2025

Belgrade Lakes Common Loon Monitoring Summary Report

SUBMITTED TO:

Belgrade Lakes Association
137 Main Street, PO BOX 551
Belgrade Lakes, Maine 04918

SUBMITTED BY:

Lee Attix
Loon Conservation Associates
12 Summit Drive
Bridgton, Maine, USA 04009

SUBMITTED ON:

December 26, 2025

Loon Conservation Associates is dedicated to the protection and welfare of loons through collaboration, education, and the implementation of successful conservation actions.

To obtain copies of this report contact:
Lee Attix, Director
Loon Conservation Associates
12 Summit Drive
Bridgton, ME 04009
lcattix@gmail.com

1.0 EXECUTIVE SUMMARY

Supported by a seventh year of funding from the Belgrade Lakes Association (BLA), and a third year of collaboration with Colby College (CC), and Loon Conservation Associates (LCA), the BLA continued a study of common loons (Gavia Immer) on Great Pond and Long Pond. Loons are a key indicator of aquatic integrity for lakes, and this initiative provides an opportunity to confirm the current population status, identify major threats, and create long-term, sustainable conservation solutions designed to aid the current population.

Engaging and educating local volunteers and CC student interns to conduct surveys with professional guidance is a key component of the project. Formal training was conducted in May by LCA. Results published in this report are taken from data gathered by LCA, BLA and CC.

In 2025, Great Pond and Long Pond were surveyed bi-weekly by LCA, and alternatively by BLA volunteers, and CC student interns and staff. Based on well-defined criteria for an established loon territory, a total of 27 territorial pairs were documented and 19 of these pairs nested. From 10 successful nests 15 chicks hatched and three survived to > six weeks of age – an age defined as fledging for modeling purposes. Overall productivity on Great Pond and Long Pond in 2025 was 0.11 fledged young per territorial pair.

Historically, nesting loons have benefited from the use of artificial nesting islands (rafts). Pairs nesting on rafts have had better success than pairs nesting naturally. In 2025, a total of five rafts were deployed; three rafts on Long Pond (Beaver Cove, Lynch Cove and Tracy Cove), and two on Great Pond (Finger Reef and Robbins Mill). The raft previously placed in Horse Point was not deployed. Four of the five rafts were used for nesting (80%), and three of the four nests were successful (75%). Comparatively, there were a total of 15 natural nest attempts on the two lakes, and seven nests were successful (47%).

Banding (color-marking) loons is a key conservation measure for comprehensive population studies. Marked individuals can be tracked to gain further information on territory boundaries, between-year territory fidelity, mate switching, estimated minimum and long-term survivorship, intra-seasonal movements, and recruitment. In 2025, the capture and

banding program was continued. One new adult was banded, and two chicks were banded, all on Long Pond. Additionally, two previously banded adults were recaptured on Long Pond, and samples were obtained for contaminant analysis.

Significant findings/outcomes:

- Monitoring of a larger banded population allowed confirmation of individual survival, and mate and territory fidelity with high certainty. Findings from the 2025 field monitoring season looking at adult loons banded since 2020 included:
    - Twenty-seven of 38 adult loons returned (71%). *
    - Sixteen of the 27 returning loons occupied the same territory (59%).
    - Three of 14 banded pairs remained together (21%). This is down from 36% in 2024, and 50% in 2023, largely due to very weak territory fidelity of banded pairs. All three of the pairs who remained together hatched chicks, but only one chick survived to fledge.
    - There were seven chicks hatched on Great Pond, but none survived to fledge. This is the first occurrence of this complete productivity failure since the monitoring project began in 2019.
    - Three ABJs (adults banded as a juvenile) were confirmed in breeding plumage on several occasions. One of the three was an individual who was first banded in 1999 on lower Long Pond. It had never been observed in any previous year, a period of 26 years. The total of three ABJs is an increase from one in 2024.
    - There was one notable adult mortality; an adult female originally banded in the Great Pond, Pine Island territory in 1997. She had not been observed during any of the seven years of the project. There are minimal details from the recovery. Her body was extensively decomposed, and only her USFWS metal band was recovered. She was found on Great Pond. The exact location is unknown.

    * Tracking loons on these large lakes is a very challenging task. As documented by the findings above, not all banded loons who have returned are actually sighted, and the return rate would be somewhat higher if this wasn't the case.

- Four of the five rafts deployed were used (80%). Constant disturbance from other loons in Beaver Cove, Long Pond, is suspected as the most likely cause of this pair not nesting on the raft placed there. They were observed both on and around the nest on multiple occasions.
- Twenty-seven occupied territories is a notable increase over the previous high of 24, although territory occupancy in this study area can be difficult to determine. As noted in previous reports, there is a significant chance for some error in these determinations.

