A STUDY ON
WINTERING AND RELEASED REHABILITATED
BALD EAGLES IN MINNESOTA

WINTER 1988-89

A Report Submitted to
The Minnesota Department of Natural Resources
Nongame Program

by

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INTRODUCTION AND OBJECTIVES

This report summarizes the second field season of a three year project documenting the survival and movements of released rehabilitated Bald Eagles, and the numbers, habitat use and contaminant levels of Bald Eagles wintering in Minnesota. A summary of the first years work was prepared by Martell and Redig (1988).

Objectives of this study included:

1) Document the reintegration of Bald Eagles rehabilitated at TRC into the wild population.

2) Determine the number of Bald Eagles using the Mississippi and St. Croix Rivers between October and April.

3) Locate and document the use of Bald Eagle roost and feeding sites located between the Twin Cities and Lake Pepin.

4) Determine the home ranges and use of roosts and feeding areas for individual eagles during the winter months.

5) Determine contaminant levels in a sample of Minnesota wintering Bald Eagles.

METHODS AND MATERIALS

Study Area

The study area was located along the Mississippi river from St. Paul, MN (river mile 836) to the top of Lake Pepin (river mile 786), and the St. Croix River from Stillwater, MN (river mile 16) to its junction with the Mississippi (fig 1). Aerial counts were made along the Mississippi river from South St. Paul, MN to the Minn.-Iowa border, and along the St. Croix river from Bayport to Hastings, Minnesota. Four roost/feeding sites identified in 1988 were used to monitor eagle numbers and prey selection (Fig. 2):

a) Pigs Eye Island (PEI) - located south of Holman Airfield in St. Paul, MN; river miles 836 - 832.

b) Grey Cloud Island (GCI) - located aprox. 16km south of PEI in Spring Lake, river miles 828 - 817.

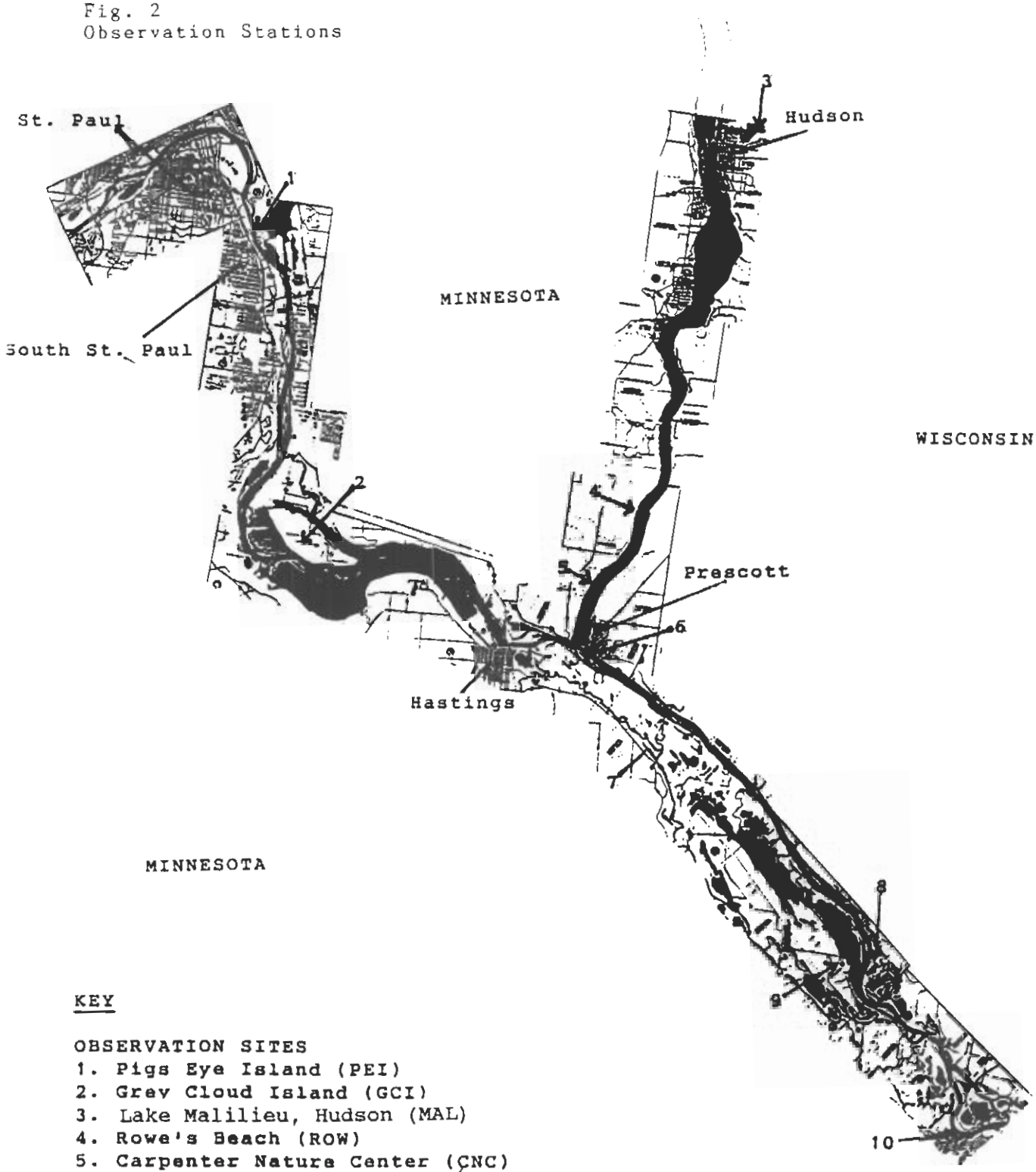
c) Gores Pool Wildlife Management Area (GPW) - located south of Hastings, MN, river miles 810 - 808.

d) Prairie Island Nuclear Plant (PIN) - the area immediatly adjacent to the Prairie Island Nuclear Plant and Lock and Dam #3.

