PIPING PLOVER RECOVERY AND MONITORING

IN MINNESOTA, 2000

17 JANUARY 2001

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Minnesota Department of Natural Resources
Nongame Program
2115 Birchmont Bch. Rd.
Bemidji, MN 56601

Natural Heritage and Nongame Research Program
500 Lafayette Rd., Box 25
St. Paul, MN 55155

Introduction

The Lake of the Woods area is the only remaining breeding site for piping plovers in Minnesota. From l982 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 recovering the population. This report summarizes the activities conducted in 2000, which were partially funded by the U.S. Fish and Wildlife Service (USFWS).

Summary of Activities and Results for 2000

Population Status

In 2000, personnel who assisted with field observations included Project Manager Katie Haws, Technician Bruce Lenning, and Assistant Zippel Bay State Park Manager Doug Easthouse. During the 2000 field season, we made observations at Pine and Curry Island SNA and Rocky Point on 13 days between May 9 and July 12, 2000. Observations were made 1-2 times per week at Pine and Curry Island and Morris Point. Rocky Point was visited five times, on May 25, June 15, June 21, June 25, and July 12. Zippel Bay was visited once on June 10. All observations were made with 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 five 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. This year none of the plovers observed had color bands or aluminum bands.

A total of 11 adult plovers were present at Lake of the Woods in 2000; nine of these were seen on Pine and Curry Island, and two on Rocky Point (Table 1). Our observations indicate that 10 birds were breeders, and one was a non-breeder or migrant, possibly a sub-adult. Although the total number of adults observed was lower than in 1999, the number of breeding pairs observed increased by one pair.

Reproductive Success

Nests were visually located by observing the birds' 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. During the incubation stage, the nests were viewed from a distance of 2 meters to determine the status of the nest, and the number of eggs in it. Fledging success was determined by observing from a distance, usually from the boat, as young plovers hide when approached.

There were six nests found in 2000; five on Pine and Curry Island, and one at Rocky Point (Fig. 1). The first nests were found on May 25th, one at Middle Curry Island dunes and the other at Rocky Point. Both nests had 4 eggs. A third nest was located on June 4th, on Tern Point, containing 3 and subsequently 4 eggs. This nest was flooded, and a re-nest initiated within the exclosure cage but slightly higher on the sandy beach on June 15th. This re-nest had 2 eggs. A fifth nest was found on the beach at the Middle Curry site on June 4th with 4 eggs. A sixth nest was found also at Middle Curry on 6/29 only 10 meters from next #1. These observations are summarized in Table 2.

The outcomes of each of the nests are as follows (Table 3): Nest number 1 hatched 4 eggs and fledged 3 chicks. Nest number 2 (Rocky Pt.) hatched 4 eggs and fledged 3 chicks. Nest number 3 was flooded and the renesting birds hatched 1 egg and fledged 1 young. The fifth nest at Middle Curry was flooded and produced no young, and the sixth nest also at Middle Curry was abandoned. In 2000, three nests actually reached the hatching stage (50%), compared to 40% in l999. Overall reproductive success in 2000 was relatively good, with 7 young total fledged or 1.4 young fledged per pair (Table 4). This year, Middle Curry Island, with 3 nests, had the greatest number of resident plovers. Tern Point is much reduced in size, and the land connection has decreased its suitability as a nesting site.

Predator Control

A federal permit was obtained to take nesting Ring-billed Gulls from the SNA, where they have attempted to breed every year since l985. Gulls compete with terns and plovers for breeding space and also are potential predators on chicks and eggs. This year, the gulls did not attempt to nest anywhere on the SNA, so no eggs were taken under the permit.

The formation of a land bridge between Tern Island and Morris Point makes control of mammalian predators infeasible. Trapping of mammalian predators has therefore been discontinued.

Water Levels and Erosion

Data on Lake of the Woods (LOTW) water levels were obtained from the Lake of the Woods Control Board in Quebec. Water levels led to several nest failures in 2000, as mentioned above, because of the large increase in levels through June (Table 5).

Historical comparisons are shown in Figure 2. In 2000, the washing out of nest #3 and #5 were attributed to high water levels and storm surge.

Continued erosion was observed on the SNA. This year the land connection of the traditional plover and tern nesting site to Morris Point was more complete. Additional trees at the west end of the island washed away this year. A report was completed for the DNR (Gangaware 2000, piping plover nesting habitat on Pine & Curry Island, Lake of the Woods, MN. Changes and trends 1975-1999) that documents changes in the size of the SNA based on evaluation of aerial photography (Figure 3). There has been significant erosion of the SW corner of the islands, and some increase in size of the NE end. Changes in area are summarized in Table 6.

