PIPING PLOVER RECOVERING AND MONITORING

IN MINNESOTA, 1997

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by

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INTRODUCTION

The Lake of the Woods area is the only remaining breeding site for piping plovers in Minnesota. From 1982 to the present, investigators have monitored the reproductive success of plovers at this site, and have conducted a wide array of management activities directed at mitigating threats to piping plovers and sustaining their population. This report summarizes the activities conducted in 1997, which were partially funded by the USFWS under the Sec. 6 program.

SUMMARY OF ACTIVITIES AND RESULTS BY TASKS IN WORK PLAN

Task 1. During the 1997 field season, we made observations at Pine and Curry Island SNA on 18 days between May 19 and July 16. Observations were made twice weekly at Pine and Curry Island and Morris Point. We visited Zippel Bay on June 18, and Rocky Point was visited four times (June 20, June 25, July 9 and July 13th). All observations were made with either a 20x wide Bushnell Spotting scope, a Swarovski Zoom 20x60x Spotting scope, or field binoculars. Each plover was studied to determine if bands were present, and the breeding status of each bird was assessed (i.e., observations made as to the bird's nest site affinity). Note that since bands have not been placed on birds in this population for several years, identification of individual birds has become more problematic.

A total of 9 plovers (two breeding pairs) were present on the SNA this year (Table 2) representing a population decrease of 1 bird from 1996. However, surprisingly, a total of 7 birds were sighted at Rocky Point during the four visits, and there was one nesting pair there, with possibly one additional nesting pair seen, although a nest was never found for the second pair. This brings the total to 16 birds sighted on the South shore of Lake of the Woods in 1997.

Tasks 2 and 4. Nests were visually located by observing bird's behavior, and this year a wire mesh predator exclosure was placed around each nest within one day of finding the nest, even if only one egg was present. Exclosure cages were made of 2" x 4" mesh welded wire 4.3' in height. A circle of wire 9.8' in diameter was fastened to three steel rods which were driven into the ground. Nylon Carpenter's string was tied across the top in an overlapping manner to discourage avian predators. The exclosures allowed plovers to freely pass in and out of their nest site, while serving as a barrier to mammalian and avian predators. The reason that more aggressive placement was initiated this year was that in 1996, several nests disappeared before the full clutch was present, so we wanted to give the birds the greatest advantage possible. Hatching and fledging success was determined for each nest.

The three nest locations (Fig.1) were as follows. 1): one nest was found with just a scrape and no eggs on the E. Spit of "Tern Island"on May 29. This pair never laid eggs at the site. A nest with one egg was located on the North side of "Tern Island on May 31, and a cage placed around the nest. Subsequently additional eggs were laid in this nest, and the nest was observed until July 4th, when observations indicated there were no eggs in the nest. Chicks were never

observed, so we must conclude that all chicks were depredated. A third nest was found at Rocky Point on June 18 at the very tip of the point. There was only one egg in the nest. The nest was located in the midst of 2500 Franklins Gulls and 20 Ring-billed Gulls. A exclosure cage was placed around the nest on 20 June. This nest was being incubated by an adult plover. This nest was observed until July 9th, when the egg was no longer present at the site. No evidence of chicks/fledglings was ever seen at this site either (Table 3). Thus, fledging success in the S. Lake of the Woods population was zero in 1997 (Table 4), which represents a fledge rate of 0 chicks per breeding pair (Table 5).

Task 3. We obtained a federal permit to take nesting Ring-billed Gulls from the SNA, where they have attempted to breed every year since 1985. Gulls compete with terns and plovers for breeding space and also are potential predators on chicks and eggs. On May 25, 75 Ring-billed Gulls were present on the island, but were not yet nesting. On May 29, 60 adult Ring-billed Gulls were observed on the island. We collected 41 Ring-billed Gull eggs from 22 nests. At this time we set up a deterrent "string grid" area in the vicinity of the nesting gulls. We put out approximately 1000' of nylon string attached to 3' metal posts. We did have some limited additional nesting within the string grid area. On June 3 we found three gull nests with a total of four eggs in the grid and destroyed these. There were no subsequent nesting attempts made after this time.

Gull deterrents were removed on 16 July. No birds became entangled in the string, and the grids seem to be effective at discouraging Ring-billed Gulls at this site.

There were some congregations of non-breeding Franklin's Gulls, but most of these were found on the E. Spit of "Tern Island." Five hundred Franklin's gulls were seen on Tern Island on July 9th. By July 16th few Franklin's gulls remained.