Fig. 1

Study Area

Fig. 2
Observation Stations



KEY

OBSERVATION SITES

1. Pigs Eye Island (PEI)
2. Grey Cloud Island (GCI)
3. Lake Malilieu, Hudson (MAL)
4. Rowe's Beach (ROW)
5. Carpenter Nature Center (CNC)
6. Prescott Island (PRE)
7. Gore's Pool (GOR)
8. Gantenbein Slough (GAN)
9. Lock and Dam 3 (LD3)
10. Colvill Park and Mud Lake, Redwing (RED)

Eight bait stations were set up along the river and used to lure in eagles for trapping (fig. 3):

1) Carpenter Nature Center (St. Croix river mile (rm) 2),
2) Rowe's beach on the St. Croix (rm 5.5),
3) Control Data Corporation beach (St. Croix rm. 5),
4) Below St. Joseph's Cemetary, Prescott, MN (Mississippi river mile 811),
5) Pierce County road "Q" (river mile 808.5) ,
6) Mud Lake in Red Wing, MN,
7) Prairie Island Nuclear Power Plant hot water outflow,
8) Gantenbein Slough near Diamond Bluff, WI (rm 796).

Three locations were used for trapping: Carpenter Nature Center, Rowe's Beach, and Gantenbein.

Study Duration

Bald Eagle numbers were counted weekly from the air between 15 Oct - 15 Dec. 1988, and 15 Feb. - 15 April 1989 and bimonthly from 15 Dec. 1988 - 15 Feb. 1989. Exact dates flown depended on weather conditions and pilot availability. Ground counts at roost/feeding areas began on 17 Oct. 1988 and were discontinued on 23 March 1989. A ground survey was conducted on 13 January 1989 in conjunction with the annual National Wildlife Federation Mid-winter Bald Eagle survey. Trapping began on 11 Nov. and was discontinued on 10 March.

Fig 3
Bait Stations and Trapping Sites

BAIT STATIONS

1. Rowe's Beach; and nearby Control Data Corporation Property
2. Carpenter Nature Center
3. Prescott: St. Joseph's Cemetary,
   Southeast off of County Road "Q" (Rivr Mile 811)
4. Gantenbein Slough
5. Lock and Dam 3
6. Mud Lake, Redwing

Techniques Used

Two eagles used in the rehabilitation portion of the study were available from patients admitted to The Raptor Center. This was fewer than the 10 birds anticipated, and 7 fewer than were available last year. Each bird admitted to TRC is given a unique case number and the birds in this report will be referred to by that number. Their injuries were repaired and the birds determined ready for release using methods described elsewhere (Redig, et al., 1983; Martell and Redig, 1985). The birds were released on 18 October 1988 and 08 November 1988.

During aerial and ground counts eagles along both the Minnesota and Wisconsin sides of the river were counted and age (immature vs. adult), and location were recorded. The air survey portion of the study was directed by Joan Galli of the MNDNR Non-game program. Weekly observations at roost/feeding sites began 1/2 hour before sunrise and ended one half to one hour after sunrise. Age, location and river use was recorded.

When in the field we recorded ambient temperature, precipitation, wind direction and speed, and cloud cover. River ice conditions, number of eagles seen, their location, behavior (ie. roosting, feeding, flying, intraspecific interactions) and human disturbance (fishing, barges) that could affect Bald Eagle behavior were also recorded. Presence and numbers of potential prey were recorded. All observations were aided by the use of binoculars and 20-60X spotting scopes.

Banding, Marking, Telemetry

In order to facilitate monitoring of the movements and locations of released rehabilitated eagles, each was fitted with a radiotransmitter. In addition, a white, wrap-around patagial marker coded with a unique number made from orange herculite sewn onto the dorsal side of the marker, and a USFWS aluminum leg band was affixed to each bird.

Two styles of radiotransmitters were used in the study. A tail-mounted model (Advanced Telemetry Systems; Bethel, MN) with a battery life of 120 days which was also used in the first year of the study (Martell and Redig 1988). The radio was attached to a central retrix by tightening a clamp around the base of the feather shaft. The 8 inch antenna was secured to the feather with surgical thread and coated with epoxy glue. The total package weighed approximately 20 grams. The second style transmitter was a back-pack mounted model (Communication Specialists, Orange, CA) with a battery life of 3 years. The radio was attached by means of teflon ribbon running over the birds shoulders and under its wings (Kenward 1987). The antenna hung loose down the birds back.

