



**1997 COMMON LOON SURVEY
ISLE ROYALE NATIONAL PARK, MICHIGAN**

RESOURCE MANAGEMENT REPORT 97-4

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ABSTRACT

The annual Common Loon (*Gavia immer*) monitoring program at Isle Royale National Park was completed in 1997 to maintain continuous data on the size and productivity of the island's unique loon population.

Forty-seven of the Island's interior lakes and 27 locations located along the Lake Superior shoreline were surveyed between 29 July and 11 September 1997 either by boat, canoe, kayak, or walking along the shoreline.

Adult loons were recorded on 27 of the 47 interior lakes (57%) and 17 of the 27 Lake Superior sites (63%). Juvenile loons were present on nine of the interior lakes (19%) and four of the Lake Superior locations (15%), and totaled 20 young. Productivity was 0.42 young/pair for the Island population. Reproductive output in 1996 and 1997 was lower than in previous years.

Seven lakes that were determined to be unsuitable for loons were removed from the survey. Ten other lakes have shown no productivity and, in some cases, have lacked loon presence altogether in the past seven years. However, the data are incomplete. An approach to determine their future in the loon survey is presented.

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INTRODUCTION

The Common Loon (*Gavia immer*) has been described as a common migrant and summer resident on Isle Royale where it breeds on the inland lakes as well as the protected harbors, coves, and bays of the island's Lake Superior shoreline (Krefting et al. 1966). The 1997 Common Loon survey was conducted to maintain annual records of the population size and reproductive success of the Common Loon population at Isle Royale National Park. For further background and historical information regarding Isle Royale National Park's formal loon monitoring program reference should be made to the 1995 Isle Royale Common Loon Report (Gostomski 1995).

METHODS

The 1997 Isle Royale Common Loon survey was conducted from 29 July to 11 September 1997. This time frame provides the highest probability of observing all juveniles produced on the island in a given season (Fettig and Krumenaker 1991). Interior lakes were surveyed by a skilled observer either canoeing or walking along the shoreline. These data are presented in the lake stratum classification system (Robinson et al. 1988) which uses the size of a lake and the presence of islands in it as determinates in the likelihood of its being used by loons for nesting. There are four categories described in the original classification; Fettig and Krumenaker (1991) added a fifth category to include Isle Royale lakes <4 ha in size.

Observations at Lake Superior sites were conducted by boat, kayak, or canoe. These data are not subject to the lake stratum system and are presented separately. Individual territories are identified for loons nesting in Tobin Harbor and Rock Harbor because the nest locations are known for all of these pairs.

The following criteria were used in determining the presence of a breeding pair of loons and the number of young that were produced at each site:

- (1) juveniles were present (regardless of whether adults were seen or not);
- (2) if no juveniles were seen but two adults were present on the lake, they were assumed to be paired and without young;
- (3) on lakes where more than two adults were present but no juveniles were seen, only one '0' was entered for that site, unless adults were observed in pairs in which case, the data for a given nest site showed [2,1,4,2], adults (indicating two pairs, a lone bird, and a group of four; nine birds total) and [0,0] juveniles, a '0' would be recorded for each of the adult PAIRS (recorded as 2's)

that were observed.

- (4) on all lakes where groups of loons are found (i.e., more than 2 birds) but no juveniles are seen, no pairs will be recorded. Thus, for a lake with recorded data of [7,0], indicating 7 adults and no young, no pairs will be counted. To assume there is a pair of loons within that group of 7 may be inaccurate; we will remain conservative in our counting. A possible exception to this criteria will be if reports from the same lake had indicated a territorial pair present on the lake earlier in the summer.

In 1997, a loon observation form was used by most observers to help record and clarify the number of loons observed (Appendix 2).

RESULTS AND DISCUSSION

Adults were observed on 27 of the 47 interior lakes that were surveyed (57%) and 17 of the 27 Lake Superior sites (63%), while juveniles were observed on 9 of the 47 interior lakes (19%) and 4 of the 27 Lake Superior locations (15%) (Tables 1 and 2). The total of 48 adult pairs is comparable to 1994 and 1995 (51 and 48 pairs respectively), but productivity remained low compared to 1994 and 1995.

Table 1: Number of adult and juvenile Common Loons observed on interior lakes at Isle Royale National Park, Michigan, in 1997. N=47 lakes. Classification system adapted from Robinson et al. (1988).

