

Piping Plover and Common Tern Investigations

**Lake of the Woods
2003-2004**



by
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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 this site (Figure 1), 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 2003-2004.

2003 - Summary of Activities and Results

Plover Observations

In 2003, personnel who conducted fieldwork for this project were independent contractor/wildlife biologist William Berg, with project management by Katie Haws. During the 2003 field season, observations were made at Pine and Curry Island SNA and Rocky Point on 20 days between May 19th and August 15th, 2003. Morris Point and Pine/Curry Island SNA were visited on May 20, 29th, June 5th, 11th, 17th, 18th, 24th, July 15th, 24th, 25th, 31st and August 15th. Rocky Point was visited seven times; on May 19th, 30th, June 6th, 11th, 25th, July 14th, and 31st. Zippel Bay was visited three times on May 29th, June 17th and July 25th. The NW Angle common tern nesting site was visited on July 8th, 2003 (Table 1). All observations were made with a 20x wide Bushnell spotting scope, or 8x42 field binoculars. Jeff Birchem provided additional observations.

Each plover observed was checked to see if bands were present, and the breeding status 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 identification of individual birds has become more problematic, since bands have not been added to this population for nine years. However, the pairs are affiliated quite closely to their nesting site, and it is usually apparent when members of a nesting pair are encountered. This year there were no birds with bands seen by either observer.

A total of 5 adult plovers were present at LOTW in 2003. There were no breeding pairs located at Morris Point, Rocky Point or Pine and Curry Island this year. One non-breeding plover was seen at Rocky Point on May 19th, and two were seen at the same site on May 30th. However, they did not nest there this year despite low water levels and adequate beach habitat. Jeff Birchem observed a probable nesting pair of plovers at Stony Point, a sandy spit at the South end of the NW Angle, on July 18th. Due to the remote location, the area was only checked once. The total number of adults observed (5), was actually the lowest ever observed at LOTW since the study was initiated in 1982 (Table 2).

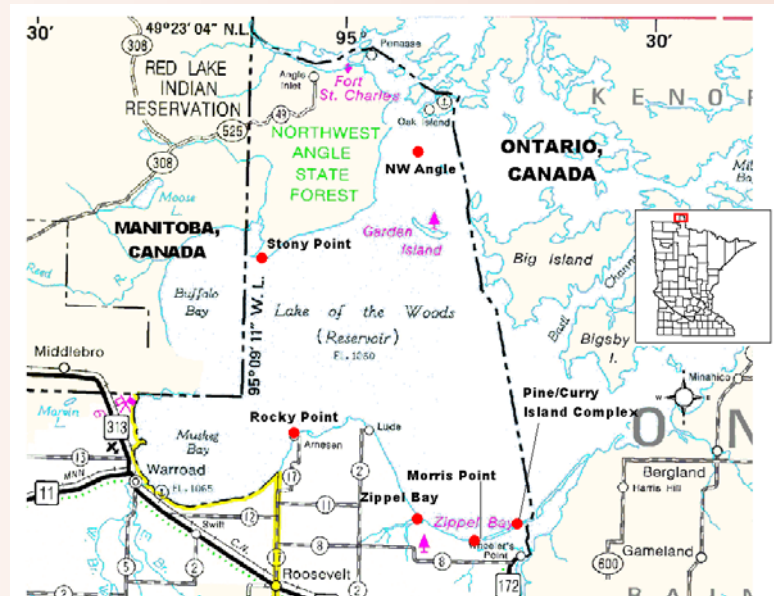


Figure 1. Map of study site locations (red dots).

