

1993 STATUS AND BREEDING SUMMARY
OF PIPING PLOVERS AT
LAKE OF THE WOODS, MINNESOTA

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PIPING PLOVERS

Methods

In 1993 we increased our monitoring and management efforts on Pine and Curry Island SNA by hiring Joan McKearnan to study the common tern colony on "Tern Island" and to assist with the piping plover studies. Consequently, observations and/or management efforts took place on 54 days between 27 April and 20 August. Enforcement efforts were also stepped up this year. Bob Djupstrom met with area resort owners in early May to distribute new Pine and Curry Island SNA brochures and to explain SNA regulations. MDNR Enforcement personnel issued a number of warnings and citations to people engaged in inappropriate activities on the island. As a result, trespass on sanctuary areas seemed to decrease this year.

Air photos of Pine and Curry Island, Morris Point, and Zippel Bay were taken on 19 August. Data on Lake of the Woods (LOTW) water levels were obtained from the U.S. Army Corps of Engineers, St. Paul. In October, willow brush was cut and burned on "Tern Island" and Oak Point (see Fig. 1) to maintain open habitats for nesting piping plovers.

Observations of piping plovers were made regularly at Pine and Curry Island and Morris Point. Zippel Bay was visited once (8 June) and Rocky Point was visited twice (8 June, 8 July). All piping plovers observed were checked for bands and their breeding status was determined. Nests were located and a wire mesh predator exclosure was placed around each. Exclosures were constructed of 5 x 10 cm mesh welded wire 1.3 m tall. A 3 m diameter circle of wire was

placed around the nest and was fastened to three steel rods driven into the ground. The bottom edge of the fence was buried approximately 15 cm deep to inhibit predators from digging under the barrier. Heavy string was tied across the top in a criss-cross pattern to discourage avian predators. Installation of an exclosure took about 15 minutes. Plovers could easily pass through the openings in the mesh. We attempted to nest trap and band unbanded adults or birds in need of new color bands once incubation was well underway. When possible, chicks were captured with a butterfly net when 7-10 days old and banded with a USFWS aluminum band.

Results

The summer of 1993 (especially late May-July) was typified by frequent spells of cool, rainy, weather. LOTW water levels were low at the start of the season (Table 1) exposing broad sandy beaches in the areas traditionally used by piping plovers. The lake level rose slowly during the summer but did not cause problems for nesting piping plovers. However, by August, water levels were quite high once again and signs of beach erosion became evident. By the time we removed sanctuary signs on 23 September, some 14 metal signs and two large wooden signs had washed away while three small gaps in the island had opened up at "West End plus."

In 1993 two adult piping plovers and nine chicks were banded. In addition, two adults were recaptured and given new color bands (see Table 2 and attached banding schedule). Interestingly, one of the recaptured birds was 10 years old and its mate (the other recaptured bird) was banded as an adult seven years ago.

A total of 11 adult piping plovers (9 breeders, 2 nonbreeders) were present this year, thus continuing the downward trend in population numbers (Table 3). Two additional adults were seen briefly, late in the season, and likely came from other breeding sites. No plovers bred at Morris Point, Zippel Bay, or Rocky Point. Five piping plover nests were found between 24 May - 13 June (Fig. 1, Table 4). A sixth nest that had been previously deserted was discovered on 19 July on "Tern Island." The desertion was likely caused by disturbance from ring-billed gulls about 24-25 May (see section on gulls). We believe this same pair laid a second clutch of three eggs which we found on 13 June. Four nests hatched. The remaining nest was deserted when the male from the pair nesting at "West End plus" attempted to be simultaneously polygynous with his mate of 1992 on "Tern Island" 0.8 km away. While his first nest was successful, the second failed when the female deserted and left the area in mid June. Interestingly, this male was observed in agonistic encounters with three other piping plovers on "Tern Island" in early June. On 11 June this bird was observed hopping on its right foot due to an injury (perhaps from fighting) to its left leg. This bird continued to use only its right leg until 12 July when it was noted that the left foot was missing. Despite this handicap, the bird successfully fledged two chicks from its first nest.

Most piping plover chicks survived extended periods of cool, wet weather. Nine of 14 chicks fledged (64%) resulting in a fledge rate of 1.8 chicks per breeding pair (assuming 9 adults = 5 breeding pairs) (Table 5). This was the most chicks fledged since 1988 and the highest fledge rate since 1983.

PREDATOR MANAGEMENT

Mammals

In 1993 Jim Walton continued trapping mammalian predators on Pine and Curry Island and Morris Point. Nine traps were set each night from 10 May to 15 July for a total of 603 trap nights. One mink, two red foxes and two striped skunks were captured. Despite these efforts, skunk tracks were frequently seen at Oak Point and "Middle Curry." However, there was no sign of mammalian predators on "Tern Island" this year.

