COMMON LOON - GAVIA IMMER

Taxonomy: Kingdom: Animalia Phylum: Chordata Class: Aves Order: Gaviiformes Family: Gaviidae Genus: Gavia Species: G. immer

Habitat:

Biomes: Common Loons are a classic bird of the North Woods lakes. They are excellent indicators of water quality as they require crystal-clear lakes (which makes it easier for them to see prey underwater) with abundant populations of small fish. Lakes with coves and islands are preferred as they provide cover from predators while resting and nesting. They also require lakes with enough surface area for their flapping-and-running takeoffs across the water. In their winter range along ocean coasts, they occur fairly close to shore and in bays and estuaries. They are only rarely found more than several miles offshore. Some Common Loons winter inland, on large reservoirs and slow-moving rivers. Common Loons that migrate across interior North America find large lakes and rivers to move between on their way north and south.

Distribution:

In US: Freshwater habitats of North America (including Greenland and Iceland). In Canada and Alaska, generally found nesting north to edge of the taiga shield. Breeding pairs rarely occur in tundra and coastal plain areas of Beaufort Sea. In the United States, currently breeds in isolated areas of w. and e. Washington, n. Idaho (breeding attempts are intermittent), nw. Montana, a disjunct population in nw. Wyoming (Yellowstone National Park and Shoshone National Forest), n.-central North Dakota (Turtle Mountains), the upper Great Lakes (south through northern Minnesota, Wisconsin and Michigan's Lower Peninsula), New York's Adirondack Mountains, parts of the St. Lawrence River and nearby area, and much of n. New England, except for a disjunct population breeding in central Massachusetts. In Canada, southern extent of breeding range extends to the U.S. border except in southeastern Alberta, southern Saskatchewan, southern extreme of Manitoba, and far s.-central Ontario.

In Other Countries: Iceland, Russia, Alaska, Greenland, China

Holistic Description: The eerie calls of Common Loons echo across clear lakes of the northern wilderness. Summer adults are regally patterned in black and white. In winter, they are plain gray above and white below, and you'll find them close to shore on most seacoasts and a good many inland reservoirs and lakes. Common Loons are powerful, agile divers that catch small fish in fast underwater chases. They are less suited to land, and typically come ashore only to nest.

Species Richness: NO SUBSPECIES

Population Dynamic: Global population is relatively healthy and robust, with a total estimated breeding population of 252,000 to 264,000 territorial pairs (Appendix 3). The non-breeding cohort increases total adult population to 607,000 to 635,000 individuals. Population increases to 710,000 to 743,000 individuals during fall migration after including young of the year. Approximately 30% of the fall population migrates to the Pacific Coast and 70% to the Gulf of Mexico and Atlantic Coast. Over 94% of the breeding loon population resides in Canada.

Evolution and Systematics:

Evolution: A loon-like fossil, Neagaeornis wetzeli, was found from the Cretaceous, but it remains unclear whether this is a direct ancestor of Gavia. Gavia ancestry is likely linked to Colymboides, an extinct genus. The oldest Colymboides, C. anglicus, unearthed in England was named from a single coracoid bone in the Eocene 40mya. The split between Gavia and Colymboides likely occurred around then.

Systematics: Monotypic. Despite broad variation in multiple morphometric characters, there is substantial individual variation, and geographic variation is smoothly clinal. Yodel frequency also follows a geographic cline, with higher frequency vocalizations from interior birds and lower frequency vocalizations from coastal birds.

Number of Species: NO SUBSPECIES

Number of Genera: NO SUBSPECIES

Physical Characteristics:

Size and Length: Length: 26.0-35.8 in (66-91 cm) Weight: 88.2-215.2 oz (2500-6100 g)

Wingspan: 40.9-51.6 in (104-131 cm)

Coloration: In summer, adults have a black head and bill, a black-and-white spotted back, and a white breast. From September to March, adults are plain gray on the back and head with a white throat. The bill also fades to gray. Juveniles look similar, but with more pronounced scalloping on the back.