Table 1. Survey dates, 2003

DATE	PINE ISLAND COMPLEX	MORRIS POINT COMPLEX	ROCKY POINT	NW ANGLE	ZIPPEL BAY	STONY POINT
May 19			+			
May 20	+	+				
May 29	+	+			+	
May 30			+			
June 5	+	+				
June 6			+			
June 11	+	+	+			
June 17	+	+			+	
June 18	+	+				
June 24	+	+				
June 25			+			
July 8				+		
July 14			+			
July 15	+	+				
July 18						+
July 24	+	+				
July 25	+	+			+	
July 31	+	+	+			
August 15	+	+				

Plover Reproductive Success

Nothing is known of the reproductive success of this year's only probable nesting pair on the NW Angle (Table 3).

2003 was the worst in a series of bad years for plovers in the area. This was particularly disheartening, due to the adequate habitat available because of the unusually low water level. Nesting success for the Sable Island/Windy point area in adjacent Canada was also zero this year (Leo Heyens, pers. com.), and again it would seem that this sub-population may not persist far into the future.

Table 2. Population summary of piping plovers from 1982-2004 at LOTW, Minnesota.¹

Year	Breeding Birds						TOTAL
	Pine/ Curry Island	Morris Point	Zippel Bay	Stony Point	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
2003	0	0	0	2*	0	3	5
2004	0	0	0	0	0	6	6

¹ 1982-84 data from Wiens 1986.

1985-87 data from Haig and Oring 1987.

*Presumed breeders

Common Tern Observations

Contrary to 2002, 2003 proved to be a fairly good year for common terns on LOTW. There was one colony present on Pine/Curry Island. It was located on the small spit remnant east of Morris Point. The colony was censused on June 11th, and 200 plus adult terns were observed, with at least 24 nests. The colony was checked again on July 25th, and 90-95 tern chicks were seen with potentially 50 not counted. Approximately 40-50 nests were likely active at this date. Some of the chicks observed could fly, so there were approximately 140 young terns fledged this year. The success of this tenuous colony was due to the low water of 2002.

In the course of conducting water-bird surveys on LOTW, sites were searched for common tern nesting. A new nesting site, exposed due to low water, was located west of Crowduck Island. We named it Joshua's reef. This site was surveyed on July 8th, and 153 tern nests were counted, with 103 young terns, and many eggs still un-hatched. Although this site was not checked again, it was likely successful. This was the only colony site located on the NW angle in 2003.

Predator Control

A federal permit was obtained to remove 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 are also potential predators on chicks and eggs.

In 2003, no ring-billed gulls attempted to nest anywhere within the SNA. Therefore, no Ring-billed Gull eggs were collected under the permit. There were very few ring-billed gulls seen on the SNA in 2003. The formation of a land bridge between Tern Island and Morris Point makes control of mammalian predators ineffective. Trapping of mammalian predators was not done in 2003, and will not be done in the foreseeable future, due to lack of funds.

Table 3. Nest initiation dates and nest fates of piping plovers breeding at LOTW, Minnesota, 2003.

Nest Location	Approximate nest initiation date	Nest fate
Stony Point, NW Angle	July 2003	Unknown
Non breeding birds seen at Rocky point on May 19th and May 30th		
No nesting occurred at Rocky Pt., as the nests were not present by June 5th or thereafter.		

2004 - Summary of Activities and Results

Plover Observations

In 2004, contractor Bill Berg, under project management by Katherine Haws, completed plover and tern observations at the south LOTW area. Katherine Haws made tern observations at both the NW Angle and the Pine/Curry Island nesting sites. The six visits to the southern LOTW sites by Berg in 2004 were on May 20/21, June 2/3, 17/18, July 8/9, 19/20, and August 19/20 (Table 4). Haws visited Rocky Point, Pine/Curry Island and Morris Point on June 16th. She visited the NW Angle twice, on June 23rd and July 15th. All observations were made with a 20x wide Bushnell spotting scope, 7x35, or 8x42 field binoculars. Jeff Birchem provided additional observations.

Each plover observed was checked to see 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 identification of individual birds has become more problematic since bands have not been placed on birds in this population for ten years. However, the pairs are affiliated quite closely to their nesting site, so it is usually apparent when members of a nesting pair are encountered. This year there were no birds with bands seen by either observer.

