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MIDWEST PEREGRINE FALCON RESTORATION, 1989 REPORT

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INTRODUCTION

The eighth year of restoration of Peregrine Falcons in the Upper Midwest was completed in 1989 with the release of 100 young falcons. An additional 16 were released in Thunder Bay, Ontario. Pairs or single falcons were on territories at about 23 places by the end of the season. Twelve pairs of wild falcons laid eggs and at least 22 young fledged successfully.

Since 1982, 370 falcons produced in captivity have been released in the Midwest; for Minnesota, the total is 183. An additional 35 or more young falcons have been fledged by peregrines now breeding on their own in the wild. For Minnesota, we have reached the point where releases can be cut back or perhaps eliminated. In other Midwest states, releases will continue for several more years, but successful conclusion of the project is in sight.

It now appears that the new population of peregrines in the Midwest will differ dramatically in distribution from the original population, at least for the next decade or so. Specifically, the lowland river cliffs along the Mississippi River and its tributaries, the heart of the original population of falcons, will remain vacant until the new peregrines learn to deter predation by Great Horned Owls, as did the original birds. Instead, a substantial population of falcons will be nesting on city buildings and bridges in the great lowland arc from southern Michigan and Ohio west through Indiana, Illinois, southern Wisconsin, Iowa, and southern Minnesota to the Missouri River at Omaha. These corn belt peregrines are expected to provide the pioneers for an eventual successful return to the river cliffs. Until that happens persons wanting to see Midwest peregrines nesting on cliffs will have to go to northern Minnesota and to cliffs around Lake Superior, where owl densities are low and peregrines are able to nest successfully. (The owl/falcon dilemma is discussed in more detail by Cade, Redig, and Tordoff, in the *Loon*, 1989, 61 (4). Suffice it to say here that our original expectation that peregrines hacked along the river cliffs would be able as breeding adults to cope with owls on their own is apparently wrong. All eight falcon nesting attempts so far along the Mississippi have failed. But there is reason for optimism over the long haul.)

An amazing highlight of the summer was the nesting of two pairs of peregrines in the Chicago metropolitan area that went undiscovered, in one case until a week before the young fledged, in the other the nesting site is still unknown! We expected some nesting pairs in the wilds of northern Minnesota to evade detection, but not in metropolitan Chicago.

Dave Vesely, Andy Weaver, Diane Bond, and Andy Day pulled off the management trick of the year when they rescued eight of nine flying young peregrines from the attacks of two belligerent adult falcons at the hack site at the Environmental Learning Center, Finland, Minnesota, and transferred them 65 miles to a hack site at Virginia, where all eight survived to independence along with nine other youngsters already there!

POPULATION STATUS

SUCCESSFUL BREEDING PAIRS

1. Multifoods Tower, Minneapolis, Minnesota. On March 17, a juvenile plumaged female, 14V, released at Virginia, Minnesota, in 1988 was in the MFT nest box, being courted by Will, a new male for this territory. By March 23 14V was displaced by MF 1 (Muffin), returning for her third nesting. Will (04Y) is a two year old released in Rochester, Minnesota, in 1987. Will had spent the summer of 1988 in Rochester. The pair produced four eggs, from which two females hatched on May 24. We added a captive-produced male and female to the brood at seven days of age, and at three weeks moved the brood to the roof for fledging. All four fledged successfully in early July, but the fostered female (29V) was killed in a skyway collision on July 7. Another young Minneapolis female (30V) became grease covered at a settling pond at Kaukana, Wisconsin, was cleaned and released there on September 13, and picked up again with a broken ulna in nearby Appleton, Wisconsin, on September 21. She later died at the UM Raptor Center.

