1995 STATUS AND BREEDING SUMMARY

OF PIPING PLOVERS

AT LAKE OF THE WOODS, MINNESOTA

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INTRODUCTION

Management activities for piping plovers have been conducted by the Minnesota Department of Natural Resources on islands in Lake of the Woods since 1982, when Pine and Curry Island and adjacent Morris Point were acquired by the state of Minnesota as a Scientific and Natural Area. Since 1985, this has been the only nesting site in the state for this federally threatened species. Activities conducted under this project include census, banding adults and chicks, placing predator control cages around nests, assessing reproductive success, monitoring and controlling avian and mammalian predators, and managing vegetation to favor plover nesting.

METHODS

In 1995, management activities were conducted at Pine and Curry Island SNA on 26 days between 9 May - 23 August. Observations of piping plovers were made regularly at Pine and Curry Island and Morris Point. Zippel Bay (18 May) and Rocky Point (13 June) were visited once. All piping plovers observed were checked for bands and their breeding status was determined. Nests were located and a wire mesh predator exclosure was placed around each after the clutch was completed. Exclosures were constructed of 5 x 10 cm mesh welded wire 1.3 m tall. A 3 m diameter circle of wire was placed around the nest and was fastened to three steel rods driven into the ground. The bottom edge of the fence was buried approximately 15 cm deep to inhibit predators from digging under the barrier. Heavy string was tied across the top in a criss-cross pattern to discourage avian predators. Installation of an exclosure took about 15 minutes. Plovers could easily pass through the openings in the mesh. We attempted to nest trap and band unbanded adults or birds in need of new color bands once incubation was well underway. Brush removal in traditional plover nesting areas was done in August after plovers had left the site.

Air photos of Pine and Curry Island, Morris Point, Zippel Bay, and Rocky Point were taken on 28 July. Data on Lake of the Woods (LOTW) water levels were obtained from the Lake of the Woods Control Board.

RESULTS AND DISCUSSION

Water Levels

LOTW water levels were low at the start of the season and remained so all summer (Table 1). This exposed broad sandy beaches in the areas traditionally used by piping plovers.

Piping Plover Reproduction

A total of 14 adult piping plovers (13 breeders, 1 non-breeder; 7 pairs) were present on the SNA this year (Table 2) representing a population decrease of 1 bird from 1994. One previously unbanded adult piping plover was captured and banded (see attached banding schedule). No piping plovers were seen at Zippel Bay or Rocky Point. Eight piping plover nests (Fig.1)

were found between 18 May - 27 June (Table 3). Three nests were depredated before predator exclosures could be installed. The type of predator could not be determined. One pair renested at a different location on the SNA. A second pair split up and one member left the area. The remaining member found a new mate and nested again at the same site. The third pair had nested late (25-27 June) and did not renest. The remaining 5 nests hatched 19 chicks of which 7-8 (36.8-42.1%) fledged (Table 4). This represents a fledge rate of 1.0-1.1 chicks per breeding pair (Table 5). Of the chicks that failed to fledge, 8 disappeared during the first few days after hatching, but the remaining 3-4 survived 10-15 days.

Predator Management

Mammals In 1995 a professional trapper continued trapping mammalian predators on Pine and Curry Island and Morris Point. Nine trap sets (3 mink/6 fox) were maintained from 9 May to 15 July totaling 612 trap nights. Two mink and 2 red foxes were captured. Despite these efforts, skunk and otter tracks were seen in several locations throughout the season. Also, Franklin's ground squirrels were observed on Morris Point.

Crows/Ravens As in 1992-94, we attempted to disrupt nesting attempts by crows and ravens on Pine and Curry Island and Morris Point. However, the single pair of ravens nesting on the SNA had already fledged 3 chicks by 26 May before we located the nest. We destroyed 19 crow nests on 26 May and 7 June. None contained eggs, although shell fragments were found below one nest. While some nests were no doubt those remaining from 1994 (19 nests were destroyed in 1994), others were new in 1995. It appears that predators (perhaps ravens) are frequently depredating these crow nests at least early in the season when they are quite visible. We have repeatedly observed ravens being mobbed by crows on the SNA.

Raptors There was evidence that a great horned owl was a nocturnal visitor to "Tern Island" and "West End plus" this year (see Fig. 1e for locations). On 13 June we were unsuccessful in an attempt to lure an owl in to taped crow calls at dusk. Other attempts were canceled due to stormy weather. A bald eagle nest on Pine and Curry Island was active this year and 1 chick fledged.