A total of 6 adult plovers were present at LOTW in 2004 (Table 2). There were no breeding pairs located at either Morris Point, Rocky Point or Pine and Curry Island this year. One non-breeding plover was seen at Rocky Point on June 17/18, and two were seen at the same site on July 8/9, but a nest was not found. One non-breeding bird was seen on Pine Island spit on July 8/9 as well. The total number of adults observed (4) was again the lowest ever observed at LOTW since this study was initiated in 1982, eclipsing even the number seen in 2003. The number of breeding adults seen has been tracked since 1982, and this year no breeding adults were seen. Historic observations indicate a continuing decline, and the possible extirpation of this portion of the population (Figure 2).

Plover Reproductive Success

Nesting success in 2004 was zero, as no known nesting attempts were observed at the locations inventoried (Table 5). There were also no breeding birds observed in Ontario in 2004 (Leo Heyens, pers. Comm.). The Piping Plover in Minnesota could now be accurately classified as a migrant at the various sites (including Duluth) where it has been spotted recently. Chicks fledged has gone from a high of 44 in 1983 to the current low of 0, seen in 2002 and 2004 (Table 6).

Common Tern Observations

2004 was not a good year for terns on the south shore of LOTW; NW angle terns did nest, but fate is unknown. There was one colony present on Pine/Curry Island. It was located on Morris Point. The colony was censused on June 16th, at which time there were 109 tern nests with eggs. The colony was checked again on July 21st, at which time there had been total nest failure at this site due to predation. It appeared at this date that a small group of 60-70 terns had initiated a re-nest at the 2003 site (small spit/island east of Morris Point), but this was unsuccessful due to the late initiation date and high water levels.

Table 4. Survey dates, 2004.

Date	Pine Island Complex	Morris Point Complex	Rocky Point	NW Angle	Zippel Bay	Stony Point
May 20/21	+	+				
June 2/3	+				+	
June 16	+	+	+			
June 17/18	+		+			
June 23				+		
July 8/9	+	+	+			
July 15				+		
July 19/20	+	+	+			
July 21		+				
August 19/20	+	+				
TOTAL CHECKS	7	6	4	2	1	0

Table 5. Nest initiation dates and nest fates of piping plovers breeding at LOTW, Minnesota, 2004.

Nest Location	Approximate nest initiation date	Nest fate
No plover nesting known to occur on American LOTW in 2004.		

Number of breeding Adult Plovers Lake of the Woods (US)