Task 5. During 1997 Jim Walton continued to conduct predator trapping on Pine and Curry Island and Morris point. An average of 9 sets were maintained for the period of May 5th through July 15th, totaling 684 trap nights. On May 7th, a female fox was captured on the main portion of the SNA. On May 25th, one male mink was caught, also on the main portion of the SNA. On May 30th a male fox pup was captured on Morris Point. Trapping effort intensified in the Morris Point area after predation on the tern colony was discovered , but not all members of the fox family were captured, and there was evidence that the remaining individuals were extremely trap shy. One additional animal, a female fox pup was captured on June 24th.

WATER LEVELS AND EROSION

(note: these activities were not part of the sec. 6 project)

Aerial photos were taken of the islands and Rocky Point on July 22 in order to document the extensive erosion in land area that has occurred on Pine and Curry island, and most dramatically in the "Tern Island" area where plovers traditionally nest. Data on Lake of the Woods (LOTW) water levels were obtained from the Lake of the Woods Control Board in Quebec.

Water levels were comparatively stable/low during the summer of 1997 (Table 1). Even so, massive erosion of beach areas on Pine/Curry Island occurred during 1997. In fact the only plover nest on Pine/Curry was located approximately 12 feet from the north shoreline when found in June, and by mid July erosion had undercut the exclosure cage. Apparently factors other than high water contribute to erosion at this site, although causative factors have not been positively identified.

RECOMMENDATIONS

The following are our recommendations for continuance of monitoring on Pine and Curry Island SNA.

1. Continue to monitor population size, nesting, and reproductive success of piping plovers on Pine and Curry Island SNA, Rocky Point and Zippel Bay, at least until there are no nesting pairs remaining.
2. Continue to use wire mesh predator exclosures around piping plover nests, immediately upon locating a nest with a minimum of one egg.
3. Continue to contract with a trapper during May-July on Pine and Curry island and Morris Point, with an effort to reduce large scale depredation occurrences such as that which occurred at the site in 1997.
4. Continue to obtain a federal permit and remove gull eggs as they occur on the SNA. Install deterrents of elevated string grids on the sites picked by the gulls for nesting. Closely monitor the response of the gulls to this practice, as full scale nesting of the gulls is to be avoided at all costs.
5. Continue the sanctuary signing of all traditional use areas including Morris Point, "Tern Island", "West End", "Middle Curry" and Oak Point, as well as placement of the large wood-routed signs.
6. Cut trees and shrubs, as needed, in the "Tern Island" and "Oak Point" areas to eliminate crow/raven/raptor perches and to maintain an open habitat condition.
7. Attempt to quantify the amount of habitat loss occurring at the site next year. Try to determine square meters lost through comparing aerial survey photos, and in 1998, use a GPS unit to create cartography for the island.
8. Attempt to establish better local communication regarding rules on the SNA, and justification for the rules. This can be accomplished by continuing brochure distribution as well as submission of stories to the local newspaper. Encourage MDNR Enforcement personnel to continue enforcing these regulations.
9. Continue to seek federal funding for this important project.

ACKNOWLEDGMENTS

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September. Rick Cousins supplied us with LOTW water levels from the Springsteel Point gauge on LOTW.

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.

Table 1. Monthly mean water levels (ft. above sea level) at Lake of the Woods, 1982-1997.

	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
1997	1059.8	1059.7	1060.0	1059.7	1059.8

/1 1987 data are not available.

Table 2. Population summary of piping plovers from 1982-97 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
1997	4	0	0	4	8	16

/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, 1997.

Nest location	Approximate nest initiation date	Nest fate
Tern Island E. Spit	29 May	washed away
Tern Island N. Shore	31 May	4 hatched, 0 fledged
Rocky Point	Prior to June 18th	nest failed

Table 4. Reproductive success by breeding location for piping plovers, 1997.

	Rocky Point	Morris Point	Tern Island	West End Plus	Middle Curry	Oak Point	Total No.	Total %
No. nests	1	0	2	0	0	0	3	--
No. eggs laid	1	0	4	0	0	0	5	--
No. successful nests[a]	0	0	1	0	0	0	1	33.3
No. eggs hatched	0	0	4	0	0	0	4	80.0
No. chicks fledged	0	0	0	0	0	0	0	0.0

[a]Successful = at least one egg hatched.

Table 5. Reproductive success of piping plovers at Lake of the Woods, Minnesota from 1982-1997.[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
1997	3	0	0

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

Table 6. Colony size and reproductive success of common terns nesting on Pine and Curry Island SNA, 1988-1997.

