

Piping Plover and Common Tern Investigations

Lake of the Woods, 2005-2007

15 February 2008

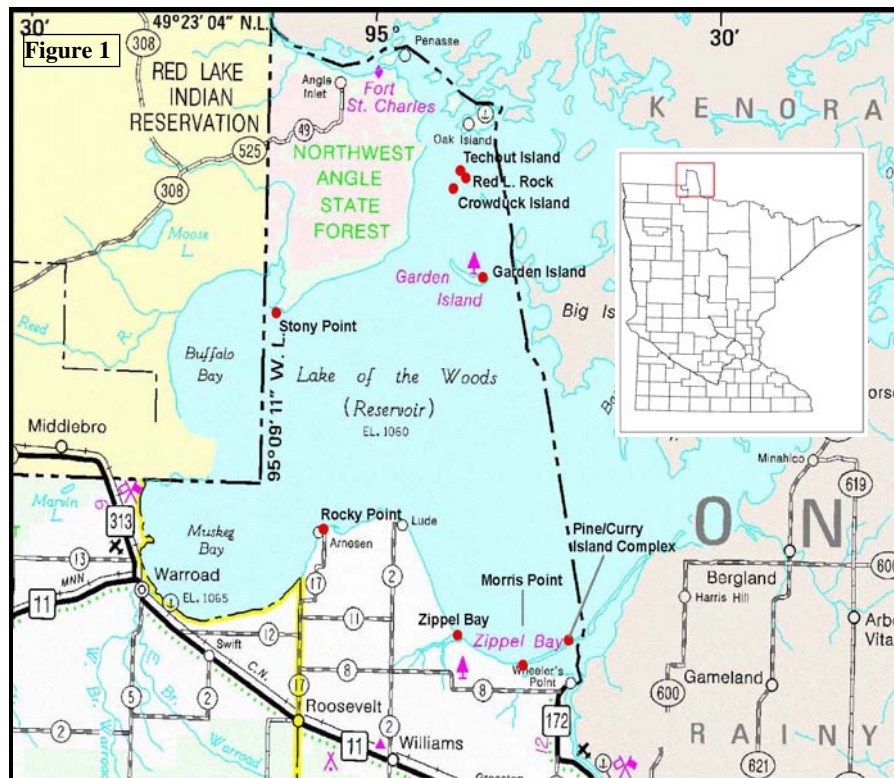
by

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Introduction

The Lake of the Woods (LOTW) area is the only remaining breeding site for Piping Plovers in Minnesota. This species is currently listed as State Endangered and Federally Threatened at this location. Lake of the Woods is also one of only five sites in the state where the Common Tern (State Threatened) nests. From 1982 to the present, investigators have monitored the reproductive success of plovers and terns these locations, and have conducted a wide array of management activities directed at mitigating threats to piping plovers and recovering the population, from trapping predators, to acquiring land, to putting up string grids to prevent avian predation, to putting up nest enclosures to protect nesting plovers and their eggs. This population of terns and plovers remains critical to the survival of both species in the state.

The area surveyed for terns and plovers is the U.S. portion of Lake of the Woods, and includes island sites on the Northwest Angle which are checked every other year: Pine and Curry Island Scientific and Natural Area (SNA), Morris Point (part of Pine/Curry Island SNA), Zippel Bay State Park (spit), Stony Point on the NW Angle (spit), Rocky Point Wildlife Management Area (WMA) and Garden Island State Recreation Area. This report summarizes the activities conducted during three field seasons, in 2005-2007 (Figure 1).