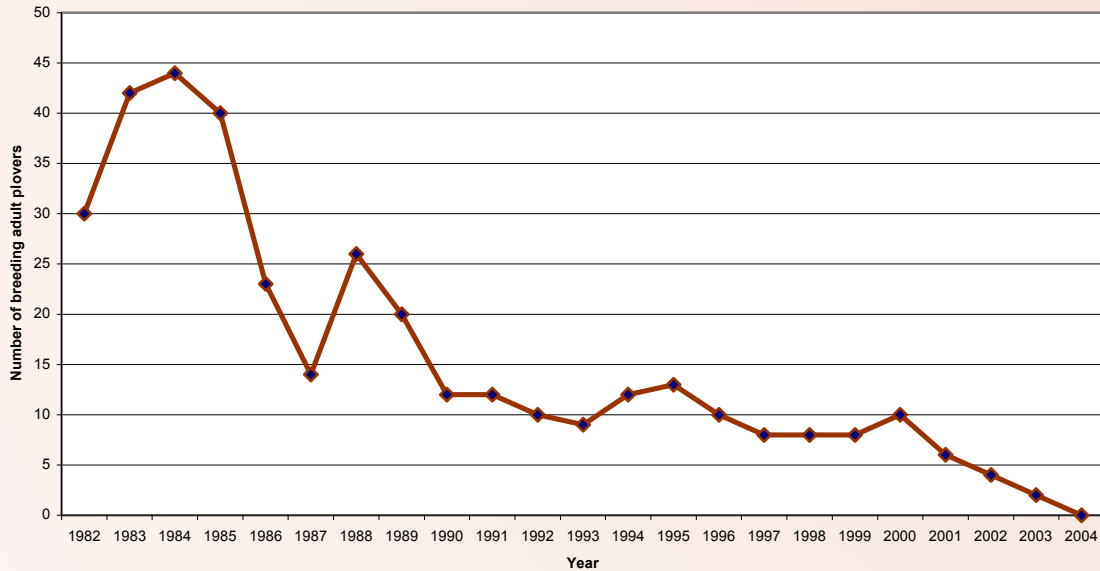


Figure 2. Number of breeding birds on LOTW (United States), 1982-2004.

Predator Control

No predator control was initiated in 2004.

Water Levels and Erosion

Data on LOTW water levels were obtained from the Lake of the Woods Control Board in Ottawa, Ontario. Note that the mean LOTW lake level was generally low in 2003, in comparison to other recorded years. Historical comparisons of water levels on the lake are shown in Figure 3.

In 2004, there were several peak rain events in May of 2004 that resulted in a rapid rise in lake level approaching 1061 feet (Figure 4). Figure 5 shows the 5 gauges on the lake, and the variability in readings, influencing the mean elevation line. While little erosion of the islands occurred in 2003, the higher water of 2004 once again contributed to erosion; loss of large trees and sandy banks on the island.

A study done by Herb, Mohseni and Stefan, 2004, indicates that erosion of LOTW shoreline has been concentrated in four areas over the past 40 years: Pine/Curry Island, south shore of Four Mile Bay, Sandy Shores (east of Rocky Point), and the shoreline between Rocky and Long Points. The material eroded is soft organic sediment and/or sand, and has little likelihood of being replenished (Herb, pers. comm.).

High water levels and other unidentified factors have contributed to the seemingly irreversible disappearance of acres of island and shoreline habitat. Sediment data from the Rainy and Little Fork rivers indicate a decreasing trend in suspended sediment concentration over the past 40 years, and may be indicative of a reduction in sediment supply for LOTW, since these are some of the main rivers feeding the lake (Herb *et al.*, 2004).

Photographs taken in 2003 indicate continued erosion of Pine/Curry Island (Figure 6). Current trends point towards the breaching of the SNA in additional locations, and continuing narrowing of the width of the island. According to Herb *et al.* (2004), approximately 1500 m. (5000 ft.) of this island has disappeared since 1985. The recent erosion is quite clearly seen in the satellite photos of 1990 and 2001 (Figure 7).

