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MIDWEST PEREGRINE FALCON RESTORATION, 1993 REPORT

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NOTICE: In late 1992, we joined a continental color banding scheme for Peregrine Falcons. All hatched and breeding falcons in our area are to be banded with bicolored bands, black over red (migrants get a different color). Bands have two numbers or two letters or a combination, one over the other. These are shown in our reports as 1/3 or C/H or 2/F, for examples. In order to increase the number of possible alphanumeric combinations, some bands have the lower (red) character on its side; these we show by using a caret (^) to indicate the tipped-over letter or number, for example, 2/^E or H/^4. We still used the convention this year of color band on the right leg for wild birds, left leg for hatched birds. The continental scheme asks that all color bands be put on the left leg only; we are appealing for an exception in our area on the grounds that we have over 800 falcons already marked with a right/left scheme that gives us valuable information even without reading the band.

INTRODUCTION

Twelve years into the restoration of Peregrine Falcons (*Falco peregrinus*) in the Midwest releases of falcons produced in captivity have been essentially completed. Through 1993, 639 young falcons have been released by hacking in the following midwestern states:

Illinois	46
Indiana	46
Iowa	49
Michigan	123
Minnesota	179
Missouri	24
Nebraska	22
Ohio	46
Wisconsin	104

In addition, 50 falcons were hatched from in 1989 to 1992 along the Lake Superior North Shore in Ontario by the Ontario Ministry of Natural Resources (Northwest Region), the Canadian Wildlife Service, and the Thunder Bay Field Naturalists. In Missouri, Walter Crawford and his associates have independently released XX peregrines in the St. Louis area. In 1993, new releases were initiated by Robert Anderson, Raptor Resources Project, in Alabama (10 birds), Arkansas (5), and Tennessee (5), extending the Midwest population into the southern states. Steve Sherrod, Sutton Avian Research Center, also provided peregrines for a release in Tennessee. These new programs will probably continue for a few more years, but hacking peregrines on a large scale seems to be completed in our region. For example, in 1993 only 20 falcons were released by hacking in our area (excluding the southern states and Ontario for comparative purposes), compared with 92 in 1992.

Where have these peregrines come from? Here is a breakdown by falcon breeders:

Name	Number	Percent of total
Robert Anderson	132	21%
David Baker	1	
David Bird	2	
Les Boyd	19	3%
Miles Coussens	4	
James Doyle	4	
Gerald Geiger	3	
Richard Graham	41	7%
Bruce Haak	22	3%
Robert Hollister	5	
David Jamieson	4	
Peter Jenny	7	
Burt Loessburg	2	
Brad Mitchell	4	
Greg Moore	1	
Lynn Oliphant		
& Paddy Thompson	116	18%
Jack Oar	25	4%
Alberto Palleroni	2	
Peregrine Fund	5	
Michael Peterson	3	
Edward Pitcher	3	
George Richter	1	
Charles Robinson	2	
Ralph Rogers	5	
Dewey Sevell	1	
South Dakota		
Raptor Trust	176	28%
Daniel Thee	9	
Skip Tubbs	8	
Pete Widener	28	4%
Ric Wood	1	

Although falcons from 30 sources have been released in the Midwest, three breeders, South Dakota Raptor Trust (= Victor Hardaswick/Donald Hunter), Robert Anderson, and Lynn Oliphant/Paddy Thompson, supplied 424 birds, 67% of the total. Oliphant's and Anderson's contributions are understated; at least 14 young falcons provided by Oliphant were kept to add to the captive breeding stock and do not show in the above figures, nor do the 19 falcons provided by Anderson for releases in the South in 1993.

Where have all these peregrines gone? If we apply the 40% first-year survival estimate often made for wild peregrines to hacked birds, then 525 (639 less 20 in 1993 and 94 in 1992) releasees should produce about 210 survivors to age one. Here is a rough accounting of hacked falcons known to have survived their first year in the Midwest.

Known hacked territorial birds in 1993	86
Known hacked territorial birds gone by 1993	59
Identified hacked singles, one year plus	30
Known hacked survivors, total	175

These known survivors are about 33% of the 525 falcons released early enough to give some idea of first year survival, below the 40% first-year survival estimated for wild populations. Some additional falcons from pre-1992 releases can be expected to show up in the future, but these may be offset by several 1992 birds already seen in 1993 and therefore included above as survivors. Other survivors have surely eluded us. A fair guess that Tom Cade made for eastern U.S. peregrines and that may also apply here is that we have not found perhaps 10% of the nesting pairs. Non-territorial single birds are even more likely to be missed. If we add 20 birds we might have missed in these categories to our total, we can account for about 37% as first-year survivors. Perhaps this is fairly close to the actual first-year survival rate of hacked peregrines in our area.

Are young produced by natural rearing by wild peregrines better able to live in the wild than hacked young? Forty percent first year survival of the 125 wild young fledged through 1991 in the Midwest would produce 50 one-year-olds. The actual count of wild produced young identified a year or more after birth is 18, only 14%. Perhaps wild young do not survive any better than (or even as well as?) hacked young, or perhaps it is too early to get an accurate count of returning wild young. It is encouraging to note that in 1993, ten of the 11 new territorial peregrines in Minnesota were wild birds. Because Minnesota releases ended in 1989, new breeders here must now come from wild nesting pairs or from immigrating hacked birds.

Of the 14 pairs of peregrines producing eggs in Minnesota in 1993, four were in nest boxes placed on smokestacks of electric generating plants by the Raptor Resources Project of Robert Anderson and his colleagues. Peregrines seem drawn magnetically to these tallest structures in the landscape, and need only a secure cave to stay and nest. The RRP smokestack nest boxes and comparable boxes put up by Greg Septon and the Wisconsin Peregrine Society have been very successful, opening a new niche for nesting peregrines across the country, even in the flattest countryside lacking cliffs or skyscrapers.