Lake	Lake Size ha (acres)		No. of Loons Adults/Young
Stratum I: Lakes with a known history of use by breeding loons.			
All Isle Royale lakes >16 ha have a history of loon presence or breeding (Peterson and Peterson 1985, Fettig and Krumenaker 1991).			
Stratum II: Lakes >16 ha (40 acres) with at least one island.			
Angleworm	51	(125)	2/0
Benson	24	(59)	0/0
Chickenbone	92	(228)	2,1/0
Desor	420	(1039)	2,1,1,1/0
Eva	17	(43)	0/0
Harvey	52	(128)	2/1
Intermediate	71	(175)	2,1/0
LeSage	45	(111)	2,3/0
Linklater	17	(42)	0/0
Mason	15	(36)	0/0
Richie	202	(498)	2,2,2,1,1,1,/0,0,2
Sargent	142	(350)	2,2,2,2,2,1/0,0,0,2,1
Siskiwit	1605	(3966)	2,1,1,1/0
Whittlesey	61	(150)	2,2,1/0,0
Wood	45	(111)	2/2

Stratum III: Lakes >16 ha without islands.

Beaver	20	(49)	0/0
Feldtmann	186	(459)	2,1/0
Halloran	78	(192)	1/0
Hatchet	49	(122)	2,1,1/0
Livermore	30	(74)	2/0
Mud	21	(52)	0/0
Otter	20	(50)	2/0

Stratum IV: Lakes <16 ha but >4 ha (10 acres).

Ahmik	10	(24)	2,1,1/0
Amygdaloid	11	(26)	1/0
Dustin	4	(11)	0/0
Forbes	8	(19)	2/1
Francis Pt. Pond	<6	(<13)	0/0
John	5	(13)	0/0
Lily	7	(17)	1/0
McDonald	15	(37)	2/0
Newt	5	(13)	2/0
Ojibway	15	(37)	1/1
Patterson	10	(25)	0/0
Shesheeb	11	(27)	0/0
Stickleback	8	(19)	1/0
Sumner	11	(28)	0/0
Theresa	7	(17)	1/2
Wagejo	5	(13)	0/0
Wallace	5	(13)	2/1
T.65N.,R.34W.,Sec.19 (S. of Chippewa Harbor) <5	(<13)		2/2
T.65N.,R.37W.,Sec.25 (S. of Minong Ridge)	8	(19)	NO REPORT
T.66N.,R.34W.,Sec.35 (SW of Mine Point)	<5	(<13)	0/0

Stratum V: Lakes <4 ha.

Epidote	1	(3)	0/0
George	4	(9)	0/0
Hidden	1	(3)	0/0
Moose	2	(4)	0/0
Scholts	2	(5)	0/0
T.63N.,R.37W.,Sec.9 (S. of Lake Halloran)	2	(5)	0/0

Table 2: Number of adult and juvenile Common Loons observed at Lake Superior sites, 1997. N=27 sites. Tobin Harbor(*) and Rock Harbor (+) territories are indicated separately. See text for details.

Location/Territory	No. of Loons Adults/Young
Amygdaloid Channel	0/0
Brady Cove	0/0
Burnt Island	1,1/0
+ Cemetary Island	2,1,1/0
Chippewa Harbor	2/0
Clay Island	1/0
Duncan Bay	2,2,2/0,0,1

* Emerson Island	2,1,1/0
Five Finger Bay	1/1
Grace Harbor	NO REPORT
Herring Bay	0/0
Horner Island	0/0
Lane Cove	2/0
Little Todd Harbor	0/0
+ Lorelei Lane	2/0
Malone Bay	1,1/0
McCargoe Cove	2/2
* Merritt Lane	0/0
* Moose Point	0/0
Moskey Basin	2,2,2,2,1/0,0,0,1
Passage Island	0/0
Pickrel Cove	0/0
Robinson Bay	1/0
Stockly Bay	2/0
* Suzy's Cave (Near Picnic Island)	2/0
* Tallman Island (East)	2/0
Tobin Harbor (West Near Inlet)	0/0
Todd Harbor	2/0

A total of 20 young were produced (fifteen on inland lakes, five on Lake Superior sites) among the 48 loon pairs, yielding a productivity rate of 0.42 young/pair for the island. This is similar to the productivity rate exhibited in 1996; which is lower than the productivity rate exhibited in previous years and falls below the range considered necessary for a loon population to sustain itself (range=0.5-0.79 young/pair) (Sutcliffe 1980 in Belant and Anderson 1991). Table 3 compares the productivity in 1997 to previous years.

Table 3: Comparison of total Common Loon productivity at Isle Royale NP, 1990-1997.

	YEAR							
	1990	1991	1992	1993	1994	1995	1996	1997
# Pairs	41	38	43	39	51	48	37	48
# Young	31	20	37	19	34	33	15	20
Productivity								
Chicks/Pair	.8	.5	.9	.5	.7	.7	.4	.42

Loon productivity on the inland lakes increased in 1997 to 0.50 young/pair from 0.45 young/pair in 1996. Unfortunately, loon productivity on Lake Superior is continuing to decline. In 1997 productivity was 0.28 young/pair; while in 1996 it was 0.35 young/pair. The reason for low productivity in 1997 is not known, but one possibility is that Lake Superior is continuing to have unusual water levels that are between 1.5 and 2.0 feet above chart datum. Table 4 compares 1996 and 1997 inland lake and Lake

Superior productivity.