General Survey Methods

Plovers were surveyed using direct visual observation. Boats were used to access nesting locations in all instances. 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

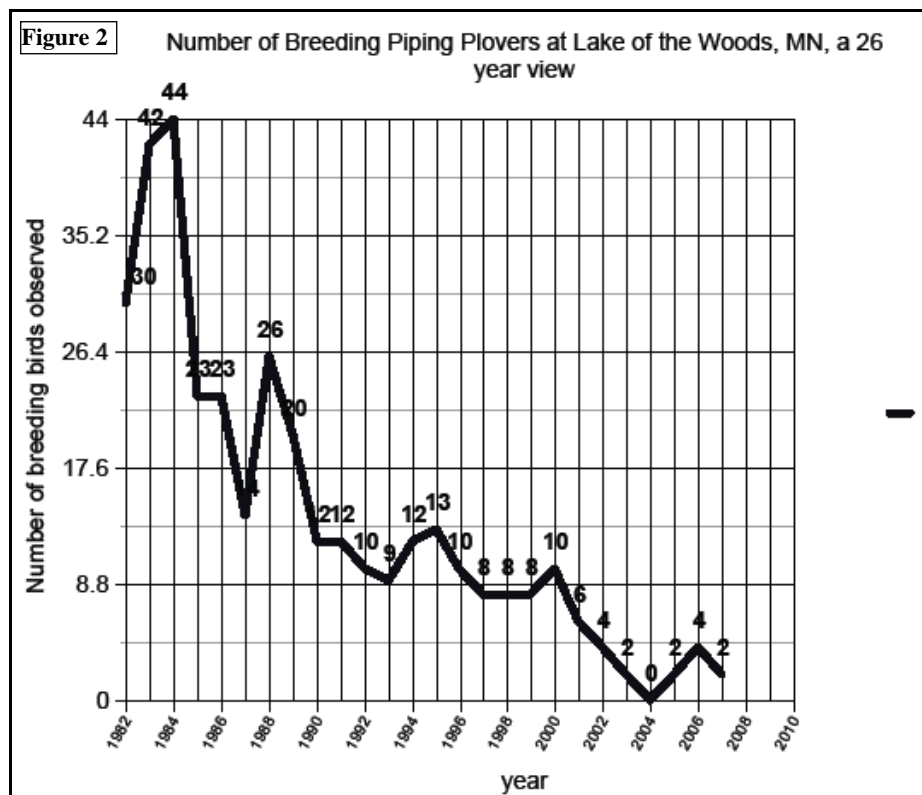
known was recorded. Note that since bands have not been placed on birds in this population for twelve years, identification of individual birds has become more problematic. However, the pairs are affiliated quite closely to their nesting site, so that it is usually apparent when members of a nesting pair are encountered.

Common Terns were also surveyed using direct visual observation. All known tern nesting areas were surveyed by boat, with boat length varying from 16-19 feet. All observations were made with a 20x wide Bushnell spotting scope, or 8x42, 7x 40 field binoculars.

Summary of Activities and Results for 2005

Plover Observations

In 2005, personnel who conducted fieldwork for this project was William Berg, independent contractor/wildlife biologist, with project management by Katie Haws. Additional observers included Bruce Lenning, Pam Coy and Terry Berg. During the 2005 field season, observations were made at Pine and Curry Island SNA, Morris Point, Zippel Bay and Rocky Point for ten days between May 18th and July 12th. This year there were no birds with bands seen by either observer (Figure 1).



A total of three adult plovers were present at Lake of the Woods in 2005, (Table 1). One pair of plovers attempted to nest during 2005. This pair was sighted on June 10th, with the nest initiated June 12th or 13th. One non-breeding plover was seen at Pine/Curry Island SNA beach on June 21st-22nd, but only sighted that one time.

Table 1. Population summary of piping plovers from 1982-2007 at Lake of the Woods, MN/1

	Breeding Birds							
Year	Pine/Curry Island	Morris Point	Zippel Bay	Stony Point	Rocky Point	Garden Island	Non-Breeders	Total
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		4	4
2005	0	0	0		2		1	3
2006	0	0	0	0	2	2	0	4
2007	0	0	0		2		2	4

/1 1982-84 data from Weins 1986.

1985-87 data from Haig and Oring 1987.

