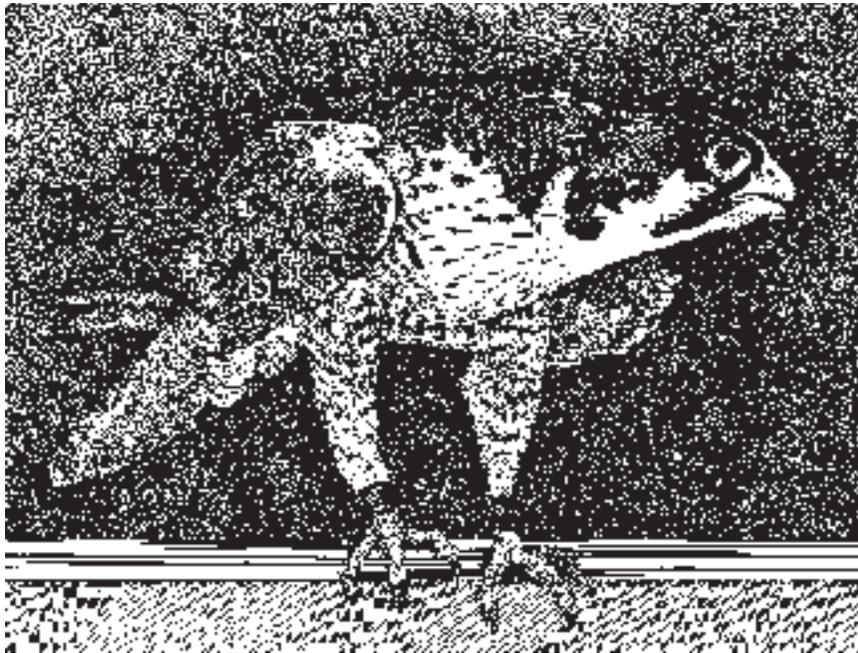
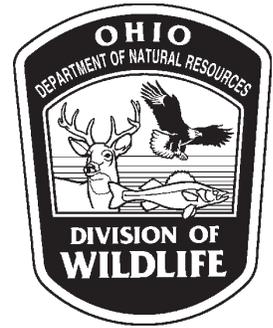


Peregrine Falcon

Scientific Name: *Falco peregrinus*



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Introduction

Falcons have had a long association with man. Falconry, the use of birds of prey in hunting, dates back to the year 2000 B.C. in ancient Egypt and China. The practice reached Europe by 300 B.C. Because of its strength, intelligence and maneuverability, the peregrine falcon was a prized possession among falconers. The peregrine falcon was the bird used by royalty in the Middle Ages, and its nests were sometimes the exclusive property of the nobles.

Peregrine falcons are found on all continents of the world, except Antarctica, and on many of the world's larger islands. Originally, there were three subspecies of peregrine falcons found in North America. The subspecies *Falco peregrinus anatum* was the one found in Ohio, the rest of the continental U.S., Canada and parts of Alaska. The current eastern population is descended from five different subspecies released since 1974.

Peregrine falcons have always been somewhat rare on the North American continent. It's believed that in the 1940s, there were approximately 5,000 peregrines on the continent, and only 350 breeding pairs in the eastern U.S.

After World War II, DDT was heavily used throughout the eastern U.S. The decline in peregrine numbers began in the 1950s, continuing through the 1960s and early 1970s. Populations of this species were essentially extirpated by the 1960s in the eastern U.S., and only a third

of the nests in the Rocky Mountains were still occupied.

Research showed that DDE, a by-product of DDT, accumulated in the fatty tissue of female peregrines and disrupted their production of normal calcium layers in egg shell formation. Like those of bald eagles, the abnormally thin-shelled eggs were broken in the nest during incubation and other eggs failed to hatch.

Peregrine falcons were placed on the federal endangered species list in 1970. Regional teams prepared recovery plans to assist governmental agencies in the protection and recovery of the species. Ohio is included in the Eastern Recovery Plan. A captive breeding program began in 1974 to introduce the peregrine falcon back into its previous breeding range. One such effort began in the mid-1980s. The Midwest Peregrine Falcon Restoration Project was initiated in an effort to restore the peregrine to the Midwest. Coordination and administration of the project is provided by the Raptor Center at the University of Minnesota and Bell Museum of Natural History. Ohio is a cooperating state and received peregrines for release through this project. Since then, over 600 young falcons have been released in the Midwest and eastern U.S. through a technique known as "hacking."

