

NORTHERN HARRIER - CIRCUS CYANEUS

While many taxonomic authorities split the northern harrier and the hen harrier into distinct species, others consider them conspecific. (called the Hen Harrier in Europe and Asia)

Taxonomy: Kingdom: Animalia Phylum: Chordata Class: Aves Order: Accipitriformes Family: Accipitridae Genus: Circus Species: C. hudsonius

Habitat:

Biomes: Breeding Northern Harriers are most common in large, undisturbed tracts of wetlands and grasslands with low, thick vegetation. They breed in freshwater and brackish marshes, lightly grazed meadows, old fields, tundra, dry upland prairies, drained marshlands, high-desert shrubsteppe, and riverside woodlands across Canada and the northern United States. Western populations tend to breed in dry upland habitats, while northeastern and Midwestern populations tend to breed in wetlands. During winter they use a range of habitats with low vegetation, including deserts, coastal sand dunes, pasturelands, croplands, dry plains, grasslands, old fields, estuaries, open floodplains, and marshes.

Distribution:

In US: It breeds throughout the northern parts of the northern hemisphere in Canada and the northernmost USA. It migrates to more southerly areas in winter with breeding birds in more northerly areas moving to the southernmost USA, Mexico, and Central America. In milder regions in the southern US, they may be present all year, but the higher ground is largely deserted in winter.

In Other Countries: Canada, Mexico, South America, Europe, Asia, Portugal, China, Russia, Siberia, Africa.

Holistic Description: The Northern Harrier is distinctive from a long distance away: a slim, long-tailed hawk gliding low over a marsh or grassland, holding its wings in a V-shape and sporting a white patch at the base of its tail. Up close it has an owl-like face that helps it hear mice and voles beneath the vegetation. Each gray-and-white male may mate with several females, which are larger and brown. These unusual raptors have a broad distribution across North America.

Species Richness: 2 SUBSPECIES

Population Dynamic: This species has a large range, and there is evidence of a population decline, but the species is not believed to approach the thresholds for the population decline criterion of the IUCN Red List (i.e., declining more than 30% in ten years or three generations). It is therefore classified as "least concern".

Evolution and Systematics:

Evolution: In ne. Mexico, fossils detected in samples from 11,000 to 27,000 years before present and in samples in n. Mexico from 40,000 ybp. Recorded as fossil from Plio-Pleistocene in Florida and from Pleistocene of Oregon and California. Subfossil from a late prehistoric site associated with human settlement in se. New Mexico. In Middle Missouri Valley, SD, subfossils abundant and widespread among 51 archaeological sites; most associated with the period A.D. 900–1700, fewer after that time. Subfossils recorded from sites in California, Utah, and Arizona.

Systematics: Surprisingly little variation considering the species' wide geographic range. Birds in the New World are larger, darker, and more heavily marked; they also are more of an obligate migrant.

Number of Species: 2 SUBSPECIES

Number of Genera: 2 SUBSPECIES

Physical Characteristics:

Size and Length: Length: 18.1-19.7 in (46-50 cm) Weight: 10.6-26.5 oz (300-750 g)

Wingspan: 40.2-46.5 in (102-118 cm)

Coloration: Males are gray above and whitish below with black wingtips, a dark trailing edge to the wing, and a black-banded tail. Females and immature are brown, with black bands on the tail. Adult females have whitish undersides with brown streaks, whereas immature are buffy, with less streaking. All Northern Harriers have a white rump patch that is obvious in flight.

General Body Features: Northern Harriers are slender, medium-sized raptors with long, fairly broad wings and a long, rounded tail. They have a flat, owl-like face and a small, sharply hooked bill. Harriers often fly with their wings held in a dihedral, or V-shape above the horizontal.

Special Features of the Body: In addition the feathers of the marsh hawk are soft resulting in quiet flight.

Special Features of the Head and Sensory Organs: The harrier's owl-like facial appearance is due to the presence of "filoplumes" that facilitate acute directional hearing. This is useful for crepuscular (twilight) hunting as well as diurnal (daylight)

hunting. It can also be useful for locating prey in areas of higher vegetation (grasses and marshes) where vision is somewhat limited.