Crows/Ravens

As in 1992, we attempted to disrupt nesting attempts by crows and ravens on Pine and Curry Island. An active raven nest was found on 27 April but was in close proximity to the bald eagle nest so we did not attempt to shoot the adults. However, when we checked this site on 1 June no adults were present and fragments of an apparently depredated raven egg were on the ground beneath the nest.

An active crow nest was found close to the bald eagle nest on 27 April and was left undisturbed. Two adult crows were shot at other locations (27 April, 7 May). Seventeen crow nests were destroyed between 27 April - 7 June. Six others were too high to reach and were left

undisturbed. Only one of the nests had eggs at the time it was destroyed. No doubt some (perhaps most) of these nests were those remaining from prior years.

Raptors

A great horned owl was a regular nocturnal visitor to "Tern Island" this year. This repeated disturbance caused the common terns to abandon their eggs at night. Joan's night observations indicated that the terns didn't return until dawn, thus leaving eggs exposed to the elements. On 7 June a freshly depredated adult ring-billed gull was found on "Tern island." On 21 June, plucked feathers from an adult common tern were also found there. During one night observation Joan observed the owl on "Tern Island" shortly after the terns had left their nests. On 28 June a great horned owl was shot on Morris Point after having been lured in to tape recorded crow calls at dusk. There was no further evidence of owl predation on "Tern Island" although the terns remained very skittish at night.

Of potential concern to piping plovers, a peregrine falcon was seen near Oak Point on 24 May and near "Tern Island" in early July. Also, a merlin was seen at "West End plus" on 25 May and near "Middle Curry" on 7 July.

The bald eagle nest was active this year and a near-fledging chick was observed on 27 July.

Gulls

As in 1992, one of our primary objectives was to prevent ring-billed gulls from nesting on "Tern Island" where they have attempted to breed since 1985. Gulls compete with piping plovers and common terns for breeding space and are a potential source of nest and chick predation. In 1992 we were successful in causing the gulls to abandon the traditional breeding site by placing three dozen 1.3 m tall metal posts in the colony area and fastening heavy yellow nylon string to the tops of the posts to produce parallel rows about 2 m apart. This year the gulls did not return to their traditional site during May. In fact, very few ring-billed gulls were seen anywhere on "Tern Island" until 24 May (Table 6) when 15 were observed in the middle portion of the island acting as if they intended to nest. (This was the area where we discovered the deserted piping plover nest on 19 July. See section on piping plovers.) On 25 May at least 70 ring-billed gulls occupied this area and we discovered three 1 egg nests. We set up the string grid at this site and the gulls left immediately and did not return. On 7 June there were a few ring-billed gulls and three nests with eggs in the traditional colony site on "Tern Island." We set up a string grid at this location also and the gulls immediately abandoned the site. There were no further breeding attempts by gulls this season.

As in prior years, large numbers of loafing ring-billed and Franklin's gulls began congregating on Pine and Curry Island SNA beaches during late June and early July. Numbers peaked on 12 July when we surveyed some 8,810 gulls (1,850 ring-billed, 6,900 Franklin's, 60 herring). On 29 June, as an experiment, we set up a string grid near a piping plover nest on

"Tern Island". This was an area we felt would likely be used by the plover brood and was also an area traditionally used heavily by loafing gulls. The string grid appeared to be successful in deterring gulls as only an occasional individual gull was seen in this area thereafter. The grid remained in place until 31 July and we observed no instances of plovers, terns, or other birds striking the string accidentally.

RECOMMENDATIONS

1. Continue to trap mammalian predators during May-July on Pine/Curry Island and Morris Point.
2. Prevent ring-billed gulls from nesting on "Tern island" by use of a grid of elevated string and/or blind, as necessary.
3. Use a grid of elevated string as a deterrent to prevent loafing flocks of gulls from landing on beaches used by piping plover broods.
4. Continue to destroy crow and raven nests on Pine/Curry island and Morris Point. Shoot adults as opportunities arise.
5. Trap or shoot great horned owls, as necessary, to prevent nocturnal disturbance and/or predation on piping plovers and common terns.
6. Continue to use wire mesh predator exclosures around piping plover nests.
7. Continue to distribute brochures and information to resort owners and other interested parties in the vicinity of LOTW to encourage compliance with sanctuary regulations. Encourage MDNR Enforcement personnel to continue enforcing these regulations.

8. Cut trees and shrubs, as needed, in areas occupied by piping plovers to eliminate crow/raven/raptor perches and to maintain relatively open habitat conditions.