Radio signals were located on the ground and from a fixed-wing aircraft using a portable, programmable scanning receiver (Cedar Creek model number 2000) and a 4-element yagi antenna. Two antenna connected through a switch box were used in aerial tracking which was done in a Cessna 172 or 182 following the procedures of Gilmer et al. (1981).

Trapping

In order to mark, band, and radio tag eagles and collect samples for contaminant monitoring, we attempted to trap Bald Eagles on the study area. Trap sites were baited with one or more of the following; venison, rabbit, fish, muskrat, beaver, and squirrel to attract Bald Eagles for trapping.

Two types of traps were used: 1) remote controlled bow net (7 X 12 ft), and, 2) Lockhart method (Bloom 1987). A live, permanently crippled immature male Bald Eagle was used as a lure bird at the sites before and during trapping. Observations were made from a blind, a vehicle on a bluff or a well-concealed area at the locations. Traps and bait were set out and observers were concealed before sunrise. Efforts continued until dark or early afternoon.

RESULTS AND DISCUSSION

Rehabilitated Eagles

Two sightings of color-marked birds not released in this field season were made. The first was at Pigs Eye Island on 9 March 1989 when an immature Bald Eagle with a white wing marker on the right wing was spotted. The observer was unable to read the number on the wing, which prevents us from identifying the bird other than knowing it was one released by TRC.

In May of 1989 a report of an adult eagle with a wing marker seen south of Grand Rapids, MN was received. The bird was observed pulling grass from a stream bed which may indicate nesting, as grass is often used by Minnesota and Wisconsin Bald Eagles as a nest liner (D. Evans pers. comm.). Fred Strand MDNR regional nongame biologist knew of no eagle nest in the immediate vicinity and flights made by Dan Frenzel (pers. comm.) did not locate a nest.

SUMMARY OF EAGLE TRACKING RESULTS

O-103

Fig. 4
Transitional female
Found: Dixon Lake, Itasca County, MN 5/7/88
Cause of injury: Unknown
Injury: Unable to fly
Total time in clinic: 184 days

Released: 11/08/88 at the Carpenter Nature Center
Date of last positive relocation: 12/7/88
# of days between release and last relocation: 29 days
relocations: 12
Greatest distance from the release site:129.6 km (81 miles)
Markers: Fed Band # 629-16530

Released with a backpack mounted radio from Carpenter Nature Center, the bird flew to a snag and perched for approximately 45 minutes; she then flew north and roosted about 3.2 km upriver. A radio signal obtained on 11/10/88 indicated that O-103 could have been one of 7 immature Bald Eagles pursuing an adult Bald Eagle at about river mile 5 on the St. Croix near Rowe's beach. A positive identification was made in the same area on 11/11/88. The eagle was sighted soaring with 2 other immature Bald Eagles over Rowe's beach. Ten additional Bald Eagles were also in the area at the time of the sighting.

On 11/12/88, O-103 moved into the Prescott Island area and remained until 11/18/88. No attempt at obtaining a signal was made until 11/21/88 at which time the bird had moved from the study area. The signal was relocated by air on 12/06/88 at Read's Landing. A positive identification was made on 12/07/88 also at Read's Landing. The bird was at the water's edge with another immature Bald Eagle eating an unidentified food item. Three immature and 9 adult Bald Eagles were in the area at that

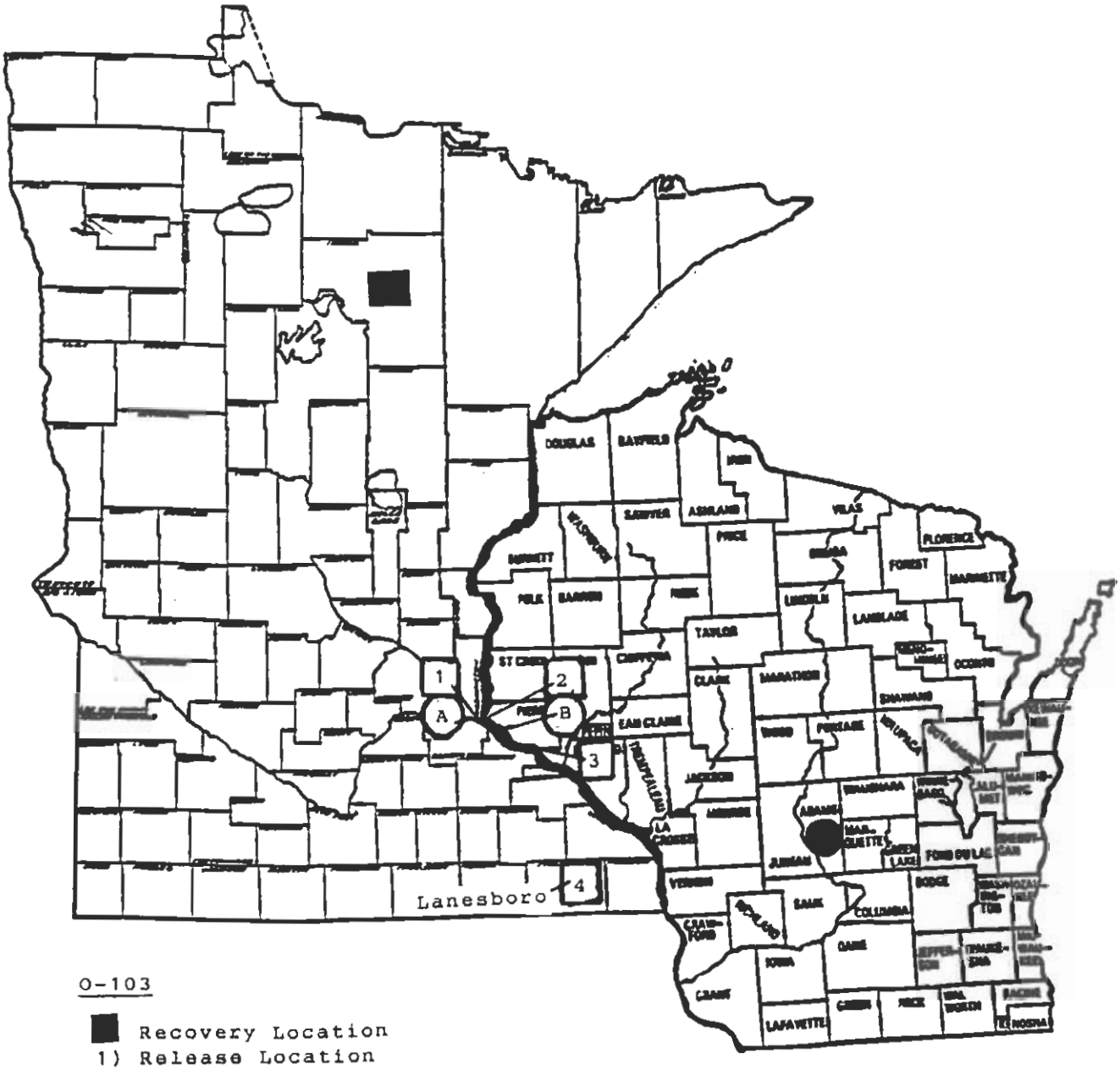
time.

