

MASSACHUSETTS WILDLIFE

No. 2, 2018

\$3.00



**Common Loons,
Pesticides & Pollinators,
Bird Banding**

MASSACHUSETTS WILDLIFE

Vol. 68

No. 2

FEATURES

RESTORE THE CALL: LOON RESTORATION IN THE NORTHEAST 6

— Deborah McKew

The return of an adult, translocated Common Loon to the Assawompset Pond Complex in southern Massachusetts marks a milestone for loon conservation efforts in the Northeast.

OF POLLINATORS, FOOD AND POISONS 18

— Richard A. Callahan

The author describes experiments performed over several years that demonstrate a direct link between long-term, low-level exposure to imidacloprid, a widely used neonicotinoid pesticide, and aberrant behavior in adult overwintering honeybees resulting in hive abandonment and death.

DAD'S LAST FISHING TRIP 26

— Alison Colby-Campbell

MassWildlife hatchery staff and a local community come together to help a World War II veteran enjoy a final fishing trip in Haverhill.

BIRD BANDING: A MORNING AFIELD 30

— Brandi Van Roo

Join the author and her university students for a morning banding songbirds and woodpeckers during spring migration.

Remembering Bill Byrne 2

Correspondence 4

Finding Summertime Trout 29

Faces of Conservation 36

On the Cover: A Common Loon prepares to feed a young Smallmouth Bass to one of its chicks. Currently, there are about 40 pairs of breeding loons in the state with the core population found in north central Massachusetts, focused in and around the Quabbin and Wachusett Reservoir areas. Photo by Bill Byrne/MassWildlife

TO SUBSCRIBE OR BUY A GIFT SUBSCRIPTION

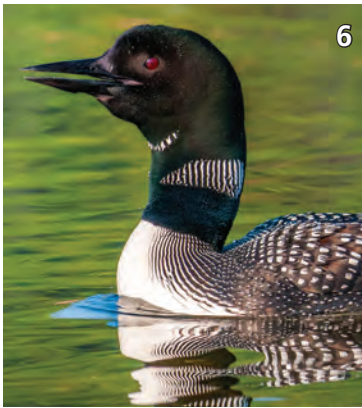
PLEASE VISIT mass.gov/masswildlife

OR CALL (617) 626-1590 ANY WEEKDAY

Questions about your subscription?

Change of address?

Call toll free: (800) 289-4778



6

Photo by Bill Byrne/MassWildlife



18

Photo © Sarah Rydgren



26

Photo by Alison Colby-Campbell



30

Photo by Nicole McSweeney/MassWildlife

Restore the Call

Loon Conservation in the Northeast



by
Deborah
McKew

Photo by Bill Byrne/MassWildlife

It was the beginning of a warm, clear day on the lakeshore that Saturday before Memorial Day, 2018. Glenn McAvoy, a member of the management team for the Assawompset Pond Complex in southeastern Massachusetts, was out early surveying the lake when he spotted an adult loon about 100 feet from shore. Sighting the loon with his binoculars, he watched it preen for a while, and when it dove, he could clearly see the numbered color bands on its leg. He immediately knew what he had to do next.

Michelle Kneeland, wildlife veterinarian for Biodiversity Research Institute (BRI), was working in the field in Central America when she received Glenn's message, which began "Break out the champagne!" Immediately she realized that five years of dedicated research and commitment had achieved a major milestone. In a rush of tangled emotions, she sent a flurry of text messages to the entire BRI loon team, a group ranging from Maine to Wyoming.

Glenn had just identified an adult loon that had been released by the group as a chick in the summer of 2015 as part of BRI's Restore the Call loon conservation study. The adult bird had returned, not to its hatch lake in New York's Adirondack Park, but to the lake in Massachusetts to which it was translocated, captive-reared, and then fledged. In the world of loon research, Glenn's confirming observation was big news.

The story begins 14,000 years ago as receding glaciers formed a network of deep lakes creating ideal habitat for Common Loons. Up to the 19th century, across most of the species range, populations of

breeding loons could be found wherever there were concentrated groups of lakes that could support loon populations. These areas were found throughout Canada, south to Pennsylvania, Indiana, Illinois, Iowa, and over to California. In the Northeast, the yodel, wail, and tremolo of the loon could be heard throughout New York, New England, and as far south as northern New Jersey. However, as humans shifted from a culture of subsistence hunting to shooting for sport and built encroaching houses and camps on critical

shoreline nesting habitats loon populations suffered serious declines. Over the course of a century, the bird's southern range was greatly reduced; in some areas, breeding loons simply vanished.