Recommendations for future activities

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. Coordinate the 2001 Minnesota component of the Piping Plover International Census.
3. Continue the use of wire mesh predator exclosures around piping plover nests, and attempt to place exclosures after one egg has been laid.
4. Continue to obtain a federal permit and remove ring-billed gull eggs as they occur on the SNA. Past experience indicates that even though gulls did not nest on the SNA. in 2000, continued vigilance is warranted. Install deterrents of elevated string grids on any gull-nesting areas. Closely monitor the response of the gulls to this practice and attempt to prevent gulls nesting on the SNA.
5. Continue the sanctuary signing of all traditional use areas including Morris Point, Tern Island, West End, Middle Curry and Oak Point. Repair wood-routed signs so that lettering is distinct. Also make sure wood routed sanctuary and picnic signs are in place. Monitor longevity and effectiveness of recently placed interpretive sign at the S. picnic area.
6. Increase size of Middle Curry Sanctuary area by 50 m., due to increased nesting there.
7. Continue shrub and brush removal at Oak Point.
8. Adequately post Rocky Point.
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. Submit Gangaware report to the Army Corps of Engineers to advocate for more extensive study of causes and outcomes of the erosion and associated hydrographic changes in the area.

Acknowledgments

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Haig, S. and L.W. Oring. 1987. Population studies of piping plovers at Lake of the Woods, Minnesota, l982-l987. Loon 59:113-117.

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Table 1. Population summary of piping plovers from 1982-00 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	8
1998	6	0	0	2	0	8
1999	6	0	0	2	5	13
2000	8		0	2	1	11

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

Table 2. Nest initiation dates and nest fates of piping plovers breeding at Lake of the Woods, Minnesota, 2000.

Nest location	Approximate nest initiation date	Nest fate
1. Middle Curry (dunes)	25 May	4 eggs hatched, 3 fledged
2. Rocky Point	25 May	4 eggs hatched, 3 fledged
3. Tern Point Gap	4 June	flooded
4. Tern Point Gap *re-nest*	15 June	1 egg hatched, 1 fledged
5. Middle Curry Island (beach)	4 June	flooded
6. Middle Curry Island (dunes)	29 June	abandoned

Table 3. Reproductive success by breeding location for piping plovers, 2000.

	Rocky Point	Morris Point	Tern Point Gap	Middle Curry	Oak Point	Total No.	Total %
No. nests	1	0	2	3	0	6	--
No. eggs laid	4	0	6	12	0	22	--
No. successful nests	1	0	1	1	0	3	
No. eggs hatched	4	0	1	4	0	9	
No. chicks fledged	3	0	1	3	0	7	

Table 4. Reproductive success of piping plovers at Lake of the Woods, Minnesota from 1982-2000.[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
2000	6	7	1.4

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

Table 5. Monthly mean water levels (ft. above sea level) at Lake of the Woods, 1982-2000.

	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
1998	1058.90	1059.54	1059.62	1059.32	1059.34
1999	1060.55	1060.95	1060.76	1060.49	1060.69
2000	1058.85	1059.62	1060.65	1060.46	1059.89

/1 1987 data are not available.

Table 6. Area of Pine/Curry Island S.N.A. (Including Morris Point) from Gangaware, 2000.

Year	Area in m^2
1975	700,822.7 m^2
1985	583,003.864 m^2
1992	839,345.240 m^2
1996	649,616.639 m^2
1999	659,199.272 m^2

