

1991 STATUS AND BREEDING SUMMARY
OF PIPING PLOVERS AND COMMON TERNS
AT LAKE OF THE WOODS, MINNESOTA

1 October 1991

Stephen J. Maxson¹

Katherine V. Haws²

1. MDNR, Wetland Wildlife Populations and Research Group, 102 23rd St., Bemidji, MN 56601.
2. MDNR, Nongame Wildlife Program, 2115 Birchmont Beach Road, Bemidji, Mn 56601.

PIPING PLOVERS

Methods

In 1991 13 trips were made to Lake of the Woods (LOTW) between 15 May and 6 August (Table 1). We made regular observations at Pine/Curry Island and Morris Point, while Rocky Point and Zippel Bay were surveyed once (10 June). All piping plovers observed were checked for bands and their breeding status was determined. Nests were located and hatching and fledging success was determined for each. Unbanded adults or birds in need of new color bands were nest trapped and banded once incubation was well underway. Chicks were captured with a butterfly net when 7-10 days old and each was banded with a USFWS aluminum band.

Data on LOTW water levels were obtained from the U.S. Army Corp of Engineers, St. Paul. On 6 May a power brush saw was used to cut willow shrubs along a 50m stretch of beach at Oak Point, as had been done in 1990, in an attempt to improve piping plover habitat at that location.

As an experiment, wire mesh predator exclosures were placed around four piping plover nests. Exclosures were constructed of 5 x 10 cm mesh welded wire 1.3m tall. A 3m 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 under the sand 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.

Results

1991 LOTW water levels were very similar to those recorded in 1990 (Table 2). Lake levels were low in May exposing broad sand beaches in the traditional piping plover habitats. A large sandy spit was again present along the north side of Oak Point. As water levels gradually rose 1.5 ft to a peak in July, beaches diminished in size. Much of the Oak Point spit was under water by 17 June and it was completely inundated by 12 July. Erosion continued to occur on "2nd Island". Storm waves on 25 June completely washed over "2nd Island" and this site was frequently washed over by waves thereafter. Continued erosion and lack of sand deposition is eliminating valuable piping plover nesting habitat. Approximately 1/2 mile of the island is completely under water.

In 1991 four adult and six piping plover chicks were banded. Two additional adults were recaptured and given new color bands (see Table 3 and attached banding schedule). One of the recaptured birds had been banded as a chick on Pine/Curry Island eight years previously.

A total of 14 adult piping plovers (12 breeders, 2 nonbreeders) were present this year thus, continuing the downward trend in population numbers (Table 4). No plovers were present on Morris Point, Zippel Bay, or Rocky Point. The two nonbreeding birds were observed on Pine/Curry Island. One unbanded and unpaired plover was present on "Tern Island" until 17 June. Another banded, unpaired plover was seen at "Middle Curry" on 20 May and 3 July. One

member of a pair at "Middle Curry" was missing its right foot. Despite its handicap, this bird got around quite well and appeared to pair and nest normally.

Six piping plover nests were found between 3-11 June (Fig.1, Table 5). Predator exclosures were placed around four of these nests (2-"Tern Island", 1-"Middle Curry", 1-Oak Point). Plovers quickly adapted to the presence of exclosures. In one case, after we had set up an exclosure, the bird was back on its eggs by the time we had walked to our boat some 20m away. All four of these nests hatched. A fifth nest ("West End plus") also hatched. The remaining nest ("2nd Island") was washed away by a storm on 25 June.

Of 20 chicks that hatched, only 2-4 fledged (Table 5). Both "Tern Island" broods were reduced to one chick each by the time chicks were banded. Neither of these survived. The brood at "West End plus" was quickly reduced to one chick which fledged. At "Middle Curry", all four chicks disappeared within the first few days. At Oak Point, three 8-day-old chicks were banded on 8 July. At least two were present on 12 July. On 22 July adverse weather conditions prevented actually seeing the chicks, but judging from the protective parental behavior exhibited by the brood male, at least one fledging-aged chick remained. Specific causes of chick mortality remain unknown. Several factors may have contributed. Prolonged periods of stormy weather when chicks were very young may have taken a toll. On "Tern Island" the numerous gulls and perhaps a mink may have been to blame. At "West End plus" and "Middle Curry" crows were often seen sitting in trees where they could survey the beach areas occupied by piping plover broods.

