

Loon Pair & Nest Monitoring Instructions

Maine Loon Restoration Project (2021-2025)



SURVEY INSTRUCTIONS: The WHAT, WHEN, WHERE, HOW & WHY OF LOON PAIR MONITORING

1. Why Survey a Loon Breeding Pair over the Entire Season?

This monitoring effort is part of a five-year project to increase loon survival and nesting success on Maine lakes and ponds. Hundreds of community scientists and lake association groups have joined the effort to survey nesting success of Common Loons throughout Maine over the last few years. Your observations throughout the breeding season will help us answer several key questions:

- *Did a mated loon pair nest in your area this year? Did they nest on a nesting platform?*
- *How many chicks did the pair hatch?*
- *Did the chick(s) survive for at least 6 weeks after hatching (an age when they are considered likely to fledge)?*
- *Was there any predation, competition from other loons, or human intrusion that affected the pair's nesting or survival?*

This effort differs from the Annual Loon Count in that you'll be focusing on one pair of loons over a season and gathering information to tell their breeding story. The loon count helps us estimate Maine's loon population. Both are important!

Your observations will help us determine what threats loons face on your lake or pond and if any actions are warranted to increase breeding success and survival, such as nesting platforms, signs, or local outreach efforts. We can also track how well loon pairs are faring in areas where we're doing active management, like putting out nesting platforms or nest warning signs or conducting local outreach.

2. **What to Survey?** We are looking for volunteers or associations to essentially “adopt” a loon pair to monitor throughout the breeding season (from approximately early May through August or later). Your surveys will focus on the **same mated pair of loons** throughout the season. We are particularly interested in pairs that haven't hatched chicks in recent years and breeding areas where we've placed nesting signs or rafts to track if these management tools are helping low-productivity pairs hatch more chicks.

How do you tell if two loons are a mated pair? During the breeding season, mated pairs interact closely with each other and normally don't allow other loons to be within an area they defend as their breeding territory. So, you may see these loons swimming and diving together or fighting off other loons that enter the area they defend. We normally call these pairs “**territorial pairs**,” because of their behaviors to fend off other loons in their territory during the breeding season. At other times of the year, loons are social. Please see our [Monitoring Reference Sheet](#) to help you determine if you are seeing a territorial pair.

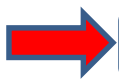
3. **Where to Survey?** On small waterbodies that support only a single breeding pair, you'll survey the entire lake or pond. If you are on a larger lake with multiple mated pairs, focus on a specific section where one pair of loons has been observed. You don't need to know where the pair's territory starts and ends to do your surveys—start by focusing on the general area where you have seen the pair interacting. Then expand or tighten your survey area over time as you observe where they spend their time. It may also help to talk to other people on the lake about

the pair's nesting history and their recent sightings. In general, a pair's breeding territory averages about 100 acres, but can be larger or smaller depending on food availability, competition, or habitat quality. Use this search tool to look up the size of your lake or pond and other information such as water quality, number of loons counted during the Annual Loon Count, types of fish and more: <https://www.lakesofmaine.org/>.

4. How Often & What Time of Year? If possible, monitoring should start at the beginning of May (or as soon after the ice melts as safely possible) and continue once per week until the chicks are at least six weeks old, and preferably until they leave the lake. If you can't cover this schedule yourself, is there someone else you can pair up with or a lake association that might be willing to help? Staff of the Maine Loon Restoration Project will provide online training sessions, in-person instruction, and resources to support you.

5. HOW to monitor nesting success and how to do surveys responsibly?

Now that you know why, when, where, and what to survey, it's time to start preparing for the survey and getting out on the water! In addition to the information below, you can find survey forms, resources, recorded webinars, and other information to help you with your surveys in the **Monitoring Program** section of the *Maine Loon Restoration Project* webpage:



<https://maineaudubon.org/projects/loons/loon-restoration-project/>

Preparing for the Survey: Before you start:

- A. Locate and print out a [Survey Form](#) for your lake here. Review the form carefully so you understand what information you will be collecting out on the water.
- B. Print out a [Monitoring Reference Sheet](#) to take with you on your survey (or, if you've worked on the project already, find the laminated copy we may have given you). This sheet provides pictures and descriptions to help you quickly identify loon behaviors and chick development stages while you are out on the water. Bring this sheet with you on your survey.
- C. Review information on loon behavior and signs of distress to learn how to avoid getting too close to a nest or loon family while you are surveying and how to know when you have approached too closely.