Appreciation of the peregrine falcon has grown as the bird makes headlines through its

rather unusual course of population recovery, nesting and breeding on the skyscrapers and office towers of America's major Midwestern and eastern cities. In Ohio and other states, the peregrine is making the artificial cliffs of downtown "home."

Peregrine falcons did not historically nest in Ohio. The first nest ever recorded in the state occurred in 1988 in downtown Toledo, and since then Cincinnati, Cleveland, Columbus and Dayton have also been home to nesting peregrines. Prior to 1988, these birds were rarely observed in the state except during migrations. Peregrines have been observed in Ohio along western Lake Erie and to a lesser extent inland during spring migrations (Peterjohn 1989). Fall migrants may be sighted from late September to late October, mainly along Lake Erie from the Central Basin west. Sightings in the interior of the state are usually near open areas or large bodies of water where prey species are more numerous. There are also scattered records of single peregrines present in the state during the summer months.

Description

As with many raptor (bird of prey) species, the female peregrine is larger than her male counterpart. Females measure 18 to 20 inches in length from beak to tail, while males are 16 to 18 inches in length. Wingspan varies from 37.2 to 40 inches for females to 31.4 to 35.6 inches for males. Female peregrines weigh from 1.6 to 2.4 pounds; males 1 to 1.5 pounds.

Peregrines have a distinctive appearance. The head and neck area are blackish with a dark wedge of coloration extending below the eyes that forms a "helmet" or hooded appearance. The throat, chin, and ear patch are contrasted by white feathers. The upper body ranges from a bluish-black or slate gray to rich brown; the back, the feathers of the bird's shoulders, and the small feathers on top of the wings and over the tail feathers have a faint cross pattern or barring, while the rump and tail feathers are more strongly barred. Wing and tail feathers have broad horizontal bars. Underparts are white to cream colored; males have a few blackish spots on the upper breast becoming horizontal bars on the lower breast and abdomen, extending to the sides, flanks and upper thighs. Females are more heavily spotted on the upper breast and become heavily barred on the abdomen, flanks, thighs, and under the tail feathers. In the adult the iris of the eye is very dark brown, and non-feathered portions of the lower leg and the feet are bright yellow.

Juveniles are more brownish-gray above, with buffy feather edges and less white underneath. They also have heavier brown to cinnamon colored markings in a more vertical pattern on the breast and abdomen. The ju-

venile peregrine's iris is dark brown, and its feet and lower legs are greenish-yellow.

Habitat and Habits

Traditionally, peregrines are found in regions of open habitat with tall cliffs that range from tundra, savanna, and forested river valleys, to coastlines and high mountains. The highest and steepest rock face available that provides a clear view of the surrounding area for hunting is preferred. Peregrines are usually associated with a source of water which attracts a prey base of small to medium-sized birds. Falcons roost on small ledges, and rock outcroppings on steep, bare rock walls preferably under an overhang. Migrants sometimes overwintered in large cities where tall buildings were used as roost sites and vantage points for foraging on pigeons. This natural behavior, coupled with the knowledge that peregrines had successfully nested on cathedrals, temples and old castles in Europe and Asia, led wildlife biologists to attempt hacking the birds in cities (which also lack the falcon's natural predators, primarily the great horned owl).

Eyries (nests) are usually established on vegetated ledges where eggs are laid in a scraped-out depression in the vegetation, soil, decomposed rock or remains of prey. The tops of tall buildings are well suited to such a nest type. Beyond the formation of a scrape, peregrines do not build nests, and they sometimes use the nest remnants of other species.

Peregrines are probably best known for their amazing flight speed in pursuit of prey. Prey may be spotted from a daytime roost or while circling high in the sky. The falcon attacks by swooping; the wings are folded so that they are nearly parallel, and the bird dives headfirst toward its prey at speeds that may exceed **200 mph!** The falcon will then strike the prey with its talons, usually killing it upon impact. The prey may be retrieved in midair or from the ground. Any small- to medium-sized bird can be a target for the peregrine; however, colonial nesting birds and those that flock are more susceptible to the falcon's hunting style. Pigeons, doves, shorebirds and waterfowl are typical forage species, but prey taken can vary depending upon habitat, geographical location and time of year. Peregrines sometimes hunt with a mate, especially early in the breeding season.