By the late 1800s, the haunting calls of the loon were no longer heard on Massachusetts' lakes and ponds. Breeding loons completely disappeared from the state. The last known breeding pair in Massachusetts

was reported in 1872 and it would take nearly 100 years (1975) before a loon pair had established a territory—breeding and nesting at Quabbin Reservoir. Since then, loons have ever so slowly begun to repopulate a portion of their former range. Currently, there are about 40 pairs of breeding loons in the state with the core population found in north central Massachusetts, focused in and around the Quabbin and Wachusett Reservoir areas.

For many, the Common Loon represents true wilderness, a symbol of undisturbed lands, clean water, and a distinctive voice for wild things and wild places. But as human activities and the needs of loons collide, loon survival has become more uncertain.

Restore the Call

"Human actions extirpated loons from this landscape. It's going to take human action to restore them," this was a comment from BRI's Executive Director,

David Evers. “It’s our obligation and our responsibility to help loons return to the former parts of their range, and to assist loons in their existing range, ensuring their populations stay strong over time.” That philosophy is the fuel behind BRI’s ambitious loon restoration project; Restore the Call. The goal is to strengthen and restore Common Loon populations within their existing and former range. The research and recovery efforts include employing the practice of translocation—taking loons from one area and re-locating them to another area. Translocating wildlife to other parts of their former range is a well-established and accepted conservation practice and has been successfully employed with wildlife such as eagles, turkeys, otters, wolves, and turtles. What is unique about Restore the Call is it’s the first time translocation has been used in loon restoration. Over the past five years, with funding from the Ricketts Conservation Foundation and partnership with fish and wildlife agencies and other conservation partners, BRI has been implementing Restore the Call on both public and private lands

in the West (Wyoming, Montana, and Idaho), the Midwest (Minnesota), and the Northeast (Maine, Massachusetts, and New York).

There are several limiting factors affecting loon population growth and range recolonization. The Common Loon is more water-dependent than any other inland dwelling bird, only coming on to the shoreline in spring to breed and nest. It builds its nest within just a few feet of the shoreline and is very sensitive to disturbance and fluctuating water levels. If levels drop too low, moving from the nest to the water is physically very difficult for loons. Their legs are placed far back on the body, an adaptation that allows for superb diving abilities but renders them unable to easily walk on land like mallards or geese. Loons often abandon a nest if repeatedly flushed or otherwise disturbed by people boating or walking nearby. Loons also have a low reproduction rate; on average an adult loon pair successfully raises only one fledgling chick every other year. Even

Continued on page 10

A Biodiversity Research Institute crew prepares a Common Loon chick for release (from left to right: Michelle Kneeland, Cassandra Hammond, Vincent Spagnuolo, Lee Attix, Alex Dalton).



Photo © Shawn P. Carey/Migration Productions



Photo © Shawn P. Carey/Migration Productions



Photo by Bill Byrne/MassWildlife



Photo © Michelle Kneeland/BRI

(Top to bottom) Wildlife veterinarian Michelle Kneeland conducts a final examination to ensure the chick (held by Lee Attix) is healthy before releasing it onto the lake. Loon chicks are raised in aquatic pens until they are old enough to feed on their own. A close up of a feeding station. A five-week-old loon chick in the captive rearing pen.



Photo by Bill Byrne/MassWildlife

Continued from page 8

though loons will migrate to the coast to open water in winter, they don't travel far to establish new breeding territories or nests. Loons exhibit what is called high site fidelity; about 80 percent of breeding birds return to the same territory each summer. Some adults return to the same lakes, but depending on the size of the lake they may move to a new cove or nearby lake or pond after losing a territory. Adults typically venture no more than two or three miles from their former breeding territories while juvenile loons may only disperse on average eight miles. These constraints make "natural" recovery a very long and slow process.

The Biodiversity Research Institute, headquartered in Portland, Maine, has a long history with loons. BRI's research on loons began in the summer of 1989, when David Evers devised a reliable and replicable method for capturing loons, intelligent and agile aquatic birds that dive to depths up to 220 feet. Capturing and banding loons with uniquely colored leg bands presented opportunities to

Loons also have a low reproduction rate; on average an adult loon pair successfully raises only one fledgling chick every other year.

conduct demographic, movement, behavioral, and contaminant studies. After analyzing the various data, researchers now have a better understanding of loon population dynamics. For example, they learned that nearly half the chicks produced each year originate from only 20 percent of the total breeding population. This research also clarified loon migration and territorial movements.

Collaboration is Key

State or regional working groups comprised of state and local agencies as well



Photo by Bill Byrne/MassWildlife



Photo by Bill Byrne / MassWildlife



Photo courtesy of BRI

(Left) ABRI crew member enters loon pen data. (Above) Loons are adapted to live in the water, with large feet and powerful legs positioned far back on their bodies, dense bones, and the ability to dive up to 220 feet.

as loon or other conservation organizations are critical to the development and implementation of loon restoration plans. A Loon Study Working Group has a long history in the Northeast. Since 1974, loon recovery efforts had been ongoing in New Hampshire and Vermont with support and experience from the New Hampshire Loon Preservation Committee. Their experience and learning was helpful to the Restore the Call project. The importance of these partnerships can't be overstated. It's not possible to attempt a project of this scope without the funding support from foundations, the cooperation of state and federal wildlife agencies, and key local loon conservation nonprofit groups. The first steps, beginning in 2013, involved working with federal and state agencies to survey loon populations and identify ecological stressors in the three study areas. These stressors or threats (see page 14) contribute to dwindling loon populations. Using the assessment information, scientifically based approaches

and plans can be created to mitigate those threats.

Moving loon chicks from one place to another and successfully raising them to the fledging stage is not easy. For the first phase of the project, the BRI team, headed by Michelle Kneeland, D.V.M., had to research and develop study protocols to guide the team's course of action in capturing, transporting and raising the chicks. It was the beginning of a long, painstaking process. The most important concern for the team was the health and well-being of the young birds; loons typically do not do well in captivity. The team's job was to try to anticipate any possible problems that might occur and think through every last detail of the rearing process to ensure success. Among the challenges: determining when to capture the chicks so they "imprint" or view the lake where they were raised and released as home instead of their "hatch" lake; designing and building the

equipment necessary to safely transport, transfer and raise the loon chicks to the point where they could fledge (fly). They also needed to ensure that the chicks stay wild and wary of people. The rearing process needed to prevent chicks from becoming habituated (accustomed) to humans. Thorough research, numerous brainstorming sessions, and many hours of discussion resulted in a detailed plan that outlined all the tasks and methods needed to accomplish this complex process.

BRI chose Minnesota, the Land of 10,000 Lakes, for its first relocation attempt. Though Minnesota has a very robust loon population in its northern regions—an estimated 4,600 territorial pairs—loons had completely disappeared from the lakes in the southern part of the state. The Minnesota Department of Natural Resources was eager to help loons recolonize their former range. The choice proved an ideal testing ground for developing and refining loon translocation methods and techniques.

Capture of adult loons for banding has been conducted ever since David Evers developed the methods in the late 1980s. The process involves night lighting loons and capture with long-handled dip nets from a boat. Chicks utilized for translocation are caught using the same methods.

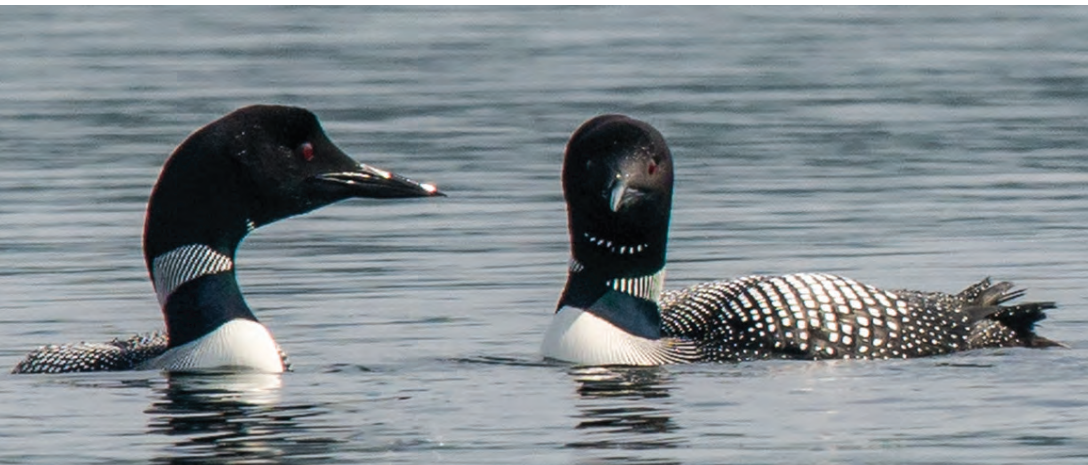
To keep the captured 4–6 week old chicks calm and protected during transport to their new location, the birds