On 12/15/88 a report came in from Lanesboro, MN of an immature Bald Eagle with a white wing marker and a radio transmitter on its back.

On 12/23 O-103 was readmitted into The Raptor Center with serious leghold trap injuries to both feet and abrasions to the keel and both wings. The bird was euthanized on 12/27/88 because of the extensiveness of the injuries.

Fig. 4

Recovery, Release, and Relocation Sites for
Released Rehabilitated Bald Eagles.



O-103

■ Recovery Location
1) Release Location
2) Relocation
11-12-89 - 11-18-89
3) Relocation
12-06-89 and 12-07-89
4) Relocation
12-15-89

O-430

● Recovery Location
A) Release Location
B) Relocation
12-12-89

Fig. 4
Second year immature male
Found: Adams County, Wis 10/18/88
Cause of injury: Projectile
Injury: Open ulnar fracture of the right wing.
Total time in clinic: 55 days

Released: 12/11/88 at the Carpenter Nature Center
Date of last positive location: 12/12/88
Number of relocations: 1
Greatest distance from release site:25.6 km (16 miles)
Markers: Left patagial 8-9 orange on white, Fed band # 629-16531

This bird was released with a tail mounted transmitter at Carpenter Nature Center at 1415 hrs on 12/11/88. He flew north along the St. Croix river and landed in a tree about 2.4 km from the release site. The signal was located 1 km downriver of the release site in the Prescott Island area at 1730 hrs. We assume that is where the bird roosted that evening.

The eagle was relocated on 12/12/88 south of Prescott along the Mississippi river and northwest of Diamond Bluff. No relocations were made after that date.

