PIPING PLOVER RECOVERY AND MONITORING

IN MINNESOTA, 2001

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Introduction

The Lake of the Woods area is the only remaining breeding site for piping plovers in Minnesota. From I982 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 2001, which were partially funded by the U.S. Fish and Wildlife Service (USFWS). This is the last year in which a cooperative agreement with the U.S. Fish and Wildlife Service is in effect for the Piping Plover in Minnesota.

Summary of Activities and Results for 2001

Population Status

In 2001, 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 2001 field season, we made observations at Pine and Curry Island SNA and Rocky Point on 10 days between June 1 and July 18, 2001. Morris Point and Pine/Curry Island SNA was visited on June 1,3,6,7,15, and 18th. Rocky Point was visited four times, on June 7, , July 6, July 13, and July 18. Zippel Bay was visited once on June 18. 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 six 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 one bird was seen with bands; it was banded with a blue flag above the right knee joint, and a metal band on the left leg. The lower portion of the right leg was missing.

A total of 7 adult plovers were present at Lake of the Woods in 2001, five of these were seen at Rocky Point WMA, and two birds were seen at Morris Point (Table 1). Our observations indicate that 6 birds were breeders, and one was a non-breeder or migrant, possibly a sub-adult. The total number of adults observed was lower than in 2000, and there were also fewer breeding pairs.

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. This year, there were two nests which had nest exclosures placed around them. 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 once or 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 two nests found in 2001; one on Morris Point, and one at Rocky Point (Fig. 1). This year no birds nested on Pine and Curry Island proper. The first nest located on Morris Point was found on June 3d, and by June 6th had four eggs. The second nest, located on Rocky Point was found on July 6th . It is likely that this nest was a re-nest, as it contained a maximum of 2 eggs. These observations are summarized in Table 2.

The outcomes of each of the nests are as follows (Table 3):The Morris Point nest was incubated for at least 14 days. However, sometime in the end of June, storms and high water washed away the nest. The birds did not re-nest, or stay in the area. At the Rocky Point site, visits by observers were infrequent enough, that initial nesting attempts were probably not noted. The eventual fate of the re-nest is not known, however, in general plover nests initiated in July do not fledge young, and are abandoned after a few weeks of incubation (Steve Maxson, pers. com.) Reproductive success for 2001 was most likely 0, as fledging of young could not be determined for one nest, and was zero for the other (Table 4).

Certainly, 2001 was the latest in a series of bad years for plovers in the area. Nesting success for the Sable Island/Windy point area in adjacent Canada was also zero this year (Leo Heyens, pers. com.), and the future of this plover sub-population would seem to be in doubt.

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 1985. Gulls compete with terns and plovers for breeding space and also are potential predators on chicks and eggs. This year, the gulls attempted to nest in small numbers at Morris Point, amidst the Common Tern colony which has relocated there with the disappearance of the traditional island nest location that they previously used. A total of 61 Ring-billed gull nests were destroyed under the permit.

The formation of a land bridge between Tern Island and Morris Point makes control of mammalian predators ineffective. Trapping of mammalian predators has

therefore been discontinued. Our observations indicated that mammalian predation was not a problem for the Piping Plovers in 2001.

Water Levels and Erosion

Data on Lake of the Woods (LOTW) water levels were obtained from the Lake of the Woods Control Board in Ottawa, Ontario. Water levels led to all of the nest failures in 2001, as mentioned above, because of the large increase in levels through June and/or storm surge(Table 5). Historical comparisons of water levels on the lake are shown in Figure 2. Note that high water levels exceeded the 90% mark in June of 1996, as well as late May, June, July and August of 2001.

This year was the second wettest on record for Lake of the Woods, and continued habitat erosion has resulted in drastic changes to Pine/Curry SNA. Note that the high water elevation of 1061.8 is only 2.2 feet lower than the all-time high of 1064 which was seen in 1950. Also note in the historical comparison, that we have been wetter than 75% of the observations recorded from 1927-2001 in1996, 1999, 2000, and 2001; 4 out of the past 6 years. High water levels have contributed to the seemingly irreversible disappearance of acres of island habitat.

Continued erosion was observed on the SNA (Table 6). It is significant to note that since 1975, about 20% of the original acreage of Pine and Curry Island has disappeared; this amounts to 32.25 acres of land. Severe lakeshore erosion has also occurred elsewhere on the Lake including Morris Point, Sandy Shores and Long Point (Dan Thul, pers. comm.). There has been quite a bit of rip-rapping of these problem areas, further complicating the hydrological story of this lake.

