

## **Peregrine Falcon**

*Falco peregrinus*

**Spanish name:** Halcon Pollero, Halcon Peregrino

**French name:** Faucon Perelin

**Other names:** Peregrine, duck hawk

**Size:** Length from head to toe 37-46 cm,  
wingspan 94-116 cm, mass 453-952 g

**Type migrant:** partial



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### **Introduction**

The word peregrine, which is Latin for “wanderer,” aptly describes this near-cosmopolitan and often highly migratory falcon. Peregrines are found on every continent except Antarctica and some individuals migrate distances up to 25,000 km annually. Although widely distributed, the Peregrine Falcon is common in only a few places. The species occurs in an extraordinary array of natural habitats, as well as in urban areas.

With speed, agility, and a trademark high-velocity stoop, the Peregrine Falcon is often considered to be the perfect flying machine. The species is a powerful hunter that is well suited for capturing avian prey. For centuries Peregrine Falcons have been prized for falconry, especially the larger females. These “masters of the sky” are fast and maneuverable, not only when chasing prey but also while performing aerial courtship and territorial displays. There are 19 subspecies of Peregrine Falcons, three of which are found in North America.

Populations of this naturally rare species declined across North America during the 20th Century due to widespread use of DDT. Peregrine populations were extirpated from most of the species’ original range in the East, and most populations elsewhere experienced declines as well. When Peregrine Falcons consume pesticide-laden prey, the pesticides accumulate in the peregrine’s fatty tissues and eventually interfere with an individual’s ability to produce eggshells of adequate thickness, thereby reducing reproductive success. Fortunately, a ban on the widespread use of DDT in 1972, coupled with extensive recovery efforts involving captive propagation and release and the species own reproductive determination, enabled the Peregrine Falcon to rebound to pre DDT-era levels.

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### **Identification**

The Peregrine Falcon is a long-winged, medium-sized falcon. Adult peregrines have bluish-gray upperparts and a blackish head. The species has dark mustachial marks on the sides of its face, whitish cheeks, whitish or buffy underparts with black spotting or bars, and gray or black barring on the undersides of its wings and tail. Young peregrines look similar to adults except that their upperparts are slate-colored to chocolate-brown and their underparts are buffy with black streaks. Female peregrines are 15-20% larger and 40-60% heavier than males.

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## **Breeding Habits**

Peregrine Falcons breed in a variety of different habitats across North America. The species prefers to nest on cliffs, and the presence of suitable nest sites often determines its distribution and density. Peregrines nest in a variety of cliff types including overlooking rivers and lakes, coastal areas, and mountain valleys. They also nest on rocky islands. A nest site must afford protection from the weather and potential predators, and it must be in or near areas with an adequate prey base. Peregrines prefer to nest on tall cliffs, and nest success increases with the height and protective nature of the nest site. Peregrine Falcons avoid nesting near potential predators such as Golden Eagles and Great-Horned Owls. Successful breeders rarely change nest sites, and preferred nest locations are passed down from generation to generation. It is not uncommon for a site to be occupied for decades and, sometimes, for centuries. Peregrines often reuse not only the same cliffs, but also the same individual ledge. Nest sites vacated during the DDT era are again being used, indicating that the use of specific sites probably involves more than simple tradition. The peregrine's tenacity to specific sites makes it relatively easy to study its reproductive success, and also has aided in its reintroduction.

The species also nests in tree cavities and in the stick nests of other species, on the ground, and on manmade structures. Historically, peregrines were known to nest on old buildings in small towns, but few were observed in urban environments. This changed during the Peregrine Falcon's reintroduction as individuals were raised and released into cities. Today, peregrines breed in many major urban areas that provide tall buildings for nest sites and ample pigeons and rats to feed upon. In 2000, there were 14 pairs of Peregrine Falcons breeding in New York City.

