

PIPING PLOVER RECOVERY AND MONITORING

IN MINNESOTA, 1999

15 November 1999

Progress report submitted to the U.S. Fish and Wildlife Service

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 1999, which were partially funded by the U.S. Fish and Wildlife Service (USFWS) under the Section 6 program.

SUMMARY OF ACTIVITIES AND RESULTS BY TASKS IN WORK PLAN

Task 1. In 1999, personnel assigned to this project who assisted with field observations included Project Manager Katie Haws, Technician Bruce Lenning, Assistant Zippel Bay State Park Manager Doug Easthouse, and Laborer Lance Becklund, as well as several Minnesota Conservation Corps (MCC) members. During the 1999 field season, in total, we made observations at Pine and Curry Island SNA and Rocky Point on 27 days between May 20 and July 28, 1999. Observations were on the average made twice weekly at Pine and Curry Island and Morris Point. In addition, a temporary laborer was hired for 10 days between May 24th and June 4th. Rocky Point was visited eight times, on May 27, June 7, June 24, June 27, July 8th, July 13th, July 21st, and July 28th. All observations were made with either a 20x wide Bushnell spotting scope, or 8x42 field binoculars. Each plover seen was observed to determine if bands were present, and

the breeding status of each bird was determined (i.e., observations made as to the bird's site affinity and associated nesting observations). Numbers of plovers seen, and age of the bird if known was recorded. Note that since bands have not been placed on birds in this population for several years, identification of individual birds has become more problematic. However, the pairs are attached quite closely to their nesting site, so that it is usually apparent when members of a nesting pair are encountered.

Observers traveled to nest sites with help of a 16' Lund boat, and 40 hp. motor.

A total of 13 adult plovers were present at Lake of the Woods in 1999, eight of these were seen on Pine and Curry Island, and five on Rocky Point (Table 2). This represents a population increase of two birds at Pine and Curry, and a population increase of five birds at Lake of the Woods as a whole. This apparent slight increase in the population is encouraging. However, it is difficult to evaluate the exact numbers of unbanded non-breeders. Our observations indicate that 8 birds were breeders, and 5 were non-breeders, possibly sub-adults.

Tasks 2 and 4. Nests were visually located by observing the bird's behavior from 50 meters. Incubating birds exhibit agitated behavior and remain close to the nest site when observed. Wire mesh predator exclosures were placed around each nest on the day the nest was found, 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 nests were observed twice weekly to determine hatching dates, and subsequent survival of chicks. Hatching and fledging success could then be determined. During the incubation stage, the nests were viewed from a distance of 2 meters to determine number of eggs in the nest, and any other observations. Fledging success was determined by observing from a distance, usually from the boat, as young plovers hide when approached closely.

There were five nests found in 1999; four on Pine and Curry Island, and one at Rocky Point (Fig. 1). The first nest was located on May 23d, at the recently formed peninsula attached to Morris Point, formerly known as "Tern Island." I will henceforth call this area "Tern Point". This nest (#1) eventually contained four eggs. The second nest (#2), also at "Tern Point" was found several days later, and also eventually contained four eggs. A third nest (#3), was located at Rocky Point on May 27th. This nest eventually contained three eggs. A plover nest with 4 eggs was located at the "middle Curry" site on June 24th (#4), and a fifth nest (#5) was located on June 20th, probably a re-nest at the "Tern Point" site, it had one mis-shapen egg. These observations are summarized in Table 3.

The outcomes of each of the nests are as follows (Table 4): Nest #1 washed out sometime prior to June 10th. Nest #2 was abandoned also prior to June 10th. Nest #3 hatched approximately June 24th, (three eggs hatched). Subsequent observations on July 28th confirmed that three young fledged from this site. Nest #4 hatched around

July 14th (3 eggs hatched). Two young fledged from this site. Nest #5 was unsuccessful. In 1999, only two nests actually reached the hatching stage (40%), compared to 75% in 1998. This was most likely due to the un-suitability of the "Tern Point" peninsula and may be attributed to flooding and increased predation at the site. However, overall reproductive success was good, with 1.25 young fledged per pair, 5 young total fledged (Table 5). The emergence of Rocky Point as a significant plover nesting area and population concentration center was again underscored this year.