General Body Features: Long-bodied waterbird with a hefty bill. Sits low in the water. Breeding birds have a black and white striped collar and a checkerboard back.

Special Features of the Body: Common Loons are excellent divers, capable or reaching depths of about 200 feet. A loon can stay under water for as long as 15 minutes. Loons swim underwater using only their feet. The wings of loons are relatively short and are held tightly against the body during a dive.
Special Features of the Head and Sensory Organs: Bill?
Dentition: Lamellae and Gizzard
Special Features of the Limbs and Digits: The lateral placement of the legs makes for hydrodynamic efficiency. If the legs were close together, the turbulent eddies created by one leg would interfere with smooth movement through the water of the other leg. The lateral arrangement allows a loon to generate maximum thrust while minimizing hydrodynamic drag. The feet of loons are large and webbed. The real power in swimming is generated by the rearward movement of those webbed feet against the water. When the loon moves its feet forward during the recovery stroke, the toes are brought together causing the web to collapse and minimizing the effort needed to get the foot ready for the next power stroke.
Any Special Internal Anatomy: The long bones of birds are not hollow as seen in most species of birds. These heavier bones make it easier for a loon to dive. Just before a dive, a loon compresses its body, driving out the air trapped within its feathers. Air trapped in the feathers would increase the buoyancy of the loon and make it harder to dive. Loons, like other diving birds and marine mammals, have the ability to store large quantities of oxygen in their blood. Even so, staying underwater for 15 minutes is no easy task. During diving, a loon undergoes a physiological change called the diving reflex. Oxygen flow to most body parts is greatly reduced except to the heart and nervous system.
Sexual Dimorphisms: A large loon that varies greatly in size based on geography and sex: length 66–91 cm; mass 2.2–7.6 kg; on average male larger and up to 26.6% heavier than female
Differences Between Juvenile Stage and Adult: CHECK COLOR
Behavior:
Diurnal, Nocturnal, or Crepuscular: Diurnal
Activity: Common Loons spend a lot of their time working shallow waters for fish: swimming slowly and sticking their heads into the water to look for fish, then diving suddenly after their quarry with a quick plip! that hardly leaves a ripple on the water's surface. Loons do all their feeding during the day, when they can best see their prey. At times, loons can be seen sticking one foot up out of the water and waggling it—this may be a means of cooling off, as scientists have observed loons waggling their feet more often on sunny, midsummer days. Loons also perform a territorial display of lifting their body upright and flapping their wings vigorously. Canoeists who get too close to a loon may witness this display, along with a defensive tremolo call as the loon swims away. Loons also tremolo when they fly from lake to lake or in circles above a lake, their necks sticking straight out and feet trailing behind them. They can be very vocally active with nocturnal choruses. After sundown, many North Woods lakes reverberate with the echoes of loon wails and yodels and tremolos (which writer John McPhee called "the laugh of the deeply insane"). In spring, loon mates arrive back on their lake separately. Loons are monogamous, and pair bonds typically last about 5 years. If one year one of the mates doesn't return, the other will quickly pair up with another mate. The male defines his territory through yodeling. Courtship consists of swimming in circles and synchronous dives. If nesting is successful, loon chicks can be seen going for a ride around the lake on a parent's back.
Locomotion: Wings narrow, highly cambered, long-tapered, and short relative to overall body length. Require long takeoff distance, up to 200 m, but with high winds, can attain lift in as little as 30 m. Will run on water to assist in take-off, take-offs typically face into the wind. Take-off flights more common in windy weather. In flight, assumes characteristic hump-backed profile, with head slightly lower than body and feet extending beyond the tail. Rarely observed on land, except for copulation, nest-building or tending, ritual defecation, during or after conspecific conflicts, or when ill or injured. Because feet are located so far aft, they are unable to walk on land, but instead propel themselves forward using their feet and if rushed, wings. Loons that have been disoriented or confused during a storm have been observed shuffling along highways and roads. In some instances, they have navigated > 1 km. Newborn chicks can walk upright on land, but lose this ability by around week 3. **Master divers. Possess both skeletal and muscular adaptations to maximize thrust and minimize drag in the water. On surface, strokes feet alternately, but will occasionally tuck one foot under the wing while moving forward using just one leg. By changing buoyancy in air sacs, can vary depth while resting in water. Capable of neutral buoyancy. To dive underwater simply compresses feathers and expels air and sinks or propels upwards with hind feet and simultaneously extends and lowers neck to break surface tension.**
Communication and Perception: Common Loons are famous for their eerie, beautiful calls. Among these are the tremolo, a wavering call given when a loon is alarmed or to announce its presence at a lake. The yodel is the male loon's territorial claim. Each male has his own signature yodel. If a male moves to a different territory, he will change his yodel. The wail is the haunting call that loons give back and forth to figure out each other's location. Hoots are soft, short calls given to keep in contact with each other. Parents might hoot to a chick, or one mate might hoot to another.