Gulls As in previous years, one of our objectives was to prevent ring-billed gulls from nesting on "Tern Island" where they have attempted to breed since 1985. Gulls compete with piping plovers and common terns for breeding space and are a potential source of nest and chick predation. In 1992-93 we were successful in causing gulls to abandon the site by placing parallel rows of elevated nylon string in the traditional nesting area. In 1994 no ring-billed gulls attempted to breed on the SNA, but in 1995 they returned to "Tern Island." On 19 May we noted about 20 ring-billed gulls attempting to nest in the middle portion of Tern Island. Between 19 May and 26 May, up to 70 gulls were present. During this period 16 nests containing 1-2 eggs were destroyed, and additional strings were added to the grid. Thereafter, no gulls occupied the middle portion of the island during the remainder of the season. Between 1 June and 8 June 4 gull nests were destroyed on the sandy eastern tip of "Tern Island". No further nesting attempts occurred on "Tern Island" in 1995. The strings were removed on 22 August.

As usual, large numbers of loafing gulls (mostly Franklin's gulls in 1995) began congregating on Pine and Curry Island SNA beaches in late June and early July. Gull numbers peaked on 12 July when we surveyed some 5,771 birds (4,430 Franklin's, 1,300 ring-billed, 41 herring). Unfortunately, the gulls congregate on the same beaches used by piping plover broods. This year we set up parallel rows of elevated nylon string in potential piping plover brood habitat near each plover nest to deter gull use of those sites. Deterrents varied from about 100-400m^2 and were installed late in the plover's incubation period. They remained in place from 23-70 days ($\bar{x}$=47 days). String deterrents were 100% effective in preventing ring-billed and herring gull use of the sites. However, deterrents were only marginally effective against Franklin's gulls. Fortunately, quantitative observations by Steve Maxson this year indicate that Franklin's gulls do not appear to be a serious threat to piping plover chicks. Strings did not deter piping plovers or common terns. One common tern became entangled in the strings set up in the ring-billed gull colony. This was the only bird entangled during 4 seasons of string use on the SNA.

RECOMMENDATIONS

The following recommendations are made considering that personnel and funding to conduct this work will likely be reduced in future years.

1. Continue to monitor population size, nesting, and reproductive success of piping plovers on Pine and Curry Island SNA.
2. Discontinue banding of piping plovers.
3. Continue to use wire mesh predator exclosures around piping plover nests; make every effort to get the exclosures around the nests soon after laying.
4. Continue to trap mammalian predators during May-July on Pine and Curry Island and Morris Point; report locations of any predatory tracks to the trapper as soon as they are observed.
5. Prevent ring-billed gulls from nesting on "Tern Island" by use of a grid of elevated string as necessary. Remove gull eggs as necessary.
6. Install grids of elevated string on beaches near piping plover nests to deter landing by flocks of gulls. Strings should be installed during the latter part of the plover's incubation period.
7. Cut trees and shrubs, as needed, in areas occupied by piping plovers to eliminate crow/raven/raptor perches and to maintain relatively open habitat conditions
8. Continue to distribute brochures and information to resort owners and other interested parties in the vicinity of LOTW to encourage compliance with sanctuary regulations. Encourage MDNR Enforcement personnel to continue enforcing these regulations.

ACKNOWLEDGMENTS

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Program assisted with brush cutting in August. Rick Cousins supplied us with LOTW water levels.

LITERATURE CITED

Haig, S. M. and L. W. Oring. 1987. Population studies of piping plovers at Lake of the Woods, Minnesota, 1982-1987. Loon 59:113-117.

Wiens, T. P. 1986. Nest site tenacity and mate retention in the piping plover (Charadrius melodus). M.S. Thesis, University of Minnesota - Duluth, 34 pp.