Table 4: Common Loon productivity (chicks/pair) at inland and Lake Superior sites at Isle Royale NP, 1996 and 1997. Inland pairs, N=20 in 1996 and N=30 in 1997. Lake Superior pairs, N=17 in 1996 and N=18 in 1997.

	YEAR	
	1996	1997
INLAND	0.45	0.50
LAKE SUPERIOR	0.35	0.28

Loon productivity on Lake Superior should be looked at more closely in the near future to see if there can be any direct correlations drawn between water levels and nesting success. By looking at 1996 and 1997 data it would appear that may be the case. Also, a intense effort should be made to ensure that all loon pairs observed are indeed territorial pairs and not non-territorial loons that happen to be together at the time of observation. Table 5 summarizes the productivity of loon pairs in 1997.

Table 5: Summary of Common Loon productivity at Isle Royale NP, 1997. N=18 pairs for the Lake Superior shoreline; 30 pairs for the interior lake sites.

Location	No. of Young Produced		
	0	1	2
Lake Superior	14	3	1
Interior Lakes	20	5	5
Total		8 singles	6 pairs

It should be noted that regular observations were made of the Lorelei Lane pair throughout the summer. This nest appeared to be active early in the summer, but later the nest was abandoned. Powerboat disturbance may have been a contributing factor to the nest's failure.

On 26 September, Jack Oelfke and Jennifer Beeman (NPS RM) observed twenty-seven loons on Siskiwit Lake. The loons were located closely to one another in a group. The group consisted of immature loons and adult loons in varying degrees of winter plumage. Some

of these loons were most likely migrating through the area.

RECOMMENDATIONS FOR 1998

Seven lakes (all unnamed) that have become dried up or are choked with dead trees to the extent that they are no longer useable as loon nesting lakes have been eliminated from the 1997 survey. Each could be checked every 3 years to determine if water conditions have changed which would make them favorable for loon nesting. They are:

T.65N.,R.35W.,Sec.1 (N of Lake Richie)
 T.66N.,R.34W.,Sec.2 (SW of Lane Cove)
 T.66N.,R.33W.,Sec.6 (N of Tobin Harbor)
 T.66N.,R.34W.,Sec.10 (S of Belle Harbor)
 T.65N.,R.35W.,Sec.15 (S of Intermediate portage)
 T.66N.,R.35W.,Sec.26 (S of McCargoe Cove)
 T.65N.,R.37W.,Sec.27 (N of Minong Ridge)

Similarly, 10 other lakes have shown no productivity since the surveys began in 1990 (Table 6).

Table 6: Interior lakes with no loon productivity, 1990-1997.
 * = historic nest site, 1974-1984 (Peterson and Peterson 1985).

LAKE	1990	1991	1992	1993	1994	1995	1996	1997
Beaver	0/0	2/0	0/0	3/0	2/0	0/0	0/0	0/0
George	NR	0/0	0/0	1/0	0/0	0/0	1/0	0/0
Halloran	2/0	NR	NR	NR	1/0	0/0	0/0	1/0
John	1/0	NR	NR	NR	0/0	2/0	1/0	0/0
Lily*	0/0	0/0	NR	NR	0/0	0/0	0/0	1/0
Mason	2/0	0/0	2/0	0/0	1/0	0/0	0/0	0/0
Moose	?	NR	NR	NR	0/0	0/0	0/0	0/0
Scholts	0/0	0/0	0/0	0/0	1/0	0/0	0/0	0/0
Stickleback*	0/0	NR	NR	NR	0/0	0/0	8/0	1/0
T.66N.,R.34W.,Sec.35	0/0	NR	NR	NR	0/0	0/0	0/0	0/0

NR = No Report; ? = Fettig and Krumenaker (1991) show NR, but Meetz (1993) shows 0/0.

Given the lack of productivity on these ten lakes when they were checked in the past six years, it may not be necessary to continue checking them regularly. These lakes should become first priority sites in 1998 in order to have at least five consecutive years of data. Using this information, a decision could then be made whether to continue annual checks on them or not.

The current method of conducting the loon survey by visiting every lake in the park is an attractive one because it provides a fairly complete profile of the Common Loon population on Isle Royale. An alternative for the "unsuitable" 17 lakes mentioned above would be to do a semi-annual check (every 3 years). This would allow for some flexibility if personnel or time is limited.

The use of a "Loon Form" in 1997 helped to clarify the number of loon observations (Appendix 2). This form should be used again in 1998, especially by those observers who are not familiar with loons and/or their behavior. The dates that observations are made should be included on the form.