Year	No. Nests	No. Fledged	
		Observed	Estimated/1
1988	52	0	
1989	120	1	
1990	180	70	
1991	274	9	
1992	186	0	
1993	153	84+	159
1994	379	92+	330
1995	378	200+	465
1996	375	140 +	422
1997	200+	0	0

/1 Estimate based on extrapolation from fledge rate (no. fledged/breeding pair) in enclosures to all nests.

Table 7. Contents of common tern nest enclosures on "Tern Island", 1997.

Date	Tern enclosure
21 June	enclosure erected on E. spit
25 June	22 nests 55 eggs
9 July	15 nests 26 eggs, 2 unincubated eggs 1 dead chick 2 depredated eggs
16 July	nothing remaining (washed over)
No. presumed fledged	0

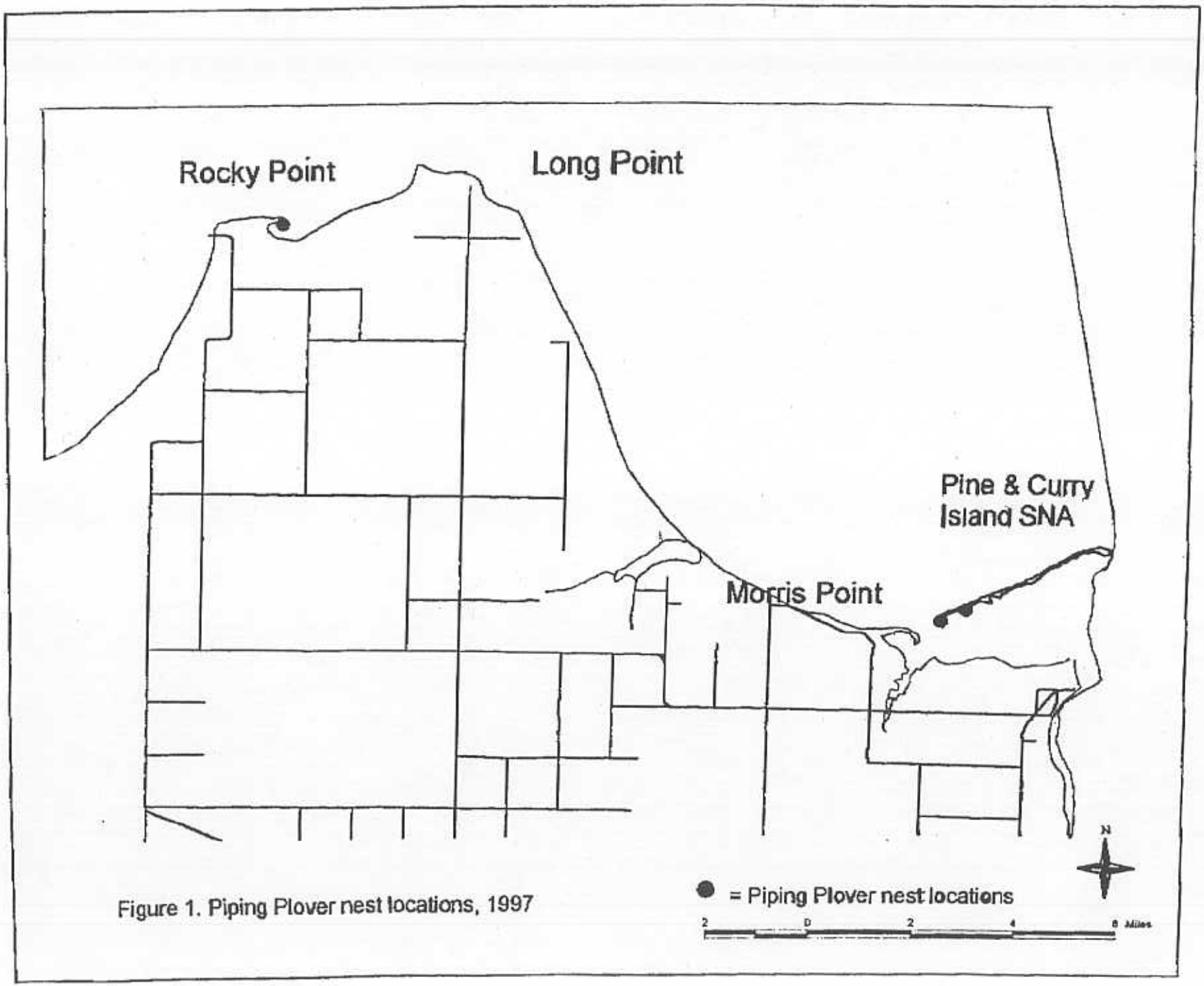

Figure 1. Piping Plover nest locations, 1997