PEREGRINE FALCON - FALCO PEREGRINUS

Taxonomy: Kingdom: Animalia Phylum: Chordata Class: Aves Order: Falconiformes Family: Falconidae Genus: Falco Species: F. peregrinus

Habitat:

Biomes: The word "peregrine" means "wanderer" or "pilgrim," and Peregrine Falcons occur all over the world. In North America they breed in open landscapes with cliffs (or skyscrapers) for nest sites. They can be found nesting at elevations up to about 12,000 feet, as well as along rivers and coastlines or in cities, where the local Rock Pigeon populations offer a reliable food supply. In migration and winter you can find Peregrine Falcons in nearly any open habitat, but with a greater likelihood along barrier islands, mudflats, coastlines, lake edges, and mountain chains.

Distribution:

In US: The peregrine's breeding range includes land regions from the Arctic tundra to the tropics. It can be found nearly everywhere on Earth, except extreme polar regions, very high mountains, and most tropical rainforests; the only major ice-free landmass from which it is entirely absent is New Zealand. This makes it the world's most widespread raptor, and one of the most widely found bird species. In fact, the only land-based bird species found over a larger geographic area is not always naturally occurring, but one widely introduced by humans, the rock pigeon, which in turn now supports many peregrine populations as a prey species. The peregrine is a highly successful example of urban wildlife in much of its range, taking advantage of tall buildings as nest sites and an abundance of prey such as pigeons and ducks.

In Other Countries: ^^^^^^

Holistic Description: Powerful and fast-flying, the Peregrine Falcon hunts medium-sized birds, dropping down on them from high above in a spectacular stoop. They were virtually eradicated from eastern North America by pesticide poisoning in the middle 20th century. After significant recovery efforts, Peregrine Falcons have made an incredible rebound and are now regularly seen in many large cities and coastal areas.

Species Richness: 19 SUBSPECIES

Population Dynamic: The peregrine falcon became an endangered species over much of its range because of the use of organochlorine pesticides, especially DDT, during the 1950s, '60s, and '70s. Pesticide biomagnification caused organochlorine to build up in the falcons' fat tissues, reducing the amount of calcium in their eggshells. With thinner shells, fewer falcon eggs survived to hatching. In several parts of the world, such as the eastern United States and Belgium, this species became extirpated (locally extinct) as a result. An alternate point of view is that populations in the eastern North America had vanished due to hunting and egg collection. Following the ban of organochlorine pesticides, the reproductive success of Peregrines increased in Scotland in terms of territory occupancy and breeding success, although spatial variation in recovery rates indicate that in some areas Peregrines were also impacted by other factors such as persecution.

Evolution and Systematics:

Evolution: No Peregrine Falcon fossils predate Pleistocene (about 1.6 million to 12,000 ybp). Most fossils are mid- to late Pleistocene and widespread at scores of locations in Pleistocene and Holocene prehistoric sites: e.g., Australia, New Caledonia, throughout Europe, Mediterranean region, Caucasus Region, North and South America.

Systematics: Exhibits variation in plumage coloration and morphometrics; somewhat clinal on continent with Aleutian Is. Peregrines most distinctive and morphometrically uniform. Resident populations generally conform to Gloger's rule (darker in areas of higher relative humidity) and Bergmann's rule (larger size at higher latitudes); migratory northern breeders smaller, however. Birds breeding in cold, dry climates (F. p. tundrius) are palest; in hot, dry climates (F. p. anatum) have tints of browns and reds; in humid climates (F. p. pealei and some F. p. anatum) usually saturated with tints of darker grays and grizzle. 19 SUBSPECIES, **3 IN NORTH AMERICA**

Number of Species: 19 SUBSPECIES

Number of Genera: 19 SUBSPECIES

Physical Characteristics:

Size and Length: Length: 14.2-19.3 in (36-49 cm) Weight: 18.7-56.4 oz (530-1600 g)

Wingspan: 39.4-43.3 in (100-110 cm)

Coloration: Adults are blue-gray above with barred underparts and a dark head with thick sideburns. Juveniles are heavily marked, with vertical streaks instead of horizontal bars on the breast. Despite considerable age-related and geographic variation, an overall steely, barred look remains.