Materials: On your survey you will need:

- | | |
|---|---|
| <input type="checkbox"/> Printed Survey Form | <input type="checkbox"/> Watercraft/survey vessel |
| <input type="checkbox"/> Monitoring Reference Sheet | <input type="checkbox"/> Life jacket/PFD |
| <input type="checkbox"/> Clipboard & Pencil | <input type="checkbox"/> Binoculars |
| <input type="checkbox"/> Rain/wind protection | <input type="checkbox"/> Hat/Sunglasses/Sunscreen |

- Monitoring can be done from any type of watercraft. You will not be able to do a thorough survey from shore. You might occasionally be able to check on a nest from shore, but you will not be able to do a full survey from land or reliably locate the pair for observation from a shore location.
- If you have a phone or camera with a zoom lens, please take and submit photos with your completed survey form. A cell phone can also be used to mark loon locations using Google Maps.

The Survey: You will need to spend from a half hour to more than an hour traveling around the area that the loons frequent and defend in order to:

- A. Locate and observe behaviors of both members of the loon pair if they are in the area;
- B. Try to locate a natural nesting site or raft and observe the nest and any loon sitting on the nest with binoculars (and from a distance that doesn't cause the loon to raise its head high in alert or crouch down low on the nest—a sign it is threatened and ready to leave the nest);
- C. Find and observe any chicks that have hatched;
- D. Record your observations on the survey form.

Safety!

Don't go out on the water when conditions seem questionable or unsafe. The survey can wait! Always remember a PFD and be sure to let someone know where you are going and when you'll be back.

Safety Guidelines: Give loons plenty of space and watch for distress signals! Keep your distance if you see or suspect a loon or nest is near. When you locate the pair, nest, or chicks, observe them from a distance and watch only as long as necessary to collect the survey form information. **Back away** if you see any of the stress behaviors shown on your *Monitoring Reference Sheet*--even if you don't have all of the data. The loons' ability to tend to their eggs or chicks is more important than data or photos.

Never approach loons or follow them. Also don't approach the nest to count eggs, even if a loon isn't on the nest or it appears to be abandoned. Loons may sometimes leave the nest for extended periods. For more information about how to observe loons safely, review our brochure: [How Close is Too Close?](#) and visit loon.org for educational videos of loon behavior.

Do not remove eggs from loon nests, even if they are abandoned. It is illegal to collect eggs without permission from a federal permit holder or sub-permittee. Neither Maine Audubon nor Maine Department of Inland Fisheries and Wildlife will accept abandoned loon eggs.

If you ever find a dead, injured, beached, or entangled loon, Please call Warden Dispatch immediately at 800-452-4664 and go to this website: <https://maineaudubon.org/projects/loons/injured-dead-loon/describe> for more information about what to do and how to proceed. Do not touch the loon.

6. Data Collection:

- A. As you conduct your survey, mark your observations on the survey form and check the *Monitoring Reference Sheet* regularly.
- B. Make sure to fill out the top of the form with your contact information, number of observers, and give the pair a name that you will use to identify the pair on every survey form.
- C. On the map, mark:
 - ✓ "C" where you observed a chick hatched by the pair. Do your best to determine which development stage the chick fits into (downy, small, or large; shown below) and circle one of these choices on the survey form. Also let us know if the chick has been seen by you or others for more than 6 weeks. If you know when it hatched, you can also use this information to calculate the chick's approximate age. Note: if you're seeing a chick is in the 'large' stage, it is definitely over 6 weeks old.



