.