General Body Features: Peregrine Falcons are the largest falcon over most of the continent, with long, pointed wings and a long tail. Be sure to look at shape as well as size—long primary feathers give the Peregrine a long-winged shape. As with most raptors, males are smaller than females, so Peregrines can overlap with large female Merlins or small male Gyrfalcons.

Special Features of the Body: The peregrine falcon's coloration helps it to blend into its environment. There are 19 subspecies of the peregrine falcon and each has different colorations to aid with concealment in its native environment. The majority of the subspecies of peregrine falcon have speckled underbellies and black to slate or bluish black wings and head.
Special Features of the Head and Sensory Organs: The name falcon is derived from the Latin word falcon meaning hook shaped and refers to the animal's beak and claws. Falcons typically hunt small birds and they use their beaks and claws to swiftly immobilize and kill their prey while in flight. These combined traits make the peregrine falcon a very successful predator. It is the fastest animal in the world; clocked at over 200 miles per hour during a stoop, or dive while in pursuit of a prey item. At that speed, any small bird that the peregrine falcon places in its sights is not getting away. All falcons use their talons to latch onto prey while their sharp curved beak severs the prey's spinal column at the base of the skull.
Dentition: BEAK/LAMELLAE/GIZZARD
Special Features of the Limbs and Digits: Like all falcons they have long tapered wings and a short tail. These anatomical adaptations equate to high speed maneuverability while in flight. These characteristics increase the fitness of areal predators.
Any Special Internal Anatomy: Peregrine falcons perch very high in tall trees, cliff sides and buildings which tend to reduce the predation of juvenile young by small mammals and lizards. Beyond reducing predation, a tall perch increases the successfulness of the peregrine's ability to successfully live hunt. Generally speaking, the higher the peregrine falcon is in reference to it prey, the faster speeds it can attain during its pursuit the higher the probability of a successful capture.
Sexual Dimorphisms: As is typical of bird-eating raptors, peregrine falcons are sexually dimorphic, with females being considerably larger than males.
Differences Between Juvenile Stage and Adult: The immature bird is much browner with streaked, rather than barred, underparts, and has a pale bluish cere and orbital ring.
Behavior:
Diurnal, Nocturnal, or Crepuscular: Diurnal
Activity: Peregrine Falcons are very strong fliers and often reported to be the fastest bird in the world. Their average cruising flight speed is 24 to 33 mph, increasing to 67 mph when in pursuit of prey. When stooping, or dropping on prey with their wings closed, it's been calculated that Peregrine Falcons can achieve speeds of 238 mph. One researcher studied trained Peregrine Falcons while skydiving and described their body position while diving at 150 mph and 200 mph. When hunting, Peregrines start by watching from a high perch or by flapping slowly or soaring at great height. Stoops begin 300–3,000 feet above their prey and end either by grabbing the prey or by striking it with the feet hard enough to stun or kill it. They then catch the bird and bite through the neck to kill it. Peregrine Falcons do have other hunting methods, including level pursuit, picking birds out of large flocks, and occasionally even hunting on the ground. Though the Peregrine Falcon is an elite predator, it does have its own predators, including Gyrfalcons, eagles, Great Horned owls, and other Peregrines.
Locomotion: Will walk on ground to approach prey, although most common in young birds. Will walk or run briefly on nest ledge to displace another bird. Incubating adults have trouble walking around eggs or nestlings because feet instinctively ball up as in incubating condition. Male has high-stepping walk used during ledge displays. Wings have low camber and relatively high aspect ratio. High-speed pursuit of prey and execution of stoop require extraordinary visual capabilities. From postural adjustments of head, raptors and falcons appear to use their forward-directed, shallow fovea for near vision (8 m) and their deep, highly acute, laterally directed fovea for distant vision. Having its most acute vision to either side of forward movement causes problem when falcon dives at prey from distance at high speeds, as turning its head sideways to see prey straight ahead may increase aerodynamic drag by factor of 2 and slow it down.
Communication and Perception: Alarm call a loud series of harsh "kak, kak, kak."
Home Range: NONE
Degree of Sociality: Despite solitary mode of existence adopted by most individuals outside breeding season, many breeding and pair-bonding behaviors occur on migration or nonbreeding (wintering) grounds, including neotropical; e.g., territories established, birds roosting together, immatures roosting near adult pairs, female food-begging to male, male prey deliveries to female, immatures chasing and food-begging from adults, copulations.
Level of Aggression: Peregrines attack and strike or grapple each other much same way they attack prey. Aerial fights involve stoops, tail-chases, strikes, and rollovers with presentation of talons to attacker; sometimes 2 birds hold onto each other's feet and cartwheel through air, infrequently falling to ground still bound together. On ground, attacker charges in running and flapping and grabs opponent by legs and feet; usually both birds manage to grab hold of each other in some way. Locked together, they jab and bite with bills, directing attack to each other's head and neck. Vicious and prolonged fights, sometimes lasting hours and resulting in fatal injuries if one bird does not break away soon enough. Occurs most often at eyrie when intruder attempts to replace a breeding bird.