The willow cutting at Oak Point once again opened up that area considerably. However, as in 1990, only one pair of piping plovers settled at Oak Point and the cut over area remained unused. By mid summer vigorous new willow growth again made the site largely unsuitable as piping plover habitat. While it would still seem desirable to remove these willows to enhance piping plover habitat, a more permanent solution may need to be implemented.

COMMON TERNS

Pine/Curry Island

1991 was not a successful year for nesting common terns on Pine/Curry Island. The main colony was located at the traditional site on the western half of "Tern Island". About 25 terns had returned by 15 May. By 3 June, several hundred were present and a few were starting to incubate. A census on 7 June tallied 270 nests (37-1 egg, 43-2 egg, 190-3 egg), almost 100 more than were found in 1990. No signs of predation were evident. We did not enter the tern colony thereafter until 3 July when a brief walk through the area revealed many depredated eggs. It appeared that the contents of relatively fresh eggs had been eaten, whereas eggs containing large embryos had been broken open but left unconsumed. Some eggs had only a single small puncture about 4mm in diameter. We suspect that grackles/blackbirds may have been involved in this predation. (Terns were observed mobbing a blackbird on the ground on 2 July). A few small tern chicks were noted. One small dead chick apparently had been pecked on the head and part of its breast appeared to have been pecked away and consumed. Another brief walk through part of the colony on 12 July revealed no chicks other than a small dead one. More depredated

eggs were noted but most did not appear fresh. On 22 July three large tern chicks were seen on the beach and were the only large chicks seen at this site in 1991. A second colony census on 25 July tallied 100 active nests with eggs (16-1 egg, 55-2 egg, 28-3 egg, 1-4 egg), 58 abandoned nests (43-1 egg, 13-2 egg, 2-3 egg), and 99 depredated eggs. Another nest contained 1 egg, 1 live chick, and one dead chick. We also found a freshly killed adult tern that appeared to have been eaten by a mammal. By 6 August only four adult terns remained at the colony. No tern chicks were seen, the remaining nests had been abandoned, and four crows were walking around in the colony area scavenging abandoned eggs.

As in 1990, a small group of 3-4 pairs nested at Oak point. Six fledged chicks were observed on 22 July. One 3 egg nest was also found at that time. On 25 July this nest was abandoned and no adults or fledged young were present.

Similar to other nesting sites in Minnesota, this colony shows a continuing pattern of nesting failure (Table 7).

Rocky Point

No common terns were present during our 10 June survey.

Fourblock Island

A new cabin has been constructed on this island. No nesting common terns (or gulls)

were present during a 19-20 June survey.

Techout Island

A 19-20 June census tallied 100 common tern nests.

PREDATOR MANAGEMENT

Mammals

In 1991 Jim Walton continued trapping mammalian predators on Pine/Curry Island and Morris Point. An average of 11 traps (9 mink, 2 fox) were set each night from 3 May - 15 July for a total of 814 trap nights. Two mink, one fox and one raccoon were captured.

Gulls

Ring-billed gulls returned to the northwest end of "Tern Island" where they have attempted to nest since 1985. This site is adjacent to the common tern colony and occupies some of the best piping plover habitat on the SNA. As in previous years, we destroyed all gull nests by removing eggs, obliterating the nest bowl and scattering the nest materials (Table 8). Gulls were beginning to lay eggs by 20 May. On 3 June we destroyed nests and scrapes of 154 pairs. Gulls continued to reneest throughout most of June. During the season as a whole, we destroyed

177 nests with eggs and 398 scrapes. These figures are more than double those recorded in 1990. Despite these repeated disturbances, ring-billed gulls continued to occupy the site until the end of July.

Many gulls were present on "Tern Island" beaches from 15 May - 25 July (Table 8). Gulls that were flushed from nest sites quickly returned to the area as soon as we left the colony. Numbers peaked in early-mid July when there was an influx of ring-billed and Franklin's gulls. A few herring gulls were also present. On 12 July when 1,725 gulls were recorded on "Tern Island", there were also 3,070 gulls present on other portions of the SNA (e.g., Oak Point-300, "West End"-600, "West End plus"-400, "2nd Island"-170, Morris Point-1,600). Unfortunately, these gull congregations typically occur in areas favored by piping plovers and at a time when piping plover broods are present. The gull flocks prevent piping plover broods from using some of their preferred beach habitats and are also a likely source of predation on piping plover chicks.

