



Peregrine Falcon

Falco peregrinus



Joe Kosack/PGC Photo

CURRENT STATUS: In Pennsylvania, the peregrine falcon is endangered and protected under the Game and Wildlife Code. It formerly was listed as endangered, then threatened at the federal level; it was removed from the federal Endangered Species List in August 1999. All migratory birds are protected under the federal Migratory Bird Treaty Act of 1918.

POPULATION TREND: The peregrine falcon is cosmopolitan, in more ways than one. It nests in many parts of the world and its choice of nest sites is now very diverse and often urban! Peregrines historically nested widely in the eastern United States, numbering about 350 nesting pairs in the early 1900s. In Pennsylvania, there were 44 known nest sites; most were on cliffs, usually along rivers. The native eastern breeding population was wiped out by the early 1960s, primarily due to effects of DDT. The peregrine falcon was listed as an Endangered Species by the U.S. Fish and Wildlife Service in 1972 following the catastrophic decline of the species worldwide. No nesting records were known in Pennsylvania between about 1959 and 1987.



Joe Kosack/PGC Photo

After DDT was banned, the Peregrine Fund Inc., a non-profit organization, organized with the mission of reintroducing the species into the eastern United States. Some of the earliest reintroduction sites during the 1970s included historic nesting areas in Pennsylvania. A slow, steady expansion in the population was assisted by supplemental releases of birds coordinated by the Pennsylvania Game Commission in the 1990s. The peregrine falcon subsequently experienced one of the most dramatic recoveries of any endangered species, and was formally removed from the federal list in 1999.

Cliff-nesting – where most peregrines nested in Pennsylvania prior to their population collapse and eventual extirpation – was first reconfirmed in the state in 2003 at a site in Lycoming County. Our statewide population experienced a surge from 13 pairs in 2006 to 23 pairs in 2007. A more traditional, slow population expansion has resumed since then, although some pairs may be overlooked. A total of 24 nesting pairs were known in 2009, including five on natural cliff sites and 20 on manmade structures.

IDENTIFYING CHARACTERISTICS: Peregrines are mid-sized birds of prey, 15 to 22 inches in length, with a wingspan of more than three feet. Adults have dark-bluish-gray upper parts and wings; undersides are whitish to buffy, broken by horizontal blue-gray bars. Young birds, up to two years old, are dark brown (rather than gray) on their wings and back with vertical brown streaks against a pale chest. The head has a dark "helmet" pattern that is more pronounced in adults. Like all falcons, the peregrine has long pointed wings and rapid, steady wing beats in flight. An adult peregrine can reach a speed of more than 200 miles per hour in a vertical dive called a stoop; in level flight they average about 60 miles per hour.



BIOLOGY-NATURAL HISTORY: The true eastern United States peregrine falcon was the subspecies *anatum*. The population reestablished by the Peregrine Fund from captive-bred birds employed many subspecies, including some of the native subspecies. That reintroduction has been tremendously successful and in many areas, birds are reoccupying historic nest sites.

Peregrines feed exclusively on other birds, typically by striking them in flight. Prey range in size from birds as small as the five-inch-long chimney swift, to waterfowl and gulls. While no formal food studies have been performed recently in the state, the remains of pigeons, blue jays, common flickers and other mid-sized songbirds are typically encountered at nest sites. The aerial hunting style provides part of the explanation for peregrines' preference for high prominences, buildings, cliffs and other open spaces with expansive views.



Joe Kosack/PGC Photo

In Pennsylvania, most peregrines are currently nesting on buildings and bridges. Power plant smokestacks also are used, and native cliff nest sites are being reoccupied. Male and female falcons remain paired for life, and renew their bond with courtship activity during late winter and early spring. Their courtship is marked by special flight patterns and by the male bringing the female food. No nest is built. In natural settings, a clutch of eggs is normally laid in a small scrape in gravel on a high ledge or cliff. For city dwellers, nest platforms and boxes have been installed on bridges and buildings where possible. The female peregrine lays her eggs at two- to three-day intervals, until her clutch has three to five eggs, with four the typical number. She shares the duties of incubation with her mate for about 31 days.

The eyasses, or young falcons, hatch after spending about two days "pipping" the shells with a sharp egg tooth on their beaks. At hatching, eyasses weigh about 1.5 ounces, are covered in a fluffy white down, and grow rapidly. Their down is replaced by feathers in three to five weeks and they are essentially full-grown at six weeks of age. Males develop more quickly than females.



