

Piping Plover Recovery & Monitoring

**Lake of the Woods,
Minnesota
2002**



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by

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

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

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INTRODUCTION

The Lake of the Woods (LOTW) 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 site in the Minnesota portion of LOTW, 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 2002, which were partially funded by the U.S. Fish and Wildlife Service (USFWS).

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Summary of Activities and Results for 2002

Population Status

In 2002, field work for this project was conducted by contract wildlife biologist William Berg, under the oversight of Katie Haws, Regional Non-game Wildlife Specialist. During the 2002 field season, observations were made at Pine and Curry Island Scientific and Natural Area (SNA) and at Rocky Point on 11 days between May 24th and August 2nd, 2002. Morris Point and Pine/Curry Island SNA were visited on May 24th, 25th, June 4th, 14th, 20th, 24th, and 27th, July 2nd, 18th, 25th and August 2nd. Rocky Point was visited six times: on May 30th, June 4th, 14th, 27th, July 18th, and 25th. Zippel Bay was visited once on June 15th. All observations were made with a 20x 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) were recorded. Note that since bands have not been placed on birds in this population for seven years, identification of individual birds has become more problematic. This year no birds with bands were seen. However, the pairs are attached quite closely to their nesting site, so it is usually apparent when members of a nesting pair are encountered.

A total of 4 adult plovers were observed in the vicinity of Pine and Curry Island and Rocky Point in 2002: a breeding pair at Middle Curry Island (dunes area), and another breeding pair at Morris Point (Figure 1). No breeding pairs were observed at Rocky Point and no non-breeding plovers were observed at any other locations. The total number of adults observed was the lowest ever observed in the LOTW study area since monitoring was initiated in 1982 (Table 1).

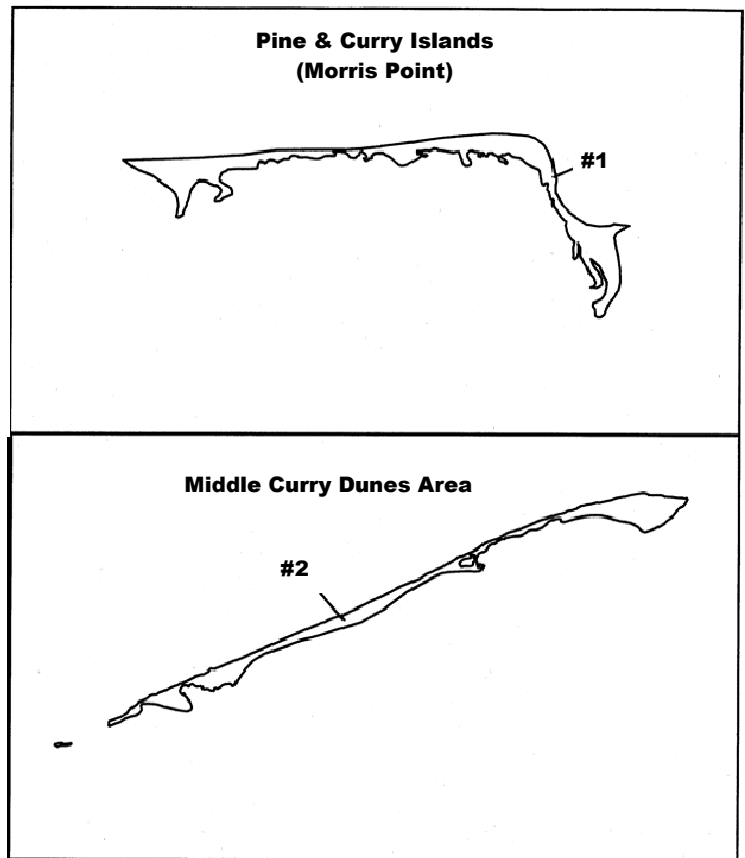


Figure 1. Nesting locations of Piping Plover 2002.