Dentition: Beak/Lamellae/Gizzard

Special Features of the Limbs and Digits: The northern harrier has a flight of speed of 24- 38 mph, which includes flapping and gliding. It usually flies low over the ground, about 10-30ft. up. The northern harrier flies in a pattern of a few wing beats followed by a short glide, wings held slightly up in a V shape, then drops quickly to its prey.

Any Special Internal Anatomy: NONE

Sexual Dimorphisms: A strongly sexually dimorphic hawk with slim body, long wings and tail, and long, slender legs. Females average about 50% heavier and 12.5% larger than males. Adult male gray above, mostly white below, and with black wing-tips and tips to secondaries; adult female brown above and buffy with brown streaks below.

Differences Between Juvenile Stage and Adult: Juvenile males have pale greenish-yellow eyes; juvenile females have dark chocolate brown eyes. Eye color changes gradually over the first several years, with adults of both sexes attaining lemon yellow eyes. Second-year female eye color variable, sometimes retaining dusky color, but not chocolate brown.

Behavior:

Diurnal, Nocturnal, or Crepuscular: Diurnal/Crepuscular

Activity: Northern Harriers usually fly slowly and low over the ground, their wings held in a V-shape as they glide. Most males have either one mate or two mates at a time, but some have up to five mates when food is abundant. Each male courts females and advertises his territory by performing sky-dancing displays: undulating, rollercoaster-like flights up to 1,000 feet off the ground, sometimes covering more than half a mile. Although they don't protect large territories, both males and females vigorously defend the nest itself. Nesting females usually chase away other females, and males chase other males. Females incubate eggs and brood chicks, while males provide most of the food for the females and nestlings. Nest predators include coyotes, feral dogs, striped skunks, raccoons, red foxes, American Crows, Common Ravens, and Great Horned Owls. Livestock and deer sometimes trample eggs and nestlings underfoot. Juvenile harriers play (and hone their hunting skills) by pouncing on inanimate objects like vole-sized corncobs. In winter, Northern Harriers roost in groups on the ground, sometimes with Short-eared Owls. The larger females are dominant to the males.

Locomotion: Occasionally walks or hops short distances while retrieving prey, collecting nesting material, or retrieving nestlings that have strayed from the nest. Typically flies slowly, low over the ground with a series of heavy flaps and distinctive buoyant, tilting glides, with wings held in a strong dihedral; sometimes hovers briefly. Occasionally soars. Has low wing-loading and high wing length-to-width ratios for a diurnal raptor. These features, along with wing-slotting, prominent alulas, and pronounced camber, enhance aerodynamic efficiency and the conservation of power, particularly at low flight speeds. Rare and usually incidental to drowning of prey.

Communication and Perception: Males and females both give a fast series of kek notes lasting 1–2 seconds during courtship displays. When threatened by nest predators or mobbed by small birds, they use higher-pitched kek notes. The female gives a piercing scream during the breeding season, prompting the male to either mate with her or bring food.

Home Range: In breeding season, not strongly territorial, except near the nest, where both sexes are intolerant of conspecifics, chiefly those of the same sex and unrelated fledglings of either sex. Territorial interactions most frequent during courtship and incubation periods, then wane as season progresses, yet intrusions by neighbors into nest area always lead to vigorous pursuit.

Degree of Sociality: Adults and fledglings roost individually on the ground. In Wisconsin, birds do not reuse roost sites on successive nights. Polygynous males roost, preen, and loaf more often in the vicinity of primary females than other harem members. Juveniles apparently do not roost communally during early period of fall migration.

Level of Aggression: Females dominant to males at artificial feeding stations and at communal roosts. Females win virtually all aggressive interactions with males and about half with females; males rarely respond to approaches by conspecifics. Territorial adult females are most aggressive toward neighbors and least aggressive toward male floaters; aggressive intensity toward these classes varies following food consumption. Neither the frequency nor duration of interactions between neighbors and owners decline significantly as season progresses. Floaters never observed to take over territories; on 2 occasions, however, neighbors expanded their territories.

Migration: Resident to long-distance migrant. Harriers are leapfrog migrants, with individuals from northern breeding populations wintering farther south than individuals from southern breeding populations. They usually migrate alone and during daytime, hunting as they go.