Current populations of peregrine falcons in Ohio are not readily classified as migratory or nonmigratory. Movement patterns are as yet unknown, and the small number of observations that we do have are variable. For example, some birds have returned to their nest sites early in February indicating that they have overwintered; however, some birds have been located as far away as Alabama and Tennessee.

Longevity is also difficult to pin down for this

species. Band recoveries of birds banded as nestlings indicate that most peregrines (60 to 70 percent) do not survive their first year following hatching. Twenty-three to 25 percent of falcons that survive their first year of life die in each following year. In the cities, the primary cause of death is collisions with buildings or other downtown obstacles; in more traditional settings, predation is the most frequent cause of death. Several peregrines aged 12 to 18 have been recovered in the wild, but they are very rare.

Dispersal patterns for these birds are also difficult to determine. Once the fledglings leave the nest, they are usually not seen again until they are either found nesting two to three years later or are recovered dead. Some birds produced from urban areas have shown a great range of dispersal from where they were hatched. A male bird nesting in Dayton arrived from Baltimore... 464 miles to the east, and "Nellie," our first urban peregrine came to Toledo from St. Catherine's, Ontario... approximately 305 miles away; her mate in 1995 arrived from Milwaukee, Wisconsin... 318 miles west.

Reproduction and Care of Young

Most peregrines don't become sexually mature until they are two to three years of age. Pairs are monogamous, staying mated for life. Behavior of pairs during the nonbreeding season is variable and is believed to be at least partially dependent upon prey availability. Some pairs remain together throughout the winter, while others appear to separate.

Established pairs return to the same breeding territory, and often the same cliff or city building, year after year. Male falcons that have not previously bred tend to return to their natal (the area where they were hatched) site in the spring. If a territory cannot be established, the birds disperse to suitable unoccupied habitat. Male peregrines have been observed defending territories of one to two miles around their urban nest sites. Among breeding pairs, it is believed that the male usually returns to the nest site first and begins aerial courtship displays to attract its mate. Early in the breeding season the pair will hunt together and occupy the same cliff or skyscraper while reestablishing the pair bond. A period of courtship follows, including aerial maneuvers with vocalizations by the male and the pair, feeding of the female by the male, and ledge displays by both male and female.

Eggs are laid in a scrape at the nest site at an interval of two to three days. The average number of eggs laid is four. Incubation is done primarily by the female, although the male may incubate for short periods during the daytime. Hatching occurs after 32 to 34 days. If a nest is destroyed during egg laying or early in incuba-

tion, the female will usually lay a second clutch.

Once the falcons have hatched, the female does most of the brooding of the altricial (helpless and dependent on the parents) young. Observations of city nesters indicate that some males are as active in brooding as their mates. For the first three to four days prey is delivered by the male to the female who then tears the food to small pieces for the chicks. Later, both the male and female hunt, but the female still does most of the feeding. Fledging usually occurs at 35 to 42 days. The average number of young fledged per nest is between 1.3 and 3.05.

The time at which breeding occurs varies by geographic location. Peregrines of the eastern United States (prior to their extirpation in the 1960s) were usually on their breeding territories by March, and began egg laying by late March and April. Fledging would then occur in late April and May. However, the current eastern and Midwestern populations of peregrines appear to be operating on a slightly different cycle, which has not yet been completely defined. So far, Ohio's peregrines have hatched in the months of May through early June and have fledged from June through mid-July.

Management Plans

Ohio's peregrine falcon management efforts began in 1988 with the first peregrine nest ever in the state on the Commodore Perry Motor Inn in downtown Toledo. Young from the nest were rescued several times from ground level and replaced at the nest site. A nesting box was later constructed on the building to provide a more secure site.

Another box was placed on downtown Cleveland's Terminal Tower in 1989 to provide a safe nesting location for a pair of territorial falcons there. Ohio's peregrine falcon hacking program started that year in Columbus with the release of five falcons from the Rhodes State Office Tower in downtown. Three falcons were successfully fledged in that effort.