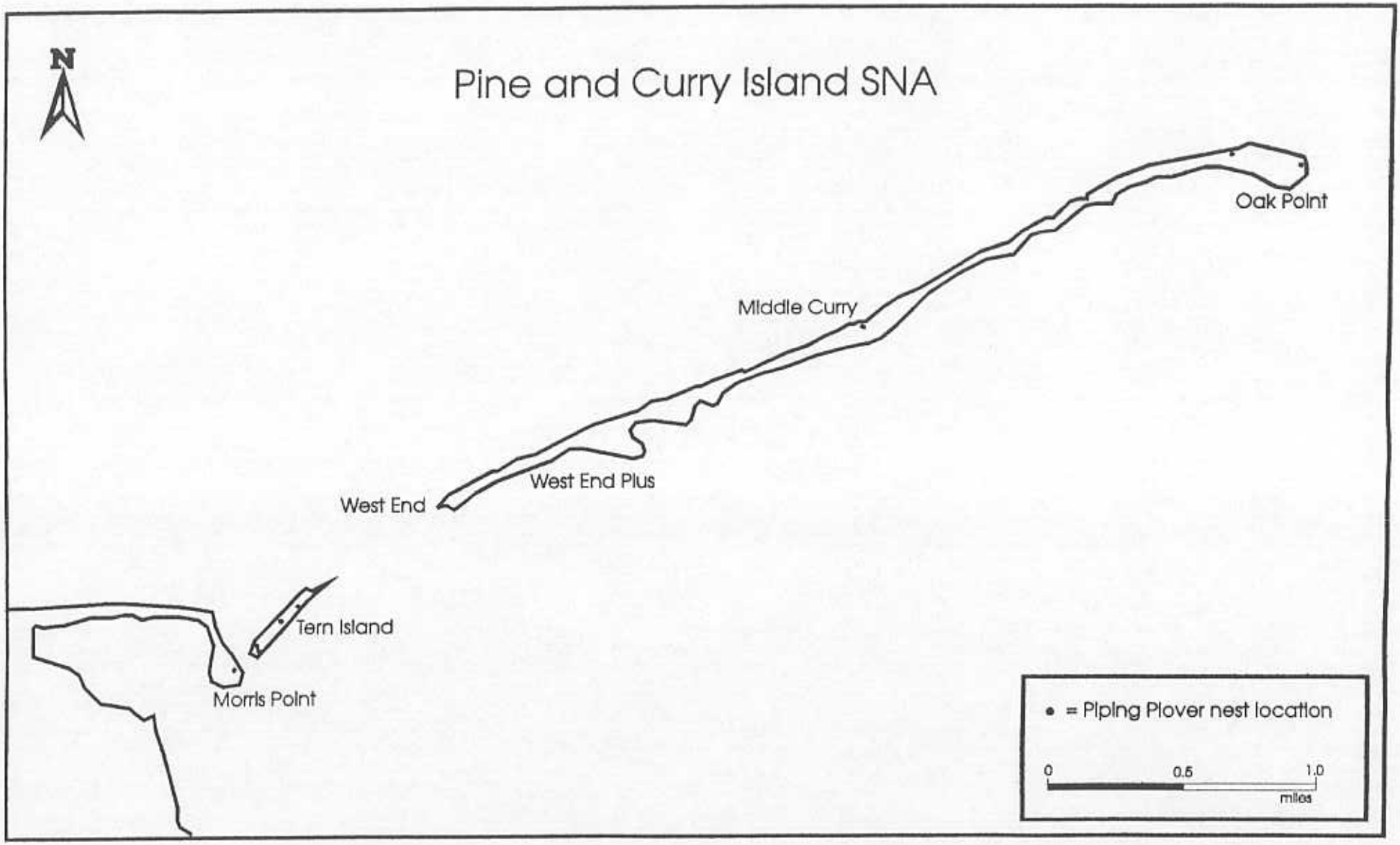
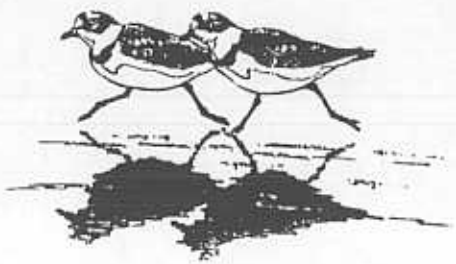


Figure 1. Piping Plover nest site locations, 1995.



Approval expires: 04/30/95
OMB Approval # 1018-0006

Master Permit No. 08035 | Banding Schedule | Master Permittee L. W Oring, Dr.

Pine and Carry Island, 4 mi. N. Hackett

—Banding Locations—

A Lake of the Woods Co., MN

B

C

D

E

F

REPORT ONLY CONTIGUOUS BAND NUMBERS

FROM 701-37471 THROUGH 701-37491 INCLUSIVE BAND NOS

BAND PREFIX: ←	COLOR MARKER CODE*	ALPHA CODE	SPECIES #	STATUS	AGE-SEX	REGION	LAT-LONG	LOC	DATE MO. - DAY - YR
01 02									
03 04									
05 06									
07 08									
09 10									
11 12									
13 14									
15 16									
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43 44									
45 46									
47 48									
49 50									

U.S. bandings to: Bird Banding Laboratory, U.S. Fish and Wildlife Service, 12100 Beech Forest Road, Laurel, MD 20708-4037. Canadian bandings to: Canadian Wildlife Service, ECN Wildlife Research Center, 100 Gamelin Blvd., Hull, Quebec, Canada K1A OH3.

