1996 STATUS AND BREEDING SUMMARY OF PIPING PLOVERS AT LAKE OF THE WOODS, MINNESOTA

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by

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PIPING PLOVERS

Methods

In 1996 we made observations and/or conducted management activities at Pine and Curry Island SNA on 24 days between 23 May - 22 August. Observations of piping plovers were made regularly at Pine and Curry Island and Morris Point. Zippel Bay and Rocky Point were visited once (12 June). 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 3 steel rods driven into the ground. Heavy string was tied across the top in a cris-cross pattern to discourage avian predators. Installation of an exclosure took about 15 minutes. Plovers could easily pass through the openings in the mesh. Hatching and fledging success was determined for each nest.

Air photos of Pine and Curry Island and Morris Point were taken on 17 May. Data on Lake of the Woods (LOTW) water levels were obtained from the Lake of the Woods Control Board.

Results

1996 was reportedly the coldest spring since 1950. When the fishing season opened on 11 May, LOTW was still partially ice covered. LOTW water levels were quite high at the start of the

season and remained so all summer (Table 1). Many beach areas were either inundated or subject to frequent washover by wind generated waves.

A total of 10 adult piping plovers (5 breeding pairs) were present on the SNA this year (Table 2) representing a population decrease of 4 birds from 1995. Poor habitat conditions this spring may have contributed to the population decrease. No plovers attempted to breed at Morris Point, Oak Point, or "West End plus". None were seen at Zippel Bay or Rocky Point. Nine piping plover nests (Fig.1) were found between 29 May - 29 June (Table 3). Before clutches could be completed, 3 nests were washed away by waves and 2 were depredated. The egg predation appeared to be caused by avian predators (ring-billed gull, crow). One pair renested late in the season and although 3 eggs hatched, this nest was unsuccessful because both parents had abandoned the nest, likely due to the late date, before eggs hatched. The 3 remaining nests hatched 10 chicks of which 4 - 6 (30.8 - 46.2%) fledged (Table 4). This represents a fledge rate of 0.8 - 1.2 chicks per breeding pair (Table 5).

PREDATOR MANAGEMENT

Mammals

In 1996 Jim Walton continued trapping mammalian predators on Pine and Curry Island and Morris Point. Seven trap sets (4 mink, 3 fox) were maintained from 14 May to 20 June. Three trap sets (2 mink, 1 fox) were maintained from 21 June to 16 July for an overall total of 344 trap nights.

One mink, 1 red fox, and 1 otter were captured. Despite these efforts, there was evidence that a mammalian predator (mink or otter) was residing on "Tern Island" late in the season and was preying on common tern chicks.

Crows/Ravens

Due to budget cutbacks, we did not attempt to control crows or ravens in 1996.

Raptors

We had no direct evidence that a great horned owl was a regular nocturnal visitor to "Tern Island" in 1996. Due to budget cutbacks, we made no attempts to control owls this year.

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. Ring-billed gulls proved more troublesome in 1996 than they have in recent years. On 23 May, about 40 ring-billed gulls were present on "Tern Island" and 2 1-egg nests were found and destroyed. We set up 3 small deterrents consisting of 1,000 ft of elevated nylon string in the areas occupied by gulls. However, in contrast to previous years, gulls did not immediately abandon the site. On 29 May the

gulls were still present and some were nesting under the strings. We destroyed 21 additional eggs and expanded the deterrent area by adding another 1,000 feet of nylon string. This was not totally effective as some gulls were soon back walking under the strings. We next added another 1000 feet of string to form a grid pattern instead of parallel rows. By 5 June gulls had abandoned one section of deterrent, but 15-20 were still present in another area and one gull was entangled in the string. We destroyed another 18 eggs. On 8 June another gull was found entangled and another egg was destroyed. By 12 June only 8-10 gulls remained near the deterrent and we destroyed an additional 4 eggs. On 19 June we found 3 more gull eggs near the deterrent, but thereafter gulls abandoned the deterrent sites. However, gulls next moved to a site near the west tip of "Tern Island" where no deterrents were present. Between 16 - 26 June we destroyed an additional 12 eggs at the site before laying ceased. However, gulls continued to occupy this portion of "Tern Island" throughout July.