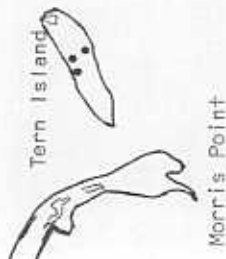
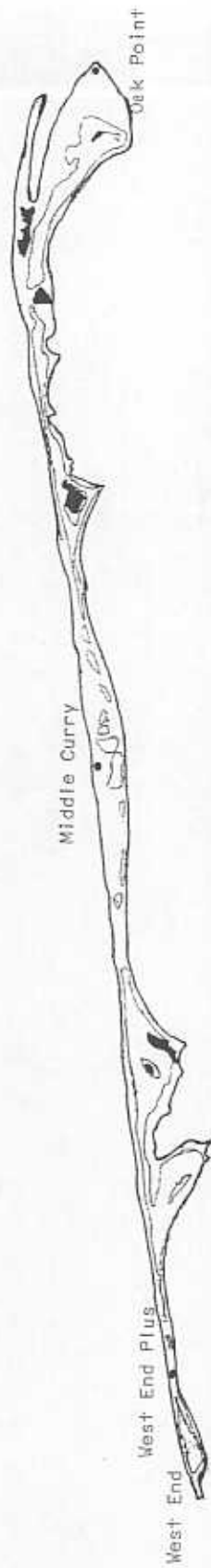
ACKNOWLEDGEMENTS

We are grateful for the cooperation and assistance of Katherine Haws. Bruce Lenning and Sharon Glidden provided assistance in the field. Jeff Dittrich and Kevin Olson posted sanctuary areas in early May. Edward Eaton supplied us with LOTW water depth data. Bruce Lenning, Tim Marion, Pete Hill, and Kevin Olson assisted with brush cutting in October.

LITERATURE CITED

- Haig, S. M. and L. W. Oring. 1987. Population studies of piping plovers at Lake of the Woods, Minnesota, 1982-1987. *Loon* 59:113-117.
- Wiens, T. P. 1986. Nest site tenacity and mate retention in the piping plover (Charadrius melodus). M.S. Thesis, University of Minnesota - Duluth, 34 pp.

PINE AND CURRY ISLAND SNA



• = nest

Figure 1. Piping plover nest site locations, 1993.

Table 1. Monthly mean water levels (ft. above sea level) at Lake of the Woods, 1982-1992.

	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
Mean	1059.2	1059.7	1060.4	1060.0	

/1 1987 data are not available.

Table 2. Adult piping plovers given new band combinations in 1993.

Band Number	Old band combination	New band combination	Location	Date
901-39413 / <u>1</u>	AG:-/ <u>3</u>	FA:WdB	Oak Point	15 June 93
901-39425 / <u>2</u>	FAdB:R	FAB:-	Oak Point	15 June 93

/1 This bird was banded as an adult on Pine and Curry Island in 1987.

/2 This bird was banded as a chick on Pine and Curry Island in 1983.

/3 Bands are read left leg top to bottom: right leg top to bottom. A = USFWS band, F = green international flag, dB = dark blue, B = light blue, W = white, R = red, G = green.

Master Permit No. **08035**

Banding Schedule
3-860 (Rev. 1985)

Master Permittee **L. W. Oring, Dr.**

Pine and Curry Island, 4mi N. Hackett —Banding Locations—

A Lake of the Woods Co., MN

D

B

E

C

F

INCLUSIVE BAND NOS.
FROM **901-39477**
THROUGH **39487**
REPORT ONLY CONTIGUOUS
BAND NUMBERS

BAND PREFIX:	COMMON NAME	AOU #	STATUS	AGE-SEX	REGION	LAT-LONG	LOC	DATE MO DAY YR
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Color code
(WdB:FA)
(FA:dBR)

REMARKS: Color code is read - left leg top to bottom & right leg top to bottom.
 Colors are as follows - F = green international flag, A = USFWS band,
 dB = dark blue, R = red, W = white.

Table 3. Population summary of piping plovers from 1982-93 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

/1 1982-84 data from Wiens 1986.

1985-87 data from Haig and Oring 1987.

Table 4. Reproductive success by breeding location for piping plovers, 1993.

	Tern Island	West End Plus	Middle Curry	Oak Point	Total	
					No.	%
No. nests	3	1	1	1	6	--
No. eggs laid	11	4	4	4	23	--
No. successful nests / <u>1</u>	1	1	1	1	4	66.7
No. eggs hatched	3	3	4	4	14	60.9
No. chicks fledged	1	2	3	3	9	64.3

/1 Successful = at least one egg hatched.

Table 5. Reproductive success of piping plovers at Lake of the Woods, Minnesota from 1982-1993. /1

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 / <u>2</u>

/1 1982-1984 data from Wiens 1986.

1985-1987 data from Haig and Oring 1987.

/2 Assumes 9 adults = 5 breeding pairs (see text).

Table 6. Total gulls present on "Tern Island," 1993.

Date	Estimated number of gulls present			
	Ring-billed	Franklin's	Herring	Total
May	7	4	0	0
	11	0	0	0
	17	4	0	0
	24	45	0	0
	25	70	0	0
June	1	0	0	0
	7	20	1	4
	14	0	0	0
	15	90	49	0
	21	9	814	0
	28	6	622	0
July	6	3	16	0
	12	165	336	0
	19	440	1,250	0
	27	17	0	4
August	20	0	0	0
				61 /1

/1 Total includes 40 Bonaparte's gulls.