

INDICATOR: PEREGRINE FALCON REPRODUCTION IN SOUTHEAST MICHIGAN

Background

Peregrine falcons (*Falco peregrinus*), known for their swift flight, have never been very abundant anywhere in the world due to very specific nest site requirements and their position at the top of the food web. A 1940 survey of eyries (nesting sites) estimated that the eastern U.S. population consisted of only 350 pairs. The upper Midwest population was estimated to be 109 pairs before a dramatic decline in the 1950s. Historically, there were 13 known eyries in Michigan, all located on cliffs in the Upper Peninsula (Huron Mountains, Pictured Rocks, Mackinac Island), except for some found in steep sand dunes on the Fox Islands in northern Lake Michigan. The last documented successful nesting in Michigan before restoration began was in 1957 at Burnt Bluff, a cliff on the Garden Peninsula in Delta County (Michigan Department of Natural Resources 2001).

During the 1950s, the world population of peregrines was decimated, mostly due to the use of pesticides like DDT. When DDE, the breakdown product of DDT, accumulates in the bodies of many birds, it causes them to lay thin-shelled eggs which break during incubation (Michigan Department of Natural Resources 2001). Studies show the peregrine falcon retains the highest DDT residue of all vertebrates, causing reproductive problems (Appel et al. 2002). A repeat of the 1940 survey of historically known eyries, conducted in 1964, found no breeding pairs or even a single adult peregrine falcon east of the Mississippi River. As a result, the peregrine falcon was listed as an endangered species by the U.S. Fish and Wildlife Service in 1970. The peregrine falcon was also included in the first list of endangered species promulgated under Michigan's Endangered Species Act in 1974 (Michigan Department of Natural Resources 2001).

By the 1970s, DDT had been banned in both Europe and the U.S., partially due to data linking it to the decline of the peregrine falcon. In 1981, the Midwest Peregrine Falcon Restoration Team was created and charged with the task of developing a management plan to restore peregrine falcons as a nesting bird population in the upper Midwest.

A highly successful program for Midwest reintroductions into urban environments was started in 1982. Peregrine chicks of captive adults were raised in artificial structures and subsequently released into their new urban environment. These new homes, including buildings of all shapes and sizes, bridges, and power plant stacks, were so successful that in 2005, over 90 Midwest cities had peregrine falcon nesting effort. Peregrines feed exclusively on other birds which are abundant in urban areas, such as rock pigeons, mourning doves, European starlings, northern flickers and American woodcocks (Appel et al. 2002). It is also thought that, as these "urban" raised peregrines expanded their territories, they would naturally seek out some of the natural, more traditional sites, such as cliffs in the Upper Peninsula of Michigan.

By 1991, over 3,000 captive-bred peregrines had been released throughout the U.S., including 400 in the upper Midwest and 139 in Michigan (108 in the Upper Peninsula and 31 in Grand Rapids and Detroit; Michigan Department of Natural Resources 2001). As of 2005 more than 20 peregrines have been observed either nesting or attempting to nest in southeast Michigan (Figure 1). Birds released from Sudbury, Ontario and Pittsburgh, Pennsylvania formed a pair that became the first to successfully nest in Michigan at the Book Building in downtown Detroit in 1993 (Yerkey 2004.)



Figure 1. Peregrine falcon (*Falco peregrinus*) (Photo credit: Paul Buxton).

The year 1999 will be recognized as a milestone year for the restoration of endangered species. On August 20th, the peregrine falcon was taken off the list of federally endangered species. This triumph is significant, due to the fact that the eastern population of peregrine falcons had been completely eliminated by the mid-1960s. At the time restoration began, the population of peregrines in the U.S. was probably down to approximately 10% of its original size (Michigan Department of Natural Resources 2001). Reintroducing captive-bred falcons into the wild has proven to be successful in restoring a population of peregrines that were produced in the wild.

Status and Trends

Michigan started the introduction program with a goal of establishing ten successful nesting pairs by 2000. The first release site was in 1986 at a Grand Rapids location. In 1987, five peregrine falcon young were released in downtown Detroit. In 1988, one sub-adult pair was present when the five chicks were released; however, this pair did not successfully nest. For the next four years, various pairs continued to “visit” each year with no nesting success. In 1993, two young peregrines were successfully raised, documented for the first time in Detroit’s history and the first in the Lower Peninsula in 37 years. The number of young produced in southeast Michigan increased from none in 1992 to a peak of 10 in 2005 (Figure 2).

From 1997 through 2004, there have consistently been four territories defended by peregrine pairs in southeast Michigan. In 2005, two new nesting sites were added totaling six territories. These six territories produced a total of 10 peregrine young that subsequently fledged. In 2001, surveys found 10 territorial pairs in Michigan fledging 13 young, while in 2005 there were 17 territorial pairs fledging 33 young (Tordoff et al. 2005). Southeast Michigan, especially for peregrines nesting along the Detroit River and its connecting waterways, is a significant part of the species’ habitat in Michigan. They have also begun nesting in Canadian urban centers such as London, Ontario (USFWS 2005).