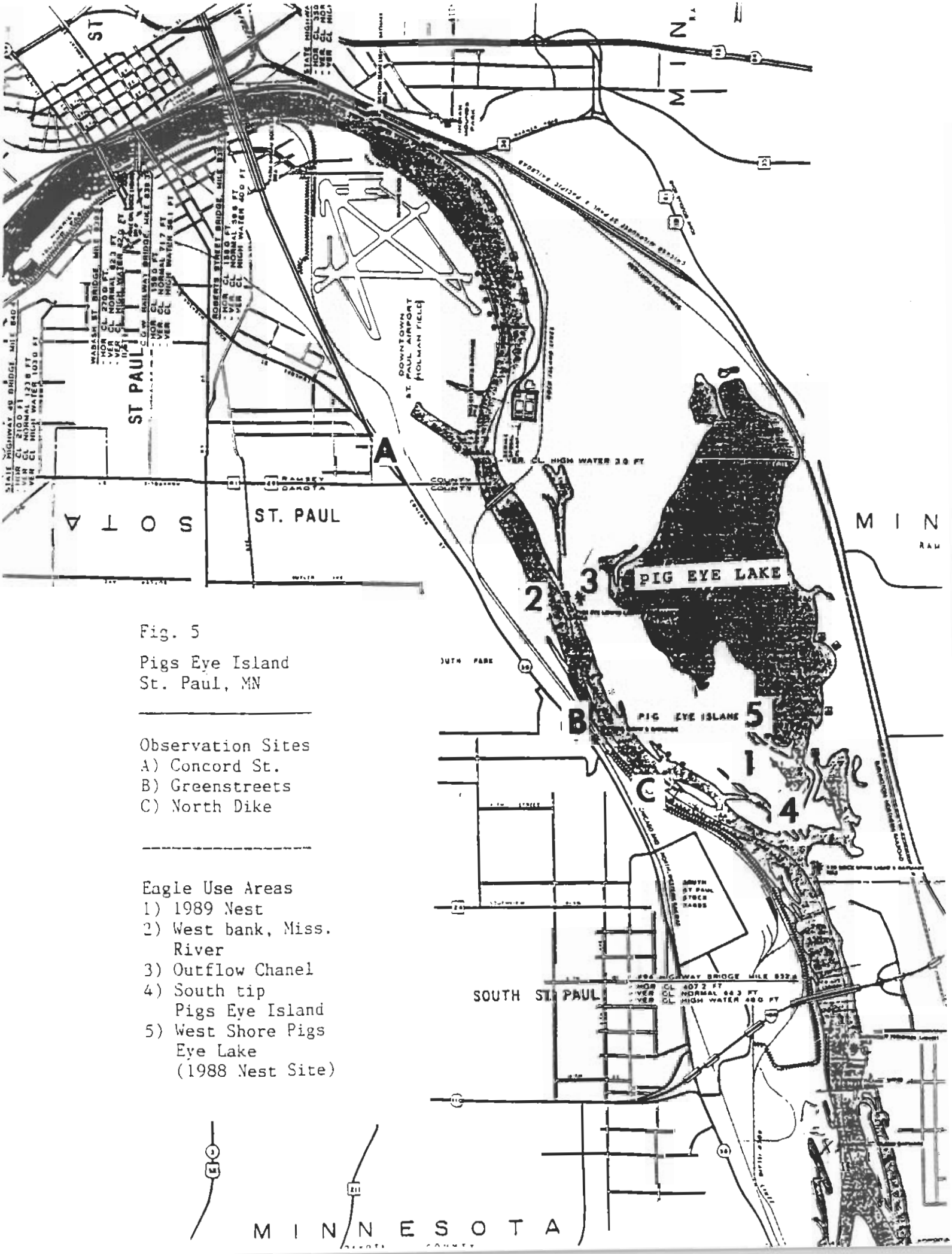


Fig. 5

Pigs Eye Island
St. Paul, MN

Observation Sites
A) Concord St.
B) Greenstreets
C) North Dike

Eagle Use Areas
1) 1989 Nest
2) West bank, Miss. River
3) Outflow Chanel
4) South tip Pigs Eye Island
5) West Shore Pigs Eye Lake (1988 Nest Site)

Eagle Counts

Data from the weekly aerial counts was not available at the time of this report. Results of the Mid-winter Bald Eagle survey are summarized in table 1.

The Pigs Eye Island area was consistently used by Bald Eagles during the course of the study (table 2). The highest count was 5 eagles seen on 02/04/89 (3 adults, 2 immatures), and on 01/05/89 (4 adults and 1 immature). This compares with counts of up to 10 birds seen in 1988, and similar counts in 1986 (Lane et al. 1986) and 1987 (Barton Aschman 1987). It is very likely that the reduced number of Bald Eagles using the area was the result of the presence of a territorial pair on the island.

Five areas of use were noted most consistently at the Pigs eye area. The nest, and various trees in its vicinity (area 1, fig. 5), was the area at which eagles were seen most often with 27 out of 40 visits (67.5%) having some activity in that area. Trees located on the west bank of the Mississippi river (area 2 fig. 5) were used as perches during the day. Eagles were observed on 8 days (20%) during the study. Immature eagles and adults from the nesting pair were seen hunting from these perches. These perches seemed to be important hunting spots overlooking the open water of the Metropolitan Sewage Treatment plant during times that other portions of the river were frozen over. Half of our observations of use of these trees came in January, a time of extensive ice cover. Eagles were also seen perched at the treatment plant channel mouth (area 3, fig. 5), on 6 occasions (15%), and on the southern tip of the island (area 4, fig 5) on 4 occasions (10%). The west shore of Pigs Eye Lake

(area 5, fig 5) was used by the nesting birds during days of high winds or inclement weather. The trees there most likely provided good protection from the prevailing westerly winds. Also, eagles were seen diving below the tree line in the Pigs Eye Lake area from the Concord road observation point. Although the lake remained frozen all winter a barge channel servicing Terminal road was kept open making fish and waterfowl available to the eagles.

Artificial perches erected in Spring of 1989 to replace trees removed or cut on the north end of the island were not seen being used during our study. These poles were checked regularly on visits to the Pigs Eye area. During February the resident pair as well as other eagles were seen flying south along the river just before dark and flying north in the morning. This leads us to believe that the eagles using Pigs Eye Island had alternate roosting spots downriver of the Hwy 494 bridge. Our attempts to locate the roost(s) were not succesful.

Eagles in the Pigs Eye area were seen chasing ducks, and catching fish. We also observed them feeding on fish and unidentifiable carcasses on the ice, and on one occasion apparently take something directly below the nest tree.

No eagles were seen using the Gray Cloud Island area during this winter. This is in contrast to counts of up to 19 birds in spring of 1988.