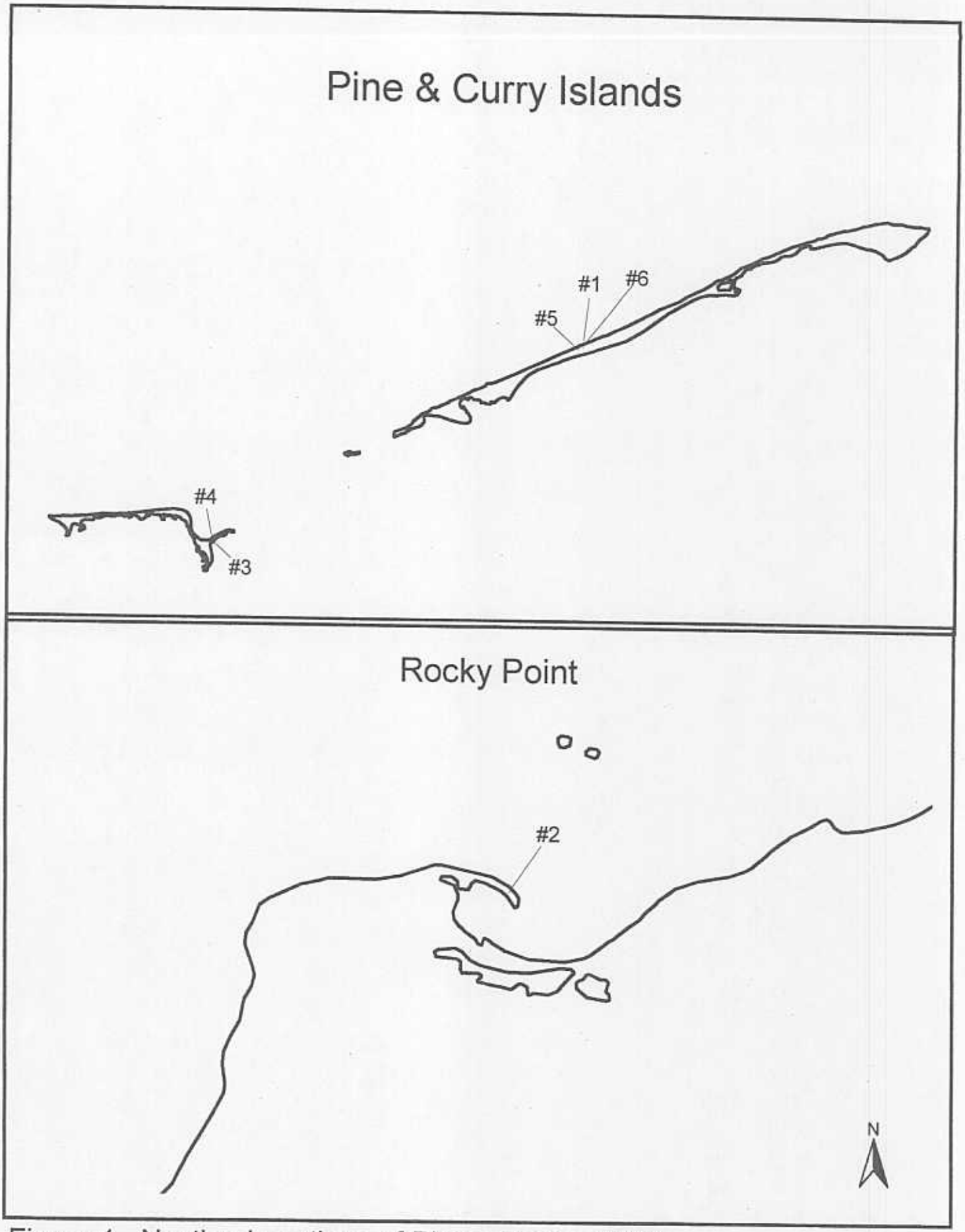
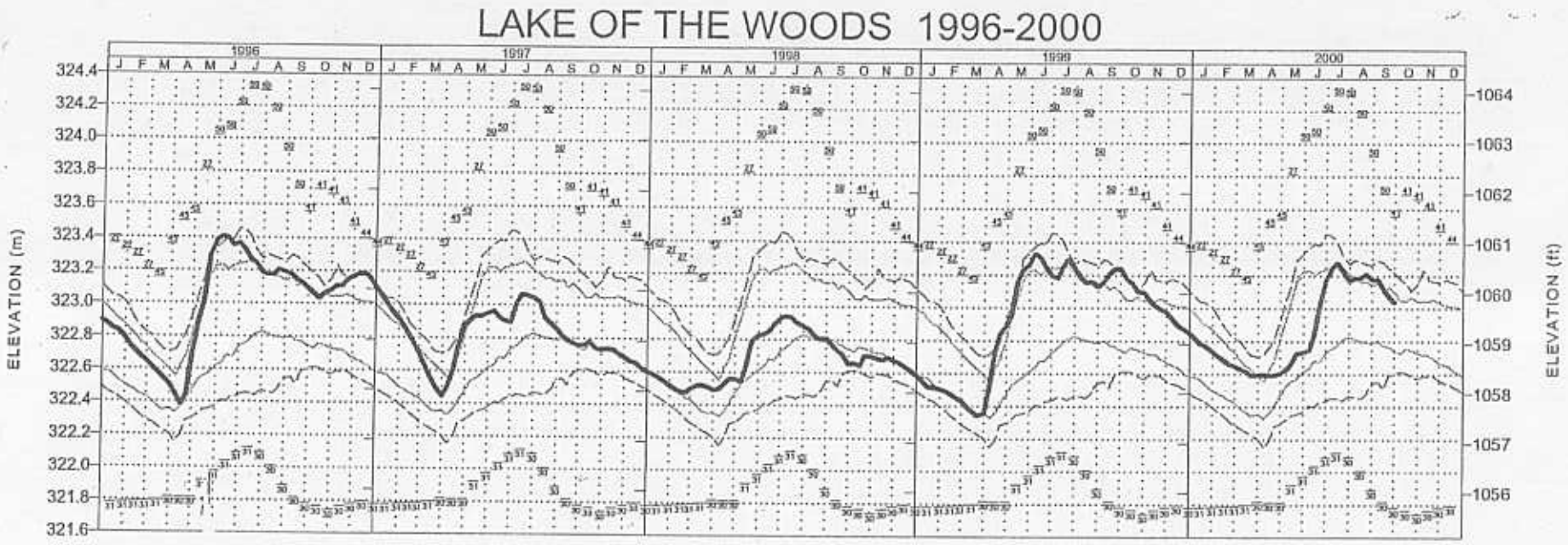


Figure 1. Nesting Locations of Piping Plover, 2000.