LAKE OF THE WOODS 2000-2004

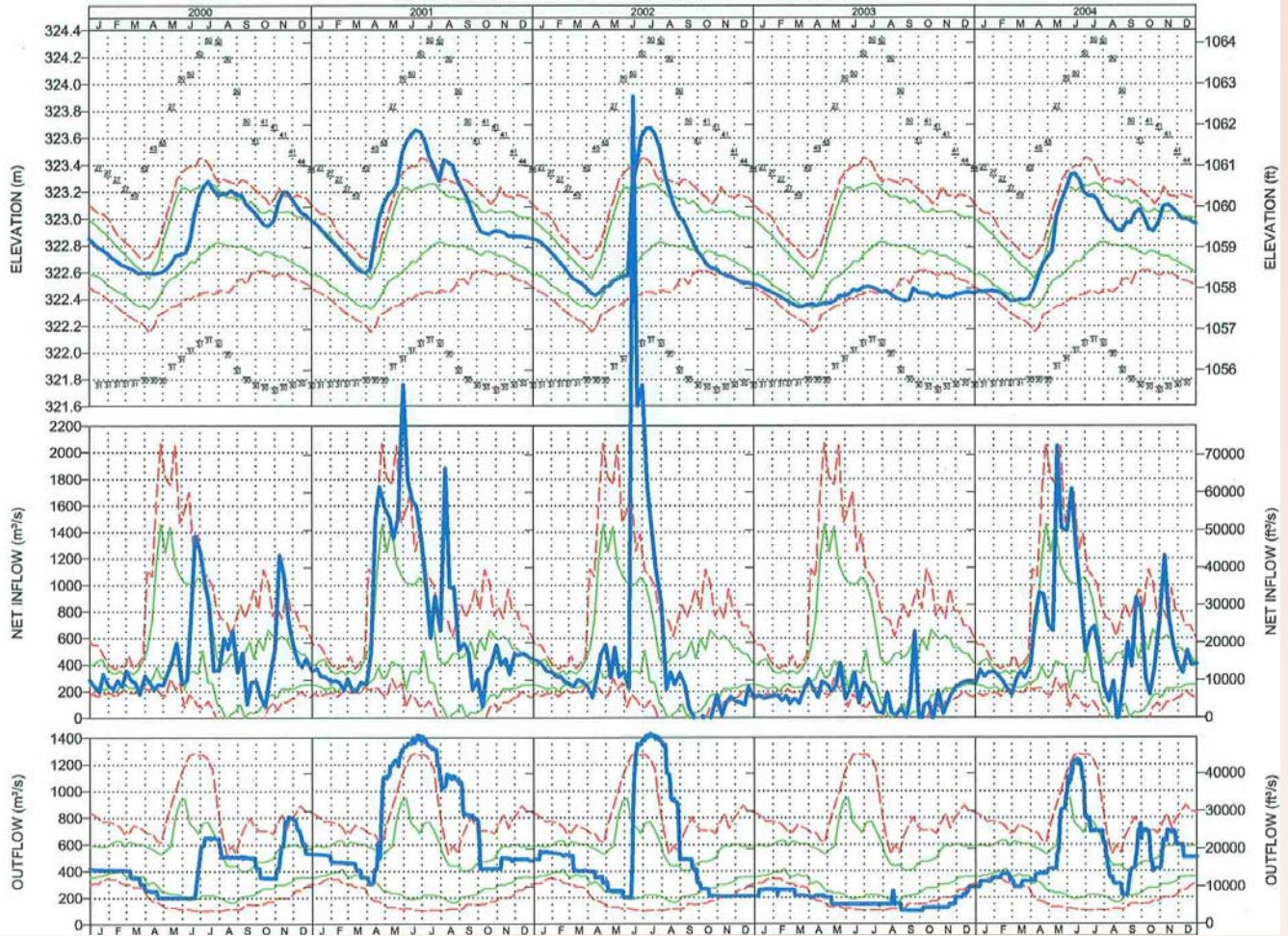


Figure 3. Historical comparisons of elevation, net inflow and new outflow; LOTW 2000-2004 (Source: Lake of the Woods Control Board website).