Task 3. A federal permit was obtained 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 18, "hundreds" of gulls were reported at "Tern Island" peninsula by Jeff Dittrich, Wildlife Manager at Baudette. When I first visited the site on May 20th, I observed over 2000 adult Ring-billed Gulls already at in the area. I collected 885 eggs from 580 nests. A grid constructed of nylon carpenter's string and metal posts was erected in the gull breeding area on this date also. We have never observed so many gulls in previous years, and it seemed that the grid was not going to be enough to discourage the gulls from the site. In fact even immediately after it was constructed, several gulls ventured underneath the string.

Lance Becklund was hired on a temporary emergency appointment, began work on May 24, and worked for 10 days through June 4th. His main responsibilities were to create disturbance where the gulls were congregating so as to discourage nesting, and

also to continue collecting gull eggs. An additional 1502 eggs were destroyed during this time period. This effort was adequate to discourage the gulls, and there were not large numbers of them present on the site after that time. This brings the total number of eggs taken to 2357, which far exceeds actual permit allotments. This point was brought to the attention of permit administrator Bill Paul in a phone conversation in May. Next year we will have to apply to take a larger number of eggs on the federal permit. Conversations with Bob Djupstrom indicate that he would like to continue the gull deterrent efforts, as once established, a ring-billed gull colony is almost impossible to discourage (Jeff Hines, Steve Mortenson, pers. Comm). Gull deterrents were removed in the end of July. No birds became entangled in the string, and the grids were moderately effective at discouraging gull nesting.

Task 5. Jim Walton was re-hired to conduct predator trapping on Pine and Curry Island and Morris Point. An average of eight sets were maintained during the period of 5/9/99 until 7/15/99, for a total of 536 trap nights. Most of the sets were concentrated in the Morris Point area. A total of one fox was taken from Pine Island, and one fox and four skunks were removed from Morris Point.

WATER LEVELS AND EROSION

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

1975, 1985 and 1996 reveal some very significant changes in the physiography of the island (Figure 2). Data on Lake of the Woods (LOTW) water levels were obtained from

the Lake of the Woods Control Board in Quebec. Water levels in 1999 were significantly above average (Table 1). The washing out of nest #1 and abandonment of nest #2 can be attributed to high water levels and storm surge. Continued erosion was observed on the SNA. The most significant change observed this year which directly impacts the plovers, is the elimination of the traditional "island" nesting site due to its convergence with Morris Point. The gap which closed last October remained closed during the summer of 1999, and the lake to the North of the old gap site is filling in rapidly with numerous logs, sand and debris. Several big pines at the west end of the islands washed away this year. Preliminary comparisons made using aerial photography done in 1975, 1985 and 1996. The aerial shots were digitized and composites are shown in Figure 2. There has been significant erosion of the SW corner of the islands, and also some increase in size of the NW end. The total acreage lost since 1975 is 14 acres. The loss of feet of perimeter is 5,609.27 from 1975 through 1996. (Table 6).

RECOMMENDATIONS

The following are our recommendations for future monitoring and management on Pine and Curry Island.

1. Continue to monitor population size, nesting, and reproductive success of Piping Plovers on Pine and Curry Island SNA, Rocky Point and Zippel Bay.
2. Continue the use of wire mesh predator exclosures around piping plover nests, and attempt to place exclosures after one egg has been laid.

