

## Peregrine Biology: Natural History

[Courtship](#) --- [Nesting](#) --- [Eggs](#) --- [Incubation](#) --- [Chicks](#)  
[Fledging](#) --- [Longevity](#) --- [Mortality](#) --- [Food/Hunting](#)

### Courtship Behaviour:

Peregrines generally mate for life, but will readily accept a new partner if their mate dies. Migratory pairs may separate for the winter, while resident Peregrines generally maintain pair-bonds throughout the year. In either case, most Peregrines go through courtship rituals every spring. Males court the females with aerobic flights and repeated calls. Courtship feeding is often observed, where the male will catch prey and present it to the female. This strengthens the pair bond, and also gives the female the extra nutritional boost she needs to lay healthy eggs, since she is too heavy to hunt efficiently on her own just prior to laying the eggs.

Although pairs commonly stay together for many years, the relationship between couples often appears to be not too friendly. Females are normally dominant over males, and can be quite aggressive toward their partners. Often they will take food from the male, or chase him away from the nest. For his part, the male often approaches his mate cautiously and bows in submission to her.

### Nesting Behaviour:

Once the pair bond has been established, the next priority is to select a nest site. The male chooses several potential nest sites, and shows these to the female. She then decides which one of these she likes the best, and that becomes the nest. In some cases, pairs will alternate between two or three closely spaced nests over a period of several years, but more often a pair will use the same nest again and again, provided that they nest there successfully.

### Eggs:

Peregrine eggs range from creamy pink to reddish-brown in colour, and are 53 mm (2.1") long (slightly smaller than chicken eggs). An average nest contains three or four eggs. Young pairs often only have two eggs in their first breeding season, and then increase to three or four eggs in subsequent years. Some Peregrines regularly produce five eggs, and rarely as many as seven. The demands of feeding hungry growing chicks makes it difficult for a pair to successfully raise more than four chicks, although if food is plentiful they can sometimes manage to feed five. The eggs are usually laid every other day, and are left mostly unattended until the last or second-last egg has been laid, at which point incubation begins.



### Incubation:

For Peregrines, incubation usually lasts 33 to 35 days from the date the last egg was laid (or the second last, if that is when incubation began). The eggs generally hatch on successive days, but occasionally two hatch on the same day, or a day or two passes between hatching. During the incubation period, the eggs are rarely left uncovered for more than a minute or two, although on very warm days the adults may stay off them for somewhat longer periods. Typically the female sits on the eggs throughout the night, and also for much of the day. The male takes over for several short shifts through the day so that the female can get away and hunt for herself. As a result, the female usually does about three quarters of the incubation herself, while the male contributes the rest. In the last couple of days before hatching the female often becomes reluctant to leave the nest, and chases the male away if he offers to take over incubation.

### Chicks:

Peregrine chicks grow up very rapidly. By the time they are six weeks old they have already grown to full adult size, and are starting to fly. As the chicks develop, the parents allow them to become increasingly independent, and each week the appearance and behaviour of the chicks changes noticeably:

**Week 1:** When the chicks emerge from the eggs, they look like helpless bundles of white down with oversized feet. The chicks' eyes stay closed for the first couple of days, and during this time they do not move except to wobble back and forth in place. Toward the end of their first week, they begin to stumble around the box, and make tentative attempts to preen themselves with their beaks. During this period the adult female spends most of her time guarding the chicks, while the male does most of the hunting. Both parents feed the chicks at the nest, and there are several feedings per day.

**Week 2:** Over their second week, the chicks become less willing to sit still under the adults, and begin to spend more time moving around the nest. Although they start to stand upright during this time, most of their "walking" is still done on their tarsi rather than on their feet. Already at this age the chicks are becoming eager for food, and the adults begin to give them larger chunks. By the end of the week, the adults start to leave the chicks alone at times, and both adults hunt in order to satisfy the hunger of the growing chicks. By this time the parents are feeding the chicks up to ten times per day.

**Week 3:** At this age the solid white coat of down the chicks have been sporting since hatching begins to be flecked with dark patches as the flight feathers begin to grow in. Toward the end of the week, they begin to flap their rapidly growing wings. During this time they also become much more proficient at preening themselves.

**Week 4:** By the end of their fourth week the chicks have grown to the point where they almost rival the adults in weight, but remain mostly covered in down. They have gained strength, and are able to walk a considerable distance from the nest, but remain somewhat clumsy. If leg bands are being put on the chicks for identification purposes, this is usually done during their fourth week, when they are large enough that their legs are fully grown, but not yet old enough to consider flying away when the banders approach the nest.

**Week 5:** The chicks become increasingly restless during their fifth week, moving around a lot and beginning to flap their wings regularly. The adults no longer feed the chicks, but instead drop off carcasses and let the chicks tear the food up themselves. Even though the chicks appear to have voracious appetites, they are remarkably gentle with each other, and generally the chicks do not fight each other for food, but instead wait their turn. It is during this week that the chicks begin to have more feathers than down visible.

**Week 6:** The down feathers of the chicks begin falling out on a regular basis, and they spend much of their time actively trying to pull it out. The chicks are old enough to take their first flight at this time, and spend hours on end running back and forth along the nest ledge, and flapping their wings, until they finally dare to take off.