Joe Kosack/PGC Photo

Females, however, are larger and more powerful when fully grown. In the early weeks after hatching, the female broods the young and feeds them with food brought by the male. As the demands for nourishment increase with their rapid growth, both adults provide food for the young. By age three weeks, eyasses move about the nest site and begin to tear meat from prey brought to them by their parents. Young pump their wings and do short flights along the nest ledge prior to taking their first real flight between 40 and 45 days of age. First flights, generally a broad arch out from the nest, may appear proficient but landings reveal their inexperience. After about five days on the wing, the young falcons are much more adept at flying and landing. Juvenile birds begin to hunt for food and disperse from the nest to care for themselves within four to 10 weeks after fledging. The prey taken during their first successful hunt may be a dragonfly or butterfly, but the young hunters will soon improve to include small birds.

Adult peregrines may remain in Pennsylvania year-round, although some individuals leave their nesting territory during the winter months. Based on results of telemetry studies, young dispersing from nest sites meander through the Mid-Atlantic region. They may travel hundreds of miles before taking a winter territory, and sometimes return to visit their natal area. We have no evidence of long-distance migration south to Latin America by Pennsylvania's birds.

In the spring and fall, migrants from Arctic regions of the subspecies *Falco peregrinus tundrius* pass through the state en route to Latin American wintering grounds. These are most readily seen at hawk migration sites such as Hawk Mountain Sanctuary, but birds (particularly in the spring) may show up anywhere.

Mortality in the first year of life is assumed to be high. Peregrines that survive to adulthood may reach 12 to 15 years. Most peregrines become sexually mature at two or three years of age. Occasionally egg-laying and territorial behavior may occur earlier.

PREFERRED HABITAT: Historically, Pennsylvania's peregrine falcons nested on cliffs, typically overlooking rivers. Nest surveys indicate 44 sites were once occupied in at least 21 counties. After an absence of nearly three decades, the recovery of breeding peregrines to Pennsylvania was first documented on bridges spanning the Delaware and Schuylkill rivers in the Philadelphia area. Today, peregrines are found nesting on bridges and tall buildings within cities, but they also have reoccupied five different historic cliff nest sites in recent years.

REASONS FOR BEING ENDANGERED: By 1961, peregrines no longer nested in Pennsylvania or anywhere in the eastern United States. Their catastrophic decline and extirpation has been attributed chiefly to pesticides – particularly DDT. Prior to federal protection, they were subject to egg collecting and shooting, but they withstood these pressures for centuries until DDT became widespread. With population growth following their recovery, new threats are being identified, in part because of the close association with human structures. A frequent cause of mortality, primarily to young, is airplane strikes in which it is believed the bird hits the plane. Reflective glass also kills many peregrines, as it does numerous migratory birds.

MANAGEMENT PRACTICES: Peregrine falcons have enjoyed extraordinary management attention, including federal endangered species status (but have since been delisted), active reintroduction, nest-site

improvement, protection at urban nest sites, and adjustments to bridge and building maintenance schedules to avoid disturbance at critical times.

Hacking/reintroductions occurred in Harrisburg, Reading and Williamsport during the 1990s. Hacking involves placing young birds in a rooftop or elevated enclosure for several weeks until they are ready to fledge. The enclosure is then opened so the birds can come and go as they please, with the expectation that some will return to hacking areas to nest in subsequent years.

Ongoing conservation includes annual surveys for new nest sites, protection of known nest sites from disturbance, reduction of hazards at nest sites to increase survival of young peregrines, and promotion of public support. At this time, the aim of management efforts is to restore peregrines at suitable historic cliff sites along major rivers and to enhance nesting success on buildings and bridges. Protecting existing nest sites and potential habitat to accommodate increasing peregrine falcon population levels is critically important.

Sources:

Berger, D. D., C. E. Sindelar, Jr., and K. E. Gambel. 1969. The status of breeding peregrines in the eastern United States. Pp. 165-173, *in* Hickey, J.J. (ed). Peregrine falcon populations: Their biology and decline. Madison, University of Wisconsin Press.

Groskin, H. 1952. Observations of duck hawks nesting on man-made structures. *Auk* 69: 246-253.

Hickey, J. J. (Ed) 1969. Peregrine falcon populations: Their biology and decline. Madison, University of Wisconsin Press.

Hickey, J. J. and D. W. Anderson. 1968. Chlorinated hydrocarbons and eggshell changes in raptorial and fish-eating birds. *Science* 162:271-273.

Rice, J. N. 1969. The decline of the peregrine population in Pennsylvania. Pp. 155-163, *in* Peregrine falcon population: their biology and decline. J. J. Hickey (Ed). Madison, University of Wisconsin Press.
U.S. Fish and Wildlife Service 1987. Revised peregrine falcon eastern population recovery plan. U.S. Fish and Wildlife Service, Newton Corner, MA. 35 Pp.

Suggested further reading:

Askins, R. A. 2000. Restoring North America's Birds. Yale University Press. New Haven and London.

Ratcliffe, D. 1993. The Peregrine falcon, 2nd Edition. Calton: T & A D Poyser.



Joe Kosack/PGC Photo