Peregrines usually breed when they are 2 or 3 years old. Individuals that are unable to acquire nesting territories do not breed until they are older, and individuals in populations that are below carrying capacity sometimes attempt to breed at one or two years of age. Peregrines perform awe-inspiring aerial displays during courtship. The male engages in a series of acrobatic maneuvers that may include power dives, roller coaster-like flights, loop-the-loops, and figure eight flights back and forth in front of the nesting cliff. Following such displays, both the male and the female soar together. In a feigned attack, one member of the pair may dive toward the other and, in response, the "attacked" individual will roll over and presents its talons. The pair sometimes lock talons, and touch their breasts or bills together. In some cases, food is exchanged in the air. Males transfer food to the female beak-to-beak, talon-to-talon, and by dropping it to the female as she flies underneath. When reintroduction efforts began, conservationists were concerned that peregrines would not breed in the confines of small enclosures that prohibited aerial courtship. Fortunately, this was not the case, and the lack of courtship flights did not prevent peregrines from breeding in captivity.

Peregrines lay their eggs in a nest depression called a "scrape." To make the nest scrape, a falcon pushes its feet backward while lying on its breast to create a small depression in the substrate. Peregrines build scrapes not only on ledges, but also when using the nests of other birds. No material is added to the scrape. Usually the male begins constructing the scrape, but sometimes both males and females are involved in the modest construction process. In some cases the male prepares several scrapes on the same ledge or on nearby ledges.

Food and weather often affect productivity. Typically three to four eggs are laid usually at two to three day intervals, and pairs only raise one brood per year.

Incubation generally begins when the last egg is laid. In northern areas, incubation begins after the first egg is laid and clutches hatch asynchronously. Eggs hatch 33-35 days after they are laid and the female does most of the incubation. While the female remains at the nest with the eggs and chicks, the male is responsible for bringing food back to the nest. For the first 8 to 12 days after the chicks hatch, the female broods continually. As the nestling period continues, the amount of time the female broods the chicks decreases. Once the chicks are 3 weeks old, the female leaves the nest more frequently and begins to hunt on her own. The nestling period lasts approximately 4 ½ to 6 weeks. During this time, nestlings gradually learn to eat on their own and become more mobile. By the end of this period, nestlings may have moved from the nest site to nearby ledges. Males, which are smaller than females, develop more rapidly and usually fledge several days earlier than their female counterparts. After fledging, the young stay in the area and are fed by their parents for several weeks. During this time, prey is transferred in the air and to receive food, the young may fly below and roll over underneath the returning parent. Fledglings also chase birds and catch insects during this period. As their flight capabilities increase, the young take more flights, chase each other, and engage in acrobatics similar to those that occur in courtship displays. After about six weeks, young leave the vicinity of the nest and are on their own.

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### **Feeding Habits**

Peregrine diets differ among regions, habitats, and seasons, as well as among individuals. Peregrines prey primarily on birds, and mammals typically comprise a smaller percentage of their diet. In North America, for example, peregrines feed on more than 420 species of birds, 10 species of bats, and at least 13 other species of mammals. Birds that are taken range in size from warblers to small geese. In places where pigeons and doves occur, they often make up the majority of the peregrine's diet. Migrating Peregrine Falcons sometimes feed on other smaller raptors, including Sharp-shinned Hawks, American Kestrels, and Merlins. Peregrines also feed on mammals including bats, lemmings, voles, rats, and squirrels as well as amphibians, fish, and insects. Prey choice appears to be determined by the vulnerability of the prey, not its abundance. Individual birds often prey selectively on several prey species.

Peregrines search for prey while perched as well as when in flight. When breeding, adults often hunt from high perches near the nest. In fall and winter, Peregrine Falcons typically use lower hunting perches. Once a prey item is spotted, peregrines use several means of pursuit to catch their prey including the stoop, direct pursuit, "ringing up" or circling, shepherding, contour-hugging, and running along the ground. Perhaps the best-known technique is the stoop, in which the peregrine dives at high speed from a great height in pursuit of its prey. As they close in on their prey, peregrines pull out of the stoop to pursue and then grab their prey. When they are traveling too fast to grab their prey, peregrines crash directly into it. Peregrines reportedly stoop at speeds of more than 200 miles per hour. Contour-hugging involves using features of the landscape that allow the peregrine to remain hidden until it is very close to its prey. To catch birds that are flying above them, peregrines circle or "ring up" after them. When attacking flocking species, the peregrine uses shepherding and repeatedly dives at the edges of the flock until a bird breaks formation. Peregrine Falcons sometimes walk along the ground in search of nestlings, rodents, insects, and reptiles.