This year, basically all of the old tern and plover breeding area which had adjoined itself to Morris point a few years ago, has eroded away(Figure 3). Additional trees at the west end of the island washed away this year, and several new breaches of the island occurred in the E. portion. Most of the 75 year+ old pines where the eagles traditionally nested on the SW portion of the island have now been uprooted and have washed away. This year, the eagle pair was observed nesting in a very dilapidated balm of gilead tree. In addition, my observations indicate that in places, the island is now only 10-15' wide. This may pave the way for additional erosion of the island, and possibly an entirely new configuration, or even disappearance of additional large portions of the island(Figure 3).

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. Investigate the possibility of a contract with Cuthbert/Stucker to get some more detailed

information on this population as well as to explore recovery potential.

2. Continue the use of wire mesh predator exclosures around piping plover nests, and attempt to place exclosures after one egg has been laid.

3. Continue to obtain a federal permit and remove ring-billed gull eggs as they occur on the SNA. Physiographic changes in the SNA have made it less likely for a large gull colony to locate at this site. Continue to check for presence of a colony, however, as time permits.

4. Continue the sanctuary signing of all traditional use areas including portions of the SNA, and Rocky Point WMA. 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.

5. Discontinue shrub and brush removal at Oak Point, as plovers don't seem to be responding to the available habitat there.

6. Assist in placement of the new kiosk at Wheeler's Point.

7. 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.

8. Encourage enforcement of SNA rules, and the Migratory Bird Treaty Act with regards to protection of the nesting birds and their habitat.

9. Continue to explore funding options for a study of erosion/deposition in the lake, with the Army Corps of Engineers.

10. Request a new cooperative agreement and $20,000 in funding from the U.S. Fish and Wildlife Service for continued monitoring of this critically threatened population.

Acknowledgments

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removed signs in September. Rick Walden supplied us with LOTW water levels from the Warroad gauge on Lake of the Woods.

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Table 1. Population summary of piping plovers from 1982-01 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	0	2	1	11
2001	0	2	0	4	1	7

/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, 2001.

Nest location	Approximate nest initiation date	Nest fate
1. Morris Point	3 June 01	Washed away, late June
2. Rocky Point (re-nest)	6 July 01	Fledging success not known Implied to be zero

Table 3. Reproductive success by breeding location for piping plovers, 2001.

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

Table 4. Reproductive success of piping plovers at Lake of the Woods, Minnesota from 1982-2001.[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
2001	2	0-2	0

[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, 1982-2001.

	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
2001	1060.72	1061.90	1061.38	1061.85	1061.46

/1 1987 data are not available.

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

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	559,199.272 m^2
2001	570,291.043 m^2