As usual, large numbers of loafing gulls (mostly Franklin's gulls) began congregating on the SNA beaches in July. On 17 July we surveyed a total of 7,300 gulls (6,450 Franklin's, 745 ring-billed, 105 herring). A partial survey (Oak Point not included) on 21 July totaled 10,600 gulls. By 24 July even more gulls were present, but stormy weather prevented an accurate survey. Even so, over 3,000 gulls occupied "Tern Island" beaches and similar or greater numbers were present on Morris Point. Following the usual pattern, gull numbers dropped off dramatically thereafter.

Once nesting ring-billed bulls abandoned areas covered by string deterrents, we did not observe additional gulls occupying these sites. Thus the sites were available for use by piping plovers. Deterrents were removed on 6 August. No plovers became entangled.

RECOMMENDATIONS

The following recommendations are made considering that SJM has been reassigned to other projects. 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. Continue to use wire mesh predator exclosures around piping plover nests. Because nest predation has been occurring even before clutches are complete (especially at "Middle Curry" and Oak Point in recent years), predator exclosures should be installed as soon as nests are found - even at the 1-egg stage.

3. Continue to trap mammalian predators during May-July on Pine and Curry Island and Morris Point.

4. Prevent ring-billed gulls from nesting on "Tern Island" by use of deterrents of elevated string as necessary. Remove gull eggs as necessary.

5. Install deterrents of elevated string on beaches near piping plover nests to prevent landing by flocks of gulls. Strings should be installed during the latter part of the plover's incubation period.

6. 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.

7. 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 MNDNR Enforcement personnel to continue enforcing these regulations.

ACKNOWLEDGMENTS

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LITERATURE CITED

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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.