Peregrines typically grab their prey with their feet, and usually kill their prey by dislocating its neck vertebrae. Even when an animal is struck and killed as the result of a stoop, peregrines usually still bite and break the animal's neck before beginning to feed apparently to make certain they have disabled it. Peregrines typically bring their prey to a plucking perch or to a cache site. Small prey items sometimes are consumed in flight. Particularly during the breeding season, excess food often is stored in one or more caches or hiding places. Males sometimes store food on the breeding grounds prior to the female's arrival and then use this food for courtship feeding. Females may take food from the cache site if their mate is late bringing food back to the nest.

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### **Conservation Status**

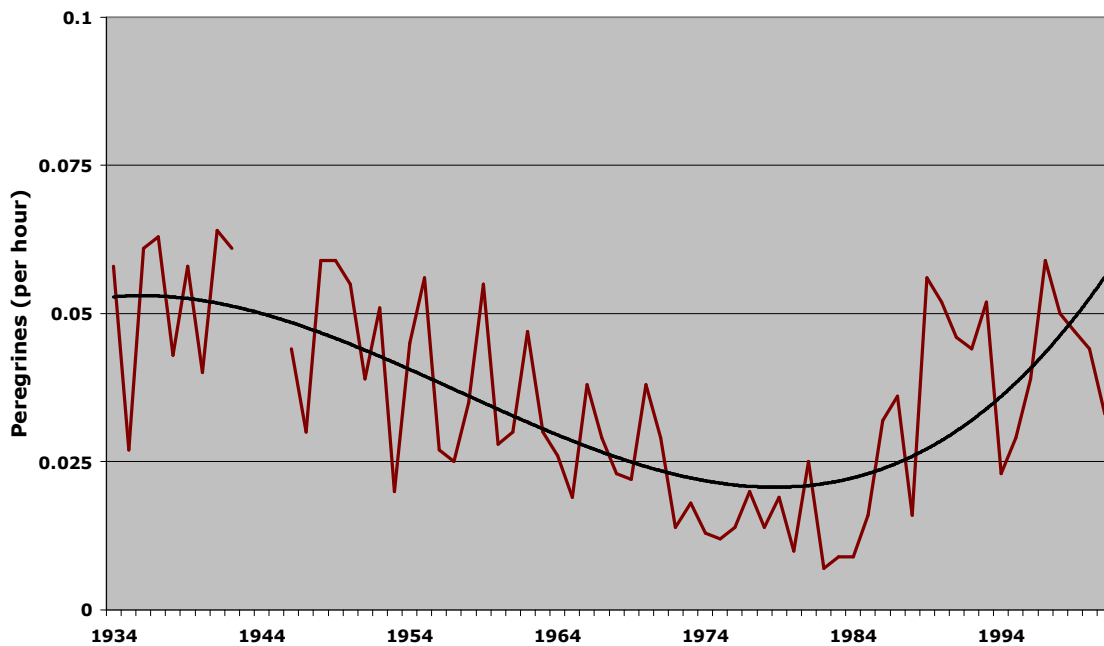
*The current world population of this near cosmopolitan species is believed to be close to 100,000 birds.*