RECOMMENDATIONS

1. Continue to trap mammalian predators during May-July on Pine/Curry Island and Morris Point.
2. Continue to destroy ring-billed gull nests on Pine/Curry Island.
3. Continue to use wire mesh predator exclosures around piping plover nests.
4. Continue to distribute brochures and information to resort owners and DNR personnel in the vicinity of LOTW to encourage compliance with sanctuary regulations.
5. Meet with DNR enforcement personnel to communicate the need for stricter enforcement of the no trespass regulation on sanctuary areas.
6. Consider whether a more permanent solution can be found for the problem of willow encroachment on beach areas at Oak Point through the use of mechanical or chemical manipulation.
7. Cut scattered trees on "Tern Island", "West End plus", and "Middle Curry" that crows and other avian predators use as perch sites to survey piping plover nesting and brood rearing areas.

8. Look into more aggressive gull disturbance tactics to see if any would be feasible on Pine/Curry Island.
9. Control crows on the island.

ACKNOWLEDGEMENTS

We thank Bruce Lenning, Sharon Glidden, Craig Thesing, Andrea Herr and Lew Oring for assistance in the field. Jeff Dittrich, Mike Haws, and Tony Powell posted the sanctuary areas in early May. Edward Eaton supplied us with LOTW water depth data. Personnel of Zippel Bay State Park allowed us to borrow a power brush saw to cut willow shrubs.

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, 34pp.

PINE AND CURRY ISLAND SNA

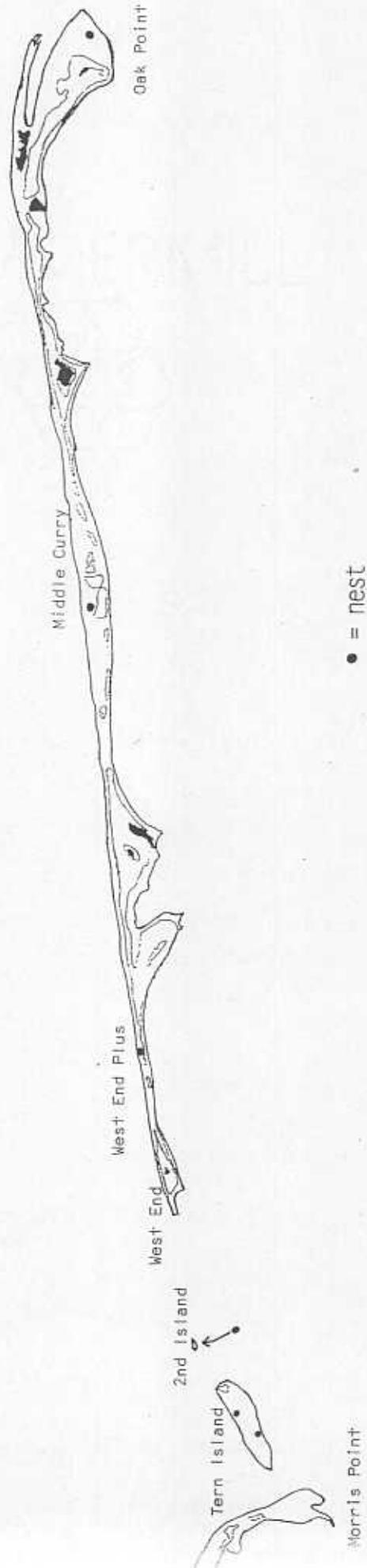


Figure 1. Piping plover nest site locations, 1991.

Table 1. Number of days spent on Pine/Curry Island and/or Rocky Point and Zippel Bay - 1991

Date		Maxson	Haws	Lenning	Other	No. of person-days
May	15	x				1
	20	x				1
June	3	x			x	2
	7	x		x	x	3
	10	x	x		x	3
	11	x	x		x	3
	17	x				1
	18	x				1
	25	x				1
	26	x				1
July	2	x			x	2
	3	x			x	2
	8	x				1
	12	x				1
	22	x				1
	25	x	x		x	3
August	6	x				1
					Total	28

Table 2. Monthly mean water levels (ft. above sea level) at Lake of the Woods, 1982-1991.

	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 / <u>1</u>	--	--	--	--	
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
Mean	1059.1	1059.7	1060.0	1059.9	

/1 1987 data are not available.

Table 3. Adult piping plovers given new band combinations in 1991.

Band Number	Old band combination	New band combination	Sex	Location	Date
901-39421 / <u>1</u>	A:-/ <u>3</u>	FA:dBdB	♀	Tern Island	17 June 91
951-54089 / <u>2</u>	RR:FA	dBdB:FA	♀	2nd Island	18 June 91

/1 This bird was banded as a chick on Pine/Curry Island in 1987.