2.0 INTRODUCTION

Loons were first banded in the Belgrade Lakes in 1997. The effort was funded as part of a Maine Department of Environmental Protection, Regional Monitoring and Assessment Program (ReMAP). Ongoing monitoring and banding efforts were continued, sporadically, over the following decades, but were limited by a lack of funding.

Data gathered from the prior banding effort and occasional surveys provides some insight into the population status. Personal monitoring efforts conducted over the last two decades confirmed Long Pond has upwards of 10± territorial pairs of loons, with knowledge of at least six territories known on Great Pond. Casual evidence suggests the population is relatively stable, with annual fluctuations in productivity, typical of the species throughout their range. However, recent declines in chick numbers observed by local residents and seasonal camp owners has generated concern about the health of the population.

Great Pond and Long Pond are vulnerable to multiple anthropogenic stressors, coupled with the potential impacts of climate change. More information is needed on the individual performance (i.e., reproductive success) and specific movements of individuals to better understand the status of the population.

3.0 OBJECTIVES

Collaborate with BLA and CC to:

1. Conduct bi-weekly, comprehensive productivity surveys to identify territorial pairs, nesting pairs, nest success/failure, number of chicks hatched, and number of chicks fledged;
2. Consult on deployment and placement of artificial nesting rafts, where appropriate, to increase nest success rates, and minimize nest loss due to flooding and predation;
3. Engage and instruct citizen volunteers and CC interns on the basics of conducting comprehensive loon breeding surveys, and
4. Continue an active capture and banding program to better understand the status of the current loon population, and
5. Share all data acquired at both regional and national conferences to aid our understanding of the species status and trends over a wide geographical area.

4.0 STUDY AREA

This study is limited to the entirety of Great Pond and Long Pond (including Ingham Stream and Ingham Pond), Kennebec County, Maine (Figure 1).

Figure 1. The Belgrade Lakes Study Area. Courtesy of Google Earth.

5.0 METHODS

5.1 GROUND SURVEYS

All known or potential loon territories and surrounding areas were surveyed by LCA, BLA volunteers, and CC student interns and staff using binoculars and/or a spotting scope, when needed. Surveys were conducted by boat, or alternatively from shore. Comprehensive surveys began in May and ended in August, although BLA volunteers and CC staff continued to conduct chick survival surveys well into the fall. Confirmed territories occupied by loon pairs were prioritized and surveyed bi-weekly at a minimum. To minimize impacts on the loons, surveys were conducted from the greatest distance possible. If nesting evidence was

obscured by vegetation, it necessitated searching for nest evidence by foot. All known nesting sites were checked regularly for nesting evidence.

Loon territories were delineated according to observed territorial behavior by a loon pair such as close physical association, and defensive posturing and calling along borders. Territories are used by pairs for feeding, resting, breeding, nesting and chick rearing, and are protected against incursion by other loons (and sometimes waterfowl) for a minimum of four weeks. Territories are used as a unit of reference in describing loon breeding activity and are recognized as being either *established* or *transitional*. Established territories have consistent occupancy for at least three seasons; transitional territories exhibit inconsistent occupation.

Nesting pairs were defined as those laying at least one egg; a nesting attempt was evidenced by a constructed nest dish or scrape with at least one egg present or fresh eggshell fragments. Successful nesting pairs hatched at least one chick. Causes of nest failure were attributed according to evidence observed.

Chicks hatched were recorded as those that hatched completely out of their eggs, not necessarily departing from the nest. For this report, we define the terms *chick* and *fledgling* as follows: *chicks* refer to loon young ≤ six weeks of age post-hatching and fledglings or "fledged young" refer to loon young > six weeks of age. Sub-adult loons in alternate plumage are recorded as immatures (ages 1-2). The number of loon chicks to survive past six weeks of age, were assumed to have fledged.

5.2 ARTIFICIAL NESTING ISLANDS

Rafts were floated in territories that met specific criteria for flotation; including knowledge of 1) a history of nest failures due to predation and/or flooding, 2) wind and wave action patterns relative to each territory, 3) loon territorial boundaries and proximity to neighboring territories, 4) previous traditional and non-traditional nest site locations, 5) boat traffic patterns relative to the specific territory, and 6) shoreline activities.