For a day-by-day photo guide of a chick's first five weeks of development, see our [Age Guide](#)

### Fledging:

There is a great deal of variation in the time at which Peregrine chicks leave the nest for their first flight. On rare occasions they take off as early as 33 days after hatching, while others linger for over 50 days. The majority, however, leave between 38 and 45 days. Females generally stay in the nest longer, because they are heavier and need longer to develop and strengthen the flight muscles needed to carry them safely. In the days before fledging, the chicks often spend hours on end perched looking over the edge, and flapping their wings, but seem to not be able to get up the nerve to go. Often the parents seem to try to encourage their young ones to take off, by flying past the nest carrying food in their talons, and by withholding food from the chicks for most of the day.

While they spend days on end teetering on the edge with wings pumping furiously, the first flight often occurs with little warning. Some chicks make effortless flights from the beginning, but others are not so lucky. Fledglings may quickly lose altitude, and end up landing on the ground. Often their wing muscles have not yet developed enough for them to fly back up to safety, and they fall victim to terrestrial predators. At many urban nests there is the additional risk of them landing in busy traffic. Another common problem is collisions with rock faces or building walls on their early flights, often because they have not yet learned how to decelerate to make safe landings. Fortunately, after just a couple of days of practice most Peregrines have mastered the basic skills of flight. Over the following weeks they become increasingly skilled aerial acrobats, and after about a month they begin to hunt on their own.

### Longevity:

Some studies suggest that Peregrines have an average life expectancy of only 4 to 5 years, while others indicate that the range is as high as 10 to 12 years. Captive birds frequently live even longer (around 20 to 25 years), and there are also records of a few wild birds which have nested for as many as 17 consecutive years.

Although some Peregrines have been known to breed when only one year old, they are generally considered to be mature at two years of age. Females will typically continue to lay eggs once a year until they die. The only time that a female would lay more than one clutch of eggs in a year is if the first eggs are lost or damaged before hatching or the chicks die in their first few days.

### Mortality:

Many studies have shown that the first year mortality of Peregrines ranges from around 60% to over 80%. Many of these deaths are concentrated around two times. The first is the period just after fledging, when Peregrines with poor initial flight skills may not get a second chance. In urban areas, where these birds are often rescued, the mortality rate for the first year is substantially lower. The second period of danger is during migration, when the young Peregrines must not only learn to navigate their way to safe wintering grounds, but also survive the hazards along the way, including poisoning and hunting.

Although mortality declines considerably in the second year, it remains higher than in subsequent years, and as a result only one or two out of every ten Peregrine survives to reach maturity. Fortunately, once Peregrines reach adulthood, the mortality rate drops off to very low levels, and they often live and breed for many years. The high juvenile mortality of Peregrines is one of the reasons why their populations are slow to recover, and it is therefore very important that as much as possible be done to help Peregrines survive their first year.

### Food and Hunting:

Peregrines generally hunt by diving on their prey from great heights. They fold their wings to their sides and go into a stoop (dive straight down), attaining speeds of up to 320 km/h (200 miles/h) (and some report higher speeds than this). It was long thought that Peregrines hit their prey in midair with their feet clenched like a fist in order to knock out their victim. However, it has been discovered that they keep all of their toes fully extended, and strike either with their talons or with the back of their forelegs. The impact is usually forceful enough to kill the prey instantly, and the Peregrine either stoops down to catch it as it tumbles, or picks it up off the ground where it lands. In cases where the initial blow was not enough to kill the prey, Peregrines usually bite the neck of the victim to finish it off.



While this is the typical mode of hunting, Peregrines use other approaches as well, depending on the situation. Sometimes they will swoop up from beneath their prey and snatch it out of the air, while in open areas such as tundra or grasslands, they will fly low over the ground like a harrier, trying to flush prey out of the grass and into flight.

Peregrines have extremely good eyesight, even in poor light, and often do much of their hunting at dawn and dusk, while remaining at rest during the heat of the day.

**Hunting success:** Hunting success varies greatly among Peregrines. Prey type and abundance, location, and sex all have a significant influence on the success rate. Despite their speed, some adult Peregrines are successful as few as one in ten times. Others have been observed with a success rate of over 90%. The average success rate seems to fall in the 20% to 40% range.

A study conducted at Cornell University demonstrated that females are more efficient hunters, because they can catch larger prey species, and therefore need to make fewer hunting expeditions, and as a result can conserve energy better. However, during incubation and while the chicks are young, the female spends most of her time at the nest, and does little hunting. The male therefore ends up providing most of the food during this time. The result of this is that when the chicks are young, they are fed small birds such as sparrows and starlings, whereas when they are older and need more food, the female begins to hunt again and brings larger prey such as pigeons and ducks.

Peregrines, as well as many other predatory species, can eat large quantities of food in one sitting, which is to their advantage because they never know when they will get their next meal. Peregrines can, in one sitting, eat a meal weighing as much as one quarter of their own weight. Additional food is usually stored in caches to be returned to at a later time when fresh food is scarce. A typical Peregrine family (2 adults and 3 young) eats roughly 225 kilograms (500 pounds) of food per year.

**Prey of choice:** Most Peregrines eat birds almost exclusively, although fledglings are often observed chasing after and catching large flying insects such as dragonflies. In years when voles and lemmings are abundant in the Arctic, Tundra Peregrines will often feed primarily on them, rather than on other birds. Dozens of species of birds have been recorded as prey, ranging in size from chickadees and goldfinches to pigeons, ducks, and gulls. While on migration, many Peregrines hunt primarily shorebirds.

In natural areas, Peregrines often nest near wetlands. As a result, their diet consists largely of ducks, grebes, rails and a variety of wetland songbirds such as blackbirds. In urban areas, the Peregrines take advantage of the abundance of city birds such as pigeons, starlings, and sparrows.

[Return to Peregrine Biology home page](#)