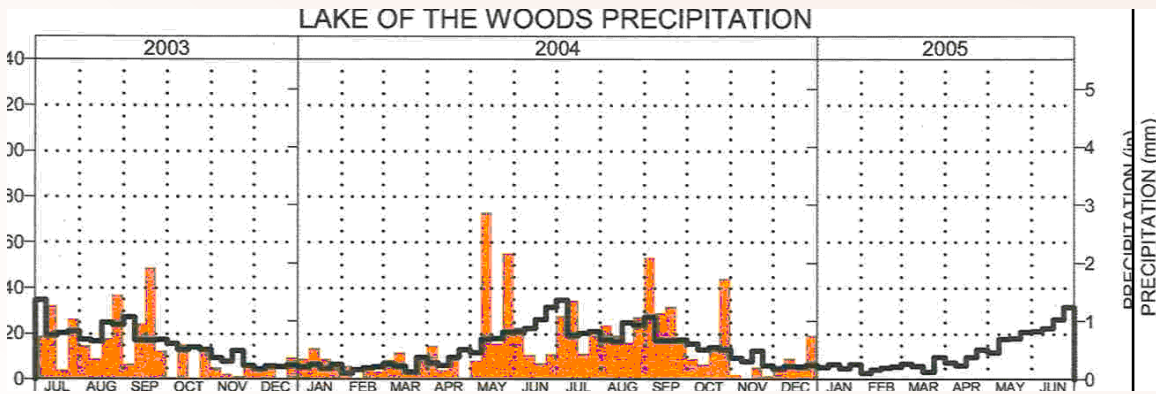


Figure 4. Precipitation 2004, LOTW. Black line = average 1970-1999, Orange bars = actual precipitation (Source: Lake of the Woods Control Board website).

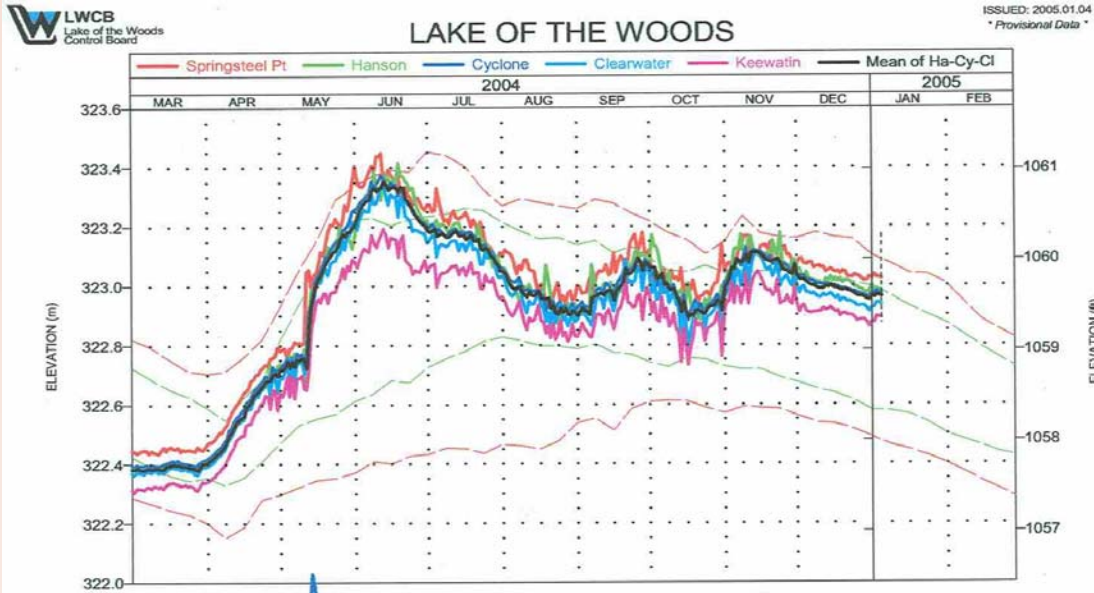


Figure 5. Water Levels on Lake of the Woods 2004 showing all five gauges and mean (Source: Lake of the Woods Control Board website).

Table 6. Reproductive success of piping plovers at LOTW, Minnesota from 1982-2004.^a from Gangaware, 2000, and subsequent analyses.

Year	No. Nests	Chicks fledged	Chicks fledge/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
2003	1?	?	?
2004	0	0	0



Figure 6. Debris and erosion at LOTW.