*Presumed breeders

Plover Reproductive Success

Incubation of the four-egg nest did commence at Rocky Point, and eggs were again noted on June 21st-22nd, but by July 12th observations indicated that the nest site had been washed over by waves, and no adult or juvenile plovers were seen at the site (Table 2). Reproductive success for the plovers at this site, and thus for the U.S. portion of Lake of the Woods was observed to be zero for 2005. The trend in declining numbers of breeding birds observed on Lake of the Woods continues, although it is encouraging to see a few birds, after none were seen in 2005.

Table 2. Reproductive success of piping plovers at Lake of the Woods, MN, from 1982-2007.^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
2002	2	0	0
2003	1?	?	?
2004	0	0	0
2005	1	0	0
2006	2	?	?
2007	1	3	3

^a 1982-1984 data from Weins 1986.

1985-1987 data from Haig and Oring 1987.

Common Tern Observations

2005 was another year with zero reproductive success. Water levels were high this year, and thus the Pine/Curry Island spit was submerged. Lake levels reach 323.5 meters in early July on the lake. Although a few terns (36 counted) were seen scouting this area in late May, nesting did not occur there. A few terns were also seen scouting the Morris Point area in late May, but no nesting occurred at this site either in 2005.

Predator Control

In 2005, 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 2005. Trapping of mammalian predators was not done in 2005. Observations indicated that there was at least one skunk, one red fox, and a great horned owl living on Pine/Curry Island during the summer of 2005. Tern nesting on the NW Angle was not known from 2005, as the area was not surveyed this year.

Summary of Activities and Results for 2006

Plover Observations

In 2006, plover and tern observations on the southern Lake of the Woods area was again completed by contractor Bill Berg, under project management by Katie Haws. Tern observations were made by Katie Haws at both the NW Angle and the Pine/Curry Island nesting sites. There were three visits to the southern Lake of the Woods sites made by Berg in 2006, on June 5th–6th, 12th, 19th–20th. Haws visited Rocky Point, Pine/Curry Island and Morris Point on June 14th, and the NW Angle, and Stony Point on June 13. In addition, Katie Haws coordinated the 2006 Piping Plover survey statewide as part of the national census for the species. She received the assistance of Maya Hamady for the historic Duluth survey sites, and the assistance of Pam Perry for potential plover nest sites along the north shore of Lake Superior. Some additional observations were made by Jerry Bonkoski and Bob Janssen on the NW Angle/Garden Island (Lake of the Woods).

A total of four adult plovers were present at Lake of the Woods in 2006 (Table 1). No plovers were seen at the Lake Superior sites surveyed. One breeding pair was observed by Janssen and Bonkoski on Garden Island, and a nest was found associated with this pair. A second breeding pair was observed on June 5th at the Rocky Point site, and on June 14th a nest was found by Haws. This nest was observed intact and with four eggs again on June 19th.

Plover Reproductive Success

A nest cage for predator exclusion was placed on the Rocky Point nest, however on the June 19th check, only one adult was observed. Both active nests were not checked during the time period necessary to determine whether the nests were successful. Nest success historical summary information is presented in Table 2.

Common Tern Observations

During 2006, Common Terns nested in several locations. The Pine/Curry Island bar had considerable tern nesting activity in 2006. The site was checked on June 5th, 12th and 20th. On June 5th there were 32 nests on the bar, and on June 12th at least 60 nests. However, by June 20th, northeast winds had washed away many of the nests on the northeast side of the spit. However, there were still 65 nests remaining, each with one to three eggs. There were most likely chicks hatched from the site in 2006. The NW Angle islands were checked on June 13th, 2006. Active tern colonies were found on Red Lake Rock (122 nests), Techout Island (35 nests), and Crowduck Island (33 nests). The nests were not checked after initial finding, but appeared to be well above the water line and likely hatched. It is encouraging that four sites did have nesting terns in 2006.

Predator information

No gulls nested on the southern shore sites during 2006. There were observations of abundant coyote sign on Morris Point and Zippel Spit.