Historically, peregrines were subject to direct persecution including shooting, trapping, and egg-collecting. Peregrines, along with many other species, were shot at well-known migration spots in the early and mid 1900s. In some instances, pigeon fanciers target peregrines, which they view as a threat to their birds. The greatest 20th Century threat to Peregrine Falcon populations was the widespread use of organochlorine pesticides including DDT. From the mid 1940s until the early 1970s, the widespread use of DDT and similar pesticides for forestry, agriculture, and human disease control resulted in high pesticide levels in most of the prey that peregrines feed upon. These toxins also accumulated in the Peregrine Falcon's fatty tissues and subsequently reduced the reproductive success of this species by causing eggshell thinning. As a result, Peregrine Falcon numbers declined significantly in the 1950s, 1960s, and 1970s. In 1970, the Peregrine Falcon was listed as Endangered under the Endangered Species Conservation Act, which was the precursor to the Endangered Species Act of 1973. The widespread use of DDT was banned by 1972 and in 1973 peregrines received protection under the Endangered Species Act and the Migratory Bird Treaty Act.

Regional recovery plans for the species were established under the Endangered Species Act. All of these plans sought to reduce the environmental contamination caused by pesticides, and most called for extensive captive propagation and release programs. The release of peregrines propagated in captivity began in 1974. By 1998, almost 7,000 individuals had been released and breeding pairs had reclaimed over 700 territories that had been vacated during the DDT era. The combined effects of strict legal protection, restoration efforts and the ban on the widespread use of DDT led Peregrine Falcon numbers to begin to increase in the late 1970s. Populations continued to increase in the 1980s and 1990s and by the late 1990s populations had achieved almost full recovery.

Despite their recovery to pre-DDT population levels, peregrines are not immune from threats today. Environmental contaminants remain potential sources of mortality for Peregrine Falcons though they have not had population-wide effects like DDT. It is difficult to assess the extent to which habitat loss affects peregrines because the species inhabits a wide range of habitats. As the numbers of Peregrine Falcons in urban areas increase, fatalities result from collisions with buildings, vehicles, aircraft, and wires. When peregrines nest on bridges, the young often fall into the water.

### Annual Fluctuations in Peregrine Falcon Passage at Hawk Mountain Sanctuary (1934-2001)



### Migration

*The Peregrine Falcon is one of 26 North American species considered to be a partial migrant.*

Peregrines are widespread on migration. Although migration begins across a broad front, clearly defined routes eventually become evident and the species often concentrates along leading lines. Individuals exhibit fidelity to specific flyways and typically follow the same route year after year. In eastern North America, the outbound and return routes of some individuals follow an elliptical path in which individuals travel south along the East Coast and return north along the Gulf Coast.

Unlike many other raptors, peregrines are not averse to crossing large bodies of water and often are seen along coastlines not so much in avoidance of water, but rather because the coastlines serve as prime hunting areas. Peregrine Falcons regularly cross the Gulf of Mexico and the Caribbean Sea. On their spring migration, many peregrines en route to eastern North America stopover at Padre Island on the Gulf Coast of Texas, which is an important shorebird stopover site. In contrast to coastal watchsites where hundreds of peregrines are sometimes counted, relatively few falcons are seen at inland watchsites in eastern North America.