Reproductive Success

Nests are visually located by observing the birds' behavior from 50 meters. Incubating birds remain close to the nest site when human observers are in the vicinity, so nests are fairly easy to locate. Wire mesh predator exclosures are placed around each nest on the day the nest is found,

regardless of the number of eggs. Enclosure cages are made of 2" x 4" mesh welded wire 4.3' in height. A circle of wire 9.8' in diameter is fastened to three steel rods which are driven into the ground. Nylon Carpenter's string is tied across the top in an overlapping manner to discourage avian predators. The enclosures allow plovers to freely pass in and out of their nest site, while serving as a barrier to mammalian and avian predators (Figure 2).

Two nests were found in 2002, one on Morris Point, and one near the dunes on Middle Curry Island (Figure 1). The first nest located on Morris Point had 4 eggs when it was found on June 4th (cover photo). The second nest (on Middle Curry Island) contained 2 eggs when it was found, also on June 4th. Nest enclosures were placed around both nests on the day they first observed.

The outcomes of each of the nests are as follows (Tables 2 and 3). The Morris Point nest was probably incubated for 10 days, until a large storm on June 10th. The adults were last sighted on June 14th, but were not incubating or near the nest. The apparently abandoned eggs were present until July 2nd. The Middle Curry nests was flooded by the June 10th storm, as the nest/eggs were not present after that date (Figure 3). There was no evidence of re-nesting by either pair. No plovers were observed in the entire study area after June 14th. Therefore, no young were fledged in 2002 (Table 4).

Unfortunately, 2002 was the latest in a series of bad years for plovers in the study area. Contributing factors in 2002 were high rainfall, rising water levels during the nesting season, and the severe storm on June 10th. Nesting success for the Sable Island/Windy point area in adjacent Canada was also zero this year (Leo Heyens, pers. comm.). The persistence of this plover sub-population remains questionable.

Predator Control

A federal permit was obtained to take Ring-billed Gulls eggs 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, few gulls were seen on the SNA, and no gulls attempted to nest there, so no eggs were destroyed under the permit.

The formation of a land bridge between Tern Island and Morris Point has made

Table 1. Population summary of piping plovers from 1982-2002 at Lake of the Woods, Minnesota.^a

Year	Breeding Birds					Total
	Pine/ Curry Island	Morris Point	Zippel Bay	Rocky Point	Non-breeders	
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
2002	2	2	0	0	0	4

^a 1982-84 data from Wiens 1986.

1985-87 data from Haig and Oring 1987.



Figure 2. Nest enclosure at Morris Point nest.

control of mammalian predators virtually impossible. Trapping of mammalian predators was therefore not done in 2002. Our observations indicated that predation was not a cause of mortality for the piping plovers in 2002.

Water Levels and Erosion

Data on LOTW water levels were obtained from the Lake of the Woods Control Board in Ottawa, Ontario. Data listed below provide a context for evaluating the significance of the high water levels in 2002.

Table 2. Nest initiation dates and nest fates of piping plovers breeding at Lake of the Woods, Minnesota, 2002.

Nest location	Approximate nest initiation date	Nest fate
1. Morris Point	1 June 02	Abandoned, approx. 11 June
2. Middle Curry dunes area	3 June 02	Abandoned, approx. 11 June

Table 3. Reproductive success by breeding location for piping plovers, 2002.

	Rocky Point	Morris Point	Tern Point Gap	Middle Curry	Oak Point	Total	
						No.	%
No. Nests	0	1	0	1	0	2	—
No. eggs laid	0	4	0	2+	0	probably	—
No. successful nests	0	0	0	0	0	0	
No. eggs hatched	0	0	0	0	0	0	
No. chicks fledged	0	0	0	0	0	0	

Table 4. Reproductive success of piping plovers at Lake of the Woods, Minnesota from 1982-2002.^b

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
2002	2	0	0

^b 1982-1984 data from Wiens 1986.

1985-1987 data from Haig and Oring 1987.