/2 This bird was banded as a chick on Pine/Curry Island in 1983. It was recaptured on Oak Point in 1989.

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

Master Permit No. 08035

Banding Schedule
3-860 (Rev. 1985)

Master Permittee L. W. Oring, Dr.

THROUGH 39471
REPORT ONLY CONTIGUOUS
BAND NUMBERSINCLUSIVE BAND NOS.
FROM 39462Pine and Curry Island, 4 mi. N. Hackberry
A Lake of the Woods Co., MN

D

B

E

C

F

BAND PREFIX:	COMMON NAME	AOU #	STATUS	AGE-SEX	REGION	LAT-LONG	LOC	DATE MO DAY YR
01								
02								
03								
04								
05								
06								
07								
08								
09								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								
32								
33								
34								
35								
36								
37								
38								
39								
40								
41								
42								
43								
44								
45								
46								
47								
48								
49								
50								

U.S. bandings to: Bird Banding Laboratory, Office of Migratory Bird Management, Laurel, MD 20708. Canadian bandings to: Canadian Wildlife Service, Environmental Management Service, Department of the Environment, Ottawa, Ontario, Canada K1A 0E7.

INSTRUCTIONS AND DEFINITIONS PROVIDED IN BIRD BANDING MANUAL

BAND PREFIX:	COMMON NAME	AOU #	STATUS	AGE-SEX	REGION	LAT-LONG	LOC	DATE
901								MO. DAY YR.
51								
52								
53								
54								
55								
56								
57								
58								
59								
60								
394	PIPL	(FA:BB) 277.0	301	AHY-U	250	485-0944	A	06-17-91
		(WW:FA)						06-18-91
		(FA:WW)						06-26-91
		(BB:FA)	300	L-U				07-02-91
								07-08-91
71								
72								
73								
74								
75								
76								
77								
78								
79								
80								
81								
82								
83								
84								
85								
86								
87								
88								
89								
90								
91								
92								
93								
94								
95								
96								
97								
98								
99								
00								

REMARKS: Color codes are read - left leg top to bottom; right leg top to bottom. Colors are as follows - F = green international flag, A = USFWS band, B^U = light blue, W = white.

Table 4. Population summary of piping plovers from 1982-91 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

/1 1982-84 data from Wiens 1986.

1985-87 data from Haig and Oring 1987.

Table 5. Reproductive success by breeding location for piping plovers, 1991.

	Tern Island	2nd Island	West End plus	Middle Curry	Oak Point	Total
No. nests	2	1	1	1	1	6
No. eggs hatched	8	0	4	4	4	20
No. chicks fledged	0	0	1	0	1-3	2-4

Table 6. Reproductive success of piping plovers at Lake of the Woods, Minnesota from 1982-1991. /1

Year	Chicks fledged	Chicks fledged/pair
1982	26	1.7
1983	44	2.1
1984	13	0.6
1985	7-10	0.4-0.5
1986	9	0.8
1987	2-21	0.3-3
1988	12-15	1.0-1.25
1989	1	0.1
1990	4	0.7
1991	2-4	0.3-0.7

/1 1982-1984 data from Wiens 1986.

1985-1987 data from Haig and Oring 1987.

Table 7. Number of nests and estimated fledging success of common terns at Pine/Curry Island SNA.

Year	No. of nests	No. of chicks fledged
1988	52	0
1989	120	1
1990	180	70
1991	274	9

Table 8. Number of ring-billed gull nests destroyed and total gulls present on "Tern Island", 1991.

		Nest contents				Estimated no. of gulls present			
Date		Scrape	1 egg	2 egg	3 egg	Ring-billed	Franklin's	Herring	Total
May	15	6	0	0	0	90	2	0	92
	20	10	5	0	0	35	0	0	35
June	3	85	30	21	18	270	0	0	270
	7	65	24	11	2	220	0	0	220
	11	40	16	9	3	600	0	0	600
	17	--	--	--	--	175	73	6	254
	18	101	12	17	5	270	35	0	305
	25	--	--	--	--	255	150	4	409
	26	91	3	1	0	265	17	4	286
July	2	--	--	--	--	250	10	5	265
	3	--	--	--	--	910	35	10	955
	8	--	--	--	--	775	470	5	1,250
	12	--	--	--	--	1,075	620	30	1,725
	22	--	--	--	--	390	0	12	402
	25	0	0	0	0	48	0	3	51
August	6	--	--	--	--	0	0	0	0
Total		398	90	59	28				