5.3 LOON CAPTURE AND SAMPLE COLLECTION

Loons were captured using well-established night lighting and playback techniques. Adult and juvenile birds were leg banded with USFWS aluminum bands and a unique combination

of plastic-colored bands, enabling identification of individual birds to be made from a distance in future observations. Chicks were not banded if their legs were too small to hold adult-size bands. All sampling was accomplished using non-lethal methods.

5.4 DEFINING REPRODUCTIVE SUCCESS

Reproductive success was evaluated according to four parameters; 1) nesting frequency, 2) hatching success, 3) chick survivorship, and 4) overall productivity. Nesting frequency was defined as the number of nesting pairs per total territorial pairs. This measure indicates the percent of the total potential breeding population that attempts to reproduce each season. The rate of success by these pairs, or hatching success, was measured through the number of chicks hatched by these pairs. Chick survivorship was defined as the number of chicks surviving divided by the number of chicks hatched. Overall productivity is a combination of the prior three parameters and measured through fledged young per territorial pair (CS/TP).

6.0 RESULTS

6.1 OVERALL STUDY AREA PRODUCTIVITY

During the 2025 field season 27 territorial pairs were identified. Of the 27 pairs, 19 nested, and 10 successful nests hatched 15 chicks; three survived to fledge. This yielded a nesting frequency of 0.70, a hatching success of 0.79, and chick survival of 0.20. Overall productivity was 0.11 fledged young per territorial pair (Table 1).

Table 1. Common Loon Population and Productivity, Great Pond and Long Pond, 2025.

Population		*Reproductive Success*	
Territorial Pairs	27	Nesting Frequency	0.70
Nesting Pairs	19	Hatching Success	0.79
Chicks Hatched	15	Chick Survivorship	0.20
Chicks Surviving	3	Overall Productivity	0.11

6.1.1 GREAT POND PRODUCTIVITY

Sixteen territorial pairs were identified on Great Pond. Of the 16 pairs, 11 pairs nested, and five successful nests hatched seven chicks. No chicks survived to fledge. This yielded a nesting frequency of 0.69, a hatching success of 0.64, and chick survival of 0.00. The overall productivity was 0.00 fledged young per territorial pair (Table 2, Figure 2).

Table 2. Common Loon Population and Productivity, Great Pond, 2025.

Population		*Reproductive Success*	
Territorial Pairs	16	Nesting Frequency	0.69
Nesting Pairs	11	Hatching Success	0.64
Chicks Hatched	7	Chick Survivorship	0.00
Chicks Surviving	0	Overall Productivity	0.00

Figure 2. Nesting Loons, Ram Island, Great Pond.

6.1.2 LONG POND PRODUCTIVITY

Eleven territorial pairs were identified on Long Pond. Of the 11 pairs, eight nested, and five successful nests hatched eight chicks. Three chicks survived to fledge. This yielded a nesting frequency of 0.73, a hatching success of 1.00, and chick survival of 0.38. Overall productivity was 0.27 fledged young per territorial pair (Table 3, Figure 3).

Table 3. Common Loon Population and Productivity, Long Pond, 2025.

Population		*Reproductive Success*	
Territorial Pairs	11	Nesting Frequency	0.73
Nesting Pairs	8	Hatching Success	1.00
Chicks Hatched	8	Chick Survivorship	0.38
Chicks Surviving	3	Overall Productivity	0.27

Figure 3. Adult and chick, 2025.

6.2 PRODUCTIVITY AND NEST FAILURE RESULTS BY LAKE/TERRITORY, 2025.

Productivity results were analyzed and documented by lake/territory, including nest failures. A total of nine nest failures were recorded. There were three cases of abandonment, three confirmed cases of mammalian predation, one confirmed case of human disturbance, one confirmed case of flooding, and one case of nest failure for unknown reasons (nest reported by Milfoil crew but not found). A total of five abandoned eggs were collected (Table 4).

Table 4. Productivity and Nest Failure Results by Lake/Territory, 2025.