- High water levels exceeded the 90% rule curve levels from mid-June through about August 10th, 2002 and also in late May through August of 2001 (Figure 4).
- The maximum lake elevation at LOTW (Springsteel Pt. Gauge) in 2002 exceeded 1062 feet for more than a week in early July (Figure 5). Lake levels have exceeded 1061.5 feet in only 5 years (1916, 1927, 1950, 2001, 2002) since gauge data became available in 1916.
- The high water elevation of 1062.2 for 2002 is only 1.8 feet lower than the all-time high of 1064' that was measured in 1950.
- The maximum LOTW water levels in 5 of the last 7 years (1996, 1999, 2000, 2001 and 2002) have been higher than the 75% exceedance levels recorded from 1927-2001.
- Over 8" of rain fell in the LOTW basin in June, 2002 (Figure 6). In one rainfall event on June 10, the inflow at Manitou Rapids on the Rainy River exceeded 169,000 cfs, which is more than twice the 90% exceedance level for this time period (Figure 5)!

In view of these data, it is not surprising that water levels led directly and indirectly to both of the plover nest failures in 2002, specifically because of the large increase in levels in June and/or storm surge. Other contributing factors in the case of the abandonment of the Morris Point nest may have been heavy rains, and/or changes in shoreline availability to the plovers due to debris accumulation (Figure 7).

High and fluctuating water levels also contributed to habitat erosion all along the South shore of LOTW, the disappearance of many acres of island and shoreline habitat, and resulted in drastic changes to Pine/Curry SNA. Progressive erosion of the SNA between 1975 and 2001 was quantified in 2001 using ARCVIEW GIS software to analyze aerial photographs (Table 6). (Although photographs were not taken in 2002, the comparison table is included for emphasis.) The analysis revealed that since 1975 about 20% (32.25 acres) of the original acreage of Pine and Curry Island has disappeared.



Figure 3. Middle Curry nest site after June 10 storm.

Severe lakeshore erosion has also occurred elsewhere on LOTW, including at Morris Point, Sandy Shores and Long Point (Dan Thul, pers. comm.). The historical tern and plover breeding area that became joined to Morris Point a few years ago has now eroded away, and will not be available as nesting habitat again, even under lower water regimes (Figure 8). Additional trees at the west end of the island continued to wash away this year, and the island was breached in several additional locations, including at the winter road crossing. 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. (However, eagles managed to nest successfully this year in one of the few remaining trees, fledging two young.)

If current trends continue, the SNA is likely to be breached at additional locations and the width of the island, now less than 15' in some places, will continue to decrease. In fact, the very existence of the island is threatened by the combination of record rainfalls, repeated large rain events, and the inability of the Kenora dam to control the large volume of water inflow to the lake.

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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, placing exclosures after one egg has been laid.
3. Although physiographic changes in the SNA have made it less likely for a large gull colony to locate at this site, it is important to continue to check for presence of a nesting gulls, obtain a federal permit and remove gull eggs as they occur on the SNA.
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. Improve communication with local residents and resorts regarding rules on the SNA, and justification for the rules. This can be accomplished by continuing individual contact, newspaper articles and working with the Tourist Bureau. Also, publish one article per year in the Baudette Region paper on the plover project, and the plover's conservation needs.

Recommendations continued on Page 8....