Eagles were observed at the Prescott site begining on 15 November. Eagles were seen on 47 of 63 observer days (75%), with the months of December and January having the heaviest use (table 3). The highest number seen at any one time was 17 birds on 30

Table 1

MIDWINTER BALD EAGLE SURVEY 1989
January 13, 1989

TIME	LOCATION	WATER	NO. OF EAGLES Adult	Imm
0820	Coon Rapids Dam	Open	0	0
0913	St. Anthony Falls	Open	0	0
0935	Ford Dam Lock & Dam #1	Closed	0	0
0947	Mendota Bridge	Closed	0	0
1000	Cherokee Park	Closed	0	0
1010	Pigs Eye Isl.	Open (part.)	0	0
1044	Inver Grove Hts.	Closed	0	0
1107	Schaars Bluff	Closed	0	0
1118	Lock & Dam #2	Open	0	0
1130	Vermillion River	Closed	1	0
1209	Lock & Dam #3	Open	0	0
1243	Diamond Bluff	Part. Open	1	0
1331	Prescott	Open	8	0
1515	Bayport	Part. Open	0	0
			10	0

Waterfowl seen at Pigs Eye Island, Prescott, Lock and Dam #2 and Lock and Dam #3.

Weather clear, calm and mild, temps. ranging from 5-35 F during the day.

Table 2.

NUMBERS OF BALD EAGLES SEEN AT PIGS EYE ISLAND

Date	Imm Eagles	Adult Eagles	Unk. Eagle
11/07/88	1	0	0
11/11/88	0	0	0
11/21/88	0	0	0
11/24/88	0	2	0
11/28/88	0	3	0
12/01/88	0	0	0
12/05/88	0	1	0
12/08/88	0	2	0
12/14/88	0	0	0
12/15/88	0	2	0
12/16/88	0	0	0
12/17/88	0	0	0
12/22/88	0	2	0
12/27/88	0	0	0
01/03/89	0	0	0
01/05/89	1	4	0
01/11/89	0	0	0
01/12/89	0	2	0
01/13/89	0	0	0
01/17/89	0	0	0
01/18/89	0	0	0
01/19/89	0	2	1
01/21/89	1	2	0
01/25/89	0	1	0
01/26/89	0	2	0
01/27/89	0	1	0
01/30/89	0	2	0
02/02/89	0	0	0
02/04/89	2	3	0
02/05/89	1	2	0
02/07/89	0	2	0
02/09/89	2	2	0

Table 2. (cont.)

NUMBERS OF BALD EAGLES SEEN AT PIGS EYE ISLAND

Date	Imm Eagles	Adult Eagles	Unk. Eagle
02/11/89	0	2	0
02/12/89	0	2	0
02/15/89	0	2	0
02/16/89	1	3	0
02/19/89	0	0	0
02/20/89	0	1	0
02/22/89	0	1	0
02/23/89	0	2	0
02/25/89	0	2	0
02/27/89	0	2	0
03/02/89	0	2	0
03/06/89	0	1	0
03/07/89	0	1	0
03/08/89	0	1	0
03/09/89	1	2	0
03/13/89	0	0	0
03/16/89	0	2	0
03/17/89	0	1	0
03/20/89	0	2	0
03/21/89	1	2	0
03/22/89	2	2	0
03/24/89	0	1	0
03/27/89	1	2	0
03/28/89	0	1	0

December. Adult birds predominated at this site. Bald Eagles fed at this site but left it by sundown to roost in other locations primarily the Eagle point roost discussed below.

Prairie Island/Lock and Dam #3 had a high count of 14 eagles on 6 March. Counts on other weeks (table 4) were not as high, usually being around 2-4 birds. A nest was occupied across from the power plant in the summer of 1988 and at least one adult was seen in its vicinity on most observation days. As with the Pigs Eye site, the presence of a territorial pair may have kept other eagles from the immediate area.

Table 3

NUMBERS OF BALD EAGLES SEEN AT PRESCOTT

Date	Imm. Eagle	Adult Eagle	Unk. Eagle
11/11/88	0	0	0
11/12/88	0	0	0
11/13/88	0	0	0
11/14/88	0	0	0
11/15/88	0	1	0
11/16/88	0	0	0
11/18/88	1	1	2
11/21/88	0	0	0
12/08/88	1	4	0
12/11/88	0	0	0
12/12/88	0	12	0
12/13/88	2	12	0
12/14/88	2	1	0
12/16/88	0	2	0
12/17/88	0	2	0
12/18/88	0	16	0
12/19/88	0	15	0
12/20/88	0	2	0
12/22/88	0	0	0
12/30/88	0	0	17
01/02/89	0	13	0
01/03/89	0	4	0
01/04/89	0	8	0
01/05/89	0	6	2
01/08/89	0	2	0
01/09/89	0	5	3
01/10/89	1	7	4
01/12/89	0	12	0
01/13/89	0	10	0
01/14/89	0	3	3
01/15/89	1	5	1
01/16/89	0	11	0
01/18/89	1	1	0
01/19/89	0	2	0
01/20/89	0	8	0

Table 3 (cont.)