Lake/Territory	TP*	NP*	CH*	CS*	NF*	CAUSE OF NEST FAILURE
GREAT POND:						
Marina	Y	N	0	0	0	
Finger Reef	Y	Y	2	0	0	
Blueberry Island	Y	Y	1	0	0	
Robbins Mill Stream	Y	Y	0	0	1	abandonment, 2 eggs collected
Crooked Island	Y	Y	0	0	1	flooded, 1 egg under water, collected
Ram Island	Y	Y	2	0	0	
Otter Island	Y	N	0	0	0	
Chutes Island	Y	Y	0	0	1	mammalian predation
Bear Springs	Y	Y	0	0	1	unknown, nest not found
Snake Point Cove	Y	Y	1	0	0	
Horse Point	Y	N	0	0	0	
Pine Island	Y	N	0	0	0	
Austin Bog	Y	N	0	0	0	
Oak Island	Y	Y	0	0	1	mammalian predation
Long Pt/Abena Shores	Y	Y	0	0	1	mammalian predation
Foster Point	Y	Y	1	0	0	
LONG POND:						
Beaver Cove	Y	N	0	0	0	
Tracy Cove	Y	Y	1	0	0	
Lynch Cove	Y	Y	2	1	0	
Blueberry Island	Y	Y	0	0	1	abandonment, 2 eggs collected
Castle Island	Y	Y	0	0	1	human disturbance/eggs inviable
W Boat Ramp	N	N	0	0	0	
Lost River	Y	N	0	0	0	
Graveyard	Y	Y	0	0	1	abandonment, eggs predated
Timber Point**	Y	Y	2	1	0	

SW Cove	Y	N	0	0	0	
Ingham Stream	Y	Y	1	1	0	
Ingham Pond	Y	Y	2	0	0	
TOTALS:	**27**	**19**	**15**	**3**	**9**	

*TP = territorial pair, NP = nesting pair, CH = chick(s) hatched, CS = chick(s) surviving, NF = nest failure.

** New territory in 2025.

Population and productivity were mapped for each lake for location reference, confirmed occupation and reproductive success (Figures 4, 5).

Figure 4. Common Loon Population and Productivity, Great Pond, 2025. Courtesy of Google Earth.