Figure 2. Water levels (m.) In Lake of the Woods. Data from the Lake of the Woods Control Board.



Actual Data

Actual data for year shown
- levels are 3-day main lake means plotted at month quarter points

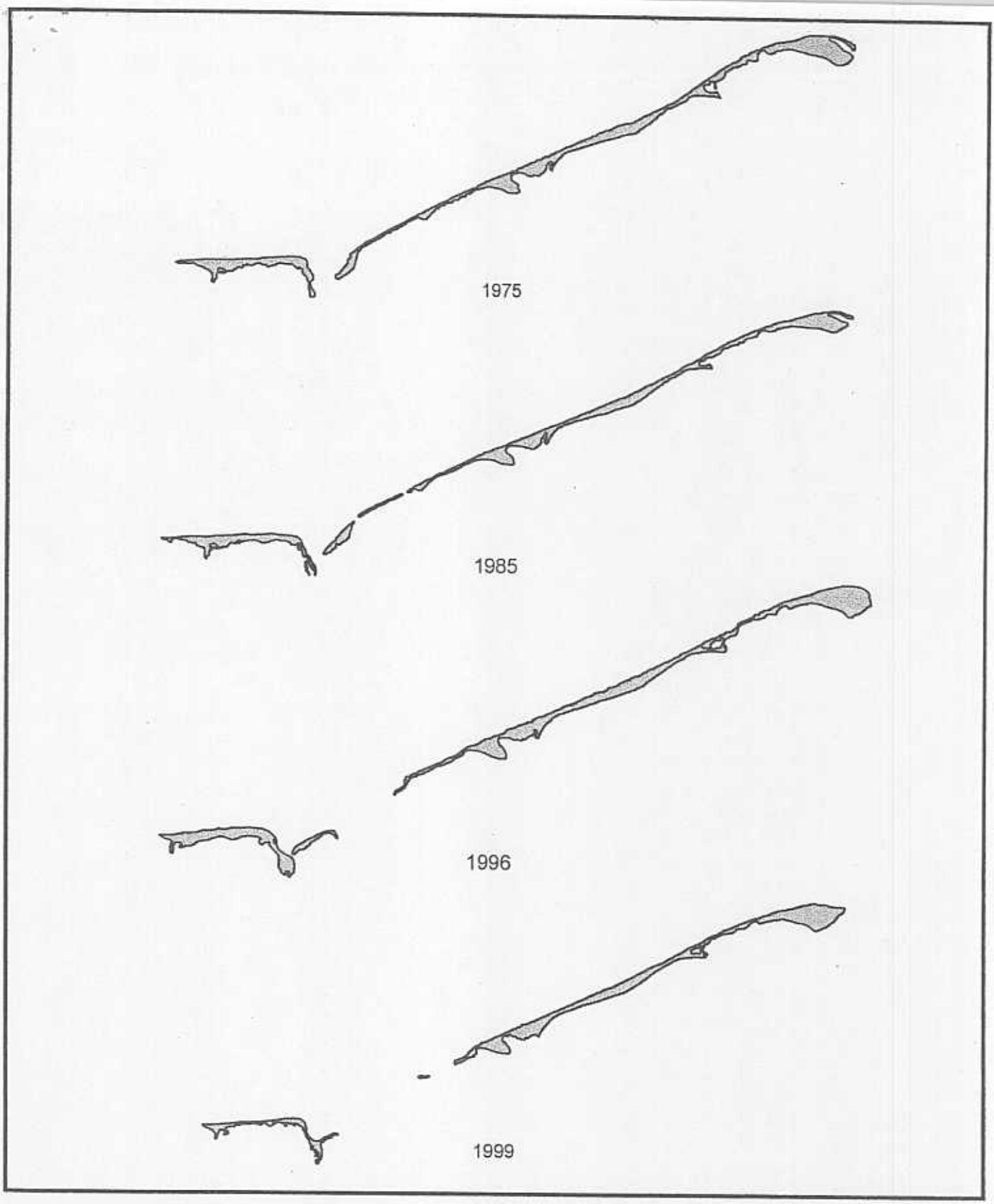


Figure 3. Historical Configuration of Pine & Curry Island Digitized from Aerial Photography