

# How does Nest Site Imprinting Affect the Population of Peregrine falcons in the Midwest?

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*This paper is an attempt to provide an opportunity for dialogue and discussion in regard to the current and future efforts to reestablish the Peregrine falcon population in the United States mid-continental area. There are questions to be asked and decisions to be made. This paper is meant to be a resource by which some of these questions and debates may be brought to the table.*

## ***An Overview of the Pre-DDT Population***

Throughout history, Peregrine falcons were found on the cliffs bordering the Mississippi River and its tributaries. By the late 1940's, their numbers dramatically decreased with the use of DDT as a herbicide by humans. The population was completely eradicated by the mid 1960's in the Midwest.

It is difficult to fully assess the pre-pesticide populations of the Midwest, as complete documentation of the Peregrines nesting, breeding, and migration habits before the mid 1970s is limited. However, we can look to research done by Daniel D. Berger and Helmut C. Muller, which highlights the reproductive history of Peregrine eyries located along the upper Mississippi River in Wisconsin, and bordering Michigan, from 1952 to 1965. The area from Red Wing, Minnesota to Dubuque, Iowa was examined: a distance of approximately 320 km, with bluffs that border the river ranging in height from 70m to 185m above the floodplain. Thirteen known nesting sites were surveyed and at least one adult at 11 of the eyries was reported. Previously, in 1932, T.S. Roberts had estimated that six pairs bred along the Mississippi River in southeastern Minnesota (Hickey, 1969). We can also find evidence of the Peregrines history of Mississippi River cliff nesting in a US Fish and Wildlife Service report, which states that Peregrines were found in the same area prior to 1941 (Hickey, 1969). They estimated that there were 30 Peregrines along the Mississippi National Wildlife Refuge along the river. There was also an historical population found along Minnesota's North Shore District of Lake Superior, extending up into Canada.

## ***A Brief Assessment of the Current Population***

Efforts to restore the Peregrine falcon population have been successful in many ways. Not only have the number of breeding pairs in the Midwest increased, but there has also been an increased awareness of the severity of the plight of Peregrines. The urban bird has brought the Peregrine closer to man and drawn interest and publicity as appreciation of these magnificent creatures has spread. It is indisputable that we have progressed in our conservation efforts to restore Peregrine populations, but have we truly reached our *original* goal of returning them to historical nest sites? A comparison of present populations to historic populations (defined as pre-DDT populations) shows that we have created a population unlike the historic population. Due to concurrent releases by the University of Minnesota's Raptor Center and the Ministry of Ontario, a small population of North Shore birds has been established. However, the majority of subsequent releases were switched to the urban environment. Presently, Peregrines are now found on cities all across the Midwest, including Minneapolis, Milwaukee, Rochester, Chicago, Cedar Rapids and Des Moines, etc. Interestingly, Peregrines have also been established in states that have no history of Peregrine population: Ohio, for example. Their presence on buildings, smokestacks, and other urban structures signals the progress of restorations efforts; however, the present day Peregrine population of the Midwest is largely urban.

***Will the Falcons that dwell on concrete cliffs reach a certain carrying capacity and cross over to its original haunts?***

The answer to this question is one that will give insight to the restoration and future management efforts for the Peregrine falcon. We know that peregrines tend to display loyalty to their place of origin. In most present cases, those places of origin are nest boxes on skyscrapers and smokestacks in large cities. It has been documented that these falcons return to the same areas or even the same specific nest boxes year after year. The United State Fidelity and Guaranty Building in Baltimore, Maryland, for example, has been home to returning falcons since 1979 (Phillips, 1993). Site imprinting is a phenomenon that is just beginning to be understood. In his book, Understanding The Bird of Prey, Dr. Nick Fox writes: "There is a strong correlation between the type of nest in which chicks grow up and the type they will subsequently choose as adults. It is even possible for two populations of a species to exist in one area in a state of virtual genetic isolation." (Fox, 1995). We have seen this demonstrated in populations of cliff nesting and tree nesting Peregrines in Germany, which Mebs theorized remained genetically indistinct, yet never displayed crossover (1969; Kleinstauber, 1969).