LAKE OF THE WOODS 1996 — 2002

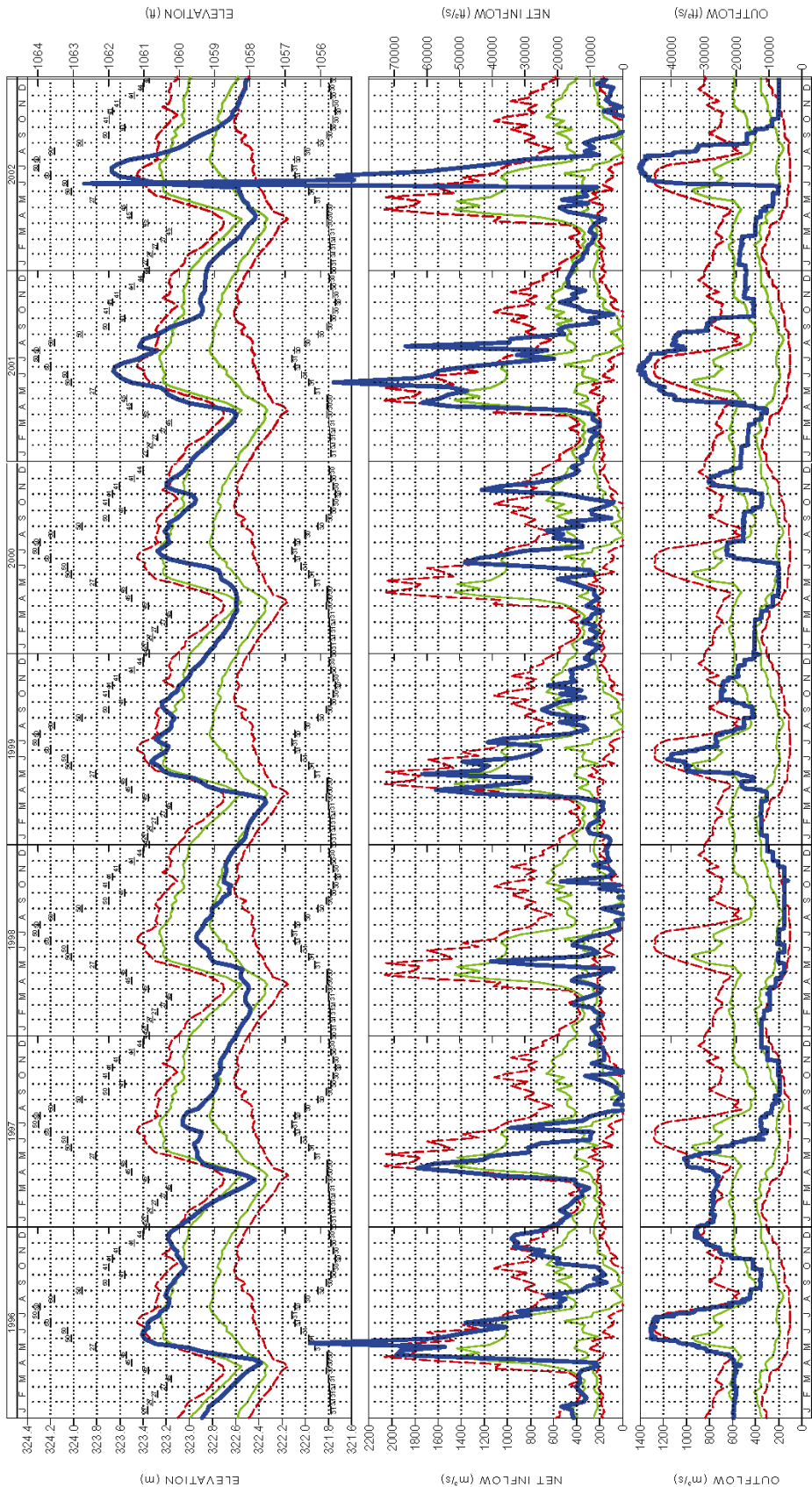
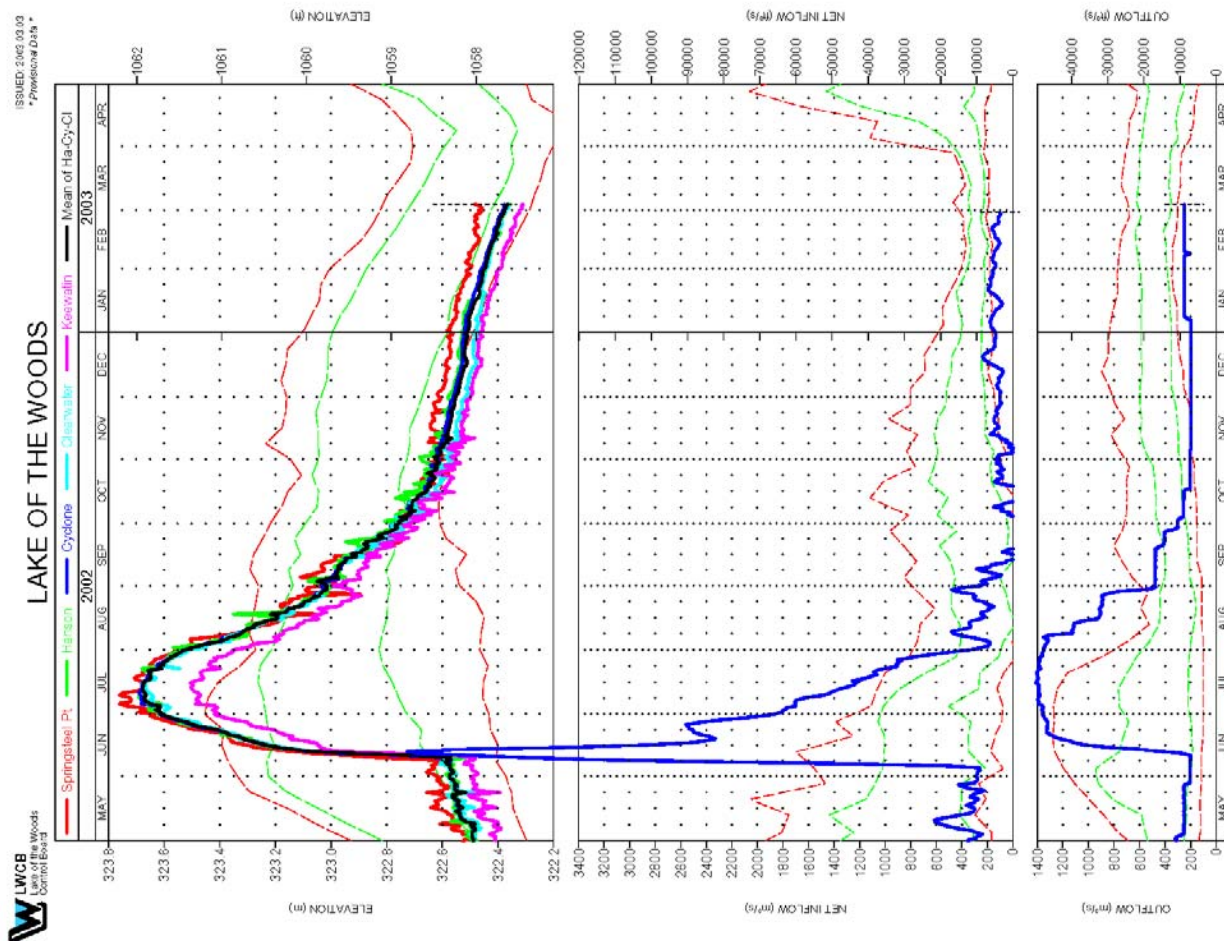


Figure 4. Water levels and flow at LOW compared to historical levels. See legend on page 7.



LEGEND FOR FIGURES 4 AND 5

Figure 5. Lake information for 5 LOTW gauges including lake elevation, net inflow, and outflow for the months of March–November 2002. See legend.

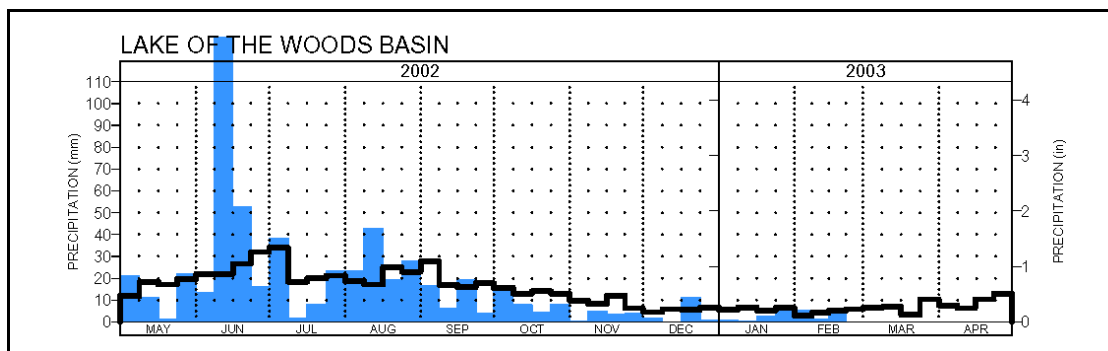


Figure 6. Precipitation information for Lake of the Woods Basin, March—November 2002. Data from the Lake of the Woods Control Board.

Recommendations, Continued from Page 5...

8. Encourage enforcement of SNA rules and the Migratory Bird Treaty Act to protect 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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Figure 7. Debris accumulation onshore near Morris Point nest.

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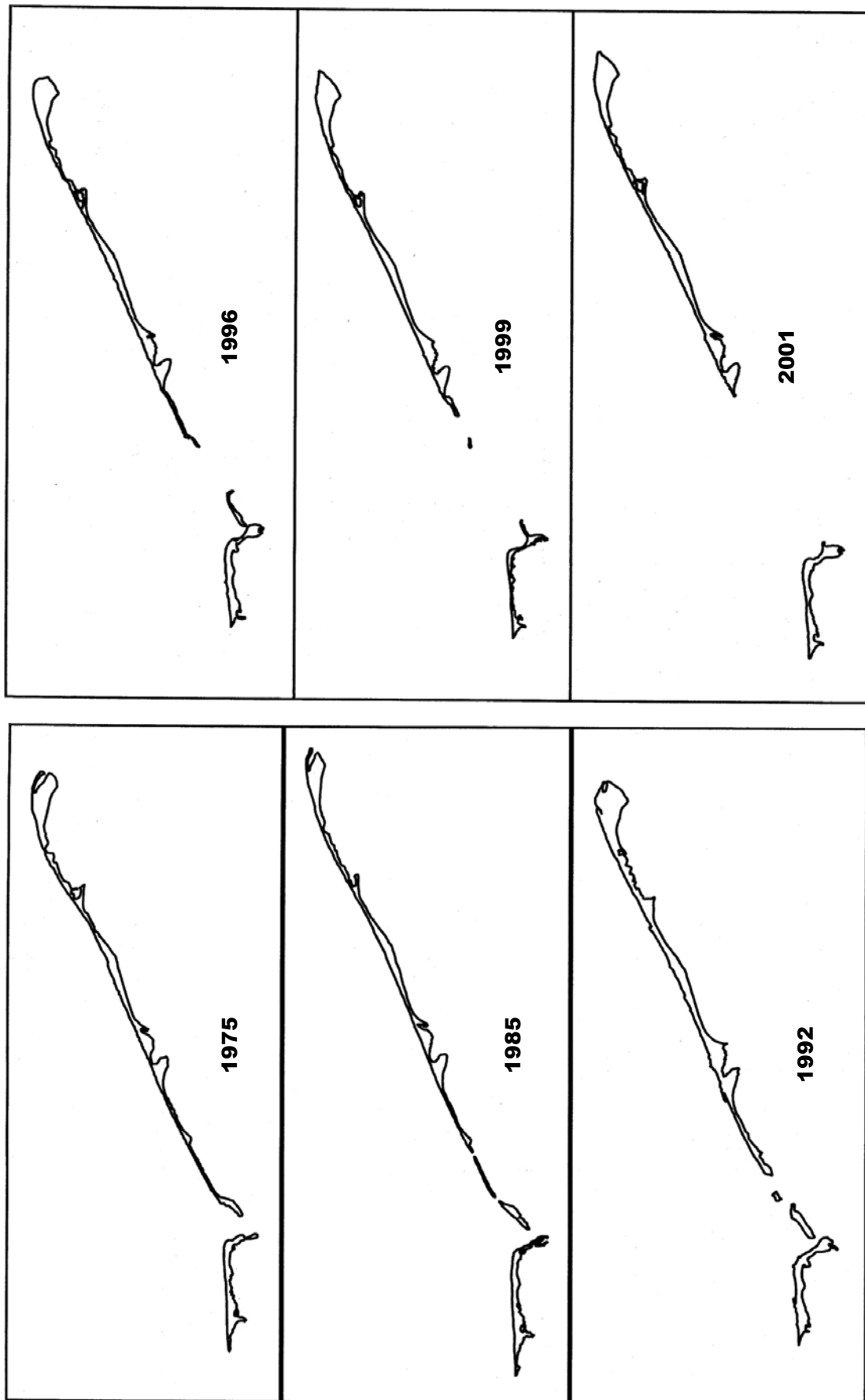


Figure 8. Historical configuration of Pine & Curry Island digitized from aerial photography.