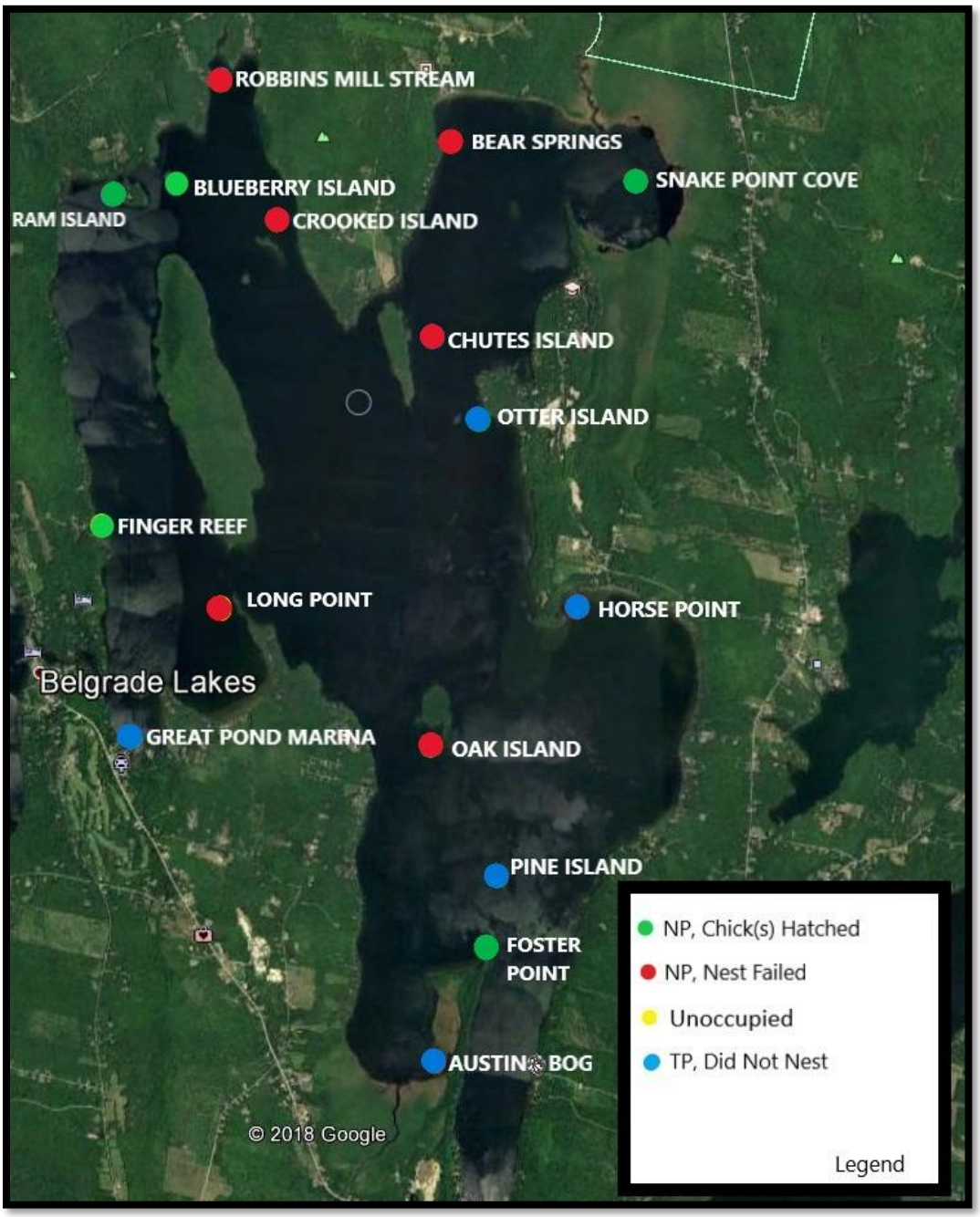


Figure 5. Common Loon Population and Productivity, Long Pond, 2025. Courtesy of Google Earth.

6.3 USE OF ARTIFICIAL NESTING ISLANDS (RAFTS)

Five artificial nests rafts were floated in 2025, and four were used (80%). Three of the four pairs nesting on rafts successfully hatched chicks (75%). In comparison, there were 15 natural nest attempts and seven were successful (47%), (Table 5, Figure 6).

Table 5. Comparative Loon Nesting Summary: Raft vs. Natural Nests, Great Pond and Long Pond, 2025.

***Raft* Nests**	***2025***	***Natural* Nests**	***2025***
Number of Nest Attempts	4	Number of Nest Attempts	15
Number of Successful Nest Attempts	3	Number of Successful Nest Attempts	7
Success Rate	***75%***	***Success Rate***	***47%***
Chicks Hatched from Rafts	5	Chicks Hatched from Natural Sites	10
Total Chicks Hatched	15	Total Chicks Hatched	15
Contribution to Productivity	***33.3%***	***Contribution to Productivity***	***66.6%***
Total Chicks Fledged	1	Total Chicks Fledged	2
Final Productivity*	***33.3%***	***Final Productivity****	***66.6%***

* Percentage of total chicks fledged.

Figure 6. Nesting Loons, Tracy Cove Raft, Long Pond.

6.4 CAPTURE AND BANDING

In 2025, 1 adult loon, and two chicks were captured and banded (Table 6, Figure 7).

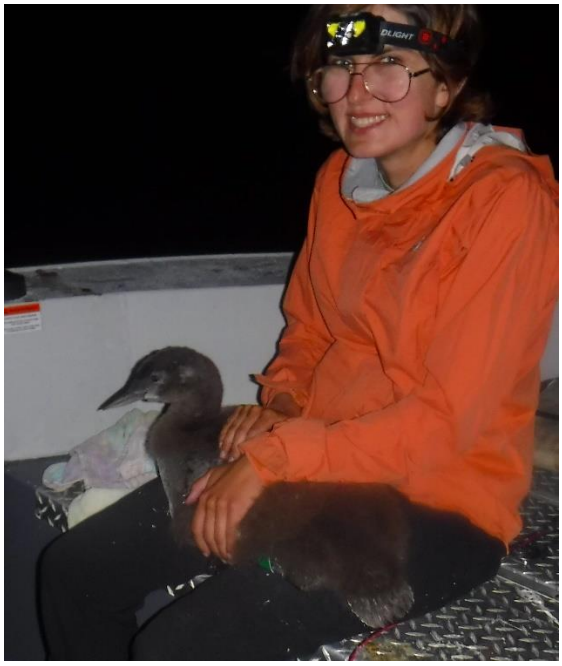
Additionally, both adults from the Long Pond, Ingham Stream territory, who were previously banded, were recaptured, and fresh samples were obtained for contaminant analysis.

Table 6. Captured and Banded Loons, 2025.

Lake/Territory	Band #	Year	Sex	Age*	Left Leg Top	Left Leg Bottom	Right Leg Top	Right Leg Bottom
Long Pond:								
Lynch Cove	0689-16577	2025	U	HY	Silver	Green	White Dot	Orange
Lynch Cove	0689-16551	2025	F	ATY	Green Dot	Orange	Green	Silver
Ingham Stream	0689-16561	2025	U	HY	Silver	Green	Yellow Stripe	Orange

* ATY = adult, HY = chick.

Figure 7. Colby interns Makena Logan and Ariana Farrokhi holding loon chicks during banding, 2025.



6.5 BANDED LOON RE-OBSERVATIONS AND RECOVERIES

Loons were first banded on Great Pond and Long Pond in 1997. Between 1997 and 2024, 59 loons were banded (51 adults and eight chicks). In 2025, 29 banded adults, and three banded juveniles were confirmed on Long Pond and Great Pond (Table 7).