Nest imprinting may also play a powerful role in whether or not urban birds cross over to the cliffs. In one case, two young falcons fledging on the former Montgomery Wards Tower in Saint Paul, MN, went on to nest on separate smokestacks. Structurally, the former Wards Tower and smokestacks are very similar. Although the sample size is small, this occurrence leads us to question whether or not Peregrine falcons are imprinting not *only* to man-made structures, but *also* to a specific type of structure. As stated previously, Dr. Fox is confident in the power of site imprinting and cites "examples of continuity of attempted use of nest sites over many years" (1995). In his book The Peregrine Falcon (1980), Derek Ratcliffe states: "Since birds probably tend to select the kind of nesting place in which they themselves were reared, it is thus unlikely that a tendency to be less demanding in choice of nesting site can ever become built in to the population." These statements lead us to believe that because Peregrines reared or released in urban environments may not recognize cliffs as possible nest sites, we may not see the crossover that was previously anticipated.

***Will the falcons that currently nest on the Minnesota/Canada border region and the Michigan Upper Peninsula expand to fill the void of the population missing from the Mississippi river, and are the Mississippi river cliffs within the range of the distribution potential of the North Shore falcons?***

The word "peregrine" means wanderer. Although it is true that Peregrines both wander and migrate vast distances, the very interesting research initiated by Tim Ellestad identifying sub-populations indicates that the Peregrine is in fact a homebody. Their dispersal distances could have a great effect on the population and it's ability to expand from one region to another. The North Shore falcons are approximately 200 miles from the cliffs of the Mississippi River. Although this is a feasible distance for females to travel, this may be beyond the dispersal distance for males. This suggests that they are unlikely to cross over to the cliffs of the Mississippi River and surrounding areas.

***What does this mean for those involved in the maintenance and restoration efforts of the Peregrine falcon?***

This is the question that is confronting us today. Currently, the Peregrine population present in the Midwest is an urban one that requires a great deal of ongoing maintenance. This maintenance includes installing nestboxes, cleaning nest sites, picking up the young from the city streets and returning them to the rooftops, and renewing enthusiasm for Peregrines when ownership changes hands. Perhaps now is the time to once again look to the river. Let us recall that our original goal was to reestablish Peregrine falcon populations at their historical nest sites on the cliffs of the Mississippi River and its tributaries. It is true that establishing peregrines on the cliffs will take an extra effort that is currently inactive, but the reasons to exert the effort are plentiful. In correspondence with Dr. Nick, he sums up the reasons best:

1. The cliff sites have a history of traditional use.
2. Despite ten years of city hacking and breeding, peregrines have not adapted to the cliff sites.
3. There is strong evidence that nest site imprinting is the factor inhibiting this adaption.
4. City populations are raising increasing management problems and draining resources.
5. The phenomena of nest imprinting has ramifications on management, breeding, and release, and needs further exploration.
6. In the words of Doctor Fox: ***"It is a sensible, natural approach. Peregrines normally live on cliffs. This is why they were called the 'Falcons of the Rock.'"***

At the Milwaukee Peregrine Symposium in 1995, Dr. Christian Saar talked and showed slides of efforts in Germany to reestablish the historic tree-nesting population of Peregrine falcons. He felt strongly about the importance of this work, and releases of young Peregrines were directed at the tree canopy. We recently received a fax from Germany informing us that Germany has now enjoyed witnessing its first tree nesting pair as a direct result of this concentrated effort. Direct release of Peregrine to cliffs will provide us with what we have sought for (i.e. the return of the Peregrine to its historical nesting sites), and know in our hearts is where the Peregrine belongs. Cliff releases of young falcons in the states of New Hampshire and Vermont have returned this species to their historical nesting sites. Interestingly, *these states have no urban nesting falcons.*

The restoration of the Peregrine falcon in the Midwest is in our hands. It is our responsibility to return the Peregrine falcon to its original place on the cliffs of the Mississippi river and its tributaries.