2. North Central Life Tower, St. Paul, Minnesota. Meg, the female who nested here in 1988, returned, paired with a new male, Radar, released at Weaver Dunes in 1985. Radar is probably the silver banded male that was at Bayport in 1988. Four eggs hatched on May 17. The three female and one male young were moved to the roof on June 5 and fledged on June 26. On June 30 two young females (26V and 27V) were grounded after building collisions, 26V with a broken furcula, 27V badly shaken up. On July 2, 27V was returned to the NCL roof and flew OK. On July 7, Radar was killed by colliding with a plane on the St. Paul airport, Holman Field. He was replaced the same day by a new adult male, probably also from Weaver Dunes, judging by his single silver aluminum band. The new male was aggressive to the young, driving them away from the downtown area. As a result, when 26V was ready on July 15, we released her at the Hill Annex Mine State Park release site, Calumet, Minnesota. On July 30, 27V was also struck by a plane at Holman Field and had to be destroyed. Final result, three young survived, one young female and their male parent dead.

On October 10, Meg and the new St. Paul male were both seen in the nest box (identified by band color and position, size, and plumage details). They were still present around the NCL building on December 23.

3. Palisade Head, Minnesota North Shore. Two adult peregrines were on the nest ledge used in 1988 on April 20. Judging by plumage details and band positions noted on April 28 and June 17, the male is almost certainly the same as in 1988 (Larry) and the female very probably the same (Fridge). Female incubating on May 15. One male chick (37T) about 3 1/2 weeks old banded by Dave Evans on July 3. Cold, windy rainstorms in late May and June may have reduced the brood on this exposed cliff.

4. Mt. Leveaux, Cook County, Minnesota. On April 28, a pair of adult peregrines was seen south of the hack box. No falcons reported in May or June, despite a careful check on June 17. John Bradley, owner of a cabin below the cliff, reported regular peregrine calling in midsummer, and Jim Carlson saw an adult peregrine and a flying, food-begging juvenile on the cliff on August 12 and 13. On August 15, Tordoff failed to find any falcons on a search of Mt. Leveaux and Mt. Oberg. On September 8, 9, and 23, 1989, Bill Lane watched an adult female peregrine and a juvenile flying together at Mt. Leveaux. The juvenile falcon tail-chased the adult female, calling repeatedly. The adult falcon perched twice in a conspicuous white pine at the top of the cliff, south of the release site, a favorite perch of the young falcons hacked there in earlier years. We conclude that a pair of peregrines nested and fledged at least one young somewhere in the vicinity of Mt. Leveaux in 1989. An unidentified pair of adult peregrines was also present here in 1988 at least

through June with no evidence of nesting. None of these birds has been seen well enough to tell if it was banded.

5. First Wisconsin Center, Milwaukee, Wisconsin. McArthur, the 1988 male, was back this year, paired with Sibella, 20V, a female released on July 20, 1988 on Isle Royale, Michigan. They produced three eggs, from which one female hatched on June 12. A male youngster was added to the nest and both fledged successfully, in contrast to 1988 when McArthur's aggression towards his young resulted in loss of two of them. The young male was captured and released at Cedar Grove, Wisconsin, on September 11.

6. Northern Building (recently renamed 125 S. Wacker Bldg.), Chicago, Illinois. A four year old female, Harriet, released in Minneapolis in 1985, and Jingles, a three year old male released in Chicago in 1986, nested here for the second year. Their first clutch of four was destroyed, at least one egg being eaten by the female. The pair renested, produced two eggs, one hatched on June 22, and a male youngster was fledged on July 31.

7. Evanston, Illinois. A pair of unidentified peregrines nested and fledged two, possibly three, young in an area where several large buildings provide potential nesting sites. The family was not discovered until the young were on the wing, and the nest site has not been located as of October, 1989.

8. Cline Avenue, East Chicago, Indiana. A pair of peregrines was reported here by Ken Brock on June 11 and confirmed by Vicki Byer on June 16; by June 18, two young had fledged and later a third juvenile was seen with the flying brood. The adult female had "P0_P" and the male "Y_4Y" on their black bands. The nest was in a square cave-like opening under the roadbed of a highway exit ramp, about 70 feet above ground level. The family had left the area by the end of July.

9. Winnipeg, Manitoba. The female youngster (Maud, 27P) produced in 1987 in Minneapolis by MF 1 and Billy Ray was in Winnipeg in 1988, paired to a male released in Winnipeg in 1986. In 1989, they nested in a box near the roof of the 30 story Delta Winnipeg Hotel and fledged four young July 14 to 16. One young was lost in a smokestack, the rest of the family was still around Winnipeg in late August.

UNSUCCESSFUL BREEDING PAIRS

10. Maiden Rock, Wisconsin. In late March and early April, an adult male peregrine with a plain aluminum band was defending the south end of the cliff and interacting with a large dark gray unbanded female Gyrfalcon. Some of the behavior between the two looked like courtship, some looked hostile. The female gyr remained until about April 7. By about April 20, the male peregrine had attracted a one year old female peregrine. We suspect by their behavior but cannot prove that eggs were laid. On June 10, feathers of the adult male were found below the cliff, probably remains of a kill by a Great Horned Owl. The site was deserted.

11. Detroit, Michigan. Solo (Y20Y), the male present in Detroit in 1988, paired with a new female, released near Montreal, Quebec, in 1984. Her activities between 1984 and 1989 are unknown. They lost their first clutch of three eggs, renested, and lost their second clutch, also apparently three eggs. The female was seen eating at least one of her eggs. Both adults were still in Detroit in mid-November.

12. Commodore Perry Motor Inn, Toledo, Ohio. At the site where two young were fledged in 1988, the 1988 male suffered a badly broken wing on April 17, 1989, and was sent to the UM Raptor Center. He had been released in St. Louis, Missouri, in 1985 by Walter Crawford. He was replaced by a new male who paired with the 1988 Toledo female, who had been released in St. Catherine, Ontario, in 1987. They nested but lost their nest in a windstorm. The new male is not yet identified.

NONBREEDING TERRITORIAL PAIRS

13. Control Data Headquarters, Bloomington, Hennepin County, Minnesota. We installed a box on the roof in March 1988 in response to reports of a peregrine using the building. On April 13, 1989, two one year old peregrines, largely in juvenal plumage, were present. The female is 08V, the male 04T, released together in 1988 from the Mayo Clinic in Rochester, Minnesota. Copulation was seen in spring and the pair remained to October 23, molting heavily through the summer. By the end of August both birds were in essentially complete adult plumage. They were not seen using the box, which will be raised about two feet to give the birds a better view both in and out. The building overlooks good hunting territory in the Minnesota River Valley National Wildlife Refuge.

14. Mayo Clinic, Rochester, Minnesota. Two peregrines, a first year male and a probable first year female were at the Mayo Clinic from late March through at least May. One bird (age unreported) was seen regularly through the summer and early fall. A nest box was installed on the roof of the east wing of the Clinic on April 5, in addition to the box put on the Plummer Building in 1988. There was no use of either box in 1989.

15. Environmental Learning Center, Finland, Minnesota. An adult male (present also in 1988) wearing a red band on one leg and a dark band on the other, suggesting Canadian origin, and a one year old female with a black band on her left leg, indicating release by us, moved in to stay at the ELC hack site on June 23, after earlier being seen on a cliff along Lake Superior a few miles away. Both were seriously aggressive to the nine hacked young, causing us to retrap eight of the nine, five of which had been flying since June 7, four since June 21. All eight were moved to the Virginia, Minnesota, hack site about 65 miles away, where they joined nine other flying young and all went on to become independent. The fate of the ninth ELC youngster, a strong flying male, is unknown; he might have left ELC on his own, or he might have been killed by the adult pair, which remained for the rest of the summer, at times visiting a nest box placed on a nearby cliff several years ago.

16. Chicago, Illinois. Since at least February, 1988, a rehabilitated male, Pacer, released in Chicago in 1986, has been paired with a female, Zoar, released in Milwaukee in 1987. Their territory, occupied year around, centers on the Fisher Building, near Irving Park and Lakeshore Drive, where two nest boxes are available. Again, no evidence of nesting was seen. Both birds were still on the territory at the end of August, 1989.

