1985 STATUS AND BREEDING SUMMARY OF PIPING PLOVERS AT LAKE OF THE WOODS, MINNESOTA

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NON-GAME PROGRAM

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INTRODUCTION

1985 was a significant year for Piping Plovers (Charadrius melodus) in North America. The species was classified as threatened by the U.S Fish and Wildlife Service and reclassified from threatened to endangered in Canada by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) (Haig 1985). This year also marked the termination of intensive field work on Piping Plovers (Charadrius melodus) at Lake of the Woods (LOTW), and initiation of a long-term monitoring program of the population.

In a series of 4 visits of 3-4 days duration, the following goals were met: most adults and chicks were banded or rebanded, the population was censused 4 times, reproductive success was determined, patterns of natal philopatry and breeding site fidelity were monitored, and disturbance to the area assessed. This progress report summarizes the results of 1985 field work, and presents suggestions for future management and study of the area.

METHODS

Field trips were carried out from 16-19 May, 5-8 June, 1-4 July and 24-26 July by L. Oring, S. Haig and assistants. During each visit, Piping Plovers were censused at least once at Morris Point, Oak Point, and Pine/Curry Island. One survey was conducted at Zippel Bay on 7 June. Adults and chicks were individually marked with 3 color bands, a USFWS aluminum band, and an international flag. Genetic samples were taken from chicks and selected adults.

RESULTS

Brief Synopsis of Visits: Visit 1 was carried out during opening weekend of fishing season. While fishermen did not seem to disturb the birds, extremely high water levels had washed out all 3 breeding sites, as well as many piers from nearby cottages. We found 1 finished nest (no eggs) at Morris Point and 2 finished nests at Pine/Curry. At this point, most birds in Manitoba had completed clutches so it is possible that LOTW Piping Plovers were already beginning renests.

Visit 2 was hampered by a 3 day storm with winds that ranged up to 100 mph. Piping Plover nests were destroyed across Saskatchewan (W. Harris, pers. comm.), Manitoba and Minnesota. Oak Point and Morris Point nest sites flooded out. Pine/Curry beaches eroded into 5 foot high cliffs and most SNA signs were left under water.

Upon arrival for visit 3, we noticed the western 200 meters of Pine/Curry had been separated from the main island. The south shore of Morris Point was washed out and hundreds of logs were strewn over nest sites. On Pine/Curry, we found: 3 nests, 2 chicks just hatching, a 1 day old chick, and 3 older chicks (15 days old). An intense storm on 3 July caused more damage to chicks and nests sites.

Pieces of Pine/Curry island were further split apart when we returned for our last visit. There were no birds at Morris Point or Oak Point. Pine/Curry contained 5 adults and 6 chicks from 3 broods.

Banding Summary: Thirty seven Piping Plovers (27 adults and 10 chicks) were banded during the summer (Table 1). Most returning birds had very faded bands and had lost at least 1 color band. Six of the adults banded were new birds to the area, we missed banding 2 other new adults. All banding was done on Pine/Curry Island. Birds were gone from Morris Point during banding and nets were never set at Oak Point. Two adults at Oak Point and 4 adults on Pine/Curry were not rebanded. One fledgling chick was not banded.

During banding, feather pulp samples for electrophoretic analysis were taken from 7 chicks in 5 broods and added to samples from other sites in North America (Table 2). Plans were made with Tom Davis to pull feathers from birds in Duluth if there were fledglings, however, success there was poor. To further aid population differentiation, morphological measurements and .3 ml blood samples were taken from select adults in the population. Samples have been processed at the Cornell Laboratory for Ecological and Evolutionary Genetics (CLEEG) and will be analyzed next summer. Preliminary results indicate the 29 monomorphic loci and 5 polymorphic loci isolated from the samples will be sufficient to evaluate local, regional and subspecies differences.

Natal Philopatry/Breeding Site Fidelity: Merging 1985 data with previous information from Cuthbert and Wiens (1985), Table 3 indicates that each year over 75% of birds in the breeding population are returning adults or chicks. Without knowledge

Table 1. Summary of Piping Plovers banded at Lake of the Woods in 1985.

USFWS Band Number	Old Combination (right:left)	New Combination (right:left)
95154120	BAB:RY	BAB:RF
005	BAR:RY	FAB:GR
020	BAY:BY	FAB:RR
016	BAY:RB	FAB:BB
023	BAY:YR	FAG:RG
082	BRA:RY	BRA:RF
039	BY:RBA	RR:FA
047	RAB:BY	FAB:BG
065	RAB:YB	FA:BBG
075	RAR:BR	AGF:GG
074	RAR:RY	FA:BBB
106	RAR:YR	AF:HH
108	RBA:YB	RBA:FB
044	RB:YRA	RB:FRA
046	RY:YRA	BB:FAR
006	YAB:BR	AF:RR
041	YAR:BR	AFR:BB
035	YAR:RY	RAR:FR
102	YRA:RY	FAB:RR
131	YRA:YB	ABB:FR
147	YR:RAY	GG:FAB
92131697	RR:AFG	
96164501	AGG:FR	
502	ARR:FR	
506	FR:AGG	
503	GG:FAG	
50	RRA:FG	
527	BB:BFA	*
509	FA:	*
524	FR:ABB	*
526	GG:AFG	*
509	GG:FRA	*
525	GRR:AF	*
528	RB:FBA	*
523	RR:FAR	*
522	R:A	*
92131801	WA:	*