Migration: The name "peregrine" means wanderer, and the Peregrine Falcon has one of the longest migrations of any North American bird. Tundra-nesting falcons winter in South America, and may move 25,000 km (15,500 mi) in a year. Maps of the migration of individual falcons determined by satellite telemetry can be seen at Environment and Climate Change Canada.

Predators:

Predators: Eagles, Gyrfalcons, Great Horned Owls, Bears, Wolves, Foxes, Wolverines, Cats, Golden Eagles.

Anti-Predator Defenses: Difficult to give hierarchy of aggression toward other species, but during breeding season, eagles, other Peregrines, Gyrfalcons, Prairie Falcons, and Great Horned Owls are or may be attacked with equal vigor depending on stage of breeding cycle or individual differences in falcons; even herons, large gulls, and jaegers often attacked.

Diet and Nutrition:

Adult Diet: Peregrine Falcons eat mostly birds, of an enormous variety—450 North American species have been documented as prey, and the number worldwide may be as many as 2,000 species. They have been observed killing birds as large as a Sandhill Crane, as small as a hummingbird, and as elusive as a White-throated Swift. Typical prey include shorebirds, ptarmigan, ducks, grebes, gulls, storm-petrels, pigeons, and songbirds including jays, thrushes, longspurs, buntings, larks, waxwings, and starlings. Peregrine Falcons also eat substantial numbers of bats. They occasionally pirate prey, including fish and rodents, from other raptors.

Juvenile Diet: ^^^^^

Special Adaptations for Getting Prey: CHECK FEATURES

Reproduction:

Mode of Reproduction: Monogamous

Mating System: Monogamous, but at least 3 documented accounts where male provided food to female at 2 eyries simultaneously.

Mating Season: February to May

Courtship: The courtship flight includes a mix of aerial acrobatics, precise spirals, and steep dives. The male passes prey it has caught to the female in mid-air. To make this possible, the female actually flies upside-down to receive the food from the male's talons.

Territoriality: NONE

Mating: Mounts either from air or standing position next to female. As male prepares to mount, female sleeks feathers, crouches, and leans forward, and may move her tail up and to side. During copulation, female is at an angle of about 45° with wings slightly lifted and extended, sometimes tail partly spread. Male maintains upright position throughout copulation by flapping wings high above body and balancing on his tarsi with closed toes and feet turned inward. During copulation, male's neck is extended and curved; he Chitters while she gives Copulatory Wail. Initially, many mountings may involve incomplete copulations. Completed copulations begin at least 2 wk prior to egg-laying. Duration of completed copulations ranges from about 5 s, earlier in season up to 10 s; normally conducted in close proximity to nest ledge. Copulations continue until third egg laid.

Nesting: Typically, Peregrine Falcons nest on cliffs from about 25–1,300 feet high (and higher, including on the rim of the Grand Canyon). On these cliffs they choose a ledge that is typically around a third of the way down the cliff face. Other sites include electricity transmission towers, quarries, silos, skyscrapers, churches, and bridges. In places without cliffs, Peregrines may use abandoned Common Raven, Bald Eagle, Osprey, Red-tailed Hawk, or cormorant nests. In the Pacific Northwest they may nest among or under Sitka spruce tree roots on steep slopes. Males typically select a few possible nest ledges at the beginning of each season and the female chooses from these. The birds do no nest building beyond a ritualized scraping of the nest ledge to create a depression in the sand, gravel or other substrate of the nest site. Scrapes are about 9 inches in diameter and 2 inches deep.

Egg-Laying: Clutch Size: 2-5 eggs Number of Broods: 1 brood Egg Length: 2.0-2.0 in (5-5.2 cm) Egg Width: 1.6-1.9 in (4-4.7 cm) Incubation Period: 29-32 days Nestling Period: 35-42 days Egg Description: Pale creamy to brownish, dotted or blotched with brown, red, or purple.

Hatching and Incubation/Gestation: Helpless, covered in whitish down, with eyes closed, weighing about 1.5 ounces.

Development: **Semialtricial**, nidicolous; covered with off-white (prepenne) down; bill and feet pinkish to pale gray; eyes closed; mass 35–40 g. If eyes open with food-begging first day, they are slitlike. Obtains 2 downy plumages.

Parental Care: Begins during hatching; young brooded >80% of time in Greenland up to age 10 d; amount gradually decreased to 20 d; not brooded thereafter.

Lifespan: Around 13 years of age.

Conservation:

Official Federal Status: Least Concern
Special Statuses in Individual States: NONE
Threats: The Peregrine Falcon has slowly been recovering after populations crashed in 1950-1970 because of DDT poisoning; at this time the eastern population was extirpated and it was declared an Endangered Species. But since 1966 populations appear to have stabilized according to the North American Breeding Bird Survey. Partners in Flight estimates the global breeding population to be 140,000 with 17% spending some part of the year in the U.S., 5% in Canada, and 5% in Mexico. This U.S.-Canada Stewardship 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. The Peregrine Falcon's recovery is due to pesticide bans and extensive efforts that were made to reestablish birds in the East, beginning with the work of Tom Cade in 1970 at the Cornell Lab of Ornithology, which eventually developed into The Peregrine Fund. The species recovered enough to be removed from the Endangered Species List in 1999.
Conservation Efforts: ^^^^^^
Extra Facts:

1. People have trained falcons for hunting for over a thousand years, and the Peregrine Falcon was always one of the most prized birds. Efforts to breed the Peregrine in captivity and reestablish populations depleted during the DDT years were greatly assisted by the existence of methods of handling captive falcons developed by falconers.
2. The Peregrine Falcon is a very fast flier, averaging 40-55 km/h (25-34 mph) in traveling flight, and reaching speeds up to 112 km/h (69 mph) in direct pursuit of prey. During its spectacular hunting stoop from heights of over 1 km (0.62 mi), the peregrine may reach speeds of 320 km/h (200 mph) as it drops toward its prey.
3. The Peregrine Falcon is one of the most widespread birds in the world. It is found on all continents except Antarctica, and on many oceanic islands.
4. The oldest recorded Peregrine Falcon was at least 19 years, 9 months old, when it was identified by its band in Minnesota in 2012, the same state where it had been banded in 1992.
5. Historically known as the duck hawk in North America.

Notable Species:

1. Falco peregrinus anatum, described by Bonaparte in 1838, is known as the American peregrine falcon, or "duck hawk"; its scientific name means "duck peregrine falcon". At one time, it was partly included in leucogenys. It is mainly found in the Rocky Mountains today.
2. Falco peregrinus pealei, described by Ridgway in 1873, is also known as Peale's falcon, and includes rudolfi. It is found in the Pacific Northwest of North America, northwards from the Puget Sound along the British Columbia coast (including the Queen Charlotte Islands), along the Gulf of Alaska and the Aleutian Islands to the far eastern Bering Sea coast of Russia, and may also occur on the Kuril Islands and the coasts of Kamchatka.
3. Falco peregrinus tundrius, described by C.M. White in 1968, was at one time included in leucogenys. It is found in the Arctic tundra of North America to Greenland, and migrates to wintering grounds in Central and South America. Most vagrants that reach western Europe belong to this subspecies, which was previously united with anatum.