17. Trap Hills, Bergland, Michigan. A one-year-old male (Y4?Y, perhaps Y42Y), apparently from the 1988 Trap Hills release, and an unidentified female took up residence on the cliff in midsummer and became increasingly aggressive as the summer went on to the newly hacked falcons. Their activities focussed on an overhung ledge west of the hack site, where the male was seen bringing kills

to the female. Both birds were still present at the end of the release in August.

SINGLE TERRITORIAL BIRDS

18. Hastings and Bayport, Minnesota. A nest box was installed on the Hastings cliff on March 25. An adult male with a gold band on his right leg, left bare, was at the box on April 16 and 17 and sporadically until April 21. He entered the box repeatedly. Judging by band and plumage characteristics, he is the same bird who was here in 1988, paired with a one year old female, Nicaragua, 11P.

On April 24, an adult male appeared at the nest box on the smokestack at Bayport, about 22 miles north. On May 9, Bob Anderson and Tordoff independently saw that he has a gold band on his right leg, a bare left leg, and also seems identical in plumage to the Hastings male, who he most likely is. He remained at Bayport through the rest of the season, visited by females occasionally in May, but unpaired.

Meanwhile, the 1988 Bayport male, who had a plain aluminum band, may have been Radar, the male who nested in St. Paul in 1989 and was killed by a plane. The question remaining is, who is the new St. Paul male? His band appears to be plain, not gold, which would rule out the 1989 Bayport male. Musical chairs!

19. Seven Forty River Drive, St. Paul, Minnesota. In 1987 and 1988, a male peregrine (Twain) used this apartment tower overlooking the Mississippi River. Continued occasional use in 1989 led to placement of a nest box on the roof on June 29. The building was still being used in September, 1989, evidently by a single peregrine.

20. Split Rock State Park, Lake County, Minnesota North Shore. On May 15, a one year old peregrine, probably a male, was seen on the cliff north of the lighthouse, during a DNR boat survey of the North Shore cliffs. There was no follow-up to determine its territorial status.

21. Hill Annex Mine State Park, Calumet, Itasca County, Minnesota. Used as a hack site in 1989. An adult male falcon with a black band ("2Y") on the left leg arrived July 13, and returned intermittently for the rest of the season, last seen on August 21. It chased the hacked young, especially at first, but did not actually strike any of them.

22. Grand Rapids, Michigan. A male, Kent (Y54Y), released in Grand Rapids in 1988, was injured, rehabilitated, and released again in Grand Rapids in June 1989. He remained through the summer, only to be killed by a car in September 1989.

23. Illinois Beach State Park, Illinois. A female peregrine (red band on right leg, 6-C-3) released at Hamilton, Ontario, on July 16, 1988 and subsequently seen in Kentucky in September 1988, arrived at the hack tower on August 5, 1989. Initially very aggressive to the hacked falcons, she became less so as the month progressed. She remained until at least early September (see Chicago hack site report for more details).

NATURAL BREEDING

Summing up the natural breeding in 1989, 12 pairs nested, nine (75%) of which were successful. Twenty-two young were fledged, 2.4 young fledged per successful pair, 1.8 per nesting pair.

Of the 12 nesting pairs, eight were on buildings, three on cliffs, and one under a highway overpass. Seven of the eight building pairs succeeded, as did two of the three cliff pairs and the highway pair. Of the 22 young fledged in the wild, at least seven were not banded, five or six in two Chicago nestings and at least one at Mt. Leveaux.

EGG-SHELL THINNING

Two unhatched eggs were recovered in 1989 in Minneapolis. These eggs, compared with the mean for eggs from the pre-1947 eastern U.S. peregrine population (Ratcliffe Index, 1.99), show no significant shell thinning (R. I., 1.87 and 2.06). A single egg from the same female, MF 1, in 1988 had a Ratcliffe Index of 1.91. (The Ratcliffe Index combines empty eggshell weight, length, and breadth to give a standardized index of shell thickness.)

Tom Cade reports in a letter that a fairly high percentage of thin-shelled eggs have been collected in the East in the past three years, frequently from clutches in which some are normal, some thin-shelled.

Peregrine pairs nesting in Chicago and Detroit in 1989 lost first clutches, apparently through egg breakage. Egg shell fragments and/or contents are being analyzed for contaminants. Factors other than shell thinning, such as unsuitable nest substrate and rough handling by adult falcons, can contribute to egg breakage.

PEREGRINE RELEASES IN 1989

Minnesota. Twenty-eight young falcons were released at three cliff hack sites, 24 fledged successfully. Two young were added to the Minneapolis wild brood.

Rouchleau Mine, Virginia. Ten falcons were released in two batches of five. Two birds of the first group left the site prematurely and are presumed dead.

Environmental Learning Center, east of Finland. Nine falcons were released in groups of five and four. The arrival here of a pair of aggressive adults (see pair 15, above) forced us to trap eight of the nine flying young and transfer them to Virginia where they joined the eight resident young and fledged successfully. The fate of the ninth bird, a male, is unknown.

Hill Annex Mine State Park, Calumet. Nine falcons in groups of five and four were released from a tower made of construction scaffolding on the rim of the mine. The tower blew over in a storm before the release, resulting the death of two young in the first group. Another suffered a broken femur but recovered completely and was released successfully at the same site with the second group of four young.

A lesson learned from the Hill Annex tower accident is that construction scaffolding makes an easy, sturdy hack tower, an idea we borrowed from a southern Appalachian Peregrine Fund release, but the tower should be guyed to withstand more wind than seems likely ever to happen.

Wisconsin. Madison. Nine falcons were released in two batches of five and four. One died before release and two disappeared prematurely. Six fledged successfully, although one female picked up at Middleton on September 7, released, and recovered again on September 12 with a broken wing is now recovering at the UM Raptor Center.

Michigan. Thirty peregrines were released in Michigan in 1989 and 27 lived to become independent.

Isle Royale National Park. Ten falcons were released from a cliff in batches of five and five. Two left the hack site prematurely (ten days and two days after release) and are presumed dead. Eight fledged successfully.

Bergland, Trap Hills Hack Site. Ten falcons were released from two hack boxes on a six foot tower atop a cliff. All fledged successfully. Two one year old males from the 1988 release and an unidentified female were present at the site. One male, Y41Y, joined the young, fed from the tower, and was not aggressive. The other male (Y4?Y) and the female became seriously aggressive to the new youngsters as the summer progressed, finally preventing the young from feeding at the hack site except at dawn and dusk.

Pictured Rocks National Lakeshore, Alger County. Ten falcons were released June 14 and 17 from two hack boxes on a three meter platform atop a 50 meter cliff on Lake Superior. All ten flew successfully until dispersed by a storm on July 27, after five weeks on the wing. One was killed the next day in Escanaba, Michigan, by collision with a truck. After the storm, only four falcons returned to the hack site.

Ohio. Columbus. Five falcons were released from the Rhodes State Office Tower, four on July 18 and one on July 24. Four fledged successfully from this site and the fifth fledged successfully after transfer following a mishap to Cedar Rapids, Iowa. On August 27, one male (60T) was found dead under a power line about six miles from the hack site.

Illinois. Illinois Beach State Park. Ten falcons were released in groups of four and six from a tower along Lake Michigan. Seven fledged successfully, one died after suffering a leg injury, and one died and one dispersed prematurely apparently as a result of aggression by a one year old female peregrine released in Hamilton, Ontario, in 1988, reported in Kentucky in mid-September, 1988, and present at the Chicago hack site beginning August 5, 1989. She was initially very aggressive towards the younger falcons but by the end of August was less threatening. She remained near the hack site at least until early September.

A female (97P) from the 1989 Illinois Beach releases was found dead on October 4, 1989, along Interstate 64 in Posey County, southwestern Indiana, apparently hit by a car.

In late August and early September, the young Chicago peregrines were hunting migrating bats over Lake Michigan with remarkable success. Details are in the Chicagoland hack site report.

Iowa. Cedar Rapids. Nine falcons were released from the Telecom*USA building in groups of four and five. One was lost in a window collision. One falcon was transferred from Columbus, Ohio, after a mishap there delayed its release, making a total of nine fledged successfully in Cedar Rapids.