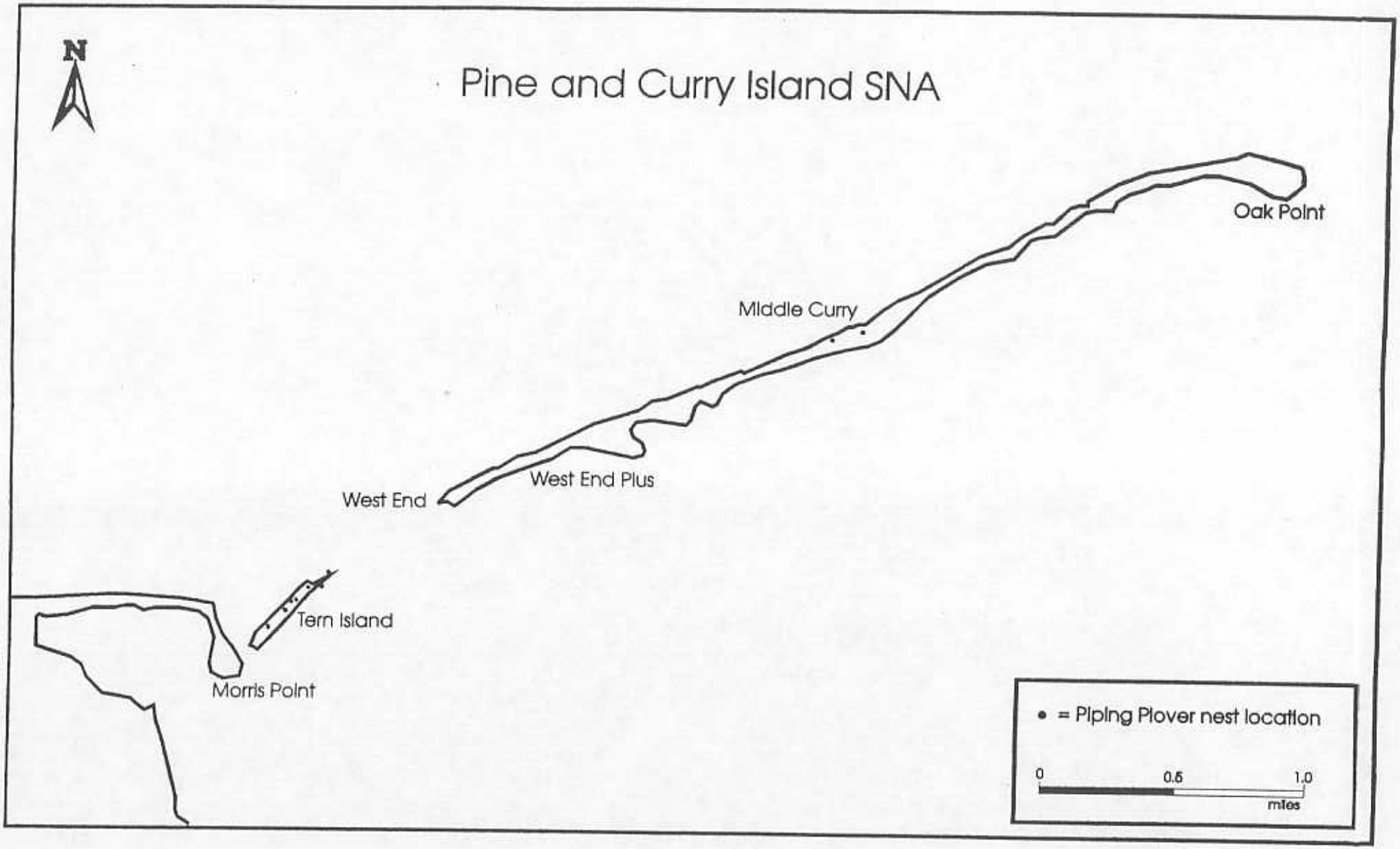

Figure 1. Piping Plover nest locations, 1996.

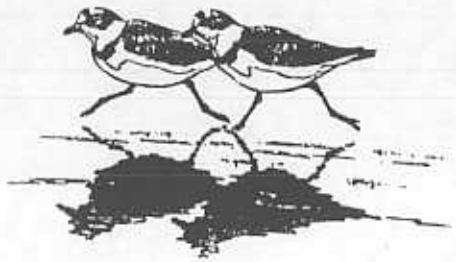

Table 1. Monthly mean water levels (ft. above sea level) at Lake of the Woods, 1982-1996.

	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
1996	1060.2	1061.1	1060.9	1060.5	1060.7
Mean	1059.2	1059.7	1060.3	1060.0	

/1 1987 data are not available.

Table 2. Population summary of piping plovers from 1982-96 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
1996	10	0	0	0	0	10

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

Table 3. Nest initiation dates and nest fates of piping plovers breeding at Lake of the Woods, Minnesota, 1996.

Nest location	Approximate nest initiation date	Nest fate
Tern Island	27 May	3 hatched, 1 fledged
Tern Island	30 May	depredated
Middle Curry	30 May	washed away
Tern Island	5 June	washed away
Tern Island	2 June	4 hatched, 1-2 fledged
Tern Island	6 June	3 hatched, 2-3 fledged
Tern Island	8 June	washed away
Middle Curry	8 June	depredated
Tern Island	25 June	3 hatched, eggs & chicks abandoned

Table 4. Reproductive success by breeding location for piping plovers, 1996.

	Morris Point	Tern Island	West End Plus	Middle Curry	Oak Point	Total	
						No.	%
No. nests	0	7	0	2	0	9	--
No. eggs laid	0	18	0	2	0	20	--
No. successful nests[a]	0	4	0	0	0	4	44.4
No. eggs hatched	0	13	0	0	0	13	65.0
No. chicks fledged	0	4-6	0	0	0	4-6	30.8-46.2

[a]Successful = at least one egg hatched.

Table 5. Reproductive success of piping plovers at Lake of the Woods, Minnesota from 1982-1996.[a]

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
1996	9	4-6	0.8-1.2

[a] 1982-1984 data from Wiens 1986.
1985-1987 data from Haig and Oring 1987.