Management Next Steps

In 1999, the U.S. Fish and Wildlife Service delisted the peregrine falcon as a federally endangered species. However, it remains protected federally under the Migratory Bird Treaty Act. In Michigan, peregrine falcons remain listed as an endangered species under state law.

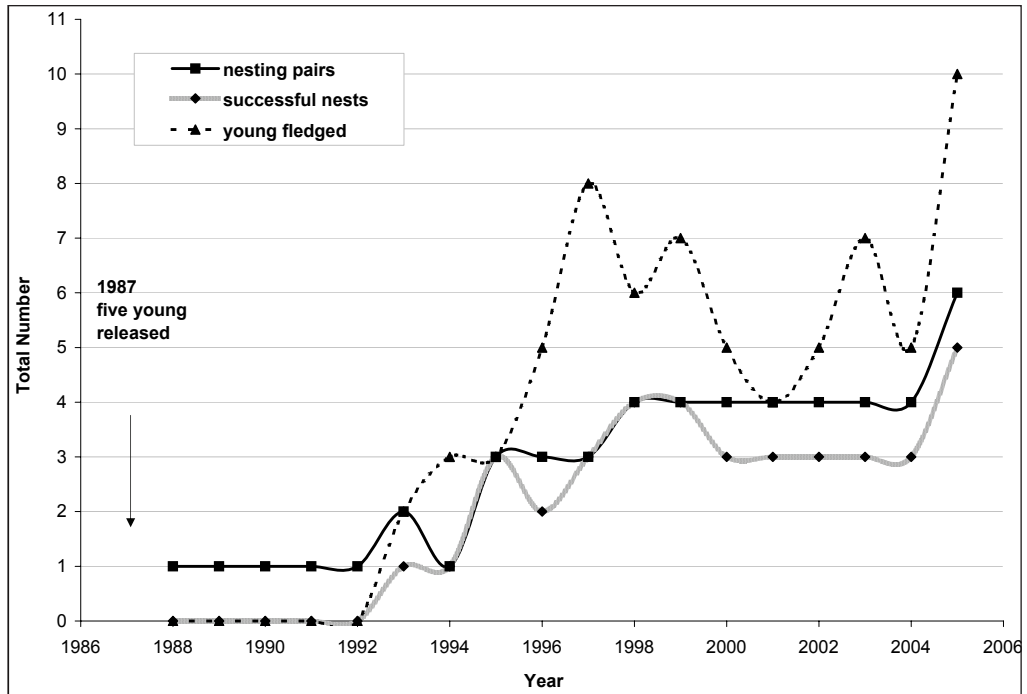


Figure 2. Southeast Michigan peregrine falcons' presence and reproduction success, 1988-2005. Reproductive success trends for nesting pairs, successful nests, and young fledged increased overall (data compiled by Judith M. Yerkey).

The goal of the Michigan Department of Natural Resources' Natural Heritage Program (nongame wildlife) is to maintain a population of at least 10 nesting pairs of peregrine falcons in Michigan.

The peregrine falcon is also identified as a Species of Greatest Conservation Need by the Michigan Wildlife Conservation Strategy (Eagle et al. 2005). Management strategies include:

- protecting and enhancing habitat (including artificial nests in the Detroit metropolitan area);
- minimizing disturbance and falcon mortality;
- monitoring contaminants, nesting success, and productivity; and
- continuing to protect peregrines through law enforcement, education, and public information.

Research/Monitoring Needs

The Michigan Department of Natural Resources has provided funding through its Natural Heritage Program to monitor falcon populations in the Detroit area and gain a better understanding of this species. With this funding and additional support, the current monitoring of the Detroit population should continue.

There have been cases of high mortality, likely caused by bad weather, incidental death, or predators, such as great horned owls, that put stress on the local population. More

research on the causes of mortality and the most effective means to decrease that mortality rate is required. Also, continued research of peregrine falcons throughout their current range could aid in a better understanding of nationwide environmental stressors and mortality. Additional research should be conducted on fledglings that are produced in Detroit and leave the area to determine the location of their nests and if they are reproducing successfully.

References

Appel, L.M., J.A. Craves, M.K. Smith, B. Weir, and J.M. Zawiskie. 2004. *Explore Our Natural World: A Biodiversity Atlas of the Lake Huron to Lake Erie Corridor*. Wildlife Habitat Council, Great Lakes Regional Office. Detroit, MI.

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Tordoff, H.B., J.A. Goggin, and J.S. Castrale. 2005. Midwest peregrine falcon restoration, 2005 report. <http://www.midwestperegrine.umn.edu/> (February 2006).

[USFWS] U.S. Fish & Wildlife Service. 2005. *Detroit River International Wildlife Refuge: Comprehensive Conservation Plan and Environmental Assessment*.

Yerkey, J.M. 2004. Southeast Michigan peregrines 1987-2004 ("An Overview"). Unpublished Report.

Links for More Information

U.S. Fish and Wildlife Service. American Peregrine Falcon: <http://www.fws.gov/ endangered/i/B22.html>

University of Michigan Museum of Zoology: http://animaldiversity.ummz.umich.edu/site/accounts/information/Falco_peregrinus.html

Detroit Falcons, 2005: http://www.geocities.com/macomb_audubon/Falcon_Page_2005.htm

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