Table 7. Banded Loon Re-observations and Recoveries, 2025.

Band #	Lake	Year	Sex	Age*	Original Territory	2025 Territory	2025	Notes
0848-04699	Long Pond	1997	M	ATY	W Boat Ramp	NA	N	
0898-05397	Long Pond	1997	U	HY	W Boat Ramp	NA	N	
0898-05395	Long Pond	1997	F	ATY	Twin Islands	NA	N	
0559-61756	Great Pond	1997	M	ATY	Pine Island	NA	N	
0848-04785	Great Pond	1997	F	ATY	Pine Island	NA	Y	deceased 2025
0559-61896	Long Pond	1999	F	ATY	SW Cove	NA	N	
0559-61871	Long Pond	1999	M	ATY	Twin Islands	NA	N	
0938-03338	Long Pond	1999	U	HY	Twin Islands	none	Y	unpaired, Beaver Cove, Long Pond
0898-09873	Long Pond	2000	F	ATY	Beaver Cove	NA	N	
0938-30822	Long Pond	2003	M	ATY	Beaver Cove	NA	N	deceased 2005
0938-30886	Long Pond	2003	M	ATY	Lynch Cove	NA	N	deceased 2006
0938-03384	Long Pond	2003	F	ATY	Lynch Cove	NA	N	
0938-66608	Long Pond	2008	M	ATY	W Boat Ramp	NA	N	
0938-66613	Long Pond	2008	F	ATY	W Boat Ramp	Lost River	N	deceased 2022
0938-66612	Long Pond	2008	U	HY	W Boat Ramp	NA	N	deceased 2018
0938-66607 1238-28522	Great Pond	2008 2024	M	ATY	Snake Pt Cove	Otter Island	Y	w/unbanded female
0938-66603	Great Pond	2008	U	HY	Snake Pt Cove	NA	N	
0689-09482	Long Pond	2020	F	ATY	Beaver Cove	Beaver Cove	Y	w/ unbanded male
0689-09476	Long Pond	2020	M	ATY	Beaver Cove	NA	N	
0689-09484	Long Pond	2020	F	ATY	Ingham Pond	Ingham Pond	Y	w/2023 banded male
0689-09487	Long Pond	2020	M	ATY	Ingham Pond	NA	N	
1238-04764	Long Pond	2020	F	ATY	Lynch Cove	none	Y	unpaired, upper Long Pond
1238-04763	Great Pond	2020	M	ATY	Ram Island	NA	N	
0968-87783	Great Pond	2020	U	HY	Ram Island	none	Y	unpaired, upper Long Pond
0689-15630	Long Pond	2021	F	ATY	Castle Island	none	N	
0689-15644	Long Pond	2021	M	ATY	Castle Island	Castle Island	Y	w/unbanded female
0689-15634	Long Pond	2021	U	HY	Castle Island	none	Y	unpaired, Long Pond & Great Pond
0689-15638	Long Pond	2021	F	ATY	Lynch Cove	none	Y	Long Pond & Great Pond
0689-15626	Long Pond	2021	M	ATY	Lynch Cove	Lynch Cove	Y	w/unbanded female
0689-09437	Great Pond	2021	M	ATY	Pine Island	NA	N	
0689-09439	Great Pond	2021	M	ATY	Robbins Mill	none	Y	
0689-09436	Great Pond	2021	M	ATY	Blueberry Island	Blueberry Island	Y	w/unbanded female
0689-09428	Great Pond	2021	F	ATY	Blueberry Island	NA	N	
0689-09426	Great Pond	2021	F	ATY	Snake Point Cove	Snake Point Cove	Y	w/unbanded male
0689-09422	Great Pond	2021	M	ATY	Snake Point Cove	none	?	Possibly sighted near Oak Island
1238-25626	Great Pond	2022	M	ATY	Oak Island	Oak Island	Y	w/unbanded female
1238-24446	Great Pond	2022	F	ATY	Oak Island	NA	N	
1238-24445	Great Pond	2022	UNK	HY	Blueberry Island	NA	N	deceased 2022
1238-25630	Great Pond	2022	M	ATY	Ram Island	Ram Island	Y	
1238-24447	Great Pond	2022	F	ATY	Ram Island	Ram Island	Y	
1238-24407	Long Pond	2023	F	ATY	Ingham Stream	Ingham Stream	Y	
1238-25632	Long Pond	2023	M	ATY	Ingham Stream	Ingham Stream	Y	
1238-25635	Long Pond	2023	F	ATY	Tracy Cove	none	Y	upper Long Pond
1238-25638	Long Pond	2023	M	ATY	Tracy Cove	none	Y	upper Long Pond
0689-15976	Long Pond	2023	F	ATY	SW Cove	SW Cove	Y	w/unbanded male