Predators:

Predators: Coyote, Feral Dog, Striped Skunk, Raccoon, Red Fox, White-tailed Deer, American Crows, Northern Ravens, Great Horned Owls, and Bald Eagle

Anti-Predator Defenses: Generally, parents respond aggressively by uttering Distress Calls and mobbing potential predators, human intruders, and some nonpredatory animals (e.g., deer). The defense response ranges from a silent retreat from the nest to striking the intruder with closed talons. On average, males and females contribute equally to defense.

Diet and Nutrition:

Adult Diet: Northern Harriers forage on the wing, coursing low over the ground. Unlike other hawks, they rely heavily on their sense of hearing to capture prey. In the breeding season they eat small mammals, reptiles, amphibians, and birds. During winter, harriers in the northern part of the range feed almost exclusively on meadow voles; they also eat deer mice, house mice, shrews, rabbits, and songbirds (including meadowlarks, Northern Cardinals, and Song Sparrows). Harriers wintering in the southern part of their range eat cotton rats, house mice, harvest mice, rice rats, shrews, and songbirds.

Juvenile Diet: ^^^^

Special Adaptations for Getting Prey: Sometimes uses the cover of vegetation and terrain to surprise prey. In British Columbia, used stealth. Virtually always hunts on the wing, coursing low (<5 m) over ground with a buoyant, gliding flight; flaps intermittently. Most pursuits are short temporally and spatially, and close to ground.

Reproduction:

Mode of Reproduction: Monogamous MOSTLY.

Mating System: Generally monogamous, but also simultaneously polygynous, with well-structured hierarchical harems of 2–5 females. No other raptor species exhibits either the degree, or regularity of occurrence, of polygyny. In New Brunswick, Wisconsin, and Washington populations, 11–14% of males polygynous mated; 20–29% of females in harems, others monogamous.

Mating Season: April-July

Courtship: Males advertise territory occupancy and court females by performing Sky-Dancing Display. Each aerial display comprises a sequence of as many as 74 deep, U-shaped undulations covering a distance of up to 1 km at a height of 10–300 m; most bouts about 25 Us at 20 m above ground. Females sky-dance, but less frequently than males. Sometimes accompanied by chattering vocalizations at the zenith of undulations. Frequently ends with male disappearing into a potential nest site. Two males in Texas initially displayed several km from eventual nest site. Female attracted by display typically follows and displaces male from the site, suggesting display plays a role in nest-site selection. Adult males display more often and more intensely in food-rich than in food-poor years; precipitation reduces frequency. The most vigorously displaying males attract the largest harems. Males will sky-dance over suitable nesting areas while on migration, so sky-dancing may not always reflect ownership of a breeding territory.

Territoriality: HOME RANGE

Mating: Copulation mainly on the ground; also on small trees and fence posts; usually before 1200 h. Food pass often precedes copulation, but not a prerequisite. Balfour describes copulation as follows. Once food is exchanged, “female will crouch over food and call with great urgency. As the male flies low toward her, she lowers her head and crouches with wings held out slightly from her sides. Just before he alights on her back, she raises her tail. The act is completed in a few seconds. Afterwards, both will preen. Coition continues to occur well into the egg-laying period, usually becoming less frequent as clutch nears completion”; apparently successful copulations (but not fertilizations) occur as late as the nestling period.

Nesting: Either the male or the female chooses the nest site, which is on the ground and usually in a dense clump of vegetation such as willows, grasses, sedges, reeds, bulrushes, and cattails. Males sometimes start building a nest platform and the female finishes it. Later, both sexes bring in nesting material but the female takes charge of arranging them to form the nest. The nest platform is made with thick-stalked plants like cattails, alders, and willows. The inner lining uses grasses, sedges, and rushes. Nest building takes 1–2 weeks. The outside of the nest measures 16–24 inches wide by 1.5–8 inches high, while the interior is 8–10 inches wide by 2–4 inches deep.

Egg-Laying: Clutch Size: 4-5 eggs Number of Broods: 1 brood Egg Length: 1.6-2.1 in (4.1-5.3 cm) Egg Width: 1.3-1.6 in (3.2-4 cm) Incubation Period: 28-36 days Nestling Period: 14 days Egg Description: Dull white, usually with no markings.