A=Aluminum band
B=Blue
F=International Green Flag
*=Chick
G=Green
R=Red
W=White

Table 2. Electrophoretic sample summary

Location	N Chicks	N Broods	N Sites
Manitoba	45	25	3
Minnesota	7	5	1
New Brunswick	17	9	3
North Dakota	31	20	4
Saskatchewan	39	25	2
TOTAL	139	84	13

Table 3. 1985 breeding site fidelity/natal philopatry at LOTW. (Using information from Cuthbert and Wiens 1985)

New Birds Banded		N Observed 1983	N Observed 1984	N Observed 1985
Adults in 1982:	37	26	16	13
Chicks in 1982:	26	9	5	2
Adults in 1983:	8	-	7	4
Chicks in 1983:	44	-	6	11
Adults in 1984:	2	-	-	0
Chicks in 1984:	14	-	-	4
Total Returns		35	34	34
Total Resident Population		42	44	36-42
% Return		83.3	77.3	81-94.4

of which birds were present in previous years, it is difficult to further speculate on return patterns.

Population Estimate: Results of censuses and identification of marked birds indicates that the population at LOTW contained 17-20 pairs and ranged from 35-42 adults (Table 4). Low census numbers from visit 2 result from completion of only a single census at all sites before the storm hit. Most likely, there were quite a few more birds than the census indicates. That same weekend, Zippel Bay was surveyed and no Piping Plovers were seen. We did not census Rocky Point or Sable Island. These estimates are slightly lower than the 2 previous years (44 birds in 1984, 42 birds in 1983) (Cuthbert and Wiens 1985), but this may be the result of less intense censusing rather than a population decline.

Reproductive Success: This year, 7 to 10 chicks fledged from 7 hatching broods. Reproductive success may be further lowered depending on the success of 2 fledged chicks that had parts of their wings destroyed. One chick had the outer 3 primaries pulled off and a part of its wing chewed, while the other had several large primaries out of place and was having difficulty flying. It is difficult to determine cause of the injuries.

The massive nest destruction from storms, and limited observation time make it impossible to state how many eggs or nests were completed and relate it to reproductive success per pair. It is obvious, however, that hatching and fledging success was quite a bit lower than previous years (13 chicks fledged in 1984, 44 in 1983, and 26 in 1982) (Cuthbert and Wiens 1985).

Table 4. Population censuses at LOTW in 1985.

Date	Morris Point	Oak Point	Pine/Curry	Total
16-19 May	11	6	18	35
5-8 June	4	2	16	22
1-4 July	4	2	36(6)	42(6)
24-26 July	0	0	6(6)	6(6)

( ) indicates chicks

Disturbance: The most significant disturbance to the area was artificial retention of water levels at 6 to 8 feet above normal levels. Disturbance from gulls was hard to assess, although each time more areas were destroyed by storms, density of Ring-billed Gulls (Larus delawarensis) and Herring Gulls (Larus argentatus) increased on all 3 study areas. We found canid tracks during the first visit, but these were the only sign of mammalian disturbance. Human disturbance did not seem to be a problem when we were present. All 4 of these factors have caused serious problems in other populations (Haig and Oring 1985) and should continue to be carefully monitored.

DISCUSSION

Future Management of LOTW Piping Plovers: In most cases, the best management for Piping Plovers is to decrease disturbance and leave the birds alone. Maintenance and enforcement of SNA signs seems essential for success of birds in the area. Early spring trapping of mammals will also assure more stability in the population. The most serious concern from this year is the high water level problem. It is critical that this issue be addressed soon (perhaps by meeting with officials at the dam in Kenora) or the LOTW population may suffer a great decline.

Future Research at LOTW: This long-term study of a marked population of Piping Plovers at LOTW is one of a few of its kind in North America and should be continued. Assessment of annual population size, return patterns and reproductive success would be fairly simple and inexpensive. Results would yield important information applicable to managing and conserving other populations, as well as Minnesota birds.

The following suggestions may further improve current field studies. First, it is essential to reband all birds at least every other year (use of UV stable bands may improve band durability). Identification of birds with missing bands is extremely difficult and may prove erroneous. Next, censusing birds using current methods is suitable at Morris Point and Oak Point, but is not satisfactory on Pine/Curry Island. Walking through the area causes a huge disturbance to plovers, Common Terns (Sterna hirundo), and gulls. The disturbance renders nests susceptible to predation or thermal stress, and makes identification of pairs, broods or nests very difficult. Construction of 2 scaffolding towers on either end of the most westerly 200 meters of the island would improve the quality and breadth of information collected, as well as decrease disturbance to the area. Finally, the probability that future studies will involve intermittent rather than continuous monitoring, coupled with the current state of the island (divided into 4 parts), high water levels and the severity of storms, suggest that future studies should be land-based.

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