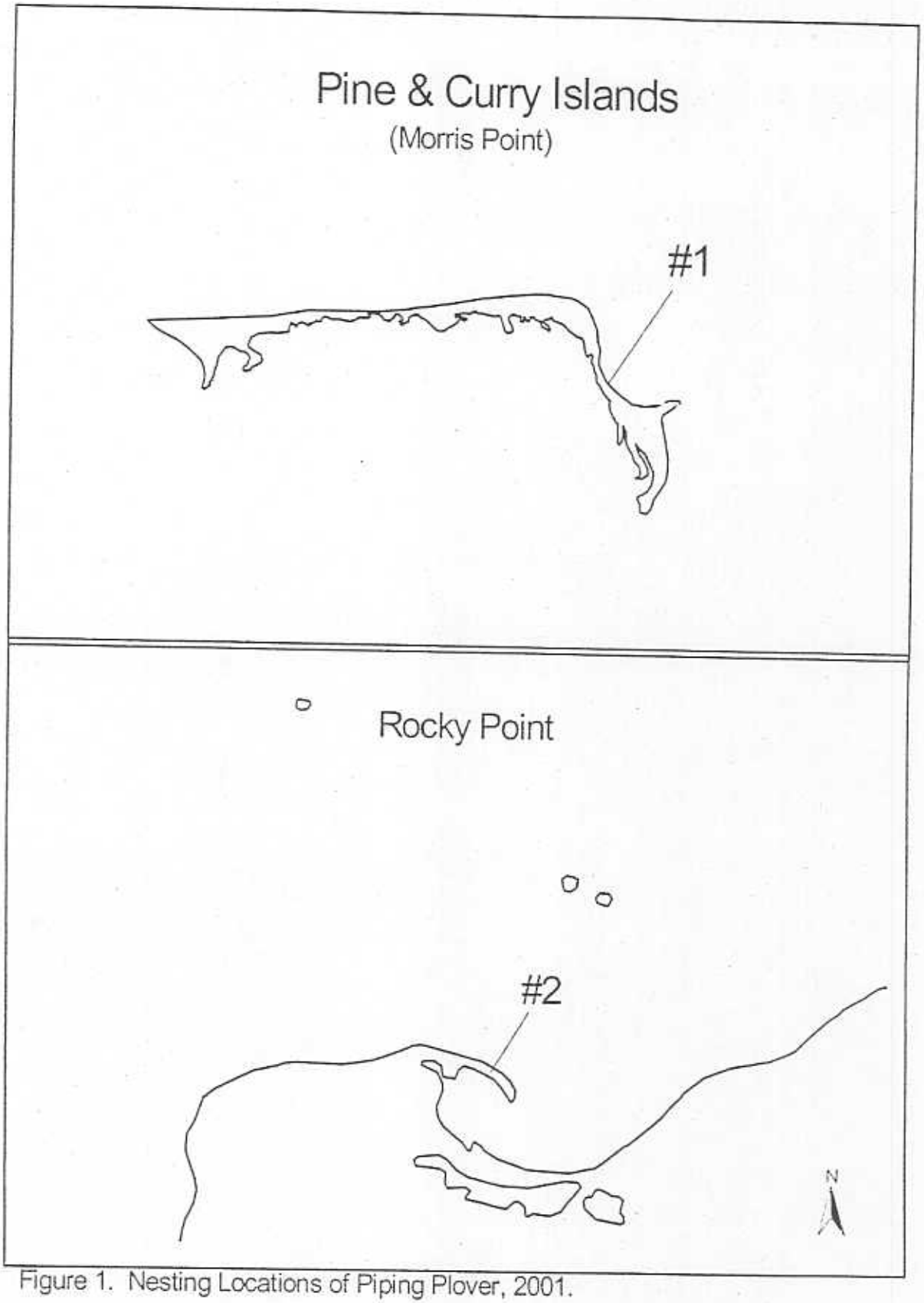
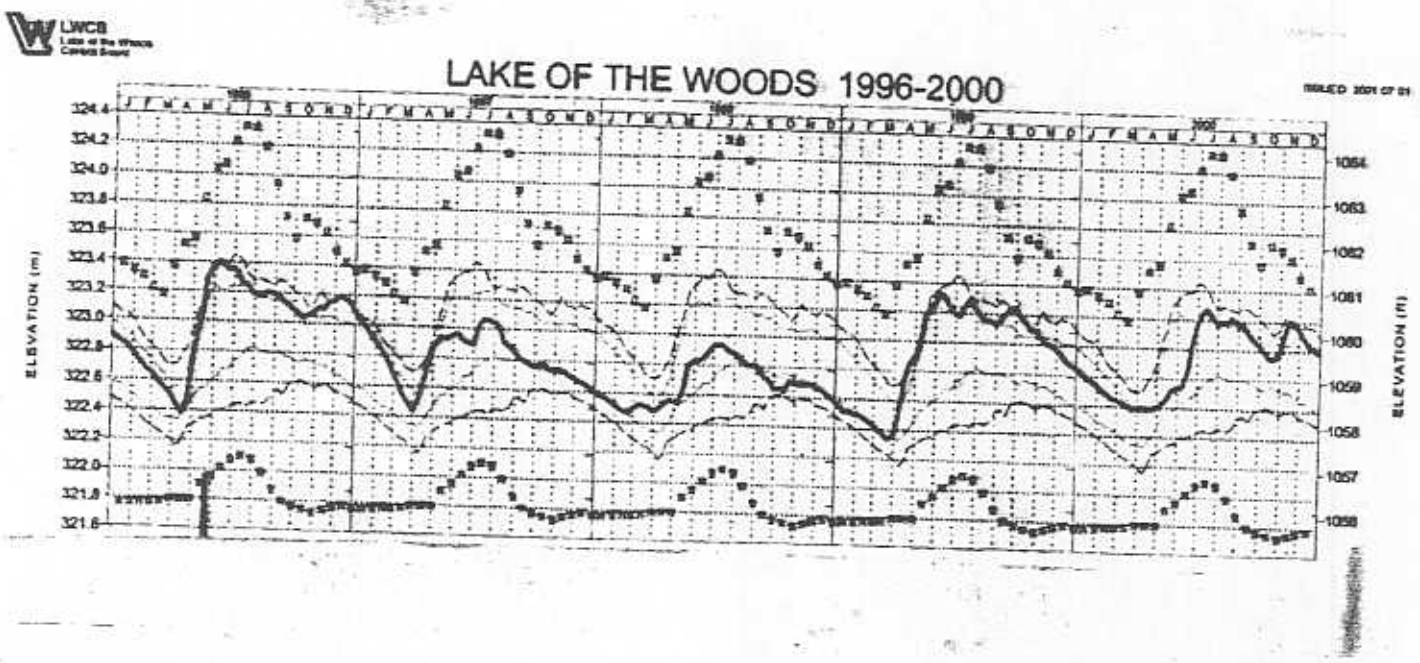