INSTRUCTIONS AND DEFINITIONS PROVIDED IN BIRD BANDING MANUAL

Master Permit No. 08035

BAND PREFIX: 901 ←	COLOR MARKER CODE*	ALPHA CODE	SPECIES #	STATUS	AGE-SEX	REGION	LAT-LONG	LOC	DATE MO. - DAY - YR
51 52									
53 54									
55 56									
57 58									
59 60									
61 62									
63 64									
65 66									
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83 84									
85 86									
87 88									
89 90									
394 91 92	– : BA	PIPL	277.0	301	AHY - U	250	485 - 0744	A	06 - 21 - 95
93 94									
95 96									
97 98									
99 00									

REMARKS: Color code is read -- left leg top to bottom & right leg top to bottom. Colors are as follows - B = blue, A = USFWS band.

*If applicable

Table 1. Monthly mean water levels (ft. above sea level) at Lake of the Woods, 1982-1995.

	May	June	July	August	Mean
1982	1059.3	1060.0	1060.1	1060.3	1059.9
1983	1058.7	1059.0	1059.8	1059.7	1059.3
1984	1058.9	1059.6	1060.5	1060.6	1059.9
1985	1060.3	1061.0	1061.5	1061.0	1060.9
1986	1060.6	1060.6	1060.5	1060.1	1060.4
1987 /1	--	--	--	--	
1988	1057.8	1057.9	--	1057.9	1057.9
1989	1059.6	1060.5	1061.5	1060.9	1060.6
1990	1058.1	1059.3	1060.0	1059.4	1059.2
1991	1058.5	1059.4	1060.0	1059.7	1059.4
1992	1060.3	1060.3	1060.5	1060.4	1060.4
1993	1058.9	1059.3	1060.0	1060.0	1059.6
1994	1058.5	1059.0	1060.0	1060.4	1059.5
1995	1059.1	1059.0	1059.2	1059.2	1059.1
Mean	1059.1	1059.6	1060.3	1060.0	

/1 1987 data are not available.

Table 2. Population summary of piping plovers from 1982-95 at Lake of the Woods, Minnesota./1

Year	Breeding Birds				Non-breeders	Total
	Pine/Curry Island	Morris Point	Zippel Bay	Rocky Point		
1982	24	4	0	2	14	44
1983	32	6	2	2	7	49
1984	36	8	0	0	3-6	47-50
1985	19-36	4	0	-	1-2	24-42
1986	18	4	0	1	9-10	32-33
1987	12	2	0	-	12	26
1988	18	4	0	4	4	30
1989	14	2	0	4	2	22
1990	8	2	-	2	4	16
1991	12	0	0	0	2	14
1992	10	0	0	0	3	13
1993	9	0	0	0	2	11
1994	10	2	0	0	3	15
1995	11	2	0	0	1	14

/1 1982-84 data from Wiens 1986.
1985-87 data from Haig and Oring 1987.

Table 3 missing from original document

Table 4. Reproductive success by breeding location for piping plovers, 1995.

	Morris Point	Tern Island	West End Plus	Middle Curry	Oak Point	Total	
						No.	%
No. nests	1	4	0	1	2	8	--
No. eggs laid	4	15	0	4	6	29	--
No. successful nests/1	1	3	0	0	1	5	71.4
No. eggs hatched	4	11	0	0	4	19	65.5
No. chicks fledged	4	3-4	0	0	0	7-8	36.8-42.1

/1 Successful = at least one egg hatched.

Table 5. Reproductive success of piping plovers at Lake of the Woods, Minnesota from 1982-1995./1

Year	No. Nests	Chicks fledged	Chicks fledged/pair
1982	24	26	1.7
1983	22	44	2.1
1984	27	13	0.6
1985	--	7-10	0.4-0.5
1986	--	9	0.8
1987	7	2-21	0.3-3
1988	13	12-15	1.0-1.25
1989	10	1	0.1
1990	7	4	0.7
1991	6	2-4	0.3-0.7
1992	5	4	0.8
1993	6	9	1.8
1994	7	4-7	0.7-1.2
1995	8	7-8	1.0-1.1

/1 1982-1984 data from Wiens 1986.
1985-1987 data from Haig and Oring 1987.