1238-25651	Long Pond	2023	M	ATY	Ingham Pond	Ingham Pond	Y	w/2020 banded female
0689-15914	Long Pond	2023	UNK	HY	Ingham Pond	NA	N	deceased 2023
1238-25653	Long Pond	2023	F	ATY	Blueberry Cove	none	Y	w/unbanded male
1238-25652	Long Pond	2023	M	ATY	Blueberry Cove	NA	N	same part of lake
0689-15911	Long Pond	2023	M	ATY	Graveyard	Timber Point	Y	w/unbanded female, new territory
1238-08886	Long Pond	2023	F	ATY	Graveyard	Graveyard	Y	w/unbanded male
1238-25647	Great Pond	2023	F	ATY	Great Pond Marina	none	Y	unpaired, Long Pond
1238-25642	Great Pond	2023	M	ATY	Great Pond Marina	Finger Reef	Y	w/unbanded female
0687-15945	Great Pond	2023	F	ATY	Foster Point	Foster Point	Y	
1238-24449	Great Pond	2023	M	ATY	Foster Point	Foster Point	Y	
1238-25641	Great Pond	2023	F	ATY	Austin Bog	NA	N	
1238-25646	Great Pond	2023	M	ATY	Austin Bog	none	Y	same general part of lake
1238-28521	Great Pond	2024	F	ATY	Otter Island	none	?	possibly sighted same part of lake
1238-28523	Great Pond	2024	M	ATY	Robbins Mill	Robbins Mill	Y	w/unbanded female

*ATY = adult, HY = chick.

6.6 CONTAMINANT ANALYSIS

Lab analysis for contaminant levels in loons is not being conducted in 2025. Lab results for both mercury (Hg) and lead (Pb) contaminants have been analyzed since loons were first banded in 1997. The results over the past 25 years, including recent samples from as recent as 2020, show only low and moderate levels of these contaminants in both blood and feathers. These results do not indicate any levels of concern at this time.

6.7 MORTALITIES:

There were four mortalities recorded in 2025, all on Great Pond. Two adults were recovered. One body was recovered for future necropsy. One body was too decomposed for collection. One deceased chick was collected. It died after being attacked by intruding loons. One chick was captured with apparent illness. It had to be euthanized, and a necropsy will be performed to better understand the injury/illness it was suffering from.

7.0 DISCUSSION

In 2025, researchers confirmed a total of 27 individual territories on Great Pond and Long Pond, the highest number recorded over the past seven years. Twenty-six of the 27 territories (96%) were occupied by loon pairs. This continued high occupancy rate demonstrates a strong breeding base in numbers, with potential to sustain a healthy

breeding population. Most of the high-quality nesting habitat is occupied on both lakes, but some suitable habitat remains where new territories could possibly emerge in the future.

Nesting conditions were relatively favorable in 2025. Water levels were managed well during extended rainy periods, and only one nest was lost due to flooding, which is often a cause of loon nest failures in years with numerous, large rain events.

Five of 11 nesting pairs on Great Pond were successful (45%), and five of eight nesting pairs on Long Pond were successful (63%). None of the seven chicks hatched on Great Pond fledged (0%), and three of the eight chicks hatched on Long Pond fledged (38%). Overall, only three of 15 chicks survived to fledge (20%). This very low chick survival rate and below average nest success were the primary factors in historically low overall productivity in the study area.

Chick loss is rarely witnessed, and it would require constant monitoring of every pair with chicks to reliably document the causes. Staffing and field conditions do not allow for this comprehensive level of monitoring. Thus, most chick loss causes are undetermined.

Identifying the cause of nest failures with some certainty is important in understanding population trends over time, as researchers weigh all the factors contributing to low productivity. In 2025 there were a total of eight nest failures; three cases where the cause of failure was egg abandonment, two cases of mammalian predation, one nest flooded, and one likely case of failure due to human disturbance. Whenever possible, intact eggs from the abandoned nests are collected, and they will be examined to determine if they were fertile, and if so, what was the stage of development.