NUMBERS OF BALD EAGLES SEEN AT PRESCOTT

Date	Imm. Eagle	Adult Eagle	Unk. Eagle
01/23/89	1	5	0
01/25/89	0	0	0
01/29/89	0	0	0
01/31/89	1	5	3
02/02/89	0	0	0
02/03/89	0	1	0
02/07/89	0	6	0
02/08/89	0	2	0
02/09/89	0	5	0
02/10/89	0	3	0
02/16/89	1	4	0
02/17/89	1	1	0
02/20/89	0	1	0
02/24/89	0	0	0
03/01/89	0	1	0
03/02/89	0	1	0
03/07/89	0	7	0
03/08/89	0	0	0
03/10/89	0	0	0
03/13/89	1	0	0
03/16/89	0	1	0
03/17/89	1	1	0
03/21/89	0	4	0
03/24/89	0	5	0
03/28/89	0	0	0
03/28/89	0	0	0
03/29/89	0	1	0
03/31/89	0	6	0

Table 4

NUMBERS OF BALD EAGLES SEEN AT PRAIRIE ISLAND/LOCK AND DAM #3

Date	Imm. Eagle	Adult Eagle	Unk Eagle
11/11/88	2	0	0
11/21/88	1	0	0
11/24/88	3	3	0
12/01/88	3	3	0
12/08/88	0	1	0
12/15/88	0	0	5
12/16/88	0	1	0
12/17/88	0	4	1
12/18/88	0	2	0
12/19/88	0	0	0
12/22/88	1	2	0
12/29/88	0	3	0
01/03/89	2	7	1
01/04/89	0	0	0
01/05/89	1	3	0
01/10/89	0	0	2
01/11/89	1	2	0
01/12/89	0	3	0
01/13/89	0	3	0
01/17/89	1	1	0
01/18/89	1	2	0
01/23/89	0	0	0
01/26/89	0	4	0
02/09/89	0	1	0
02/13/89	0	1	0
02/17/89	2	9	0
02/24/89	0	2	0
03/06/89	2	12	0
03/07/89	0	1	0

Table 4 (cont.)

NUMBERS OF BALD EAGLES SEEN AT PRAIRIE ISLAND/LOCK AND DAM #3

Date	Imm. Eagle	Adult Eagle	Unk Eagle
03/13/89	0	0	0
03/17/89	4	2	0
03/21/89	1	5	0
03/24/89	1	1	0
03/28/89	0	0	0
03/31/89	0	2	0

New Sites

Two new important sites were discovered this year. The first, located at the east end of Lake Malileau in North Hudson, Wis. (fig. 2) was used as a feeding and roosting site for up to 77 eagles at one time. The use of the roost was first recorded by us on 19 November when 38 birds were seen, and the last recorded day of use was 9 December when 4 birds were seen. Counts were also made on 25 November (63 birds), 29 November (77 birds), and 8 December (42 birds). After 9 December the lake froze and eagles were seen no longer. Lake Malileau is at the mouth of the Willow River and has houses on two shores. Residents of the area told us that this was the heaviest use of this area by eagles they had seen. It was believed by them that a rough fish die off provided a food source that attracted the eagles.

The other site discovered this year was an evening roost located between Prescott and Diamond Bluff, Wis. The site consisted of 3 coulees, eagle point, an unnamed coulee, and trumpeter valley. We made observations for 25 evenings from 3 January through 4 April. The highest number of birds seen was on 10 January when ~~25~~ 28 were observed. The roost received heavy use until 1 March (table 5) after which numbers dropped. Most of the birds using the roost were adults. The 2 northern coulees (eagle point and unnamed coulee) were used and various spots within a coulee would be used. The roost was not used during the day except when winter storms struck the area; during those days the eagles stayed in the roost which probably offered protection from the storms. Eagles arrived from both upriver and downriver.

Table 5

NUMBER OF EAGLES SEEN AT EAGLE POINT AND UNNAMED COULEE

Date	Time	Imm Eagle	Ad Eagle	Unk Eagle	Location
01/04/89	1630-1800	1	0	1	Eagle Pt.
01/05/89	0720-0805	1	0	1	Eagle Pt.
01/05/89	1100-1130	0	1	0	Eagle Pt.
01/10/89	1400-1410	0	1	0	Eagle Pt.
01/10/89	1600-1640	0	26	2	Eagle Pt.
01/12/89	0720-0815	0	5	1	Eagle Pt.
01/13/89	1645-1730	0	6	0	Eagle Pt.
01/14/89	1700-1702	0	1	0	Eagle Pt.
01/18/89	1530-1545	0	2	0	Eagle Pt.
01/19/89	1620-1750	0	0	0	Eagle Pt.
01/20/89	1615-1630	0	3	0	Eagle Pt.
01/20/89	1630-1700	0	0	16	Und Coulee
01/25/89	0640-0825	0	1	1	Eagle Pt.
01/29/89	1600-1740	0	13	0	Eagle Pt.
01/31/89	1045-1110	0	11	0	Eagle Pt.
02/01/89	1500-1615	0	12	0	Und Coulee
02/07/89	1500-1730	1	16	2	Und Coulee
02/08/89	1530-1730	0	11	0	Und Coulee
02/10/89	1430-1745	2	19	3	Und Coulee
02/17/89	1645-1810	2	6	1	Und Coulee
02/17/89	1645-1800	0	1	0	Eagle Pt.
02/20/89	0930-1400	0	0	0	Und Coulee
02/23/89	1600-1800	1	13	0	Und Coulee
03/01/89	1630-1815	0	6	0	Und Coulee

Table 5 (cont)