Home Range: NONE
Degree of Sociality: Generally highly intolerant of conspecifics outside of mate upon return to breeding lakes in spring. During mid-late summer, degree of sociality increases. Mid to late summer aggregations use stereotyped social gatherings at very specific times and locations.
Level of Aggression: More common in spring when birds actively defend territories from conspecifics and heterospecifics. Both sexes defend territory from intrasexual rivals. Above water attacks typically do not end in fatality, but rather with one of the individuals being chased off. Chases can be long, aggressive, with much jabbing and striking of bills. Territorial holders may get usurped. Territorial evictions typically occur after battles, which involve a stereotyped sequence of aggressive encounters.
Migration: Medium-distance complete migrant; not known to remain on breeding lakes throughout the year. Most of population shifts from freshwater inland breeding locations to coastal marine wintering locations, although some remain at inland freshwater sites throughout winter. Sub-adults may remain at wintering sites throughout the year.
Predators:
Predators: **Adults:** Bald Eagles, Sharks, and other predation undoubtedly occurs, but likely representing relatively random instances. **Egg:** Raccoons, mink, fisher, striped skunk, river otter, canids(foxes), herring gull, american crow, common raven, ring-billed gull, and bald eagle. **Chicks:** Snapping turtles, large predatory fish, northern pike, muskellunge, and largemouth bass.
Anti-Predator Defenses: Adult responds to the sight of a Bald Eagle by wailing; mate and young, if present, recognize and respond to this threat by either swimming closer to the individual that vocalized or (young) quickly swim to a protected shoreline area and remain hidden until the threat has passed. On freshwater lakes, adults are generally safe from underwater predators, but chicks are vulnerable to snapping turtle and large predatory fish. If an adult spots an underwater predator they will tread water rapidly with their feet and flap wings to discourage them from coming closer (JDP). If rogue loons are detected, they will rush and attack them.
Diet and Nutrition:
Adult Diet: Common Loons are expert anglers. Their diet consists of mostly fish, particularly perch and sunfish on their northern lakes. If fish are scarce or water is too murky for fishing, they will catch crustaceans, snails, leeches and even aquatic insect larvae. Though people on the surface only see loons disappear with a dive and reappear with a fish in their bill to be swallowed headfirst, their fishing pursuits underwater are something to behold. Loons shoot through the water like a torpedo, propelled by powerful thrusts of feet located near the rear of their body. When their quarry changes direction, loons can execute an abrupt flip-turn that would make Olympic swimmers jealous: they extend one foot laterally as a pivot brake and kick with the opposite foot to turn 180 degrees in a fraction of a second. In their wintering waters, loons eat smallish fish such as Atlantic croaker. Sometimes they band together in groups to chase schools of Gulf silversides.
Juvenile Diet: Adult transfers food to chick bill-to-bill at surface; acceptance of food and manipulation for headfirst ingestion are instinctive. CRAYFISH, young generally forage in relatively shallow areas.
Special Adaptations for Getting Prey: Underwater pursuit is foot-propelled by simultaneous thrust of feet, except in turns, when inside foot and tail are used as rudders. Grasps prey between mandibles and manipulates it to swallow it headfirst. Rearward-pointing, sharp denticles on roof of mouth and tongue assist retention of prey by interdigitating with scales or carapace. Using tongue, presses prey against roof of mouth while repeatedly retracting tongue in conjunction with extensions of head and neck. No taste buds found, but tactile corpuscles are present at base of tongue denticles. Proventriculus is completely lined with large digestive glands; large muscular gizzard effectively grinds bones and chitin.
Reproduction:
Mode of Reproduction: MONOGAMOUS
Mating System: Serial monogamy on breeding grounds. Genetic studies show no extra-pair copulations. Sex ratio in adults appears to be fairly close to 50-50, or slightly tilted in favor of more females than males.
Mating Season: March-May
Courtship: Courtship consists of short, synchronous dives, circle swimming, and bill dipping. In 7% of the cases, one of the mates does not return and the other mate quickly finds a new mate (passive occupation). In other instances, there may be intrasexual contests resulting in one pair member being usurped. On average, pair bonds last 5 years, with the longest tenure 11 years.
Territoriality: Highly territorial during breeding season. Territoriality is expressed through male-only yodel calls. Yodels are relatively unique within a certain geographic area but individuals are known to alter their yodel if they change territories.
Mating: Males or females may initiate copulation by swimming toward land and with a series of faint hoot and mew vocalizations motion with head and bill turns to come toward shore. The more experienced pair member on that territory may