Loon paintings by Emerson Frost

Downy Young are less than 1/3 adult length, have black to dark brown fluffy down, and ride on parents' backs when they are very young. Chicks in this stage are **less than 4 weeks old**.



Small Young are 1/3 to 2/3 the length of an adult and have a mix of light brown fluffy down and smooth gray contour feathers. They often have a 'messy' appearance. Their bills have elongated. **4-8 weeks old**.



Large Young are almost the size of an adult and have a full covering of smooth, gray contour feathers. All of the down is gone. They are still cared for and fed by their parents but are gaining independence. Large Young are more than **8 weeks old**.

- ✓ T" where you observed an adult from the pair (include a "?" if you aren't sure it's a member of the pair). Breeding pairs will calmly swim, feed, and dive together and sometimes synchronously dip their bills or hoot softly to each other. They will also fend off other loons that enter their territory with aggressive challenges and even attacks. (Please mark these pair behaviors in the *behaviors* section of the survey form).
- ✓ "L" where you observe other adult loons in or near the pair's breeding territory. During the breeding season, adult loons will have black and white breeding plumage and a bright red eye. Some loons without mates will socialize in groups at the edge of a breeding territory or in the middle of the pond. Loons competing with each other for a territory (male or female) will chase each other, aggressively circle each other, dive with big splashes, attack, or row their wings over the water to escape an attack. If you see behaviors like this, one adult is part of the pair and warding off a competitor: the other is a loon challenger trying to take over the territory. (Please mark these territorial behaviors in the "Stress & Territorial Behaviors Observed" section of the survey form).
- **See the *Monitoring Reference Sheet* for pictures of loon territorial behaviors.**
- ✓ "N" where you observe a loon on a nest. When looking for nests, pay particular attention to islands (preferred nesting habitat for loons), quiet coves, marsh areas, mounds of mud, and floating mats of vegetation, and places that provide some vegetative cover and shade. You are less likely to find a nest on steep, rocky, or exposed shoreline.
- ✓ "R" where you observe a loon on a nesting platform or "raft".
- ✓ "U" where there's a raft placed, but it isn't being used for nesting currently.
- ✓ "F" a known former nesting site, either this year or in prior years.

D. Nesting Activity: Mark any nesting activity you observe, such as if the loons are getting up on land, actively building a nest, sitting on a nest. Also mark if they do what we call "overincubating," sitting on the nest for longer than the normal incubation period of around 27-28 days. These eggs are unlikely to hatch. Mark if chicks hatched, if there are eggs missing or off the nest, or if you see a broken egg or pieces of eggshells (which could mean either a chick hatched or the egg was crushed or predated). This part of the form asks you to mark how many eggs you observed, but don't get close to the nest to count. Use your binoculars to see if you can get a glimpse of the eggs, but this data is not important enough to risk disturbing nesting.

If you know that a loon had been on a nest recently and you don't see it on the nest during your survey, mark nesting activity as "Adult loon left nest". We'll find out in subsequent surveys if the loon came back to the nest or abandoned it. Loons will also sometimes re-nest if their first attempt fails, so it's important to note if you see a nest being used in a different location than previously.

E. Behaviors Observed: You may have already documented some behaviors while you were marking the map. Take a look at the list again to see if you observed any of the behaviors listed. We particularly want you to record behaviors that give us clues about breeding status, such as if you see courtship or aggressive behaviors between two loons. We are also looking for signs that a loon is distressed. Please mark if you see a loon with its neck very stretched high, or if a loon is crouched down on a nest with its head low, or is floating so low in the water that it is hard to see its body. These behaviors can be in response to a loon challenger, a predator, or even you if you're too close! Back away and discontinue your survey if you see any of these behaviors that are signs of stress. Your monitoring reference sheet can help you determine signs of stress.