Nebraska. Omaha. Eleven peregrines were hacked from two sites, Woodmen Tower (five) and Mutual of Omaha (four and two). One died of an infection before release, a second failed to develop normally and was kept alive for educational use. Nine fledged successfully.

Ontario. Thunder Bay. The Ontario Ministry of Natural Resources, Canadian Wildlife Service, and a group of private citizens in Thunder Bay, led by Harold Kish, cooperated in a release of 16 peregrines in sequential groups of seven and nine three weeks apart from two hack boxes on an excellent cliff on Sturgeon Bay, a few miles southwest of Thunder Bay. All 16 falcons fledged successfully, making a strong contribution to the western Great Lakes population. The Thunder Bay release site is within sight of Isle Royale.

To sum up production for 1989 in the Midwest, 22 young were produced from wild pairs and 116 young (including the 16 at Thunder Bay, Ontario, part of the Midwestern population although not released under our auspices) were released from captive pairs, for a total of 138. Of these, 121 (88%) lived to independence (102 hatched, 88%; 19 wild, 86%). Causes of deaths were premature dispersal (6), collision with buildings (2), collision with airplane (1), collision with truck (1), blown-over hack tower (2), lost down smokestack (1), died before release (2), unknown (2).

PLANS FOR 1990 AND BEYOND

In 1988, we suggested a new goal for the Midwestern restoration effort of 40 territorial pairs of peregrines for the nine state area (Minnesota, Wisconsin, Michigan, Nebraska, Iowa, Illinois, Indiana, Ohio, and Missouri). Sixteen pairs were on territories in 1989. Judging by experience with the restored eastern peregrine population and our four year history of nesting birds in the Midwest, the population can be expected to double every two to three years in its early growth stage. A reasonable prediction for the Midwest might be 20 to 22 pairs in 1990, 26 to 30 in 1991, 32 to 36 in 1992, with the goal of 40 pairs reached in 1993 or 1994, given releases at the 1989 level through 1991. Individual states each have their own goals, however, which will likely result in a tapering off of releases in the 1990s, rather than an abrupt termination.

In Minnesota, we began releases earlier than other midwestern states and have now released 183 falcons. We are experiencing difficulty in finding safe release sites as adult falcons return to find territories. Accordingly, we intend to cut back or eliminate releases in 1990, depending on availability of funds.

The general objective of the restoration effort is to establish a self-sustaining population of Peregrine Falcons, large enough to reduce or eliminate the possibility of extinction through random events and sufficiently diverse genetically to provide adequate variation for natural selection. The size of a founder population is irrelevant to its survival if recruitment is not adequate. Large populations will disappear without recruitment; small populations will grow with adequate reproduction. No one can be sure at what level the new Midwest population will stabilize, but this level will be reached without human help once the general objective is met. The only biological benefit of releasing more falcons than the minimum needed to establish a safe, self-sustaining population is to reach the present carrying capacity of the region more quickly and to distribute the birds across the region in a satisfactory manner, although the details of distribution will be determined by the falcons themselves.

ACKNOWLEDGEMENTS

The Midwest Peregrine Project is a cooperative effort involving many people and organizations. The University of Minnesota provides the overall coordination and administration of the project through Dr. Pat Redig of the Raptor Center and Dr. Bud Tordoff of the Bell Museum. The Minnesota Chapter of The Nature Conservancy provides administrative support services and is involved in critical peregrine habitat preservation. Other financial and logistical support for the Minnesota part of the effort is provided by Minnesota DNR Nongame Wildlife Program, Minnesota DNR Parks and Recreation, Endangered Species Office of the U. S. Fish and Wildlife Service, U.S Forest Service, Minnesota Falconers Association, Iron Range Resources and Rehabilitation Board, Environmental Learning Center, Mayo Clinic, Northwest Airlines, and BCED Minnesota in Minneapolis and St. Paul. Over half of the financial support is

provided by private contributions. Each cooperating state and agency has, in addition, its own list of cooperators, for which see the individual hack site reports. Falcons are obtained from private falconer/breeders, listed in the appendix, throughout North America. Falcons were supplied through us to the Wisconsin, Michigan, Illinois, Ohio, Iowa, and Nebraska releases on a contract basis. The day to day devoted care that makes hacking falcons successful was provided by about four dozen hack site attendants, who are listed in the appendix.