NUMBER OF EAGLES SEEN AT EAGLE POINT AND UNNAMED COULEE

Date	Time	Imm Eagle	Ad Eagle	Unk Eagle	Location
03/08/89	1540-1730	0	4	0	Und Coulee
03/10/89	1140-1145	0	0	0	Eagle Pt.
03/23/89	1650-1750	0	0	0	Und Coulee
03/29/89	1630-1845	0	1	0	Und Coulee
04/04/89	1300-1700	0	0	0	Und Coulee

Nesting

A rehabilitated female Bald Eagle (N-415) released at Pigs Eye Island during the winter of 1987-88 nested on the island in the spring of 1988. The nest was blown down and 2 fertile broken eggs recovered (Martell and Redig 1988). No renesting attempt was made that year. A color marked Bald Eagle was seen in the Pigs Eye Lake area in June of 1988 (K. Sonnen, pers. comm) but no other sightings were reported. No attempt on our part was made to relocate the bird during the summer. A new nest, visible from the Greenstreets observation point, was first sighted by J. Galli in November of 1988. Two adults were seen at the nest on a regular basis begining on 22 December when N-415 was observed eating something in the nest cup. During January and February both members of the pair were seen either at the nest or perched in a nearby tree. On 30 January the male was observed carrying vegetative material to the female who was on the nest. On 6 occasions in February both eagles were observed at the nest, and 3 bouts of nest building with one or both of the pair arranging vegetation was observed. Mid-air talon grabbing and tumbling between the pair was observed on 16 February. We believe that egg laying occurred sometime between 27 February and 2 March when an eagle was noted laying in the nest then getting up, staring at its feet and seemingly rearranging something in the nest. After that point every visit to the observation point resulted in seeing an eagle on the nest. Both the male and female were observed incubating and on one occasion (9 March) the female was seen to bring food to the nest and feed at least 2 pieces to the male. It was not possible to positively identify the date the

egg hatched but it was most likely at the begining of April. One young was produced at the nest and banded in May by Mark Martell and Pat Redig. The eaglet was observed often on the edge of the nest and we believe that it successfully fledged.

Trapping and Contaminant Monitoring

No eagles were trapped during the study this year. The bait sites were generally unsuccesful in attracting eagles. Consequently no information on contaminants in wintering eagles was gathered. The Gantenbine site on occasion had eagles in the area but only once was a bird near the bait, and it did not get within range of the bow net. Bald Eagles were often seen succesfully fishing from the river either by diving from the air or by simply walking up to the edge of the ice and pulling fish from the water. Future trapping efforts may yield better success if attempted during migration when eagles are probably more likely to use a strange food source. Other trapping methods such as cannon nets and floating fish snares (Cain and Hodges 1989) may be tried also.

SUMMARY AND CONCLUSIONS

Comparisons of results between the first two years of monitoring released rehabilitated eagles is not possible due to the low sample size of 1988-89. The most troubling finding in this field season was the recovery of eagle #O-103 in a leg-hold trap. This was the first use of the backpack mounted radio transmitter on this project, a technique which has great potential for obtaining information on the fidelity of eagles to the wintering area. We feel that the recovery of this bird in a trap only reconfirms what the admission of more than 100 other Bald Eagles to our clinic points to -- leg hold traps pose a real and significant danger to Bald Eagles wintering in the upper Mississippi River valley.

The successful nesting of eagle N-415 was very significant. It is the first successful nesting in Ramsey county this century, and is part of an apparent expansion of the Bald Eagle's range into the Twin Cities. Also, this was to our knowledge only the second confirmed nesting of a rehabilitated Bald Eagle. The first case also involved a bird released from our program. The bird had been caught in a leg-hold trap in northern WIs. After release a color-marked feather was found below an occupied nest.

The circumstances of this nesting has conservation implications beyond rehabilitation. Releasing rehabilitated adult eagles into territories containing only one bird of the opposite sex may be a method of establishing reproductive pairs in regions with low population levels. A similar approach has been used in Europe with the Eagle Owl (Bubo bubo) and has shown some success

(Radler and Bergerhausen 1988). More research into this technique, exploring factors such as age and sex of the birds, and the timing of the release is needed. It may be possible to try this on other territories in the upper Mississippi river valley with the cooperation of the appropriate state and federal agencies.

Eagle use of feeding areas near Prescottt, Wis. and Red Wing, MN again this year point out the value those sites have to wintering eagles in the area. Ice conditions affecting food availabilty and apparently the presence of territorial pairs affect the use of feeding sites from year to year. Thus, Pigs Eye, Gray Cloud Island, and Prairie Island had different use patterns in 88-89 than in 87-88.

The discovery of the Eagle Point roost is important as this area is under great pressure for development. Roosts, more so than feeding areas, may be limited and critical to continued use of the upper part of the Mississippi river by Bald Eagles. The preservation of Bald Eagle roosting areas is a management priority.

Other trapping techniques should be tried to obtain data on contaminant levels of these eagles. Cannon nets and floating fish snares are two possible means of obtaining birds. Additionaly, moving trapping times and locations to take advantage of the largest concentrations of birds should also be productive.

The Raptor Center plans one more year of tracking released rehabililtated eagles. Contingent on funding, a continuation of

the roost/feeding area studies, and contaminant studies is also planned.

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