Hatching and Incubation/Gestation: Helpless and covered with short white down. Covered with short, white down, very scanty on underparts, with only a slight tinge of buffy down on upperparts. Loes and space around eyes naked. Cere pale pinkish-tan; tarsi whitish yellow. Eyes open within hours of hatching; irises brown. Able to crawl to edge of nest to defecate, and to raise head and stretch neck to receive food; orient toward female in response to feeding Chuckle Call. **ALTRICIAL.**

Development: NONE

Parental Care: By female only, beginning immediately after hatching. Diurnal brooding ends variably when oldest nestling is about 12–14 d, but female will brood older young in rain. Nocturnal brooding continues until 28–30 d, shortly before offspring begin flying. Female also stands with outspread wings to shade or shelter nestlings from rain or direct sunlight. Brooding decreases and shading increases with increasing ambient temperature; time spent brooding lowest, and that spent

shading highest, in early afternoon. Male provides all food to female during incubation and virtually all food until nestlings 10–14 d old. Polygynous females begin hunting and providing food to offspring earlier in the nestling period than do monogamous or primary females. When female is near nest, male transfers prey to her by an aerial pass, and she generally delivers food to nestlings. If female is absent, male will drop prey at the nest, but he does not feed nestlings; leaves within 15s.

Lifespan: Around 16 years.

Conservation:

Official Federal Status: Least Concern

Special Statuses in Individual States: NONE

Threats: Northern Harriers are fairly common, but their populations are declining. The North American Breeding Bird Survey records a steady decline of over 1% per year from 1966 to 2014, resulting in a cumulative loss of 47%, with Canadian populations declining more than U.S. populations. Partners in Flight estimates the global breeding population at 1.4 million, with 35% spending some part of the year in the U.S., 17% in Canada, and 10% in Mexico. They rate an 11 out of 20 on the Continental Concern Score and are not on the 2014 State of the Birds Report. Habitat loss has contributed to reduced harrier populations as people have drained wetlands, developed land for large-scale agriculture, and allowed old farmland to become reforested. The small mammals that harriers prey upon have been reduced because of overgrazing, pesticides, and reduced shrub cover from crop field expansion. Because they eat small mammals, Northern Harriers are susceptible to the effects of pesticide buildup as well as direct effects by eating poisoned animals. In the mid-twentieth century their populations declined from contamination by DDT and other organochlorine pesticides, but rebounded after DDT restrictions went into effect in the 1970s. Northern Harriers have been mostly safe from hunting because of their reputation for keeping mouse populations in check, but they are still sometimes shot at communal winter roosts in Texas and the southeastern United States.

Conservation Efforts: ^^^^

Extra Facts:

1. Northern Harriers are the most owl-like of hawks (though they're not related to owls). They rely on hearing as well as vision to capture prey. The disk-shaped face looks and functions much like an owl's, with stiff facial feathers helping to direct sound to the ears.
2. Juvenile males have pale greenish-yellow eyes, while juvenile females have dark chocolate brown eyes. The eye color of both sexes changes gradually to lemon yellow by the time they reach adulthood.
3. Male Northern Harriers can have as many as five mates at once, though most have only one or two. The male provides most of the food for his mates and their offspring, while the females incubate the eggs and brood the chicks.
4. Northern Harriers hunt mostly small mammals and small birds, but they are capable of taking bigger prey like rabbits and ducks. They sometimes subdue larger animals by drowning them.
5. Northern Harrier fossils dating from 11,000 to 40,000 years ago have been unearthed in northern Mexico.
6. The oldest Northern Harrier on record was a female, and at least 15 years, 4 months old when she was captured and released in 2001 by a bird bander in Quebec. She had been banded in New Jersey in 1986.

Notable Species:

1. *C. c. cyaneus* - Largely resident across the Palearctic, from Ireland and the United Kingdom east across Russia; in winter, some move south during periods of snow. Smaller; adult male is medium gray dorsally, largely lacks ventral bars, and has dark gray tail bars; adult female is grayish brown overall.
2. *C. c. hudsonius* - North America and South America. Similar to *C. c. cyaneus*, but larger; the adult male is darker grey dorsally, is barred ventrally, and has blackish tail bars; the adult female is browner overall, and the juvenile is less streaked, with the ventrum more russet.