Table 7. Area of Pine/Curry Island SNA (Including Morris Point)

Year	Area in m ²
1975	700,822.7
1985	583,003.9
1992	839,345.2
1996	649,616.6
1999	659,199.3
2001	570,291.0

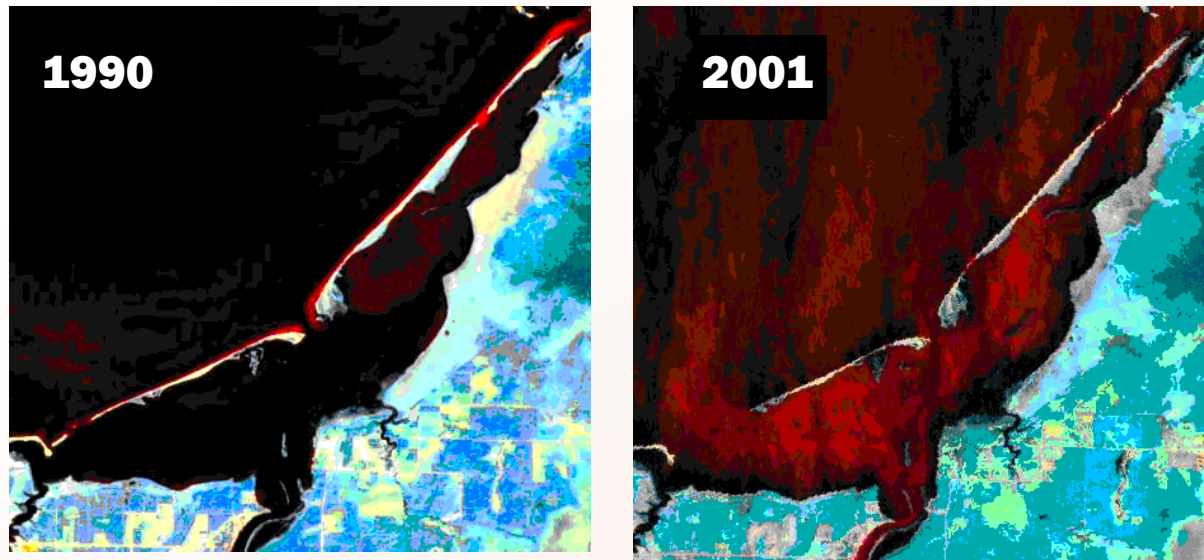


Figure 7. Satellite imagery comparing 1990-2001 photography of Morris Point and Pine/Curry Island SNA.

Again this year, there was no reclamation of the old tern and plover breeding habitat area, which had adjoined itself to Morris Point a few years ago. That portion of the SNA will likely not be present again, even under lower water regimes, were they to occur. There was no nesting of Bald Eagles during 2003 or 2004, and all of the large pines that used to be present on the island have now been washed away, except one. Recently, the eagles have attempted to nest in an unsuitable Balm of Gilead tree.

Recommendations for future activities

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

1. Reduce monitoring of population size, nesting, and reproductive success of piping plovers on Pine and Curry Island SNA, Rocky Point and Zippel Bay, due to lack of funding. However try to census at least 2-3 times per summer.
2. Continue to monitor common tern colonies on the lake, and determine productivity annually.
3. If any plovers nest, continue the use of wire mesh predator exclosures around piping plover nests, and attempt to place exclosures after one egg has been laid.
4. Discontinue Federal gull collecting permit, as conditions for gull assimilations are not favorable.
5. Continue the sanctuary signing of all traditional use areas, including portions of the SNA and Rocky Point WMA, until there is no evidence of birds for three consecutive years. Make sure wood routed sanctuary and picnic signs are in place.
6. Monitor longevity and effectiveness of recently placed interpretive sign at the south picnic area.
7. Assist in placement of the new kiosk at Wheeler's Point.
8. Attempt to improve local communication regarding rules on the SNA, and the 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 featuring the SNA and or resources of the SNA.
9. Encourage enforcement of SNA rules, and the Migratory Bird Treaty Act with regards to protection of the nesting birds and their habitat.
10. Haws will continue to participate in a committee that includes County SWCD, Army Corps, and USGS. Preliminary report written; continue to try and secure funding for additional research into causes and possible prevention measures of erosion.

Acknowledgments

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