ACKNOWLEDGEMENTS

Thanks to everyone who participated in the 1997 loon survey, particularly, Mike Meetz and Bill Beckman, who generously volunteered their time to assist with this project. Thanks also to Resource Management staff Ann Mayo, Dave Soleim, Mallory Tackett, and Mark Romanski who helped out, as well as all the other NPS employees and researchers who provided information on their observations throughout the summer: Ken Arzarian, Andrea Repinsky, Scott Hoeninghausen, Larry Kangas, Bob Whaley, Marcel Potvin, Candy Peterson, and Rolf Peterson.

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Appendix 1: Individuals involved in the 1997 loon survey by lake.

<u>LAKE/DATE</u>	<u>OBSERVER</u>
Ahmik	M. Meetz, B. Beckman
Amygdaloid 8/20	J. Beeman, A. Mayo, D. Kiely
Angleworm 8/3	M. Meetz, B. Beckman
Beaver 8/1	M. Meetz, B. Beckman
Benson 8/3	M. Meetz, B. Beckman
Chickenbone 8/1	M. Meetz, B. Beckman
Desor 8/27	J. Beeman, A. Mayo
Dustin 7/30	M. Meetz, B. Beckman
Epidote 7/29	J. Beeman, D. Soleim
Eva	A. Mayo, A. Millsaps
Feldtmann 9/11	K. McDowell
Forbes 8/3	A. Mayo, M. Tackett, M. Meetz, B. Beckman
Francis Pt. Pond 7/30	J. Beeman, S. Hoeninghausen
George 7/30	M. Meetz, B. Beckman
Halloran 7/30	J. Beeman, S. Hoeninghausen
Harvey 8/5	M. Potvin
Hatchet	A. Mayo
Hidden	J. Beeman, A. Repinsky
Intermediate 7/31	M. Meetz, B. Beckman
John 7/29	J. Beeman, D. Soleim
LeSage 7/31, 8/1	M. Meetz, B. Beckman
Lily 7/31	J. Beeman, D. Soleim
Linklater 8/5	J. Beeman, M. Tackett
Livermore 8/1	M. Meetz, B. Beckman
Mason 7/29	M. Meetz, B. Beckman
McDonald 8/1	M. Meetz, B. Beckman
Moose	J. Beeman, A. Repinsky
Mud 7/31	M. Meetz, B. Beckman
Newt 8/3	M. Meetz, B. Beckman
Otter 8/1	M. Meetz, B. Beckman
Ojibway 8/3	M. Meetz, B. Beckman
Patterson	A. Mayo
Richie 8/5, 7/31	C. Peterson, M. Meetz, B. Beckman
Sargent 8/5	M. Meetz, B. Beckman
Scholts 7/30	M. Meetz, B. Beckman
Shesheeb 8/5	J. Beeman, M. Tackett
Siskiwit 7/30, 7/31	M. Meetz, B. Beckman
Stickleback 7/30	J. Beeman, S. Hoeninghausen
Sumner 8/3	M. Meetz, B. Beckman
Theresa 7/29	M. Meetz, B. Beckman
Wagejo 8/3	M. Meetz, B. Beckman
Wallace	M. Tackett, S. Tackett
Whittlesey 7/30	M. Meetz, B. Beckman
Wood 7/30	M. Meetz, B. Beckman
T.65N.,R.37W.,Sec.19 7/30	M. Meetz, B. Beckman
T.63N.,R.37W.,Sec.9 7/30	J. Beeman, S. Hoeninghausen
T.66N.,R.34W.,Sec.35 7/29	J. Beeman, D. Soleim

OBSERVERS LISTED ABOVE

- Andrea Repinsky, NPS Interp. Ranger
- Mallory Tackett, NPS Resource Management Intern
- Mike Meetz and Bill Beckman, NPS Volunteers
- Jennifer Beeman, NPS Resource Management
- Ann Mayo, NPS Resource Management/Backcountry Ranger
- Scott Hoeninghausen, NPS Sub-District Ranger
- Dave Soleim, NPS Resource Management
- Marcel Potvin, Earthwatch Volunteer, Field Assistant to Rolf Peterson
- Candy Peterson, NPS Volunteer

APPENDIX 2
ISLE ROYALE COMMON LOON SURVEY

DATE: Inland Lake or Lake Superior (**circle one**)

Observer(s):

Lake/Site Name:

No. of ADULT PAIRS Observed:

No. of Young Observed:

No. of OTHER ADULTS Observed (unpaired or in groups of 3 or more):

Is an active nest site for this location known for this year?

Yes No Unknown

If you observed a nest, draw a map and indicate the nest location. Also describe any nesting activity you observed.

Additional Comments: