The Squam Lake Loon Initiative

2026 End-of-Season Report



Juvenile loon on Squam Lake, 2026. Photo credit: Alison J. Gage

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Executive Summary

Between 2005-2007, Squam Lake experienced an unprecedented decline of close to half of its adult loon population, followed by the near-complete reproductive failure of its remaining loons. The Loon Preservation Committee (LPC) launched its Squam Lake Loon Initiative to understand and address the causes of the declines in Squam's loon population in order to restore a healthy population of loons to the lake.

Squam's loons are facing multiple co-occurring stressors that are common to loons throughout the state, including climate change, increased recreational activities, increased predator populations, and other threats. Contaminant burdens that were higher on Squam than on other lakes and elevated rates of lead tackle mortality have, in concert with these other stressors, resulted in disruptions to loon social structure, survival, and breeding success on Squam.

In 2026, there were 14 territorial pairs and 11 nesting pairs, nine chicks hatched, and six Squam chicks fledged. Two chicks that were hatched on Squam Lake were fostered with loons on another lake and fledged. The other chick hatched on Squam that was fostered died, possibly as a result of a predator. Long-term average productivity on Squam remains well below historic levels, although there has been a welcome uptick in productivity parameters in recent years (pgs. 3-4).

The identification of elevated contaminant levels in unhatched Squam loon eggs collected from failed nests has driven LPC's work to monitor contaminants in loon eggs and to identify sources of contaminants in the Squam watershed. LPC tested three inviable loon eggs from the 2025 breeding season. Overall contaminant levels are gradually declining since the spike in contaminants between 2005-2007 (pgs. 8-10). LPC published a paper on loon egg contaminant results in the peer-reviewed journal *Environmental Toxicology and Chemistry*, which found the highest levels of contaminants in the dataset were from Squam Lake and that these eggs had the thinnest eggshells and smallest eggs (pgs. 5-6). The fish consumption advisory, issued by New Hampshire Department of Environmental Services after follow-up testing in response to LPC's findings in loon eggs, crayfish and sediments, remains in effect.

Sediment sampling conducted by LPC as part of our efforts to identify sources of contaminants pinpointed three sites of contaminated sediments. Levels of contaminants at these locations were above levels identified as being possibly or likely harmful to aquatic life. LPC and the Squam Lakes Association are working together to investigate the sources of these contaminants and the extent of contamination in the Squam watershed, with the goal of reducing contaminants in Squam Lake to benefit loons, other wildlife, and people.

LPC's work to understand and reverse the decline of loons on Squam has ensured that issues affecting the health of loons and other wildlife are addressed to safeguard Squam and all its inhabitants. LPC will continue to work to recover Squam Lake's loon population through intensive research,

monitoring, management, and outreach as part of its Squam Lake Loon Initiative. This work will continue to inform LPC's conservation efforts for loons on Squam and throughout the state.

Background

Between the fall of 2004 and the spring of 2005, Squam Lake lost seven of its loon pairs. The decline from 16 to 9 pairs represented 44% of Squam's loon population, a single-year drop unprecedented on Squam or any other large lake in LPC's 52-year history of monitoring loons throughout New Hampshire. It also brought Squam's loon population to its lowest level since LPC began to survey Squam Lake in 1975**.** This decline was followed by the near-complete reproductive failure of the remaining loon population. In 2007, only three chicks were hatched on Squam and only one survived to late August and was presumed to have fledged. Loons on Squam had not experienced a reproductive failure of this magnitude since 1978, the year LPC petitioned successfully to have loons added to the Threatened Species list in New Hampshire.

The Squam Lake Loon Initiative is LPC's response to the decline of Squam's loon population. The Initiative began in 2007 and includes an intensive monitoring, research, management, and outreach effort to:

1. Determine the overall survival and reproductive success of Squam's loon population.

2. Rescue sick, injured, or imperiled loons to increase survival.

3. Provide nesting rafts, where needed, to increase loon breeding success and float signs and/or ropelines to protect nesting and brooding loons.

4. Assess causes of nest failures and collect inviable eggs from failed nests for analysis of a wide range of contaminants.

5. Find and collect loon carcasses and test dead loons for contaminants and pathogens (disease-causing organisms) to determine causes of death.

6. Band loons to allow us to identify and track individual birds and collect blood and feather samples for analysis of contaminants, pathogens, and indicators of health.

7. Determine survival and breeding success of previously banded and sampled loons, and relate survival and breeding success of individuals to their contaminant levels.

8. Determine possible sources of contaminants and options for mitigation of these sources.

9. Inform the public about loons and their needs through presentations, signage, and electronic communications.

10. Restore and maintain a healthy and stable population of loons on Squam Lake as a component of a healthy statewide population of loons.

Squam's Loon Population and LPC's Management Activities in 2026

Squam Lake's loon population in 2026 included 14 pairs of loons, one pair less than in 2025. In 2026, 11 loon pairs nested and hatched nine chicks, the most since 2020 (Figure 1). Three chicks fledged on Squam Lake this year, and three chicks died on the lake: one disappeared immediately after hatching, one died during a territorial intrusion by another loon, and the third was killed by a Bald Eagle at eight weeks of age. Note that Figure 1 indicates four surviving chicks in 2026, as the chick killed by the eagle died after August 15th, the date LPC uses for consistency in its database to define a chick as surviving each year. Despite this, all chick mortalities post-August 15th are documented and noted in LPC records.

In very unusual circumstances, three chicks that hatched on Squam from two different families were fostered with loon pairs on other lakes. All three chicks were in imminent danger of death. In the case of one family, two chicks hatched just as the nesting female was evicted from the territory by another loon. In the second case, the younger chick withdrew from the family due to sibling rivalry, likely stemming from disturbances in the territory and the resulting inability of the adults to provide adequately for both chicks. Following strict protocols established in LPC's permit by New Hampshire Department of Fish and Game, LPC rescued the chicks and fostered them with loon pairs who had recently lost their nests. Two chicks from one family are still thriving on their adopted lake and the other chick died for reasons that are not clear but possibly as a result of a predator. In addition to the six nests that hatched chicks this year, five nests failed for the following reasons: eggs did not hatch (2 nests); nest abandoned due to loon intrusions (1 nest); nest abandoned for unknown reason (1 nest); and mammalian predation (1 nest).

LPC carries out management activities to help increase the chances for successful loon nesting and chick survival. Loons nest along the shoreline, and loon nests can be negatively impacted by habitat loss through shoreline development, changing water levels, and shoreline predators. LPC floats artificial loon nesting platforms to help loons cope with these challenges. In 2026, LPC floated nine nesting rafts on Squam Lake and loons used seven of those rafts. Six of the nine chicks hatched on Squam in 2026 came from LPC's rafts. LPC protected all 11 nests by placing signs and/or ropelines around the active nests. Chicks were protected by LPC's orange "Caution: Loon Chick" signs to alert boaters to the presence of loon chicks in an area of the lake. LPC banded three adult loons and one chick on Squam Lake in 2026. Blood samples taken from these loons at the time of banding did not indicate any health issues, and LPC will now be able to track these loons in coming years as part of our research to help loons.

The reproductive success of Squam's loon pairs in the decades before the 2005-2007 decline was far greater than after the decline, but productivity rates have improved in recent years (Figure 2). From 1975-2004, an average of 8.7 chicks hatched each year on Squam and an average of 5.7 chicks fledged. Between 2018-2026, an average of 7.1 chicks hatched each year and 4.0 fledged, an improvement over the previous ten years (2008-2017). Despite the improved hatch rate, the rate of 0.30 chicks surviving per territorial pair between 2018-2026 remains well below the long-term statewide average (0.50) and the rate needed to maintain a viable loon population (0.48). The improvements in productivity parameters in recent years are a hopeful indication that LPC's efforts to protect nesting loons are having a positive effect on Squam's loon population.

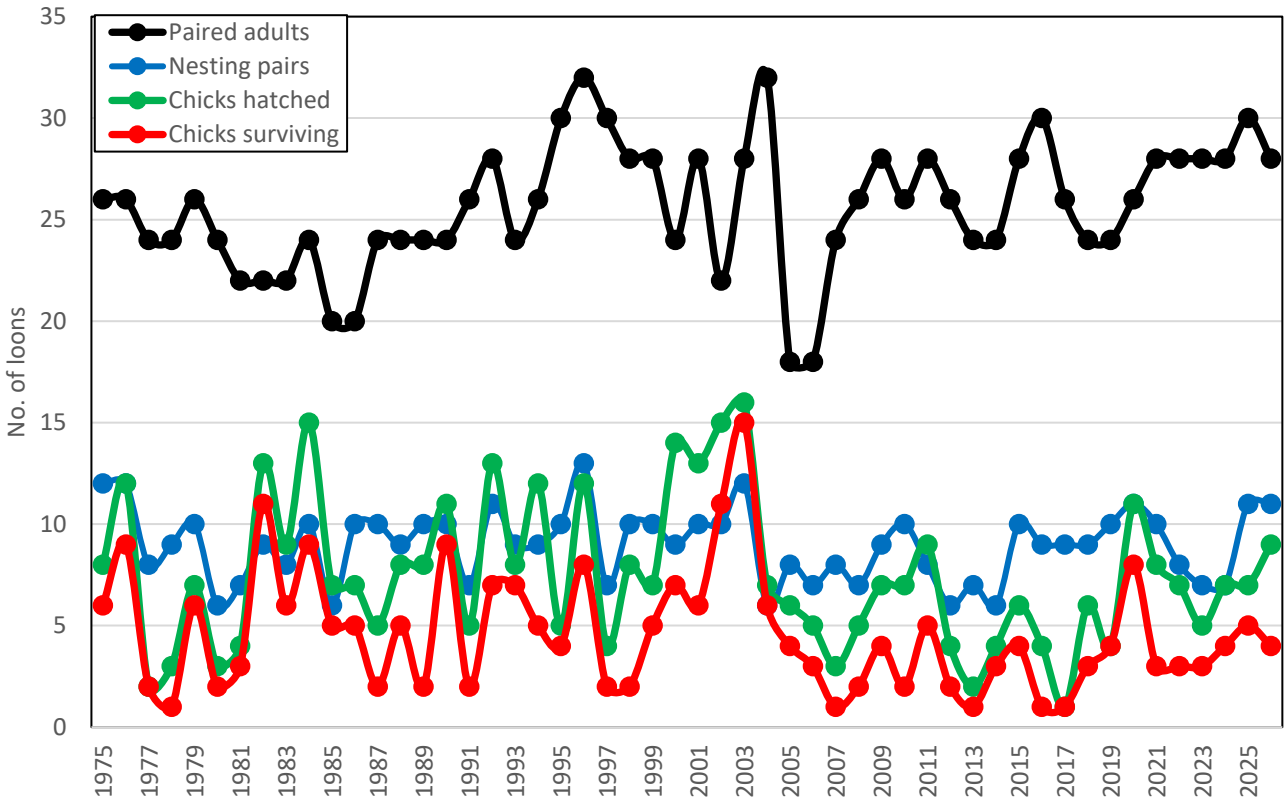


Figure 1: Squam's loon population and breeding success, 1975-2026.

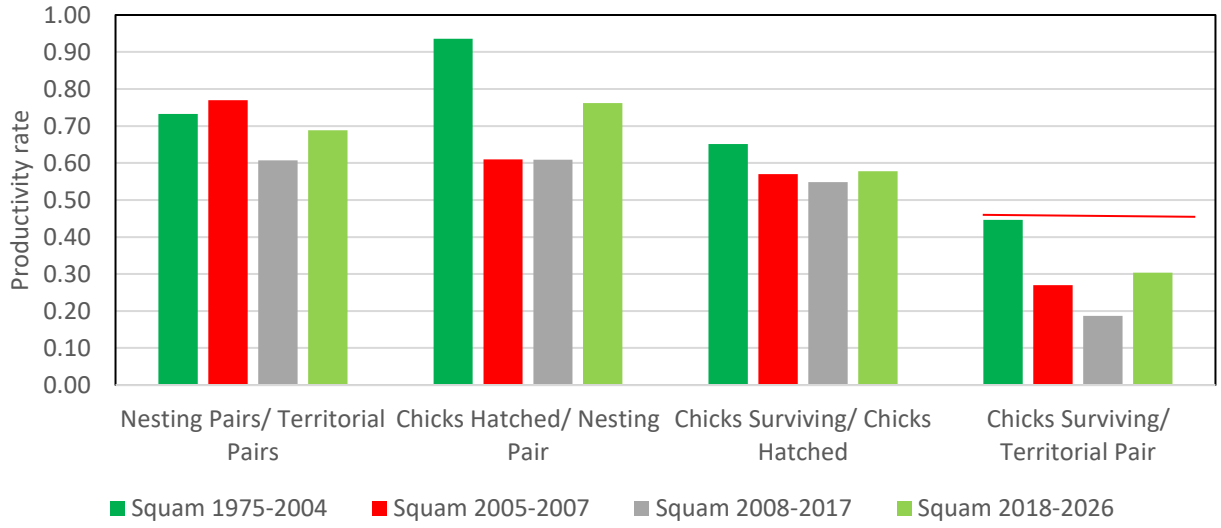


Figure 2: Productivity rates on Squam Lake before, during, and after the 2005-2007 period of decline. The red line above the chicks surviving per territorial pair parameter indicates the rate research has shown is necessary to maintain a stable population. Recent years are showing improvement in productivity parameters.

Contaminants in Squam Lake Loon Eggs

Loons on Squam are facing multiple stressors, such as increased boating and recreational activities, increasing temperatures and storm events, increased populations of shoreline predators (raccoons, mink, etc.), and fluctuating water levels. All of these factors are common to loons on lakes throughout New Hampshire, yet declines on Squam have been more severe and protracted than those on other lakes. The factors that seem to set Squam Lake apart from other New Hampshire lakes are elevated levels of chemical contaminants and high rates of mortality from lead fishing tackle.

Loons are a key indicator species, being primarily fish eaters and feeding at the top of the food web, and the contaminants LPC is testing are known to biomagnify through the food web (i.e., increase successively in bacteria, invertebrates, and fish), so loons are acquiring the contaminants from the fish they eat. Also, as a long-lived species, loons accumulate contaminants in their tissues, a process known as bioaccumulation. It is known that the nutrients (and, thus, contaminants) deposited in eggs come primarily from what the loon has been eating in the few weeks immediately prior to egg-laying. Isotope tests conducted by LPC confirmed that the material in loon eggs is primarily from freshwater sources rather than their ocean wintering grounds. Loons are present in their territories and defending them for 4-6 weeks prior to egg-laying, so we know that the contaminants in the eggs primarily came from what they were eating within their territories on Squam.

LPC tests inviable loon eggs for five classes of organic contaminants: brominated diphenyl ethers (BDE; flame retardants), polychlorinated biphenyls (PCB; industrial insulating/cooling agents), polychlorinated dibenzo-*p*-dioxins (PCDD) and polychlorinated dibenzofurans (PCDF; both byproducts of industrial processes), organochlorine pesticides (OC pesticides, including DDT and chlordane), and per-and-polyfluoroalkyl substances (PFAS; stain guards, fire-fighting foam). Levels of contaminants from Squam during 2005-2007 were up to six times higher than levels found in eggs collected from lakes throughout New Hampshire, Maine, and New York, as well as higher than the periods before and after these critical years on Squam.

Inviable eggs from Squam Lake figured prominently in LPC's recently-published paper, "Bioaccumulative contaminants in New Hampshire loon eggs indicate widespread exposure to persistent organic pollutants." This paper, written in partnership with research scientist Wes Flynn and published in *Environmental Toxicology and Chemistry*, found the highest levels of contaminants in the dataset in Squam loon eggs. These eggs also were the smallest in the dataset and had the thinnest eggshells. Of the 59 eggs from Squam Lake included in the study, 68% of them exceeded levels documented to affect the health or breeding success of other bird species for at least one of the contaminant classes (PFAS, BDE, PCB, dioxins/furans, and organochlorine pesticides including DDT and chlordane).

Analyzing the contaminant levels against both egg size and eggshell thickness indicated that eggs with higher levels of PCBs, PCDD/Fs, BDEs, and OC pesticides were associated with smaller and thinner-shelled eggs, both of which may negatively impact hatchability of eggs. Many of these contaminants were banned in the 1970s-1980s, yet they are still present at high enough levels in the environment to potentially harm loon eggs. The paper also found that eggs from Squam Lake had the highest levels of these contaminants, the thinnest eggshells, and the smallest sizes. The data suggested that loons on Squam may be at greater risk of negative outcomes associated with contaminant exposure than loons on other lakes in New Hampshire. To download the paper, please visit: www.loon.org/contaminantspaper.

Sediments, fish, and the implications of contaminants research for the Squam ecosystem

The findings of this paper put a point on years of research by LPC on loon eggs, crayfish, and sediments, demonstrating that contaminants are present at concerning levels in the Squam ecosystem and watershed. After investigating and eliminating other potential explanations for the elevated contamination in Squam loon eggs (Grade 2025), LPC has focused on the presence of multiple isolated sources of contamination as the most plausible hypothesis to explain this issue.

LPC's sampling from tributaries in the Squam watershed revealed three key locations of elevated contaminant levels in sediments. Contaminants at these sites exceeded levels identified by various agencies and researchers as being possibly or likely harmful to aquatic life. For further details of LPC's sediment testing and results, please see LPC's report to New Hampshire Department of Environmental Services at http://www.loon.org/squam-lake-study.php.

As a follow-up to LPC's data on PCB levels in loon eggs, crayfish, and sediments in the Squam watershed, New Hampshire Department of Environmental Services (NHDES) launched a study of PCB levels in fish from Squam Lake. The goals were to investigate another level on the food web between the contaminated sediments LPC found and the loons and to explore potential human health risks to people eating fish from Squam Lake. Given that contaminants in loon eggs come from the fish loons eat, there was concern for a potential risk to humans eating fish from Squam as well.

NHDES tests on yellow perch and smallmouth bass on Squam sampled in the fall of 2018 indicated elevated levels of PCBs in fish on Squam. In 2020, NHDES issued a fish consumption guideline for the Squam Lakes that was considerably more restrictive than the standard mercury guidelines in place throughout the state (Figure 3). The current guidelines for the Squam Lakes recommend limiting consumption to: for adults and children >7 years old, 1 meal per month of yellow perch and 1 meal every 4 months of smallmouth bass and other fish; for women of child-bearing age, 1 meal every 2 months of yellow perch and 1 meal every 6 months of smallmouth bass and other fish; and for children <7 years old, 1 meal every 3 months of yellow perch and 1 meal per year of smallmouth bass and other fish. Details of the guidelines can be found at: https://www.des.nh.gov/news-and-media/nhdes-issues-new-fish-consumption-advisory-squam-lake-high-levels-polychlorinated.

Since the discovery of sites of contaminated sediments, LPC has been working with sediment contaminant experts to identify the extent of the contamination in these areas as a necessary first step to identify options for remediation. LPC had extensive discussions with environmental consulting companies and is working together with the Squam Lakes Association towards the goal of reducing contaminants in the Squam watershed to benefit loons, other wildlife, and people.

It was the decline of loons on Squam that led LPC to test unhatched loon eggs from failed nests. From there, follow-up research by LPC and its collaborators on contaminants in crayfish, sediments, and fish indicated implications for human health. As reported in LPC's published paper, the loon eggs in the dataset from Squam Lake included those with the highest levels of contaminants, lowest egg volumes, and thinnest eggshells compared with eggs from the other 27 lakes tested by LPC. LPC will continue to test unhatched loon eggs from failed nests on Squam and around the state to monitor contaminant levels. LPC's work to monitor contaminants in loons will provide the ultimate measure of the success of any efforts to mitigate the issue of contaminants on Squam.

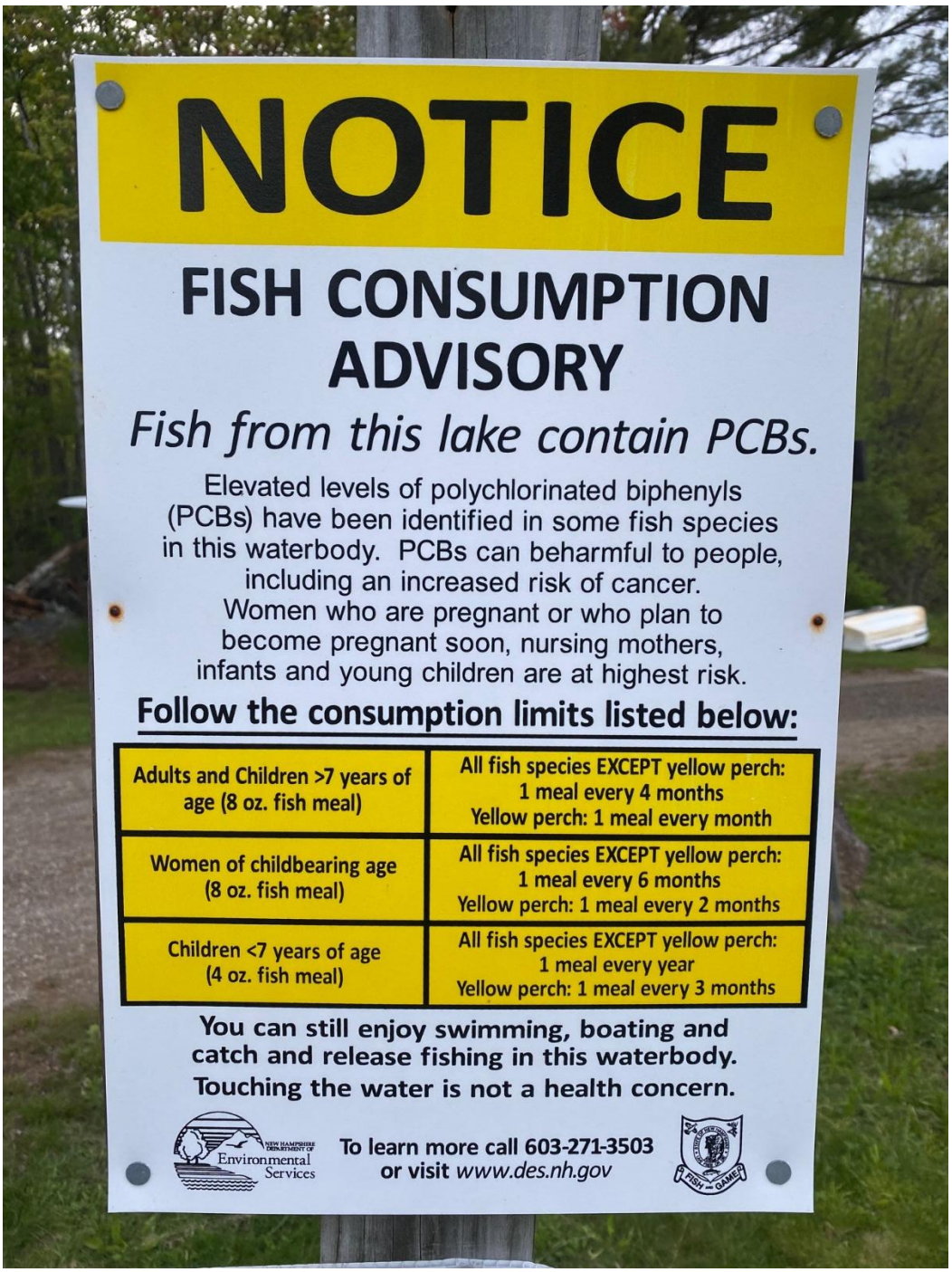
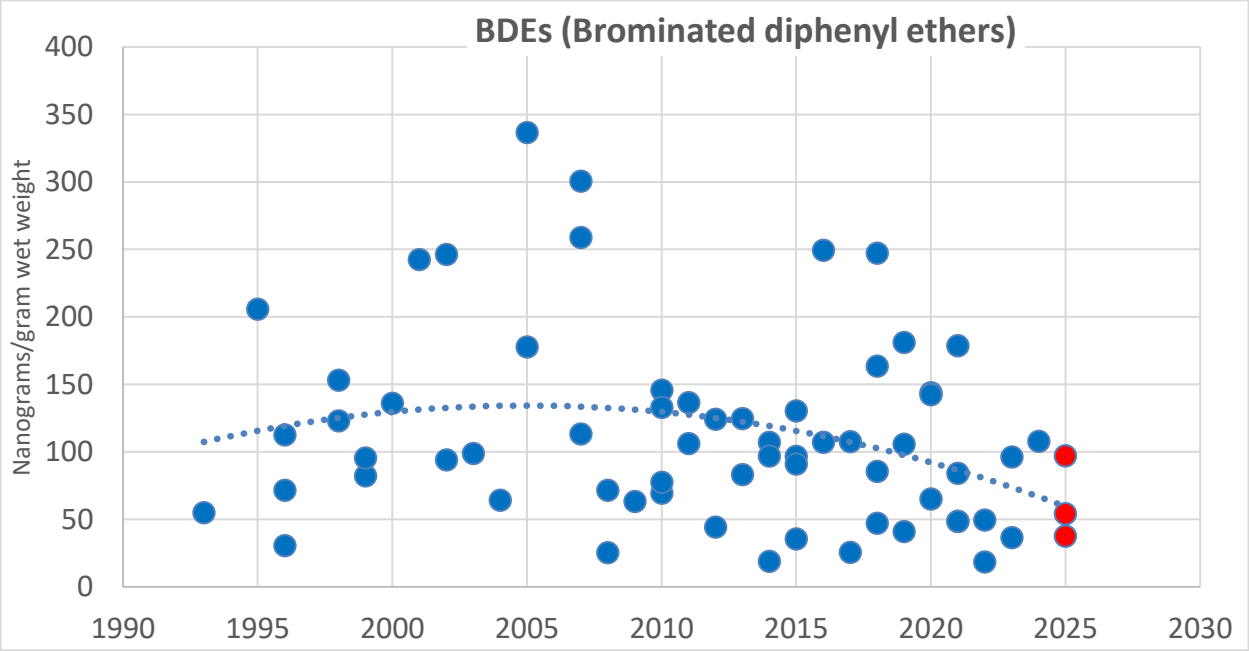


Figure 3: These signs are posted at all boat ramps on Squam Lake to inform lake users of the fish consumption advisory for PCBs issued by New Hampshire Department of Environmental Services. This advisory is much stricter than that on most lakes throughout the state for mercury.

Contaminant Testing from the 2025 Breeding Season

LPC submitted three inviable loon egg collected on Squam from the 2025 nesting season for contaminant testing. Contaminant results from these eggs were consistent with recent years, which indicate stable or slightly decreasing trends across contaminant classes (Figures 4-6).



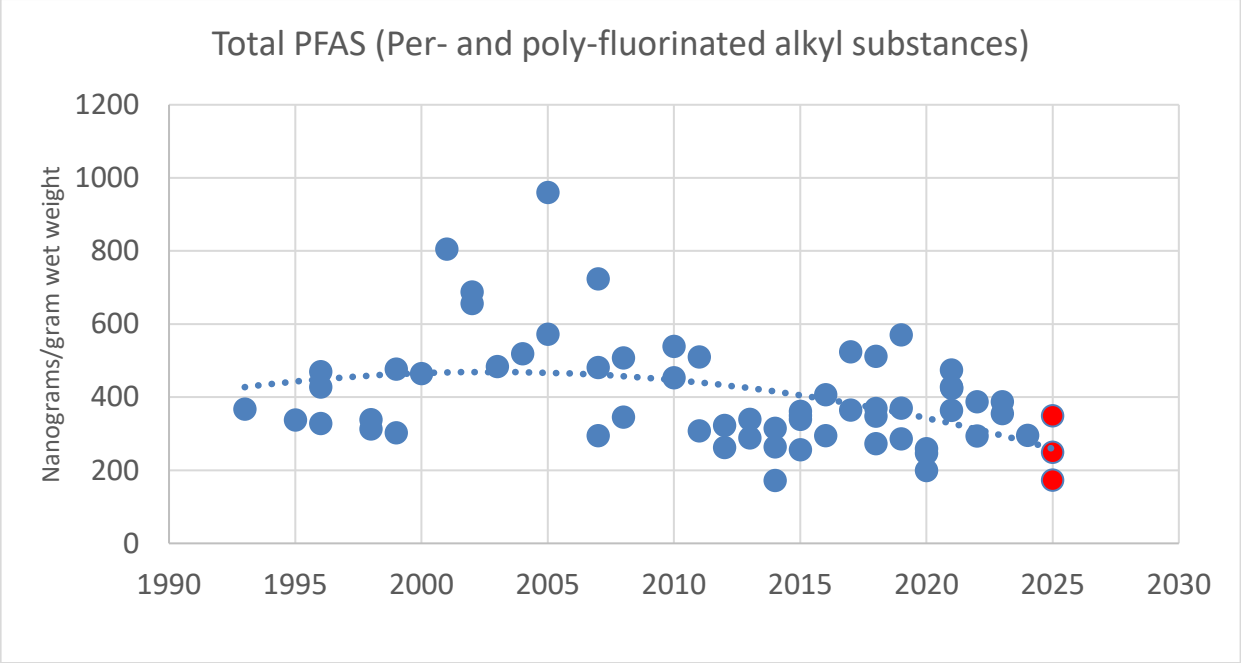


Figure 4: Trends of BDEs and PFAS in unhatched Squam loon eggs from failed nests, 1993-2025. The red dots indicate the eggs tested from the 2025 breeding season.

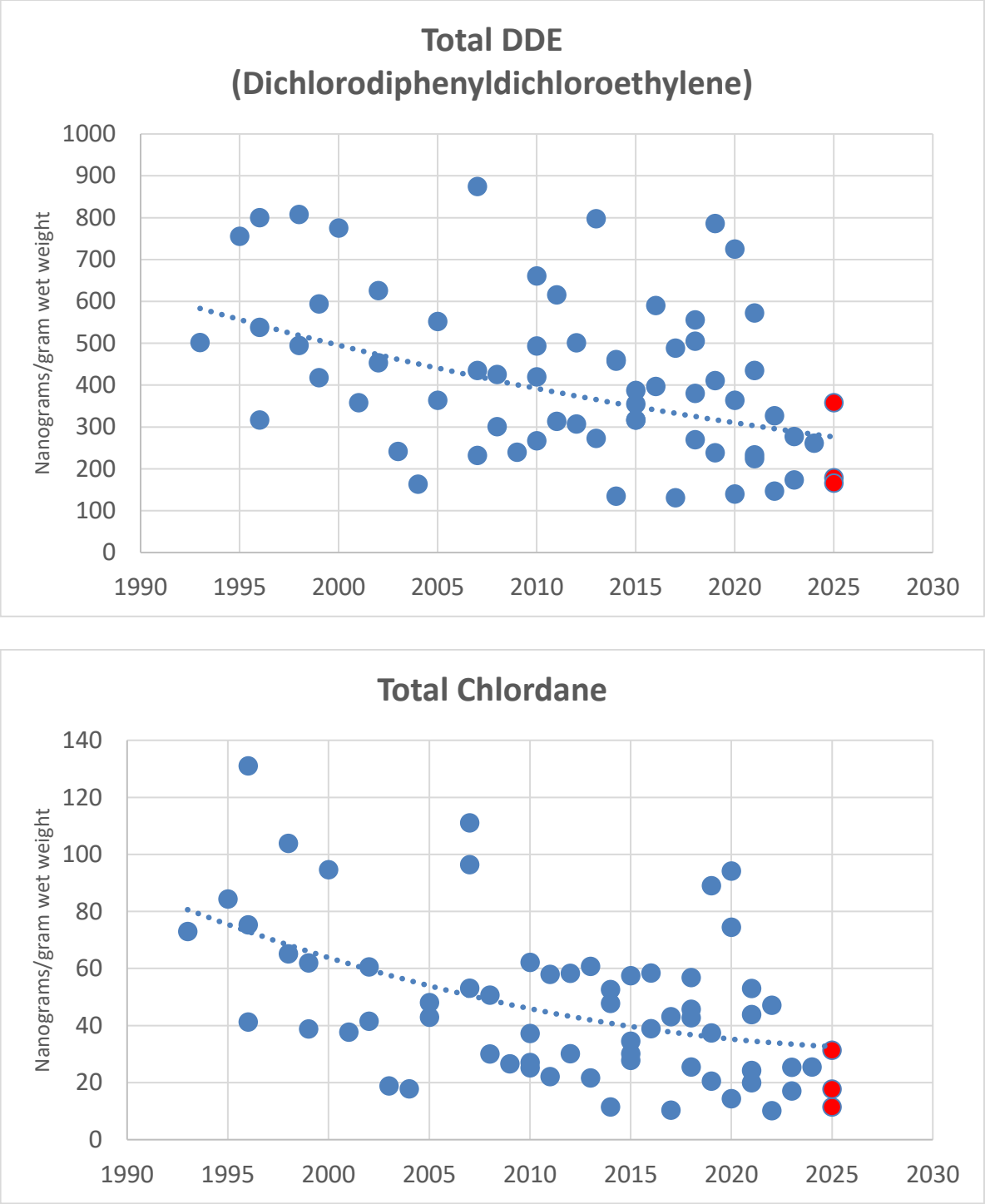
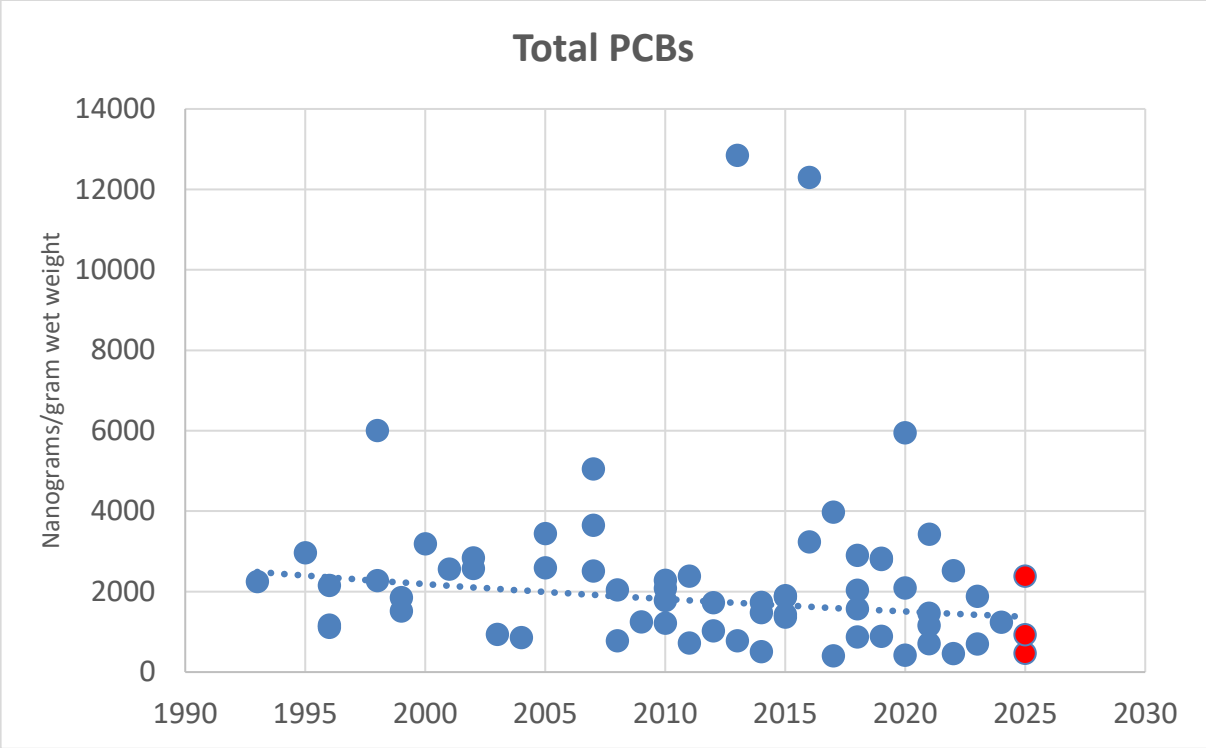


Figure 5: Trends of DDE and chlordane in unhatched Squam loon eggs from failed nests, 1993-2025. The red dots indicate the eggs tested from the 2025 breeding season.



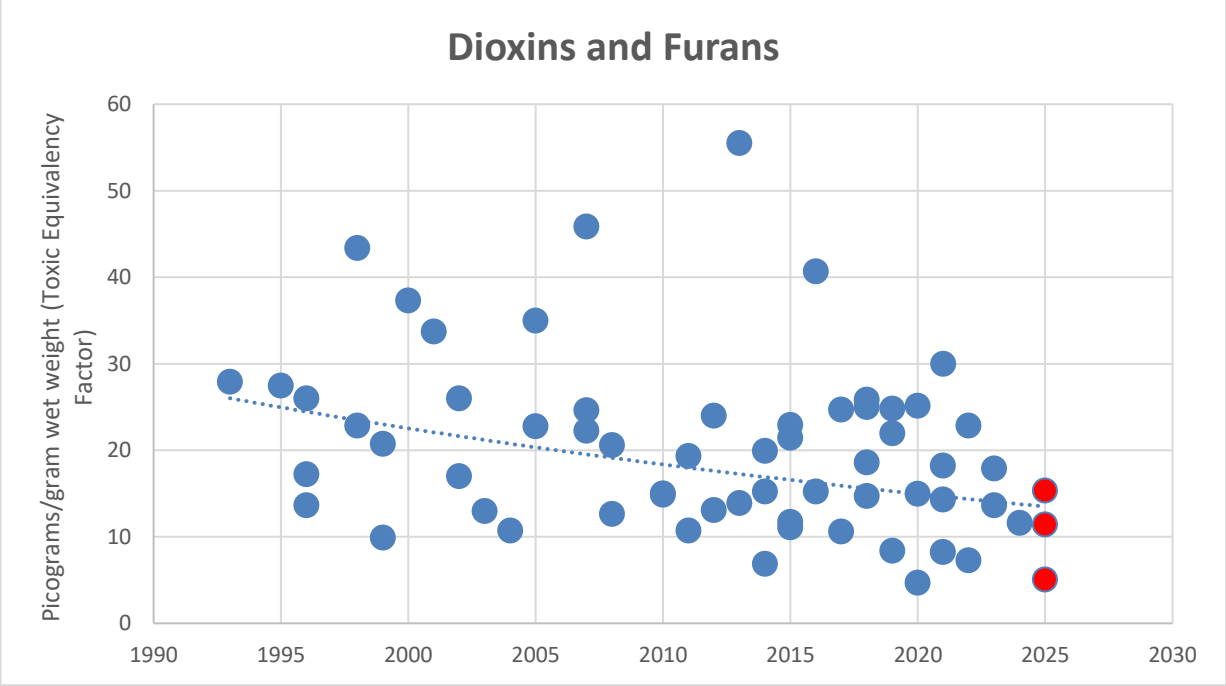


Figure 6: Trends of PCBs, dioxins, and furans in unhatched Squam loon eggs from failed nests, 1993-2025. The red dots indicate the egg tested from the 2025 breeding season.

A grant from the Squam Environmental Preservation Fund will allow LPC to test additional eggs from the 2025 breeding season, a year in which we collected a record-high number of inviable loon eggs.

Mortality of Squam Lake's Adult Loons

No adult loon mortalities were collected on Squam Lake in 2026, which is a welcome improvement following the documentation of three adult loon mortalities in 2025, including one that died from ingested lead fishing tackle (Figure 7).



Figure 7: X-ray of adult loon found on Great Island in September of 2025 that died of lead poisoning after ingesting a lead fishing jig. The jighead is circled in red on the x-ray.

Staff from Tufts University School of Veterinary Medicine, the University of New Hampshire Veterinary Diagnostic Laboratory, and Loon Preservation Committee performed necropsies on 33 adult loons from Squam Lake that were found dead between 2001 and 2026. Over half of these loons died as a result of human causes: 10 loons died as a result of ingested lead fishing tackle; 5 loons were killed by boat strikes; and 2 loons died from avian malaria. Many more Squam Lake loons missing during this time period remain unaccounted for and are presumed to have died on their ocean wintering grounds, possibly as a result of poor body condition resulting from exposure to contaminants and/or other stressors on Squam.

Since the opening of the reconstructed public boat launch in 2001, the rate of mortality from lead fishing tackle on Squam Lake has increased by 61% (Figure 8) and is nearly twice the overall statewide rate of lead mortality during the same period. Loon populations may be negatively impacted by the loss of even 0.4% of their population annually from human causes (LPC, unpubl. data;

Dillingham and Fletcher 2008); and, between 2001 and 2026, Squam lost on average 1.5% of its adult loon population annually due to lead fishing tackle alone. Although it is not possible to demonstrate causation, it is worth noting that, since 2001, the number of boats counted in the Squam Lakes Association boat census, the number of fishing tournaments, and the number of boats participating in fishing tournaments have all increased.

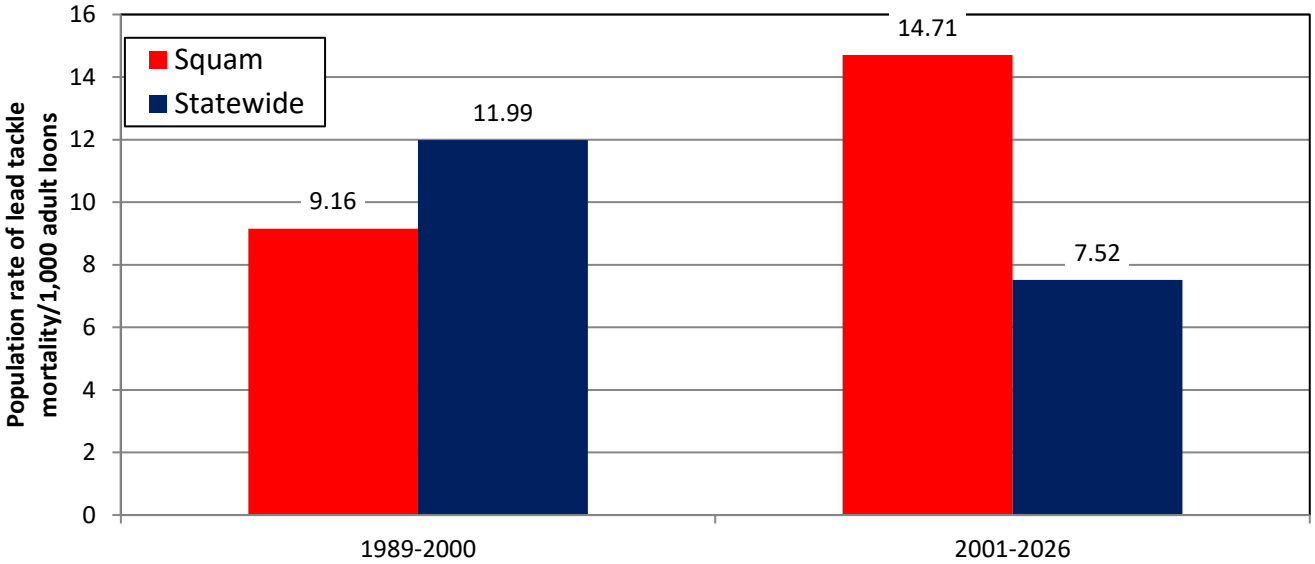


Figure 8: Population rates of lead mortality on Squam Lake vs. statewide population rates of lead mortality.

Working Hypothesis to Explain the Impacts of Stressors on Squam's Loon Population

The discovery of high levels of contaminants in Squam's loon eggs raised the question of what impact these contaminants had on the loon population in concert with the many other stressors facing Squam's loon population. LPC has a working hypothesis to understand the impacts of combined stressors on Squam's loon population. This hypothesis is subject to change as new evidence becomes available.

Like loons throughout New Hampshire, Squam's loons have been experiencing increasing stressors over time, from increased recreational pressure to increasingly hot summers and more intense precipitation events. On Squam, recreational and fishing pressure became more intense in the years following 2001, coincident with the reconstruction of the public boat launch in the same year, and mortality from lead fishing tackle increased in the same period (Figure 7). In approximately 2002, evidence suggests that there may have been an influx of contaminants into the lake from sources on tributaries flowing into Sandwich Bay and Bennett Cove, possibly as a result of increased runoff due to rain events. By 2004, these contaminants had worked their way up the food chain to loons. The classes of contaminants found in Squam loons concentrate in fat reserves and may become mobilized as fat reserves are used. These contaminants, in combination with other stressors, may have contributed to poor body condition and the deaths of many of Squam's loons during the winter of 2004/2005 as their fat reserves were metabolized for the fall feather molt and migration, both energy-intensive processes. The loons that survived to reproduce in subsequent years deposited elevated levels of contaminants into their eggs, possibly contributing to poor productivity. An independent assessment by consultant Lori Siegel using a systems dynamics model with data from LPC and other sources likewise identified contaminants as likely factors in the declines in loon survival and breeding success.

By 2008, some of the contaminants seem to have flushed though the Squam system, as evidenced by a decline in levels of some contaminants in Squam's loon eggs in subsequent years. However, evidence suggests that factors including ongoing high levels of adult mortality from lead fishing tackle and other anthropogenic causes continue to undermine the recovery of Squam's loon population. The loss of so many established, experienced adult loons led to the immigration of new loons to fill vacant territories. These loons are intruding into territories, driving remaining established loons out of their territories, disrupting nesting, and, in some cases, killing chicks. While these behaviors are typical for territorial disputes, the effects on Squam are amplified due to ***high human-caused adult mortality*** and the resultant territorial vacancies. Loons have evolved to thrive in a stable environment and stable social structure, and Squam's loons have had neither since 2001.

The critical factor to restore a healthy population of loons to Squam Lake seems to be ***keeping adult loons alive*** to stabilize the social structure. The stability of loon social structure can have a major impact on loon reproductive success. Increasing the use of non-lead fishing tackle and educating lake users about the dangers of lead and the need to boat carefully around loons will help reduce the threat of human-caused mortalities to loons. If adult mortality can be reduced and the social structure can stabilize, there is reason to hope that productivity on the lake will improve, as the disruptions Squam loons are currently facing during nesting and chick-rearing may abate.

The high nesting and hatch rates in 2026 were a positive development this year and contributed to the improving trends of each of these breeding parameters in recent years (Figure 2). The chick survival rate on Squam this past year, however, was notably low as a result of a number of factors. Intrusions from other loons, in concert with the many other stressors Squam loons are facing, contributed to low reproductive success this year. The lack of documented adult loon mortalities in 2026 is a positive step in this regard; and, while it is unfortunate that the three loon chicks that were fostered were unable to thrive on Squam Lake, it is hoped that the two that have fledged will return as adult loons to contribute to the recovery of New Hampshire's loon population.

The evidence from the decline of loons on Squam Lake and an earlier decline on Lake Umbagog suggests that recovery will take time. LPC has learned from both of these events that perturbations to the system cast a long shadow over a loon population, which would be expected in a long-lived bird like a loon. While the causes of the declines of the loon population on Umbagog remain unknown and the adult population there has not recovered, productivity of the remaining pairs of loons on Umbagog has finally begun to improve in recent years, with this past summer being a notable exception. As would be expected in a complex biological system, the experience of loons on Umbagog and Squam are not directly comparable, but the example of Umbagog suggests that, with time and supportive management, Squam's loons can recover. And on Squam, we understand much better the impacts of human activities on the decline of the loon population and how we can work together to restore the loon population.