Summary of Activities and Results for 2007

Plover Observations

In 2007, plover and tern observations on the southern Lake of the Woods area were again

completed by contractor Bill Berg, under project management by Katie Haws. Tern observations were made by Katherine Haws at both the NW Angle and the Pine/Curry Island nesting sites. There were five visits to the southern Lake of the Woods sites made by Berg in 2007, on May 30th, June 5th, 13th, 22nd, and July 16th. Haws visited Rocky Point, Pine/Curry Island and Morris Point on June 13th, 21st and 27th, and the NW Angle on July 12th.

A total of four adult plovers were present at Lake of the Woods in 2007 (Table 1). There was a nesting pair observed at Rocky Point first on May 30th, when a nest was found with four eggs. One and possibly two additional adult plovers were seen on June 21st. However, subsequent observations showed that only one nest was active at the Rocky Point site, and the two additional birds were not seen again.

Plover Reproductive Success

Nesting success in 2007 was positive, with three known young plovers fledged, and possibly a fourth. Early nesting contributed to the success of this nesting pair (Table 2). This is the first positive reproductive success at Lake of the Woods since 2001, and is a very positive sign that although on the brink of extirpation, the habitat appears good enough to attract nesting birds, and bring off young if conditions are favorable.

Common Tern Observations

During 2007, Common Terns nested in several locations. The Pine/Curry Island bar had considerable tern nesting activity in 2007. The site was checked on May 30th, June 1st, June 5th, 13th and 22nd. On the first check (May 30th), there were at least 140 adult terns present, and on June 1st approximately 80 nests with 1-3 eggs each were recorded. By June 5th after strong winds, there were 50 nests remaining, and by June 13th the entire bar was washed over and no nests remained. Common Tern nesting was a complete failure at this SNA site in 2007, and once again nest failure can be attributed to rapidly raising water levels during June. The NW Angle islands were checked on July 12th, 2007. Active tern colonies were found on Red Lake Rock (50 nests), and Crowduck Island (150 nests). The nests were not checked after initial finding, but appeared to be well above the water line and likely hatched.