Appendix

BREEDERS SUPPLYING PEREGRINES FOR 1989 RELEASES

Robert Anderson, Hugo, Minnesota
Les Boyd, Pullman, Washington
James Doyle, Arlington, Texas
Richard Graham, Colorado Springs, Colorado
Don Hunter and Victor Hardaswick, Centerville, South Dakota
Jack Oar and Bruce Haak, Boise, Idaho
Lynn Oliphant and Paddy Thompson, Saskatoon, Saskatchewan
Alberto Palleroni, Eugene, Oregon
The Peregrine Fund, Boise, Idaho
Ed Pitcher, Blackfoot, Idaho
Ralph Rogers, Winnifred, Montana
Steve Sherrod, Bartlesville, Oklahoma
Pete Widener, Sheridan, Wyoming

1989 CONTRIBUTORS TO PEREGRINE RESTORATION IN MINNESOTA

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Organizations

BCED Minnesota
Big Game Club Special Projects Foundation
Carlson Equipment Company
Citicorp/Citibank
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International Multifoods
James F. Bell Fndn.
Mayo Clinic
Minnesota DNR Nongame Wildlife
Minnesota Falconers Association
Northwest Airlines
Patrick and Aimee Butler Family Fndn.

1989 HACK SITE ATTENDANTS

Michigan

Pictured Rocks National Lakeshore, Jim Berkelman and Dyanna Smith.
Bergland, Trap Hills, Joe Rogers and Laurene Schlueter, and volunteers
Jeremy Rogers, Barb Rogers, and Irv Potts.
Isle Royale National Park, Blake Point, Gary Cress and Joel M. Peterson.

Minnesota

Virginia, Rouchleau Mine, Diane J. Bond, Andrew J. Day, Dave Vesely, Gail
Buhl.
Finland, Environmental Learning Center, Dave Vesely and Gail Buhl.
Calumet, Hill Annex Mine State Park, Gail Buhl and Jim Mussell.

Wisconsin

Madison, Van Hise Hall, Univ. Wisc., Leanne Eis, Rebecca Taylor, and
volunteer observers Ricky Lien, Naomi Hedge, Carson Cox, and Al Gunther.

Milwaukee, First Wisconsin Center, Greg Septon and Annie Wendt.

Illinois

Illinois Beach State Park, Vicki Byre, David Bernier, Dan Dinelli, Laurie Dinelli, Brian Doherty, Rich Hamilton, Mary Hennen, Russ Kamine, Sandy Kamine, Rose Kirwan, John McGuire, Mary-Fran Ohler, Leila Parts, Janice Siska, Angela Tate, Roger Tucker.

Iowa

Cedar Rapids, Telecom*USA Building, Bruce Ehresman, Pat Schlarbaum, Dave Conrads, and John Heusinkveld.

Ohio

Columbus, Rhodes State Office Tower, Jeanette Bettinger, Andy Hershner.

Nebraska

Omaha, Woodmen Tower and Mutual of Omaha Bldg., Brett Brunken, Jim Duffy, Lauren Gilson, Dana Yaw.

Table 6. PEREGRINE POPULATION GROWTH IN THE MIDWEST

Year	Total rel.	Terr. pairs	Nest. pairs	Succ. pairs	Young fldgd	Yg/n. pair	Yg/s. pair
1986	102	4	1	0	0	0	0
1987	170	6	3	1	1	.33	1.0
1988	254	13	8	6	12	1.5	2.0
1989	370	16	12	9	22	1.8	2.4

Note: Starting in 1989, "young fledged" includes young surviving to first flight from the nest, but with no reduction for birds known killed in the first few weeks on the wing.