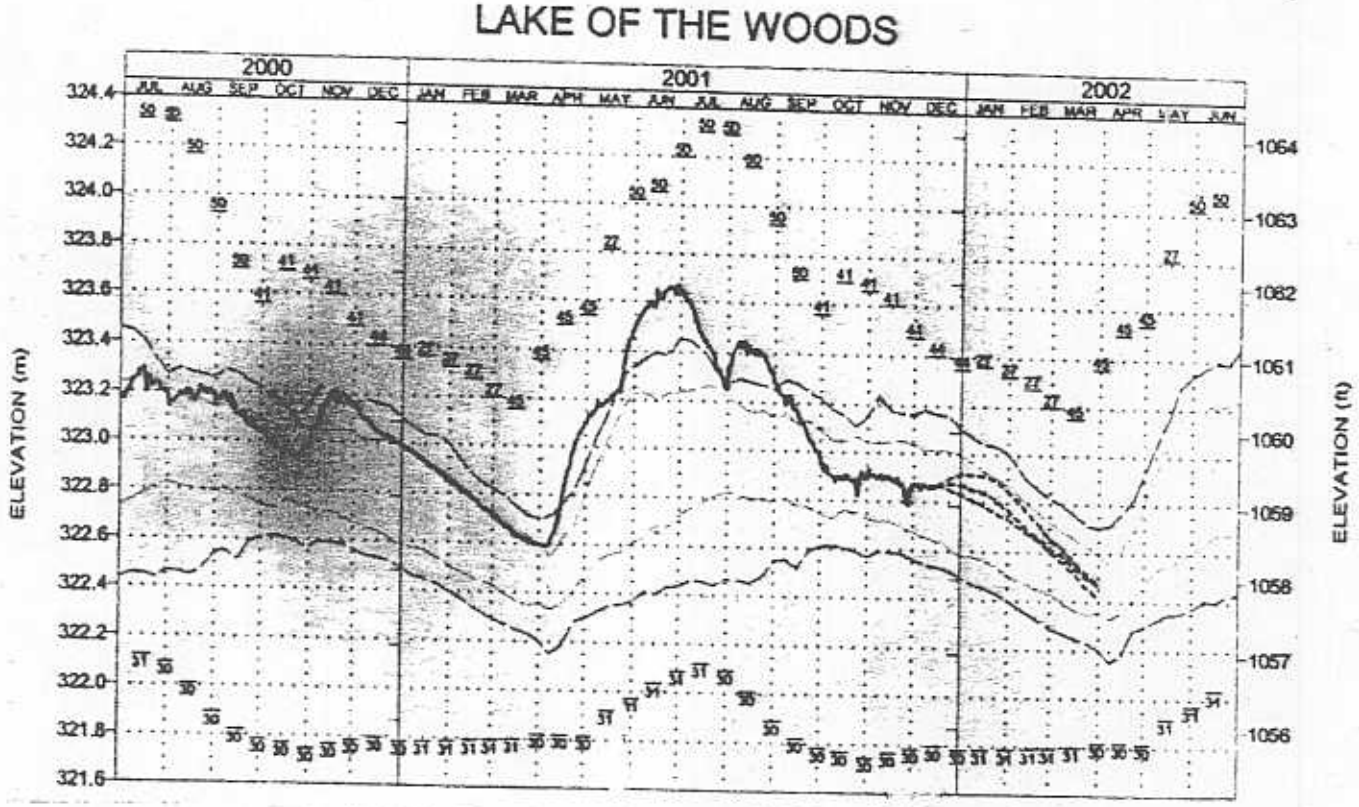


Figure 1. Nesting Locations of Piping Plover, 2001.

Figure 2. Water levels (m) and (f) for Lake of the Woods, 1996-2002.





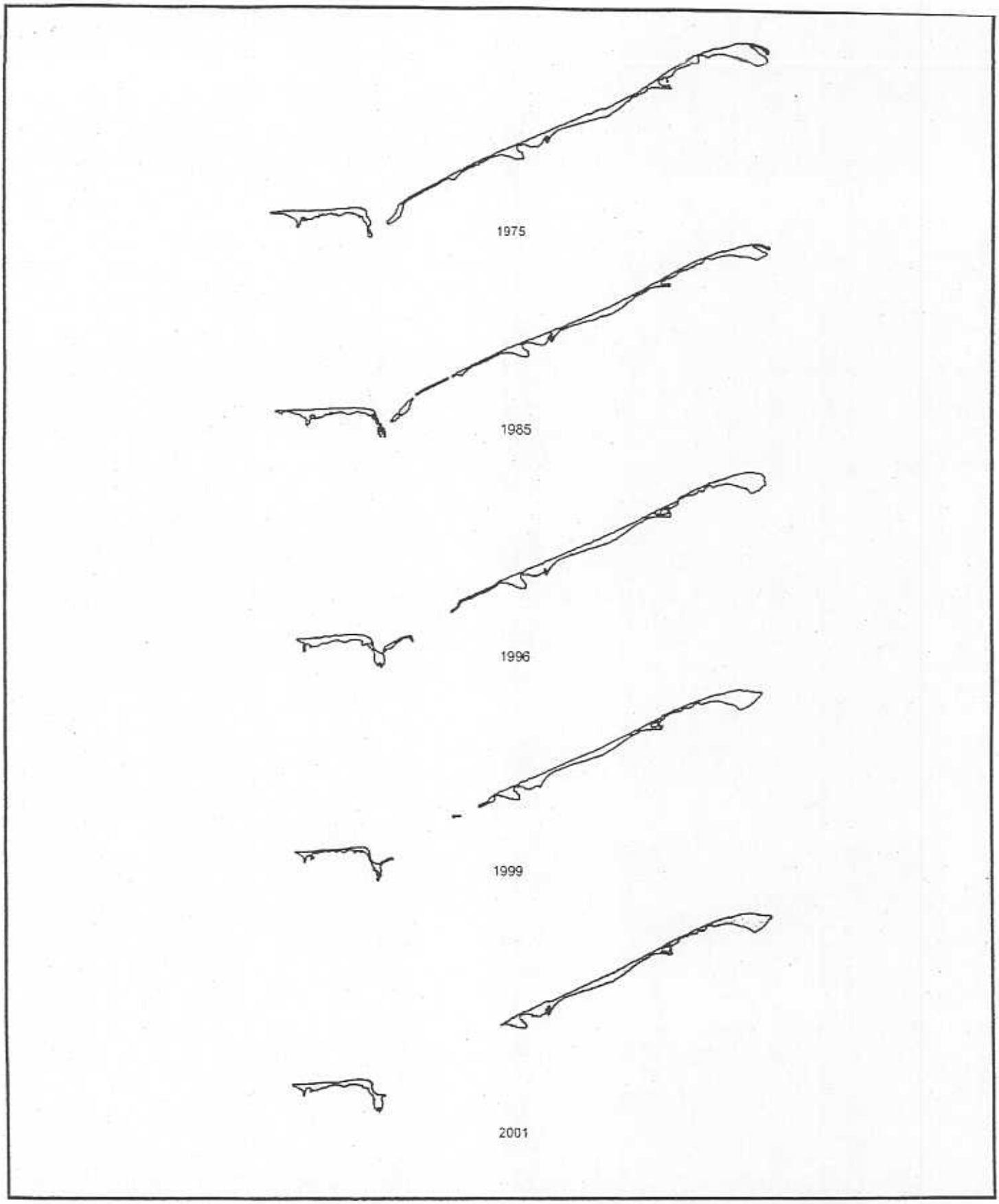


Figure 3. Historical Configuration of Pine & Curry Island Digitized from Aerial Photography