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3. Eliminate contract trapping in 2000. With the changing physiography of the Pine/Curry Island site, the trapping does little to eliminate predation from the traditional bird nesting site area, as it is now a part of the mainland. The money might be better spent on additional surveillance and monitoring.
 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 gull-nesting areas. Increase permit request to 3000 eggs. 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. Propose a re-signing project with SNA management staff to re-post the entirety of the SNA utilizing the new black SNA signs. Also make sure wood routed sanctuary and picnic signs are in place.
 6. Publish findings on island changes.
 7. Continue shrub and brush removal at traditional nesting areas.
 8. Adequately post Rocky Point. Advocate for the designation of Wildlife Management Area (WMA) at this consolidated conservation land site.
 9. Assist in placement of the new kiosk at Wheeler's Point.
 10. Attempt to better establish local communication regarding rules on the SNA, and justification for the rules. This can be accomplished by continuing individual contact, newspaper articles and working with Tourist Bureau. Also, publish one

article per year in the Baudette Region paper on the plover project, and plover population.

11. Encourage enforcement of SNA rules, and the migratory bird treaty act with regards to protection of the nesting birds and their habitat.
12. Aggressively pursue funding of a more extensive study of the erosion and associated hydrographic changes in the area, the causes and outcomes through the Army Corps of Engineers.

ACKNOWLEDGMENTS

This work was partially funded by the USFWS under Sec. 06 of the Endangered Species Act. Additional funding was provided by the Nongame Wildlife Program of the Department of Natural Resources. The Section of Wildlife and Scientific and Natural Areas Program, and the Division of Parks provided in-kind contributions. Bruce Lenning and Doug Easthouse provided field assistance. Jeff Dittrich and the MCC crew posted sanctuary signs in May, and removed signs in September. Bruce Lenning and the MCC crew did some brushing and tree removal on the island in September. Rick Cousins supplied us with LOTW water levels from the Springsteel Point gauge on Lake of the Woods.

REFERENCES

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

Weins, T. 1986. Nest site tenacity and mate retention in the piping plover (*Charadrius melodus*). M.S. Thesis, Univ. Of MN, Duluth.

Table 1. Monthly mean water levels (ft. above sea level) at Lake of the Woods, 1982-1999.

	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 / <u>1</u>	--	--	--	--	
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
1998	1058.90	1059.54	1059.62	1059.32	1059.34
1999	1060.55	1060.95	1060.76	1060.49	1060.69

/1 1987 data are not available.

Table 2. Population summary of piping plovers from 1982-99 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
1998	6	0	0	2	0	8
1999	6	0	0	2	5	13

/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, 1999.

Nest location	Approximate nest initiation date	Nest fate
1. Tern Point Gap	23 May	flooded/abandoned
2. Tern Point Gap <i>middle</i>	25 May	abandoned
3. Rocky Point	27 May	3 eggs hatched, 3 fledged
4. Middle Curry Island	24 June	3 eggs hatched, 2 fledged
5. Tern Point Gap <i>re-nest</i>	20 June	1 egg, none hatched

Table 4. Reproductive success by breeding location for piping plovers, 1999.

	Rocky Point	Morris Point	Tern Point Gap	West End Plus	Middle Curry	Oak Point	Total	
							No.	%
No. nests	1	0	3	0	1	0	5	--
No. eggs laid	3	0	9	0	4	0	16	--
No. successful nests	1	0	0	0	1	0	2	
No. eggs hatched	3	0	0	0	3	0	6	
No. chicks fledged	3	0	0	0	2	0	5	

Table 5. Reproductive success of piping plovers at Lake of the Woods, Minnesota from 1982-1999.^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
1998	4	7-8	2.3-2.6
1999	5	5	1.25

^a 1982-1984 data from Wiens 1986.

1985-1987 data from Haig and Oring 1987.

Table 6. Area of Pine/Curry Island S.N.A. (Including Morris Point) from 1975, 1985 & 1996 aerial digitized photography, 4":1 mile scale

Year	Area in Acres	Perimeter in Feet
1975	136.0	51,094.27
1985	109.38	48,528
1996	122	45,485