Remediation

LPC is working to address the challenges loons are facing on Squam and restore a healthy population of loons to the lake in the following ways:

1) *Limiting mortality from lead fishing tackle:* LPC's data was the impetus for legislation to increase protections of loons from lead fishing tackle. Mortality from lead fishing tackle has likely contributed to the social chaos and resultant low productivity on the lake. LPC published a ground-breaking paper detailing our lead tackle mortality data and the population-level effects of lead tackle mortality on New Hampshire's loon population in the peer-reviewed *Journal of Wildlife Management* (Grade et al. 2018). This publication was an important step to buttress New Hampshire's lead legislation against efforts to repeal the bill, as well as to communicate our findings to the scientific community.

    - Educating the public about the dangers of lead to loons forms a major part of all of LPC's outreach activities on and around Squam Lake. The evidence suggests that the most important thing we can do to restore a healthy population of loons on Squam is to ***keep adult loons alive***. Protecting loons from lead fishing tackle is a critical component of that effort. LPC's Lead Tackle Buyback Program, in partnership with the New Hampshire Department of Fish and Game, has expanded to 14 retail shops throughout New Hampshire, including Squam Boat Livery. Squam Lakes Association also serves as a lead tackle collection point. To date, the Lead Tackle Buyback Program has removed over 105,000 pieces of lead tackle as a potential threat to loons and other wildlife. For more information on the program, please visit www.loonsafe.org.

2) *Increasing reproductive success:*

    - **Management:** LPC is continuing intensive management on Squam Lake to increase the reproductive success of loons. In 2026, this included the provision of nine artificial nesting rafts, roping and/or signing all 11 loon nesting areas, and the placement of "Caution: Loon Chick" signs in successful territories to alert boaters to the presence of loon chicks.

    - **Investigating causes of nest failures:** Cameras placed at loon nests help us understand the causes of nest failures to guide future management. In 2026, LPC placed one camera at a nest site on Squam. Pictures from this camera will be reviewed to look for any indications of human or natural disturbance to the nesting loons.

    - **Outreach:** Educating the public about the needs of loons and the importance of maintaining a respectful distance from loons and loon nests forms an important part of LPC's outreach activities. The Squam Lake Loon Initiative has resulted in dramatically increased outreach to the Squam Lake community and visitors through weekly presentations at the Rockywold-Deephaven Camps on Squam Lake and twice-weekly loon cruises on the lake in partnership with the Squam Lakes Natural Science Center (SLNSC), as well as giving other presentations in the Squam area. In 2026, LPC and SLNSC partnered for a special "Loon Day," featuring additional loon cruises and loon educational displays at the Science Center. Squam Lakes Loon News e-newsletters provide updates on Squam's loons to over 420 people during the summer, and LPC responds to inquiries about loons and our work through individual communications throughout the year.

    - **Mitigating effects of climate change:** Covers on loon nesting rafts help protect loons from avian predators and provide shade for incubating loons, which can easily overheat. In addition, LPC has deployed shade fabric on raft covers to help loons cope with a warmer

climate. LPC's nest cameras also help us understand the impacts of climate change on nesting loons by allowing LPC to assess nest attendance during heat waves and observe behavioral signs of heat stress in incubating loons.

3) *Identifying levels and sources of contaminants:* LPC continues to investigate contaminants as one of many possible contributors to both reduced survival and reduced breeding success of Squam's loons and to identify solutions to the complex issue of contaminated sediments in the Squam watershed. LPC continues to work with the Squam Lakes Association to investigate the sources of these contaminants and the extent of contamination in the Squam watershed.

LPC is working to ensure that the issues facing loons are addressed to safeguard the health of Squam and all its inhabitants. As indicators of the health of the aquatic environment, Squam's loons originally alerted us to the problem of contamination on Squam Lake, and they will continue to serve as sensitive barometers of contamination in the watershed. As funding permits, LPC will continue to test inviable loon eggs from failed nests on Squam for contaminants. Results of these tests will provide the ultimate measure of our success to address the issue of contaminants on Squam Lake as we work to ensure the health of the Squam ecosystem and the wildlife and people that call Squam home.

Next Steps

The Squam Lake Loon Initiative has already provided critical baseline data on contaminants and other environmental stressors on loons, which will be invaluable to assess changes in, and effects of, contaminants and pathogens in the future. The testing being done on loon samples is the most comprehensive undertaken anywhere to date. LPC's research is the only systematic testing in the state for contaminants in wildlife at or near the top of aquatic food webs, and contaminant levels in loons are important indicators of the health of aquatic ecosystems. LPC remains concerned about the overall contaminant body burden of Squam's loons, given the elevated levels of multiple contaminants in Squam's loons, as demonstrated in our recently-published paper.

The SLLI has resulted in a detailed record of loon populations and productivity on Squam Lake, including causes of nest failures; the quick response to sick or injured loons to increase chances of survival of these loons; an increased number of banded and sampled loons on Squam to increase our knowledge of the survival and breeding success of known individuals, and the relationship of survival and breeding success with contaminant burdens; a model to elucidate the effects of multiple co-occurring stressors on the survival and breeding success of loons; and protection, management, and outreach to recover and maintain the Squam Lake loon population. This initiative will continue to investigate the much larger, more systemic problem on Squam indicated by the decline of loons; inform other initiatives such as LPC's New Hampshire Loon Recovery Plan and SLA's Squam watershed plan; and help LPC and others make informed decisions to protect Squam's loons, other wildlife, and the ecological integrity of Squam Lake, as well as lakes throughout New Hampshire.

Objectives for the Squam Lake Loon Initiative in 2027 include:

1. Testing inviable loon eggs from failed Squam nests in 2025-2026 to monitor current contaminant levels and trends;
2. Inspecting data from nest cameras to investigate disturbances at nests and causes of nest failures;

3. Advocating for comprehensive testing of samples while working with New Hampshire Department of Environmental Services, US Environmental Protection Agency, and Squam Lakes Association to determine the extent of contaminated sediments and facilitate remediation of potential sources;
4. Preparing a follow-up paper for a peer-reviewed journal to report levels and investigate effects of PFAS on Squam and statewide loon eggs and to focus scientific attention on this issue;
5. Continuing intensive monitoring, management, and outreach to support Squam's loons.

Squam Lake plays a leading role in advancing our understanding of loons and their challenges in New Hampshire, and the groundbreaking research being conducted on Squam Lake will continue to inform LPC's efforts to preserve loons throughout New Hampshire.

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The Loon Preservation Committee is a not-for-profit 501(c)3 and donations to fund our work to protect loons are tax deductible as allowed by law. To donate to the Squam Lake Loon Initiative, please visit https://loon.org/donate/. Thank you for your support of our work to help the loons of Squam Lake!

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