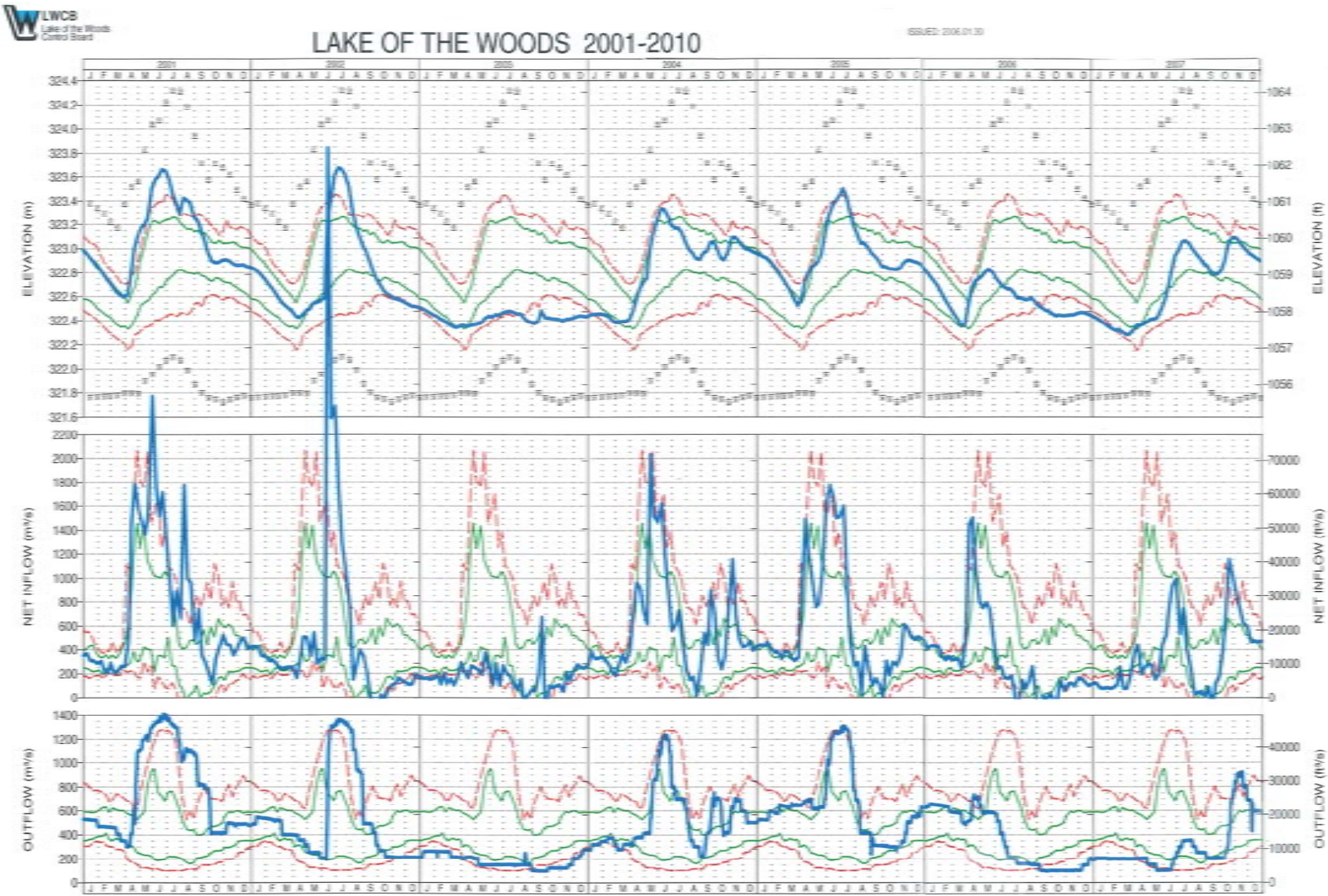
Predator information

No gulls nested on the southern shore sites during 2007. There were observations of abundant coyote sign on Morris Point, and Zippel Spit.

Water Levels and Erosion

Data on Lake of the Woods water levels were obtained from the Lake of the Woods Control Board in Ottawa, Ontario. Note that the mean Lake of the Woods lake level was varied over the three years of this report, with the highest levels occurring in 2005, when the lake levels reached 1061 feet elevation. Lower levels prevailed in 2006, with the lake reaching only to 1059 feet. 2007 was a mid range year, when level maximum for the summer came close to the 1060 foot level in early July. Historical comparisons of water levels on the lake are shown in Figure 3.