initiate it (JDP). The male mounts the female by climbing over the female's back, standing half upright. The female raises her tail and cloacal contact occurs. Male dismounts by sliding over her shoulders. Both pair members may remain on shore, but generally the male enters the water first and the female may engage in ritualized nest-building before returning to the water. Reverse mounting and post-copulatory displays have not been observed.

Nesting: The male selects the nest site. Loons nest in quiet, protected, hidden spots of lakeshore, typically in the lee of islands or in a sheltered back bay. Loons can't walk well on land, so nests are built close to a bank, often with a steep dropoff that allows the bird to approach the nest from underwater. They also use artificial nesting platforms, which people have offered as alternative habitat on lakes with extensive shoreline development. Many times a nesting pair of loons will reuse the same site the following year, refurbishing their old nest instead of building a new one. Male and female build the nest together over the course of a week in May or early June, making a mound out of dead plant materials such as sedges and marsh grasses that grow along the lake's edge. Then one of the loons crawls on top of the mound and shapes the interior to the contours of its body. The finished nest is about 22 inches wide and looks like a clump of dead grasses by the edge of the water.

Egg-Laying: Clutch Size: 1-2 eggs Number of Broods: 1 brood Egg Length: 3.5-3.5 in (8.8-9 cm) Egg Width: 2.2-2.2 in (5.5-5.7 cm) Incubation Period: 26-29 days Nestling Period: 2 days Egg Description: Brown with dark splotches.

Hatching and Incubation/Gestation: Covered with down, sooty black with a white belly. Able to swim and ride on parents' backs within hours of hatching.

Development: Semi-precocial, but dependent on parents for food. Chicks are dry and often active within hour of hatching; usually leave nest with parents within day of hatching, weather permitting. Hatched chicks weigh on average 93.9 g (range 71.4–108.5, n = 18), about 60% of mass of newly-laid egg (JFB). Chicks covered with dense down; sooty black except for white belly. Tarsus, toes, web, and bill grayish black (colors 82–83); egg tooth lighter. Iris walnut brown (see Appearance). Egg tooth retained into week 2. Feeding movements jerky and uncertain on first day; coordination and ability to focus on food item improve rapidly.

Parental Care: Occurs on nest immediately after hatching, with chick nestled under adult's wing; afterward, chick(s) either on top of the parent's back, or under the wing between flank and sides. Both chicks may ride on the back of one adult at age 1 wk, and then less frequently at wk 2. Chicks observed more often on back of males than females. Chicks are occasionally fed while on the back of adult.