F. Don't forget the back of the survey form! We have a few questions on the back of the form.

- ✓ We need to track how many hours participants spend on this project. This includes time planning with our staff, emails or calls, time in the field conducting surveys, any training webinars you complete, and any coordination or outreach you do with other members of the lake community.
- ✓ If known, what was the approximate date that an adult was first seen on the nest? This will help us to calculate when the egg is due to hatch or if the loons are incubating too long.
- ✓ Help make it easy for us to track how many chicks the pair has hatched this season.
- ✓ We need to determine if a chick lives to at least 6 weeks of age. This is a key piece of data. Please let us know the approximate or actual date the chick was seen or reported by you or community members.
- ✓ Let us know if you are aware of a chick from the pair that died or disappeared since your last survey.

G. Comments

It takes time for us to translate comments into data (i.e., numbers and categorized information that we can use to analyze the project results). Please include only the most important additional details in your comments, such as changes in nesting (like a loon leaving and returning to the nest often), if a human or animal intrusion causes a loon to leave the nest or its chicks, if there is nest failure (such as eggs being knocked out of the nest, predated, or the nest if flooded), or any details about a chick's or adult's death or disappearance, etc. This is also where you can comment on other pairs or loon families you might see during your survey.

H. Data Entry & Submission

After each survey, submit your data at: maineaudubon.org/loonmonitoring. Also email or mail completed forms and photos to us at the end of the month to the partner you work with most:

- 1) Maine Audubon, 20 Gilsland Farm Rd., Falmouth, ME 04105, attn: Loon Restoration Project, loonrestoration@maineaudubon.org, 207-781-2330
- 2) Lakes Environmental Association, c/o Loon Restoration, 230 Main Street, Bridgton, ME 04009 or maggie@leamaine.org, 207-332-1106

More frequent submissions will allow us to better track the information about your lake or pond. You may need to print a new copy of the survey form at maineaudubon.org/loonsurvey. Please reach out to the project partners if you need assistance.

THANK YOU!

This project would not be possible without your dedication and passion for loon conservation.



Appendix I. What You Can Expect Throughout the Season:

What you observe will vary throughout the season. Early monitoring will focus on defining the pair's breeding area and where they may be nesting, while later monitoring efforts may focus on locating the chicks and documenting their development and survival. Here's an idea of what you might observe at different times of the season:



Early Surveys (*Ice melt through spring*)

- Loons form territories and territorial pairs
- Begin courtship and mating
- Test out sites for nest building

Egg Laying (*Mid-May to Mid-June*)

- Surveys focus on nesting pairs
- Eggs are typically laid from mid-May to mid-June or later if the pair re-nests after their initial nest fails

Hatching & Chick Growth (*Mid-June to late July*)

- Eggs normally hatch from mid-June to late-July, but some chicks will hatch even as late as August!
- Observe chicks as they grow through different development stages
- Track loon pairs that have not produced any chicks or are re-nesting after their first attempt failed

Chick Survival & Fledging (*August into fall or early winter when chicks "fledge" or fly off the lake*)

- Surveys in August focus on growing young and their survival. If you are able to observe the loons into the fall and winter, we welcome your observations.

APPENDIX IV. Glossary of Loon Terms

Chick stashing: A loon parent will sometimes “stash” its chick to join their mate in fending off a threat, such as another loon that is challenging the pair in an attempt to take over the territory. The parent takes the chick into a protected area away from the confrontation and then leaves the chick alone, but often somewhat hidden, while both parents confront the intruder. Confrontations can last for an extended period of time. While this behavior does leave the chick vulnerable for the time it is alone, it is not abandoned. A parent will return for it. If you find a chick alone, do not approach it or try to rescue it.

Clues to Causes of Nest Failure: The reasons that cause a nest to fail are sometimes difficult to determine, but you can help by providing photos of an abandoned nest taken from a distance and gathering clues about the nest’s demise. Is there water in a nest with eggs? This may indicate the nest flooded due to rising water levels or heavy rain. Are there eggs outside the nest, floating, or missing? This may indicate that waves or boat wakes washed the eggs out of the nest or flooding floated the eggs away. Are there visible holes in the eggs that may hint at avian predation? Or crushed eggshells and egg fragments which could be leftover from a land mammal in the nest? Bigger fragments may be leftovers from hatching. Is the waterline far from the nest and/or are there drag marks, signs of something dragging itself to or from the nest? This may mean that water levels fell and left the nest high and dry requiring loons to push themselves along the shore to reach the nest. Did anyone see a chick at some point, which could indicate that the pair successfully hatched a chick and the chick may have been killed or died after hatching? Are there tracks or scat (poop) present, which may indicate that a predator took the eggs or attempted to drag them away.