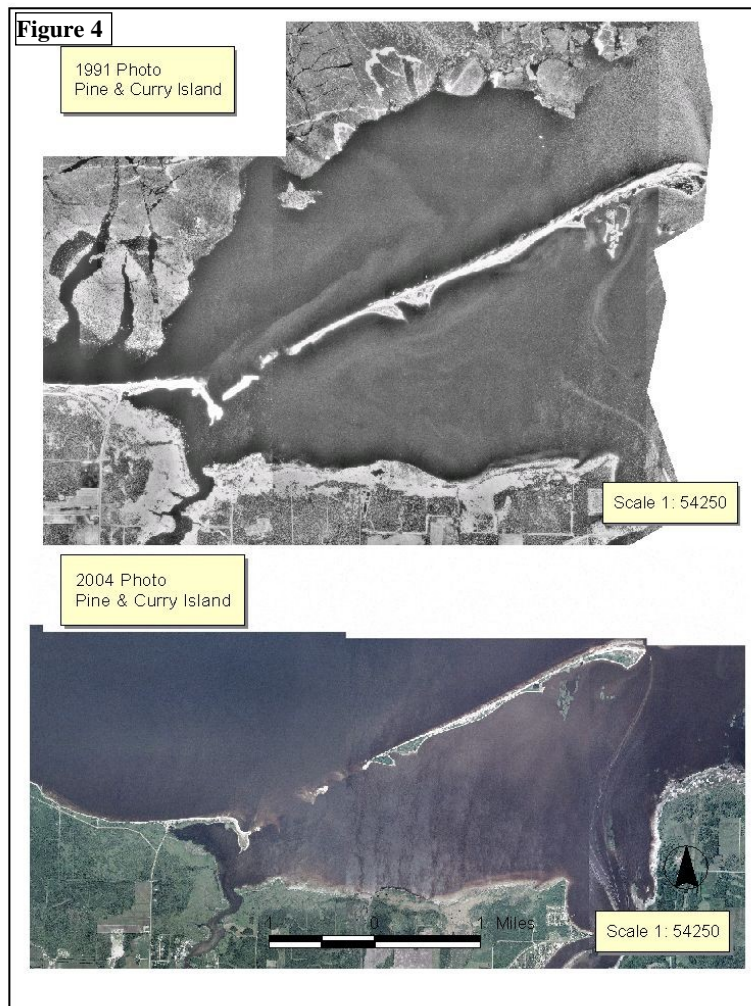
Figure 3



A study done by Herb, Mohseni and Stefan (2004), indicates that erosion of Lake of the Woods shoreline has been concentrated in four areas over the past 40 years; Pine/Curry Island, southern shore of Four Mile Bay, Sandy Shores (east of Rocky Point), and 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 as of yet 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 Lake of the Woods, since these are some of the main rivers feeding the lake (Herb et al, 2004).

Photographs taken in 2004 indicate continued erosion of Pine/Curry Island. 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 1,500 meters (5,000 feet) of this island has disappeared since 1985. The recent erosion is quite clearly seen when the FSA photos of 1990 and 2004 (Figure 4).



Again this year (2007), there was no reclamation of all of the old tern and plover breeding habitat area which had adjoined itself to Morris Point a few years ago, and that portion of the SNA will likely not be present again, even under lower water regimes, were they to occur. Bald Eagles nested successfully in 2005, 2006 and 2007, with one chick being produced in 2006 and 2007. Although the pines are almost all gone, they do find trees to nest in.

Another problem is that there appears to be quite a bit of foot traffic, dogs and even ATV's at Morris Point. Human and dog tracks are also seen quite commonly at Pine/Curry Island. The picnic and dock areas are quite close to one of the more recent plover nest locations at Pine/Curry Island. I am sure that the recent successful nest at Rocky Point may be because of little to no human disturbance at that site.

Discussion

Piping Plovers and Common Terns continue their tenacious existence in Northwestern Minnesota, nesting on a few choice sites on Lake of the Woods. During the three years of this study, the Piping Plovers were most successful in 2007, and the terns in 2006. Downward trends in the plover population continued, with the birds continuing a very small presence here (Figure 2). The NW Angle islands appear to have good habitat for terns, but there are issues with the other nesting species such as the Ring-billed and Herring Gull, which share the nesting habitat with the terns. The southern shore colonies of terns are compromised by the disappearance of the prime nesting habitat on Pine/Curry Island. Future nesting of terns on the southern shore will only likely be successful in very low water years. Changing the rule curve to encourage lower June water levels would be advantageous for both species.

Recommendations for Future Activities

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

1. Continue plover monitoring efforts, attempting to get complete coverage of the LOTW sites 3-4 times per season. Some sites (Stony Point, Garden Island and Zippel Bay), will only be visited once per summer.
2. Continue to monitor Common Tern colonies on LOTW, with NW Angle sites being visited every other year, and determine productivity on the southern shore colony 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. 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. Monitor longevity and effectiveness of recently placed interpretive sign at the southern picnic area.

5. 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 bureaus. Also, publish one article per year in the Baudette Region newspaper featuring the SNA and or resources of the SNA.
6. Encourage enforcement of SNA rules, and the Migratory Bird Treaty Act with regards to protection of the nesting birds and their habitat.
7. Try to develop recommendations/input to the LOTW rule curve revision effort, and convey these to the LOTW control board.

Acknowledgments

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