Lifespan: The oldest known common loon lived 25 years but their lifespan may be up to 30+ years.

Conservation:

Official Federal Status: Least Concern

Special Statuses in Individual States: NONE

Threats: North American Common Loon populations are stable and healthy overall, and between 1966 and 2015 populations remained stable, and slightly increased in the U.S., according to the North American Breeding Bird Survey. The species rates an 11 out of 20 on the Continental Concern Score, and is not on the 2016 State of North America's Birds' Watch List. The North American Waterbird Conservation Plan lists them as a Species of Moderate Concern. Common Loons require clear, unpolluted lakes, and can be harmed by pollution and disturbances. Regional declines have occurred at the southern edge of their range. In the Midwest, loons have disappeared from breeding sites in Illinois, Indiana, Iowa, and Ohio, and are only found in northern areas of Minnesota, Wisconsin, and Michigan. Their range has retracted in New England as well, though loon populations have rebounded there thanks to restoration efforts. Lead fishing sinkers, which loons ingest when they scoop up pebbles off the lake bottom to store in their gizzards, have been a significant cause of loon deaths from lead poisoning. Mercury from the burning of coal can build up in lakes through rainfall, and this has led to poor reproductive success for Common Loons in Canada, New England, and Wisconsin. Common Loons are often caught inadvertently by commercial fishing nets, both on the Great Lakes and in the ocean. Acid rain can acidify lakes, reducing fish populations that loons depend on. Human activity, particularly motorboats, can disturb loons on breeding lakes. Ocean oil spills can cause die-offs on loon wintering waters. Scientists are monitoring satellite transmitters on loons to evaluate if and how they were affected by the 2010 Deepwater Horizon oil spill.

Conservation Efforts: ^^^^^

Extra Facts:

1. The Common Loon swims underwater to catch fish, propelling itself with its feet. It swallows most of its prey underwater. The loon has sharp, rearward-pointing projections on the roof of its mouth and tongue that help it keep a firm hold on slippery fish.
2. Loons are water birds, only going ashore to mate and incubate eggs. Their legs are placed far back on their bodies, allowing efficient swimming but only awkward movement on land.

3. Loons are agile swimmers, but they move pretty fast in the air, too. Migrating loons have been clocked flying at speeds more than 70 mph.
4. A hungry loon family can put away a lot of fish. Biologists estimate that loon parents and their 2 chicks can eat about a half-ton of fish over a 15-week period.
5. Loons are like airplanes in that they need a runway for takeoff. In the case of loons, they need from 30 yards up to a quarter-mile (depending on the wind) for flapping their wings and running across the top of the water in order to gain enough speed for lift-off.
6. Loons are well equipped for their submarine maneuvers to catch fish. Unlike most birds, loons have solid bones that make them less buoyant and better at diving. They can quickly blow air out of their lungs and flatten their feathers to expel air within their plumage, so they can dive quickly and swim fast underwater. Once below the surface, the loon's heart slows down to conserve oxygen.
7. Migrating Common Loons occasionally land on wet highways or parking lots, mistaking them for rivers and lakes. They become stranded without a considerable amount of open water for a long takeoff. A loon may also get stranded on a pond that is too small.
8. The Common Loon is flightless for a few weeks after molting all of its wing feathers at the same time in midwinter.
9. Like many young birds, juvenile loons are really on their own after mom and dad leave at about 12 weeks. The parents head off on migration in the fall, leaving juveniles to gather into flocks on northern lakes and make their own journey south a few weeks later. Once the juveniles reach coastal waters on the ocean, they stay there for the next two years. In the third year, young loons return north, although they may not breed for several more years (on average they are six years old when they start breeding).
10. The oldest recorded Common Loon was a female, and at least 29 years old, 10 months old when she was spotted in Michigan in 2016 and identified by her band. She had been banded in the same state in 1989.