The hacking program continued from 1989 to 1993 with a total release of 46 peregrine falcons in the cities of Akron, Cincinnati and Columbus. The goal of the hacking project was to establish a nesting pair in each of those cities. Since the first nest in 1988, 19 nests have been initiated in Ohio (through 1995) in the cities of Cincinnati, Cleveland, Columbus, Dayton and Toledo. Forty-one young have fledged from these sites. Volunteers and Division of Wildlife personnel monitor individuals and pairs regularly throughout the breeding season in these urban environments. Adult peregrines are identified by their leg bands. When possible, young are banded and blood samples are taken at three weeks of age for genetic evaluation and analysis of the level of toxic substances. Banding data and blood samples are sent to the

University of Minnesota's Raptor Center.

The Ohio Division of Wildlife has outlined several objectives in its strategic plan for the management of peregrines in the state. Among them: To establish a nesting pair in Akron, and maintain one or more nesting pairs in Cincinnati, Columbus, Cleveland, Dayton and Toledo; and to increase opportunities for public awareness and understanding in the cities where peregrines nest. To meet these objectives, the Division provides safe nesting structures, organizes volunteer groups to monitor nest sites, and manages nesting pairs when they occur in new locations. Media outlets are provided information to help us educate and inform the public, special interest groups are contacted and kept up to date, and educational materials are developed to assist in the effort.

Viewing Opportunities

Peregrine falcons are not easy to view; however, the best chance to see a falcon in Ohio would be to scan the sky near tall buildings in downtown Akron, Cincinnati, Columbus, Cleveland, Dayton and Toledo from March through July. You may catch a glimpse of an adult peregrine hunting or a fledgling learning to master flying. Binoculars are definitely needed to get a good look. At some urban nest sites television monitors have been set up in the lobby of the building so that the public can watch activities at the nest. You should check with the local news media to see if this option exists.

Other opportunities would be to view migrants along western Lake Erie from late March through mid-May, or late September to late October from the Central Basin of Lake Erie west. Infrequent sightings may occur in the inland counties near large bodies of water.

Do Something Wild!

The Division of Wildlife has utilized money from the *Do Something Wild!* income tax checkoff to provide nesting structures and brochures for its peregrine falcon project. Through the generosity of Ohio citizens, who either donated through the checkoff or made their direct contribution to the Endangered Species and Wildlife Diversity Fund, the Division is able to sponsor special projects benefitting endangered wildlife such as the peregrine.

Tax time **is not** the only time you can help. Contributions to our Endangered Species and Wildlife Diversity Program are accepted throughout the year. To make a donation, please send a check to: Endangered Species Special Account, Ohio Division of Wildlife, 1840 Belcher Drive, Columbus, Ohio 43224-1329. All contributions, whether made on your tax return or directly, are tax deductible.

At a Glance

Mating: Monogamous, pairs for life.

Peak Breeding Activity: Late March through May.

Incubation Period: 32-34 days, April through early June.

Clutch Size: Average four eggs.

Young are Hatched: Peak hatching occurs in May through June.

Young: Altricial (helpless and dependent on the parents). They fledge at 35-42 days.

Number of Broods per Year: 1; however, if a nest is destroyed early in incubation, the female may re-nest.

Adult Weight: Females - 1.6-2.4 pounds; Males - 1.0-1.5 pounds.

Adult Height: Females - 18-20 inches; Males - 16-18 inches.

Adult Wingspan: Females - 37.2-40 inches; Males - 31.4-35.6 inches.

Life Expectancy: Up to 12-18 years in the wild, but this is very rare.

Migration Patterns: Undetermined in Ohio. There is evidence that the birds may overwinter or migrate to areas with more prey.

Feeding Periods: Anytime during daylight hours.

Typical Foods: Pigeons, doves, shorebirds, waterfowl, colonial nesting and flocking birds.

Native to Ohio: Yes.

Active or Potential Nuisance Species: No.

The peregrine falcon is on the federal and Ohio endangered species lists.

Reference

Bruce G. Peterjohn. 1989. *The Birds of Ohio*. Indiana University Press, Bloomington. 237 pp.