The 2025 overall productivity of 0.11 CS/TP is the lowest recorded productivity since the monitoring project began in 2019. Productivity remains extremely low when compared to the established sustainable population threshold of 0.48 CS/TP. Looking at 2019 (0.35), 2020 (0.17), 2021 (0.35), 2022 (0.30), 2023 (0.26), 2024 (0.26) productivity, no single year approaches 0.48 CS/TP. These consistently low productivity numbers over a seven-year period are concerning. Further study and evaluation of population trends is warranted to help better understand the low productivity, and determine if there are additional conservation measures which could be implemented to enhance productivity.

Determining the occupancy status of territories, and accurately identifying all territories on both lakes is of critical importance when calculating productivity. This is extremely challenging on large lakes, especially Great Pond. Errors that might incorrectly add or subtract one or two territories, or err in determining occupancy status can dramatically alter the findings of this study. There was a high level of certainty of occupancy status in 2025, although some error is possible.

Similarly, confirming chick survival to six weeks of age is of critical importance. In 2025 consistent, comprehensive survey coverage resulted in 100% certainty of chick survival to six weeks of age.

When used by nesting pairs, artificial nest rafts have been highly effective over the seven-year period of the study. Overall contributions to increased productivity are currently limited by a small percentage of known territories having rafts, and current usage rates.

Human disturbance of both nesting loons and loons on the lakes has been observed and documented. In 2025, there was one likely case of a nest failure due to human disturbance (Long Pond, Castle Island). Maps contained in this report help to inform the public about occupied loon territories, without divulging nest locations. With more knowledge and education, it is hoped the public will avoid disturbing nesting loons and exercise caution when boating and recreating in these areas of the lakes.

When used appropriately, signs can be used as a valuable education and conservation tool. Well-thought out and strategic usage of signage can help to reduce disturbance issues. Signs have been utilized broadly, often as part of well-developed conservation programs throughout common loon breeding ranges. Deploying more signs could reduce human disturbance issues.

Tracking movements, territory and mate fidelity, and long-term survival of banded loons is key to understanding the dynamics of the local population. For populations to thrive, long-term survival and mate fidelity are critical factors. Early findings raise concerns about loon fidelity in the study area. While return/survival rates are reasonably strong, mate fidelity is low. Only three of 14 pairs banded since 2020 remained together (21%). This is down from 36% in 2024, and 50% in 2023, largely due to very weak territory fidelity of banded pairs.

Five years of data collection is a beginning. It's important to continue the in-depth monitoring, as well as continued banding of new individuals in future years.

In the first seven years, this project demonstrated the effectiveness of collaboration between trained professional researchers and volunteer community scientists. Progress recruiting new community volunteers in the project area has been slow, however. The new collaboration with CC offers the possibility of always having dedicated seasonal staff through the paid internships, which could assure the long-term sustainability of the project. This unique partnership allows for the development of sustainable conservation efforts, which in turn provides valuable information to local communities and scientists concerned about the health of loon populations.

8.0 RECOMMENDATIONS

Common loons have responded well to dedicated human conservation measures designed to either stabilize a population or help a population rebound. However, these actions were implemented after years of research needed to accurately verify the status of the population, and identify past and present stressors, which may have led to population declines.

LCA recommends the following actions for 2026:

- With professional guidance, continue to use standardized survey methods to collect data on the number of territorial pairs, nesting pairs, location of nests, chicks hatched, and those surviving >six weeks of age.
- Review current utilization of nest rafts for possible changes to enhance the usage. Continue the strategic use of artificial nest rafts to aid productivity. When circumstances are appropriate, look to introduce new rafts into territories where nesting pairs are struggling to nest successfully.
- Procure and utilize nest monitoring cameras (trail cameras), as circumstances allow to better understand the causes of nest disturbance and failure.

- Continue the new collaboration with CC using student interns to conduct dedicated surveys, with an emphasis on training and oversight designed to support the students as self-guided, independent researchers.
- Connect with other loon conservation groups who are monitoring a significant banded population to compare fidelity findings and population status implications.
- Repeat capture and banding of loons through traditional night capture of adults with chicks, allowing individual identification and tracking of movements and survival over time.
- Continue to engage and inform the local community about loons on Great Pond and Long Pond through all available media.
- Increase outreach and education efforts to communicate and reduce threats from human nest disturbance, fishing line entanglement, boat wakes, etc. Specific steps could include signage at any nests where disturbance has been documented with any frequency, general education signage at boat launches, and installment of containers for disposing of fishing line.

9.0 ACKNOWLEDGMENTS

LCA wishes to acknowledge the Belgrade Lakes Association and its' members, especially Dick Greenan, and the volunteers who participated in field surveys, Colby College and professor Cathy Bevier, and student interns Makena Logan and Ariana Farrokhi.