Weather in the Midwest in spring and summer of 1993 was foul. Cold and unremitting rains made the season about two weeks later than usual. Peregrines responded by laying somewhat smaller clutches and fledging fewer young. The five pairs nesting in the Twin Cities, for example, produced 20 eggs and 18 young in 1992; in 1993, they produced 18 eggs and fledged 16 young. Pairs nesting in boxes in cities are surely better protected from bad weather than pairs on cliffs. Over all, the cold, wet weather of 1993 seems to have reduced production of peregrine young less than we expected.

The literature on peregrine biology mentions only a few cases of polygamy, mostly poorly documented, making the three instances of polygyny in the Midwest in 1993 remarkable (see pairs 13, 39, and 44 for details). At least two serious territorial battles resulting in displacement of incumbents were reported, both apparently triggered by late arriving migrants, one with a prior claim from 1992 (details in accounts 12 and 43). A third fight in Des Moines resulted in the death of the adult male peregrine 20X, found dismembered, who had occupied the territory in 1992. These battles and the 1990 battle at the NCL tower in St. Paul (1993, Loon, pp. 107-110) suggest that differences in length and timing of migration, presumably under some genetic control, may sometimes be maladaptive in the artificially reconstituted Midwest population. Peregrines released here came from ancestors from populations ranging from strongly migratory (tundrius and Yukon and Northwest Territories anatum, for example) to non-migratory (pealei, peregrinus, brookei, and southern anatum). Some Midwest birds are now resident and some are strongly migratory. In Minnesota, harsh winters make the

rural countryside untenable for peregrines, but cities provide good winter habitat with buildings to live on and pigeons to eat. Across the heart of the corn belt south of the Great Lakes, peregrines probably do not need to migrate. Peregrines that do migrate and return in April will find nesting well underway by falcons that overwintered or returned early. Territorial strife from this cause seems inevitable until natural selection sorts out a new population with reasonably synchronized migratory behavior.

The bad weather reduced production of young compared with 1992 (2.6 young per successful pair in 1993 versus 3.0 in 1992). The number of territorial pairs increased from 37 to 53, and the total number of young fledged from 68 to 87 (from 54 to 76 if fostered young are excluded). The most satisfying news of the year came from our neighbors on the Ontario North Shore of Lake Superior. Surveys by boat and helicopter by the Thunder Bay Field Naturalists and Ontario Ministry of Natural Resources (Northwest Region) located five pairs (pairs 30 to 34) of peregrines nesting on cliffs, according to Harold Kish (TBFN) and Ted Armstrong (OMNR). Given the wild country and the large number of splendid cliffs, the actual number of pairs may easily be twice those counted. Limited manpower and money made it impossible to identify the adults or to band the young, but clearly the releases over the past seven years of 50 falcons around Thunder Bay and Nipigon and 50 on Isle Royale have paid off richly. For those who relish peregrines on cliffs in wild places, this news from the north is especially welcome. It takes nothing away from our admiration of the urban pairs of this adaptable species to have special feelings for peregrines in their primeval habitat.

1993 POPULATION STATUS

SUCCESSFUL BREEDING PAIRS

(Pairs fledging young)

1. Multifoods Tower, Minneapolis, Minnesota. Adult peregrines were again present in Minneapolis through the winter. MF-1 (Muffin) was identified at the nest box on January 18, her seventh season here. Will 04Y was identified at the box on March 1, starting his fifth season. Despite her early presence, MF-1 laid late and in a peculiar pattern. She laid two eggs on April 15 and 17, about ten days later than usual, then laid a third on April 25. The first two hatched on May 23-24. Bob Anderson then hatched the third in an incubator on May 26. All three young fledged with no problems, the two older males about a week before the female. This year we let the young fledge from the nest box, now modified with a front porch, rather than moving them to the roof as in past years.

The Multifoods female young, Autumn 5/4, was identified by Pat Skewes in Madison WI on October 11 and was killed in a collision with a plane at O'Hare airport in Chicago on October 25.

2. North Central Life Tower, St. Paul, Minnesota. Meg 12R again spent the winter here and nested for the sixth year. Her mate was apparently Spanky 04T, as in 1992, but his identification was based only on plumage details from sketches made while he was at the Control Data site in 1989-91; we were unable to read his black band. He was present on March 3 and probably earlier. Meg laid four eggs by April 10; three hatched and the two young males and a female fledged in June. One of the males was found dead on the street near the nest on June 22.

3. NSP King Power Plant, Bayport, Minnesota. Female Mae 31V spent the winter here, as in past years. Her half-sibling mate 13T, however, never returned in spring. Mae remained alone until a juvenile male appeared about April 23. John Taylor, NSP guard, was able to read on the video monitor enough of the black band on the male's right leg to show that he is 51Z, Mae's own son from 1992! Mae, wasting no time, laid three eggs by April 30; all three hatched. The two females and one male fledged with no problems. Male 51Z was a good parent, incubating for long stretches and providing the family with food, despite his immaturity. Mae's former pairing with her half-sibling was enough to raise eyebrows; her mating with her son is downright scandalous. She seems determined to inflate the coefficient of inbreeding for the population. She has the distinction of raising a brood for which she is both mother and grandmother, while 51Z is both their father and half-sibling.

4. Montgomery Ward, St. Paul, Ramsey County, Minnesota. Bob Anderson saw a juvenile female here with "78" on the black band on the right leg on February 27 or 28. This bird is most likely 78R, fledged from the Multifoods Tower in 1992 and, after the brief interlude at the Ward tower, headed for a short career at Cohasset, Minnesota (see pair 12). Two adult falcons were here by March 12, Comet 11V and Maverick 05T, both back for the fourth year. Four eggs were laid; four young, two males and two females, hatched and fledged in late June.

5. Colonnade Building, Hwy. 100 and I394, Minneapolis, Minnesota. The same peregrines, three-year-old female 81V and four-year-old male 31T, nested again in the box on the 15th floor ledge on the northeast corner of the building. Male 31T wintered here again; two adults were seen at the nest box on February 2, but female 81V was not positively identified until early March. She laid four eggs by April 12. One egg disappeared during incubation, three hatched by May 16. All three were males, fledging around June 21. This glass building situated on a busy freeway would seem to be a hazardous location for nesting peregrines, but in two years seven youngsters have fledged here with no known losses. Each year, however, some of the young have been grounded after their first flight, defeated by the lack of perches below nest level on the glass walls. When rescued and released on the building roof, they do well on subsequent flights.

Male 31T seems adept snatching prey from the surface of water or mud flats, as evidenced by the dozen Pied-billed Grebes, mostly juveniles, taken in summer of 1991 and his frequent capture of Sora and Virginia rails. This summer he even brought to the Colonnade a fresh seven-inch crappie, which went uneaten until the desiccated fish was carried off by the newly fledged young peregrines. Rob McIntyre also found remains of a red squirrel and hindquarters of a cottontail rabbit at this site when he cleaned the nest box in late September, 1993. Versatile birds!

6. NSP Blackdog Plant, Eagan, Dakota County, Minnesota. A single male peregrine lived here in 1992, using a nest box on a smokestack. Bruce Fall saw an adult peregrine at the box on April 18, 1993. By April 20, two adults were present. Three eggs were in the box on May 14 when Bob Anderson and Tom Wilkomm, NSP, climbed the stack and caught the unbanded female (now b/r 4/5, right leg). Anderson read the male's band, 55X, during banding of the three chicks on June 22. Male 55X was fledged from the Montgomery Ward Tower in St. Paul in 1991; the female is assumed to be from an unbanded wild brood, who knows where. The chicks, two males and a female, fledged over the flooded Minnesota River valley in mid-July.

Unfortunately, the adult female 4/5 and one of the male young were killed by colliding with cars in the Twin Cities in September, 1993, and the other

young male was shot near Waterloo, Iowa, in September and is currently under care in The Raptor Center.

7. Mayo Clinic, Rochester, Minnesota. Paul Scanlon, Mayo MD, reported two falcons at the Clinic on January 19. In March, female Minnsoar 75V, back for the third year, and male Chase 06T, fourth year, were identified by their black bands. They nested for the second time in a box on the Plummer Building, laying four eggs by April 9, according to Tom Hennessy, Mayo. Three hatched May 11 and 12, and two males and one female fledged in mid-June. Hennessy and Ted Bartel, Mayo, reported that one male was killed on June 18 and the second on July 17 in collisions with glass-walled buildings.

8. NSP Sherco Plant, Becker, Sherburne County, Minnesota. Back for the second year at this smokestack nest box were female 36R and male 94T, identified by Dan Orr, NSP biologist. In 1992, this pair failed to hatch their eggs but fledged two foster young. In 1993, the first adult returned about March 22, the second by March 26. They produced four eggs, hatched four, and fledged all four young, three males and a female, in late June. Male 94T somehow lost his USFWS silver band between summer 1992 and spring 1993. While paired with female 36R at the Sherco Plant, male 94T was also paired simultaneously with a female peregrine 31R at the NSP Monticello Plant, four miles to the south (see pair 44).

9. Palisade Head, Lake County, Minnesota North Shore. An adult female peregrine arrived here on March 26; an adult male on March 29. Dudley Edmondson identified the female in early April as Fridge 43R, back for the sixth year. On May 21, Dave Evans and Tordoff identified the male as 71X, released on Isle Royale in 1991, nesting here for the first time. The pair used a new site at the extreme northeast end of the palisade, laid three eggs, and hatched one female chick which fledged in mid-July and was seen flying strongly by Edmondson in late July. We do not know the fate of the other eggs. Peter Smerud and Joe Walewski, Wolf Ridge Environmental Learning Center, did the climbing for banding the chick.

10. Finnish Church cliff, 2 miles north of Tofte, Cook County, Minnesota. Wayne Russ found this pair and one flying juvenile on August 12, 1993, when checking on local reports of peregrine activity. The site is about one mile from Mt. Leveaux where peregrines nested unsuccessfully in 1991 and 1992 but were absent in 1993. On August 13, Tordoff identified the adult female as Algoma 77V, released in 1990 on Isle Royale MI. Russ thinks the adult male is unbanded. Although the juvenile was flying well, the defensive behavior of the adults indicated that they were still on their nesting territory, but the nest ledge was not located. The cliff is heavily wooded on top and falls sheer to the water but is only about 60 feet high. Several possible nest sites are screened by vegetation.

11. Rouchleau Mine, Virginia, St. Louis County, Minnesota. Jerry McHugh and Jeff Lightfoot, MN DNR, report that peregrines were incubating in the old cliff hack box by mid-April. The adult female 25V was identified by distinctive plumage details as the same bird here in 1991 and 1992; the male all three years was very shy, probably the same individual but so difficult to see that we still do not know if he is banded. Four eggs were laid, all four hatched around May 17, and two male and two female young were banded on June 8. While we were lowering the young to the nest after banding, a knot failed, dumping the box containing the chicks down the cliff. Only one male survived the fall; three additional young, two from Victor Hardaswick and one from Greg Moore, two males

and one female, were added to the brood four days later. All four fledged in late June.

The Rouchleau nest produced six young in 1991 and 1992. In 1993, at least three of these were on territories: a 1991 female on a smokestack at the NSP Monticello Plant at Monticello MN; a 1991 male on a smokestack at the MPL Boswell Energy Center, Cohasset MN; and a 1992 female at the Blatnik Bridge in Duluth. The new male at the Bong Bridge in Duluth is also a wild-produced bird, but not yet further identified.

12. Minnesota Power and Light Boswell Energy Center, Cohasset, Itasca County, Minnesota. Daryl Councilman and colleagues, MPL, installed a RRP box on a smokestack in spring 1992. A male peregrine was present through the 1992 summer, but unpaired. In April 1993, an adult male and a juvenile female were present. The male is 74X, fledged from the Rouchleau Pit, Virginia MN, in 1991; the juvenile female was 78R, fledged from the Multifoods Tower, Minneapolis MN, in 1992. An adult female appeared on the scene around April 25. She became increasingly bold, with a major fight between the females in the nest box on May XX. By May 16, the adult female had replaced the juvenile 78R, who was seen hanging around the territory for a few days more. On May 24, female 78R was found dead at the Blandin plant in Grand Rapids, about five miles from the nest. Male 74X and the new female nested, producing three eggs; two hatched and fledged in late July. At banding on July 10, the adult female's red band was read by Tom Linser and Dale Overforos, MPL; she is X/H, released at Nipigon, Ontario, in 1991. Her band was intended to be H/X and is so recorded in the Canadian Wildlife Service files, but was put on upside down, according to Ursula Banasch, CWS, and Rusty Rustenberg, Ontario MNR, who remembers her from her days in the hack box at Nipigon.

13. Firststar Center (formerly First Wisconsin Center), Milwaukee, Wisconsin. Greg Septon reports that female Sibella 20V, fifth year, and male Bill 74T, third year, produced four eggs by March 30, hatched all four by May 2, and fledged two males and two females in June. One young female was killed in a heavy rainstorm on June 14, shortly after fledging.

During incubation, an adult female with a red band on her right leg appeared. Bill copulated with her on the County Courthouse on April 12 to 14; she then disappeared but returned briefly on April 20.

After her young fledged, Sibella solicited copulation, then took over a gull nest on nearby City Hall. Both adult peregrines then incubated the single gull egg for a day or two, until a storm came through. After the storm, no egg and no peregrines were at the City Hall site.

14. Edgewater Generating Station, Sheboygan, Wisconsin. The second year of use of this site was by the same pair, four-year-old female Silverstreak 42V and three-year-old male Max 70T, according to Greg Septon and Jim Marks. They produced four eggs by April 14. Two eggs hatched, one chick died, and two young from Bob Anderson were fostered; two females and a male fledged from 24 June to 2 July.

15. 125 S. Wacker Building, Chicago, Illinois. The oldest female peregrine in the Midwest, as far as we know, is Harriet, released in Minneapolis in 1985, and her mate Jingles, released in Chicago in 1986, is the oldest male. This is Harriet's seventh year nesting at this site and the fifth year for Jingles. They produced four eggs by April 6 on the same ledge used in earlier years. Three young, two females and a male, hatched by May 10 and fledged in late June, according to Mary Hennen.

Mary also reports that in March, peregrines were seen at the Madison building, two blocks away. One egg was spotted on a building ledge, but the egg

and the site were abandoned after a snowstorm. The identity of the Madison adults is not known.

16. Cline Avenue at Lake Michigan, East Chicago, Indiana. This site was occupied for the fifth year. The 1993 female was Egore 57V, released in Madison WI in 1990, and nesting here for the second year. Her new mate has "58" on the black band, left leg (either 58Y, Illinois Beach, 1988 or 58T, Omaha, 1989). Again, the nest was in the same cave-like opening under the highway overpass used earlier. Four young, three females and a male, were banded and one unhatched egg retrieved by John Castrale, IN DNR. Four young fledged in late June. One of the young females was killed by a vehicle on June 26; another female was grounded on June 22, kept overnight by a veterinarian for observation, but killed when put in a flight cage with three Red-tails and a Great Horned Owl.

17. U.S. Steel, Gary, Indiana. For the third year, a pair nested successfully on a building in this huge steel mill. The adults are female Susy Q 52P, for the third year, and a new mate with "79" on the black band on the left leg, which can only be Vulcan 79T, released in Madison WI in 1990 (other males with "79" were wild-produced, thus black-banded on the right leg). They produced four eggs, hatched one, and fledged two, one from Vic Hardaswick augmented, in late June.

18. Book Building, Detroit, Michigan. Judith Yerkey, Detroit peregrine coordinator, reports that three-year-old female Judy red AD, released in Sudbury, Ontario in 1990 and first seen in Detroit in summer of 1991, was paired with two-year-old male Pop, whose USFWS leg band was read except for the critical last digit (816-8827?), for the second year. Both adults over-wintered in Detroit. Four eggs were laid, two hatched and two fledged, a male on June 23 and a female on June 27. Pop was also simultaneously paired with female Sunrise 55R (see pair 39), who laid three eggs on the Fisher Building, three miles away. That nesting failed; Pop clearly gave most of his attention to Judy and family, although as of mid-August he still visited Sunrise for short periods each day. All three adults were still present in late November.

From mid-April 1989 through December 1993, 54 species of birds have been identified as peregrine prey in Detroit by Judy Yerkey, with Rock Doves (94), Yellow-shafted Flickers (94), Starlings (79), Tree Swallows (65), Chimney Swifts (61), Mourning Doves (59), Ring-billed Gulls (57), Blue Jays (35), and Common Grackles (31) leading the list; in biomass, clearly Rock Doves are most important.

19. Trap Hills, Bergland, Ontonagon County, Michigan. For the fourth year, peregrines nested here. Joe Rogers visited the site from April 18 to May 2 and found birds incubating in a 1992 raven nest under a large cliff overhang. After a later inaccurate report by a U.S. Forest Service observer of nest failure, Rogers visited the site again for four days in late June and clearly saw adult peregrines and one fledged young. The adult male here is distinctively plumaged; Joe thinks the same male has been here for the past three years. Joe reports nesting history here as: 1990, failed; 1991, two young fledged (reported by us earlier as one); 1992, ? (no one checked carefully); 1993, one young fledged.

20. Commodore Perry Motor Inn, Toledo, Ohio. At this abandoned hotel site two young were fledged in 1988, none in 1989, one in 1990, one in 1991, three in 1992, and two in 1993, according to Mark Shieldcastle, OH DNR. The adult female, Canadian red band 3C7, released in St. Catherine (Brockville, on CWS list), Ontario in 1987, was in her sixth nesting here; her mate in 1993

again was Solo 20Y, back for the third year. They fledged two young, which were not banded because access to the condemned building is no longer permitted.

21. Terminal Tower, Cleveland, Ohio. In 1992, a male peregrine, Szell 67Z, was paired with a hybrid female peregrine X prairie falcon. The same pair was here in 1993; Harvey Webster, Steve Wilcox, and Sara Jean Peters trapped the hybrid female on dummy eggs on April 29 and removed her. A juvenile female peregrine, Zenith 23W, wild-produced in Omaha, Nebraska, in 1992, arrived in May and was seen copulating on May 14. Male 67Z, now five years old, and the young female then produced three eggs by early June; two hatched and one male and one female young fledged, August 8 and 13 respectively.

22. Lazarus Building, Dayton, Ohio. David Graham, Ohio DNR, reports that the same pair present but not nesting in 1992 returned in 1993. Female Rachel 66R, two years old, and male Mercury 21X, three years old, produced two eggs and fledged two female young, one of which was killed in a post-fledging accident.

23. Central Trust Tower, Cincinnati, Ohio. Two-year-old female Falcar 57R, released in 1991 in Indianapolis, Indiana, and male Falcor 29X, released in Cincinnati in 1990, produced four eggs, hatched one on June 4, and fledged one female young, according to Tom Henry, Ohio DNR.

24. Firststar Bank Building, Cedar Rapids, Iowa. Laura Jackson, IA DNR, reports that female 49R, released in Des Moines in 1991, and an unidentified male (64X, Des Moines, 1991 or 64T, Cedar Rapids, 1989) produced four eggs, hatched two young about June 6, but lost one in a storm on June 13. The survivor and an augmented young from breeder Ric Wood fledged successfully.

25. American Republic Building, Des Moines, Iowa. A territorial battle here on March 9 resulted in the death and dismemberment of adult male 20X, released in Cedar Rapids in 1990; 20X had nested here unsuccessfully in 1992. Then female 13R, released in Kansas City MO in 1991, paired with an unidentified male, black band on left leg (3_T, perhaps 35T, hatched at Virginia, Minnesota, in 1989), and laid three eggs which hatched in late May; three young fledged, a male and two females. The young male was found dead about a week after fledging.

26. Southwestern Bell Building, St. Louis, Missouri. Walter Crawford and Mike Cooke report that the same pair, now a three-year-old female and a four-year-old male, both released in St. Louis, nested for the third year. They produced three eggs and fledged three young, two females and a male; the male was killed colliding with a building on his first flight.

27. Park Plaza, St. Louis, Missouri. Mike Cooke reports that the same male as in 1992, 93T, returned for the second year, paired with a new mate, juvenile female 2/3, released in Muscatine, Iowa, in 1992, the third female at this site. They produced three eggs which failed to hatch. Three foster young were put in the nest; one disappeared the first night and the other two fledged, but one of these died after colliding with a building.

28. Delta Winnipeg Hotel, Winnipeg, Manitoba. Robert Nero reports that male red 5P9 paired again with female 52V, the fifth season for him at this site, the second for her. They had four eggs, hatched two, and fledged four young, two augmented. Female 52V overwintered again, male 5P9 left for the winter.

29. Mary Speechly Hall, University of Manitoba, Winnipeg, Manitoba. Four-year-old male black 1X, son of Maud, paired for the second year with female red EH, released in 1990 in Brandon, Manitoba. They produced two eggs, hatched both, and fledged four young, two fostered, from the nest box in which they raised two fostered young in 1992.

Robert Nero supplied the above information on Canadian peregrines. Ted Armstrong, Ontario MNR, and Harold Kish, Thunder Bay Field Naturalists, reported the following five pairs.

30. Cliff at Mt. McKay, near Loch Lomond (southwest of Thunder Bay), Ontario. Two adult peregrines and two fledged young were seen here on June 26. The probable nest site with signs of recent activity was located nearby.

31. Pie Island, mouth of Thunder Bay, Ontario. A dark adult peregrine wearing a silver band and two young about three weeks old were seen July 10 on the cliff. Falcons were also reported at Pie Island in 1992.

32. Sibley Peninsula, northeast of Thunder Bay, Ontario. A peregrine nest with three young a little over four weeks old was found on a cliff on July 10. The adult male wore red and silver bands, indicating release by hacking in Canada, and the female also had a silver band. Adult peregrines and flying juveniles were seen in the same area in summer, 1991 and 1992.

33. Lake Superior Provincial Park, east end of Lake Superior, between Wawa and Sault Ste. Marie, Ontario. A peregrine nest with two young was found on a cliff on an island here on July 12. The adult male wore a red band, indicating release by hacking in Canada.

BREEDING PAIRS, OUTCOME UNKNOWN

34. Cliff near mouth of Nipigon River, south of Nipigon, Ontario. For the third year, a pair of peregrines nested here. One adult wore a red band, indicating release by hacking in Canada. The outcome of the nesting is unknown.

35. Porcupine Mountains Wilderness State Park, about five miles west of Silver City, Ontonagon County, Michigan. For the fourth year, peregrines apparently nested here, about 12 miles from the Trap Hills site. Joe Rogers found the nest ledge littered with feathers and whitewash in June, suggesting nesting. The adults were not identified and the outcome is unknown although there were unconfirmed reports of one young seen following adults at this site.

UNSUCCESSFUL BREEDING PAIRS

(Eggs laid, no young fledged)

36. Wolf Ridge Environmental Learning Center, Finland/Lake Superior cliff north of Kennedy Creek/Mary's Mountain west of Little Marais, Lake County, Minnesota. This pair, Blueberry 20P and the male with a green anodized band on his left leg and a breeder band on his right, moved once again this year. They arrived at the Kennedy Creek cliff in early spring and were seen here on April 27 and May 20 and 21. On June 24, Tordoff found the female sitting in the box on the cliff on Mary's Mountain about a mile west of Little Marais, south of Highway 6. She was seen here several times over the next month, often sitting on the front edge of the box for hours. Foot traffic in connection with proposed real estate development may have caused the falcons to leave the Kennedy Creek site, where they had nested successfully for two years, following

their first nesting at Wolf Lake, ELC, in 1990. Eggs were probably laid at Kennedy Creek, but must have failed; there was no indication that eggs were laid at the box on Mary's Mountain.

37. Bong Bridge, Duluth, St. Louis County, Minnesota. For the fourth year, a pair of adult peregrines was present here. Dave Evans identified the female as 34R, back for the fourth year. Evans also reports that the male has a black band on the right leg, indicating it was wild produced. The male here in previous years, 6P3, moved in 1993 to the Blatnik Bridge, only 2.5 miles away (pair 45). Three eggs were laid but failed to hatch, as in 1992.

38. St. Joseph Cathedral, La Crosse, Wisconsin. Pat Skewes reports that female Libby 2/2, released in Muscatine IA in 1992, arrived in April and paired with adult male 42J, hacked in 1989 by the Peregrine Fund at Smoke Cliff, West Virginia. They produced a single egg; the nest failed after flooding by a thunderstorm.

39. Fisher Building, Detroit, Michigan. Judith Yerkey reports that Pop, the male nesting on the Book Building (see pair 18), paired bigamously with female Sunrise 55R, released in Cincinnati OH. Copulation was seen and three eggs were laid by May 11. Incubation was started by May 12, but all eggs were broken by May 21. Pop continued to make the three mile trip to visit Sunrise through the summer. From January to mid-March 1993, Sunrise was seen at the Fisher Building with an unidentified Canadian male.

40. Rhodes State Office Tower, Columbus, Ohio. Female C3, released in Aurora (Maple, on CWS list), Ontario, in 1992 and male Laser 04Z, released in Indianapolis in 1991, laid six eggs on an unsuitable ledge; all disappeared, probably rolled off or were broken and eaten. Late in the season, Laser 04Z was found dead of tuberculosis.

41. Topeka, Kansas. Jerry Horak, Kansas Department of Wildlife and Parks, reports that female 28R and a male with a black band on his left leg laid three eggs on a ledge of an abandoned building; the eggs rolled off. The birds did not use a nest box provided on a nearby building; a nest box may be provided on the abandoned building for use next year. Both adults remained all season. Female 28R was released in Des Moines, Iowa, in 1991; she spent the summer of 1992 with male 39X in Kansas City, Missouri, where she sometimes fed the young falcons being hacked.

42. Woodman Tower, Omaha, Nebraska. According to Ross Lock, Nebraska Game and Parks, a pair here laid three eggs but the nest failed, probably because the male disappeared after the eggs were laid. The female was given dyed chicken eggs to keep her interested, then two young peregrines were put in the nest; she refused to feed them. The chicks were removed and returned to Victor Hadaswick, South Dakota Raptor Trust. The female was 33R, nesting here for the second year. The male was not identified.

43. Regina City Hall, Regina, Saskatchewan. Red 8B3, same female here in 1992, paired with a new male, red 1/2, released at Brandon, Manitoba in 1991. They produced four eggs. Then the 1992 male, black 3D, grandson of MF-1 in Minneapolis via her daughter Maud in Winnipeg, returned and evicted 1/2, who disappeared. Female 8B3 then renested with 3D on a new building, producing four eggs which were lost during hatching in a rainstorm. The first clutch of four eggs, sired by red 1/2 and abandoned after the territorial battle, were hatched in an incubator and the young released in Saskatchewan.

NON-BREEDING TERRITORIAL PAIRS

44. NSP Monticello Plant, Monticello, Wright County, Minnesota. Male 94T, productively occupied with female 36R at the Sherco Plant, was also paired simultaneously with a female peregrine 31R at the NSP Monticello Plant, four miles to the south. 31R fledged in 1991 from a nest in the Rouchleau Pit, Virginia, Minnesota. She moved into a nest box on the stack at the Monticello nuclear plant in late March, according to Tim McPherson, NSP. The box had been installed by Orr and Anderson about a month earlier. 94T traveled regularly between the two sites, each clearly visible from the other in open flat country along the Mississippi. He delivered food to both females and copulated with both, but Orr thinks 94T spent most of his time with the Becker female. In any case, the Monticello female laid no eggs, suggesting that the male may not have provided enough food or courtship.

Although three peregrines were seen at the Monticello site on April 1, later in the season only the male commuted, each female sticking to her own site, according to Orr.

45. Blatnik Bridge, Duluth, Minnesota. Dave Evans found and identified this pair and watched them through the summer. The male is red 6P3, a seven-year-old released in Quebec and at the Bong Bridge, Duluth, for the past three or four years. He abandoned his former mate, who stayed behind on the Bong Bridge, 2.5 miles away. The Blatnik female 85R is one year old, fledged from a wild nest in the Rouchleau Pit, Virginia, Minnesota, in 1992. Despite much courtship feeding and copulation, they apparently produced no eggs. At the nearby Duluth Hotel/Central High School territory, one peregrine was seen for about ten days in early spring, but not later.

46. Hyde Park, Chicago, Illinois. Mary Hennen, Chicago Academy of Sciences, writes that this territory was occupied in 1990 through spring 1991, then vacant until fall 1992, when a single peregrine with a silver band on the left leg arrived and spent the winter. In 1993, two birds have been present, a one-year-old wild-produced male with a black band on the right leg, silver left, and an adult female with no band on the right leg. If these birds could get organized and nest, they would have the unique opportunity to feed their young on the local colony of Monk Parakeets!

47. Detroit Towers, Detroit, Michigan. Judy Yerkey reports a new pair of adult peregrines on this building about three and a half miles east of downtown Detroit. First reported on September 22, the birds were still in residence here at the last report at the end of the year. Both adults have black bands on their right legs, silver on the left, indicating wild origin, but the bands have not yet been read.

48. Pictured Rocks National Lakeshore, near Munising, Michigan. Peregrines were seen here during May, then shifted to the northwest coast of Grand Island.

49. Metro Health Building, Cleveland, Ohio. An adult female peregrine wintered here, three miles from the Terminal Tower pair. She was joined by a male in spring, but then disappeared until reappearing in early August. The male spent the summer here. In the fall the female was seen for a while with an immature male, then with an adult male, according to Steve Wilcox, Ohio DNR. Both adults were present at the end of the year. Neither bird has yet been identified. A nest ledge and box are being installed in January 1994.

50. Centennial Bridge, Davenport, Iowa. Mark Washburn and Ed Temper, Iowa Falconers Association, followed a pair of peregrines here through winter and the nesting season. On June 14, they found and released a female, Georgia 95R, trapped in the bridge substructure, along with the decomposed remains of another female peregrine, 24W, released in Kenosha, Wisconsin, in 1992. Female 95R was wild-produced in 1992 at the Colonnade, Minneapolis, Minnesota; in November 1992, she had been found sick, possibly poisoned, at St. Louis, Missouri. She was rehabilitated at the World Bird Sanctuary and released in late November.

Washburn thinks eggs were laid, incubated, then failed, possibly when female 24W became trapped in the I-beam, but no proof is available.

51. Kansas City, Missouri. John Meyer reports that a pair of peregrines was present through the season, courting and copulating but not nesting. The birds were not identified.

52. Jefferson City, Missouri. An unidentified pair of peregrines was seen here early in the season, but apparently did not attempt to nest.

53. State Capitol, Lincoln, Nebraska. Ross Lock reports that a male was here at least through mid-June. At least three different females were here, one at a time, from late April through May. No nesting occurred and the birds were not identified.

SINGLE TERRITORIAL ADULT FALCONS

54. State Capitol Building, Madison, Wisconsin. Tim Ellestad says that the male Calvin 48T, present here for the last half of the 1992 nesting season, returned by 04/25/93, stayed until June, reappeared in August, but failed to nest. On April 28-29, a female was present; on May 15-18, an unbanded female was present. Judging by dates and appearance, these were probably tundrius females bound for the Arctic. Calvin 48T was last seen by Ellestad on September 10.

55. Racine, Wisconsin. One unidentified bird seen occasionally here through the season.

56. Kenosha, Wisconsin. Greg Septon and Jim Marks report that a male, Leopold C/D, released here in 1992, was identified on April 29 and probably remained through the season; there were many sightings of a single bird and two peregrines were seen occasionally.

57. Fort Wayne, Indiana. One yearling female, Firecracker 1/4, present here for the season. She was released in Fort Wayne in 1992.

58. Indianapolis, Indiana. One unbanded adult male present here for the season.

59. Muscatine, Iowa. Male C/M returned to his 1992 hack site on May 21, 1993, and remained for the summer.

SUMMARY OF PEREGRINE NESTING IN 1993

Summing up the natural breeding in 1993, 53 pairs were on territories, 43 pairs (81%) laid eggs, 33 (62%) pairs were successful in fledging 87 young

(counting 11 fostered young), 2.6 young per successful pair, 2.0 per nesting pair, 1.6 per territorial pair.

Of the 43 nesting pairs, 11 were on cliffs, 26 were on buildings, four on smokestacks, one on a bridge, and one under a highway overpass. Twenty of the 26 building pairs succeeded, as did the highway pair. The bridge pair failed and of the 11 cliff pairs, one failed, eight are known to have succeeded, and the outcome is unknown for the other two. Of the 87 young known fledged in the wild, all were banded except two at Toledo, Ohio, one at Trap Hills, Michigan, one at Tofte, Minnesota, and nine at the five Ontario eyries. Additional young may have been fledged at Nipigon River, Ontario, at Tofte, and at Trap Hills and Porcupine Mountains, Upper Peninsula of Michigan, and, of course, at unlocated nests.

PEREGRINE RELEASES IN 1993

Eleven young were fostered:

- Bob Anderson provided two young added to the wild brood at Sheboygan WI.
- The South Dakota Raptor Trust provided two to replace lost young at Rouchleau Pit, Virginia MN.
- Greg Moore also provided one for the Rouchleau brood.
- Ric Wood provided one for the brood at Cedar Rapids IA, where one of two wild young were lost in a storm.
- Dan Thee provided one to augment the brood of one at Gary IN.
- In Winnipeg, Manitoba, two young from the Canadian Wildlife Service were added to the wild brood on the Delta Winnipeg Hotel; two were given to the pair on Mary Speechly Hall at the University of Manitoba.

All fostered young fledged successfully. Young added to wild broods are counted in our totals as "wild-produced" rather than hacked to emphasize their rearing by wild falcons rather than their captive origin.

Indiana

South Bend. Fourteen peregrines were released in two batches, along with two rehabilitated males, a one-year-old originally released in La Crosse WI in 1992 and a two-year-old originally released in Indianapolis IN in 1991. The one-year-old was later returned once more to The Raptor Center and remains there. A young, unbanded male was found in Blackburg County, Indiana, in July, sent to The Raptor Center for rehabilitation, and released in South Bend in September, still unbanded. We assume, from its age at capture, that it came from an undiscovered nest somewhere in the Midwest or from a nest, such as Toledo, where the young were not banded.

Ohio

Akron. Six peregrines, four males and two females, were released here; all fledged successfully in mid-July. One female was later found dead on a runway at the Cleveland airport on September 1.

The Alabama, Arkansas, and Chattanooga, Tennessee, releases were arranged independently by Robert Anderson, Raptor Resources Project; the banding data are, however, in our data base. The Nashville, Tennessee, release was done with birds from Steve Sherrod, Sutton Avian Research Center, Bartlesville, Oklahoma; those bands are not in our data base.

Alabama

Birmingham. Robert Anderson, Raptor Resources Project, supplied 10 peregrines for release here. All fledged successfully; one was injured later and is not releasable.

Arkansas

Newark. Four peregrines from Robert Anderson, RRP, and one from Victor Hardaswick were released here. Two of the Anderson birds were later found dead near the release site; the others survived to independence.

Tennessee

Chattanooga. Robert Anderson, RRP, supplied five falcons for release here. All survived to independence.

Nashville. Steve Sherrod, Sutton Avian Research Center, Bartlesville OK, supplied XX peregrines for a release here. All survived to independence.

To sum up production for 1993 in the original Midwest area, 87 young were fledged by wild pairs and 20 young were released from captive pairs, for a total of 107. Of the 20 hatched young, 19, 95%, lived to independence. In the South, 20 (excluding Nashville) young peregrines were hatched; three were later lost.

GENETIC ANALYSIS

We continued collecting blood in 1993 from all released young and from all wild young banded, and from wild breeders not previously sampled. The goal is to measure inbreeding, outbreeding, genetic variation, changes in occupancy of territories, dispersal of adults and young, success of the different genetic stocks introduced, and long-term development of genetic structure in the new midwestern population. Sharon Moen has analyzed the pedigree data and done the laboratory work and genetic analysis.

PLANS FOR 1994 AND BEYOND

We have already surpassed our goal of 40 territorial pairs of peregrines in the Midwest by a dozen pairs. The 53 pairs counted in 1993 are close to some estimates of the original wild population in our region, which were all cliff nesters. With only 11 known pairs on cliffs today and plenty of space left in cities, there is obviously ample room for the population to expand. What will be the size of the new population? Our guess is that it will level off somewhere between 75 and 100 pairs; closer to 75 if the falcons fail to occupy the river cliffs, closer to 100 if they succeed. We think the rate of population growth will decline quickly in the next four or five years, leveling off to a fairly stable population early in the next century.

Our major immediate tasks remain the same. We must try to:

- Identify all breeders.
- Band all wild young produced.
- Collect and analyze blood from all young produced.
- Manage city pairs so that production of young, enthusiastic cooperation of building managers, and public appreciation of the falcons are all fully enhanced.
- Collect, coordinate, and circulate information among the Midwest peregrine workers through reports, meetings, and regular informal contacts.

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. 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 and Minnesota Cooperative Fish and Wildlife Research Unit of the U. S. Fish and Wildlife Service, U.S Forest Service, Minnesota Falconers Association, Iron Range Resources and Rehabilitation Board, Wolf Ridge Environmental Learning Center, Mayo Clinic, Northwest Airlines, BCED Minnesota in Minneapolis and St. Paul, and The Shelard Group. Each cooperating state and agency has, in addition, its own list of cooperators, for which see the individual area reports. Falcons are obtained from private falconer/breeders, listed in the appendix. Falcons were supplied through us to the Ohio and Indiana releases on a contract basis. The day-to-day devoted care that makes hacking falcons successful was provided by the hack site attendants listed in the appendix.

Appendix

BREEDERS SUPPLYING PEREGRINES FOR 1993 RELEASES

Robert Anderson, Hugo, Minnesota
Don Hunter and Victor Hardaswick, Centerville, South Dakota
Greg Moore, Grapevine, TX 76051
Steve Sherrod, Bartlesville, Oklahoma
Dan Thee, North Powder, Oregon
Ric Wood, Hazelton, TX 60641

1993 CONTRIBUTORS TO PEREGRINE RESTORATION IN MINNESOTA

BCED Minnesota
Big Game Club Special Projects Foundation
Mayo Clinic
Minnesota DNR Nongame Wildlife Program
Minnesota Department of Transportation
Minnesota Falconers Association
Northwest Airlines
University of Minnesota Graduate School Faculty Grant-in-Aid
The Shelard Group
U. S. Fish and Wildlife Service
U. S. Forest Service

PEREGRINE POPULATION GROWTH IN THE MIDWEST

Yr	Hacked yg.	Wild yg.	Terr pairs	Nest. pairs	Succ. pairs	Young fldgd	Yg/t pair	Yg/n pair	Yg/s pair
86	102	0	4	1	0	0	0	0	0
87	170	1	6	3	1	1	.17	.33	1.0
88	254	13	13	8	6	12	1.1	1.5	2.0
89	370	35	16	12	9	22	1.4	1.8	2.4
90	453	68	23	16	13	33	1.4	2.1	2.5
91	563	104	30	22	17	36	1.2	1.6	2.1
92	667	172	37	32	23	68	1.8	2.1	3.0
93	687*	259	53	43	33	87	1.6	2.0	2.6

Note; "Young fledged" includes all young surviving to first flight from nest.

* Does not include peregrines released in Tennessee, Alabama, and Arkansas in 1993, in order to make comparisons with earlier years meaningful.