Fledge/fledging/fledgling: Once chicks are capable of flight they have ‘fledged’ (around 12 weeks of age). A chick that has fledged is referred to as a fledgling. Signs that a chick is approaching the fledging stage include attaining adult size and shape, lack of fluffy down, exercising their wings by flapping, and attempts at flight. Parents typically migrate first and leave their fledged young to migrate on their own a few weeks later.

Ice out: When the ice melts to the point where you can navigate unimpeded from one end of the water body to the other.

Immature/sub-adult loons: Loons in their 2nd or 3rd summers. They are adult size and shape, but do not have the adult black-and-white breeding plumage. Instead, the feathers on their backs and heads are grayish-brown with white undersides. Sub-adults may be mistaken with older, first year young in late summer and early fall. If a loon matching this description is seen early in the season (typically before August) without parents and it doesn’t receive parental care, or is seen in a group of three or more loons, it is likely an immature, sub-adult loon. For additional tips on loon appearance at different stages and telling immature loons apart from first year chicks or wintering loons, see <https://loon.org/about-the-common-loon/appearance/>.

Intruding Loons/Intruders: Intruders disrupt loons from tending their nest or protecting and caring for their eggs and chicks and can include humans, predators, and other loons. Intruding loons are loons that are not part of a territorial pair, which enter the pair’s territory and challenge the pair with displays, aggression, or attacks. These intruders will take over the territory and displace one member of the pair if they win the confrontation. You can distinguish an intruder from members of the pair if you see the aggressive or territorial behaviors listed on the survey form and shown in the Monitoring Reference Sheet. When an intruder is present, the pair will be on alert and will not conduct normal

foraging, preening, or courtship behaviors.

Nest Failure: When a loon pair attempts nesting and fails to hatch chicks. This may include eggs that are laid but don't hatch, abandonment of the nest, predation or flooding of the nest, etc. Breeding failure is a more general term which also includes pairs that form but never attempt nesting.

Nesting pair: Pairs are considered nesting pairs from the beginning of copulation up until hatching. Copulation can occur several times over a 7 day period. 1-2 eggs are deposited in the nest 1-2 days after fertilization. The pair will share incubation duties for 27-30 days. Much longer than this and the egg(s) are unlikely to be viable.

Preening: When birds use their beak to move oil from a gland on their back to their feathers to maintain waterproofing. This is also a time when they straighten and organize their feathers.

Re-nesting: Loon pairs can re-nest (often in a different location) if the first nesting attempt fails. Pairs that re-nest as late as the end of August can sometimes successfully fledge young.

Single adult loons: These are likely unmated adult loons, also referred to as "non-territorial", "non-breeders", "residents", "wanderers", "loners" or "floaters". Unmated loons do not establish pair bonds, or are only part of a pair bond *for less than four weeks*. Unmated loons are typically found on low quality territories and are most likely young birds (ages 3-6), or established adults that have been cast out of their former territory.

Territorial pair: Two adult loons that exhibit clear pair behavior, including exchanges of contact wails or hoots and synchronized movement around the territory with relaxed foraging. Territorial pairs will also engage in territorial disputes with loon challengers or "intruders". These disputes often include sudden simultaneous dives, chases, attacks, or other agonistic behavior indicating the two loons may not be a pair. To be considered a territorial pair, loons must establish and defend a territory for at least 4 weeks.

Tour Boat: Any vessel embarking passenger for touristic reasons including site seeing and tours.

Wake Boat: Also known as surfboats or towboats. Designed to create a large wake for watersports.