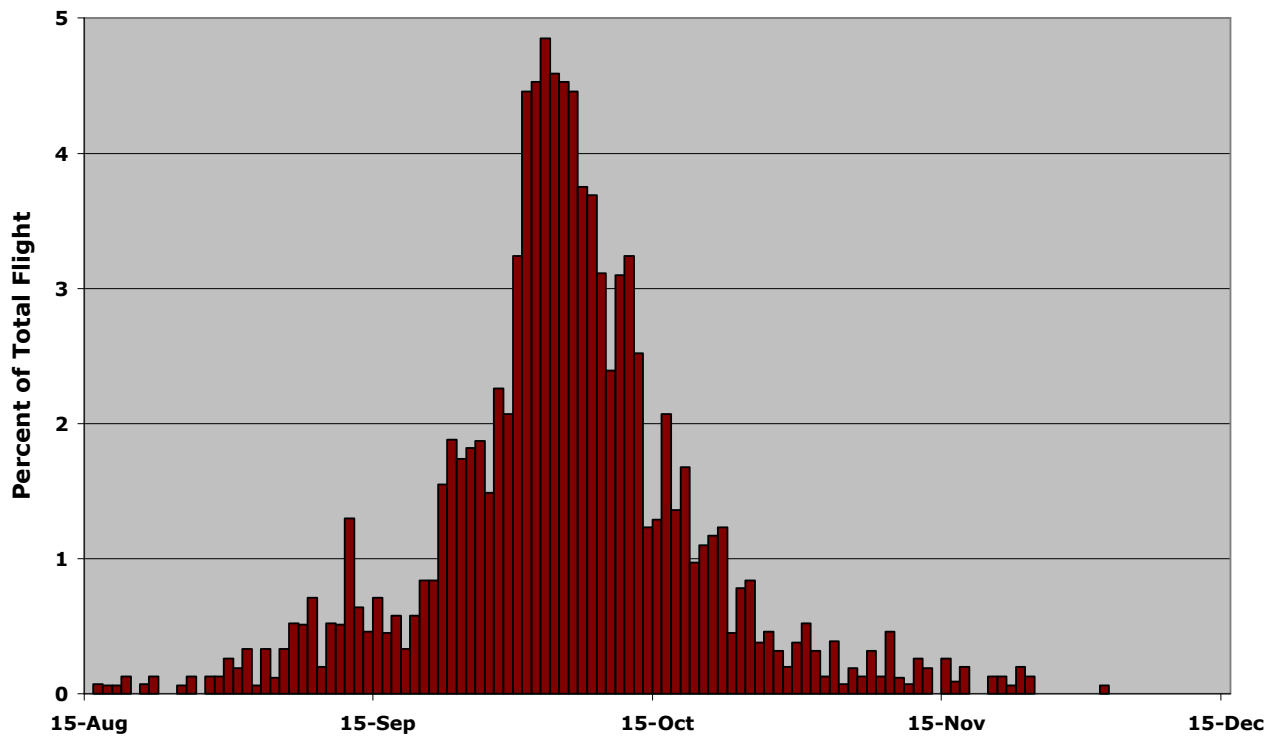
Some peregrines are long-distance migrants that make one-way journeys of up to 13,000 km. Northern tundra breeders in Greenland and Canada, for example, travel as far south as central Argentina and Chile. Almost all the individuals from tundra and boreal populations migrate, whereas more southerly populations are partially migratory. Continental Peregrine Falcon populations tend to exhibit a "leap-frog"

migration pattern in which breeders from northern areas winter to the south of individuals from more southerly locations.

Peregrines are low-altitude migrants that generally fly between 100 m and 900 m above the landscape. Although Peregrine Falcons frequently flap on migration, they also soar for long periods. Their average ground speed while migrating in flapping flight is 49 km/hr.

Counts of migrants at hawkwatches like Hawk Mountain can be one of the best means of assessing population trends of a species. During the DDT era, counts of migrating peregrines declined precipitously at Hawk Mountain. Since their recovery, increased numbers of peregrines have been observed. The longterm average autumn count for Hawk Mountain (from 1934-2002) is 26 birds. The average count for the past 10 years (1993-2002) is 44.

### Seasonal Timing of Peregrine Falcon Migration at Hawk Mountain Sanctuary (1934-2001)



**Top Ten List of Peregrine Falcon Flight Days  
At Hawk Mountain Sanctuary, 1936-2002**

<b>Number of Birds</b>	<b>Date</b>
<b>31</b>	<b>5 Oct 2002</b>
<b>11</b>	<b>7 Oct 1937</b>
<b>9</b>	<b>18 Oct 1942</b>
<b>9</b>	<b>5 Oct 1949</b>
<b>9</b>	<b>2 Oct 1999</b>
<b>8</b>	<b>12 Oct 1936</b>
<b>8</b>	<b>4 Oct 1997</b>
<b>7</b>	<b>23 Sept 1938</b>
<b>7</b>	<b>8 Oct 1941</b>
<b>7</b>	<b>6 Oct 1942</b>
<b>7</b>	<b>5 Oct 1967</b>

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**Suggested Readings**

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