were placed in custom designed vented containers fitted with suspended mesh netting to protect the loon's keel and feet. The vents and netting also prevent feces from accumulating in the containers. Cold packs beneath the netting and vehicle air conditioning cranked at full blast help keep the loons cool during long trips.

At the relocation site, an aquatic rearing pen provided a safe place for chicks; allowing them to acclimate to their new environment, learn to feed on their own, and swim and exercise to fledge by autumn. The BRI team devised a structure that permitted staff to observe and feed the captive loons—all without the chicks ever seeing them. Each rearing pen included a “feeding blind”. Live fish are dropped into the pen via a PVC pipe mimicking adult loons teaching their young to feed by dropping fish in front of them. The swimming fish stimulates the chicks to dive after the fish to feed. In the summer of 2014, five Common Loon chicks were safely moved from northern Minnesota lakes to a lake in the southern part of the state, reared in captivity, leg banded and released to fledge in healthy condition. Since then, 17 chicks have been successfully translocated to southern Minnesota.

Moving On To Massachusetts

In 2015, Restore the Call was ready to expand loon translocation efforts in



Massachusetts. In collaboration with the MassWildlife, BRI chose southeastern Massachusetts to translocate loon chicks. The Assawompsett Pond Complex (APC) in southeastern Massachusetts seemed to be an optimal location to begin this work. The APC contains an abundance of lakes and ponds of varying sizes with many protective coves and islands for nesting that may be able to support 8-10 loon territories. Designated by Mass Audubon as an “Important Bird Area”, this landscape of water supply and conservation lands of about 10,000 acres is comprised of a network of oak-pine forests, lakes, ponds, and wooded swamps. The distance and lack of any connecting habitat from the north central Massachusetts loon populations, coupled with the birds’ limited dispersal tendency, inhibits natural recolonization of this area. Coincidentally, the APC also hosts a successful MassWildlife reintroduction of captive raised endangered turtles, the Northern Red-bellied Cooter.

This was also the first year BRI researchers began transporting loon chicks across state boundaries. In collaboration with the New York State Department of Environmental Conservation and MassWildlife, BRI successfully moved seven chicks from New York’s Adirondack Park to southeastern Massachusetts. In the third and fourth years of the study, with assistance from the Maine Department of Inland Fisheries and Wildlife and the Maine Audubon Society, BRI researchers

also successfully translocated 24 chicks from Maine to the same lake area in Massachusetts.

Achieving Project Goals

Based on the Minnesota and Massachusetts translocation efforts, it is clear that the team has achieved critical project goals: 1) applying a safe and replicable approach for chick capture and transport to a new lake location; 2) successfully rearing chicks to the fledging stage; and 3) confirming the return of adult loons to the lake area from which they fledged.

Loons are migratory, breeding on lakes in the summer and wintering in coastal areas, sometimes migrating thousands of miles. Once loon chicks fledge, they usually spend close to three years maturing on the ocean. In the third summer after fledging, the young loons return to their natal lakes to join the breeding populations. It’s not until their sixth year that female loons establish their own territories, find a mate, and begin nesting.

Anticipating loon returns in the summer of 2017, BRI staff carefully surveyed the lakes in southern Minnesota for any loons banded for this project. Though adult loons were reported in the area of the release lake in southern Minnesota, the birds found could not be definitively identified. Scientists point out that it is unusual for summertime sighting of an

Continued on page 16



How Ecological Stressors Affect Loons

- **Lead Mortality** – lead fishing tackle and discarded line routinely kill adult loons
- **Human Activities** – recreational activities and shoreline development can contribute to loss of loon habitat and productivity
- **Oil Spills** – loons die from oil spills every year, sometimes hundreds are killed in one event
- **Reservoir Management** – wide swings in water levels can reduce loon reproductive success
- **Mercury** – negatively affects long-lived, fish-eating animals like loons, especially in areas with a history of acid rain
- **Climate Change** – the potential impacts of climate change are still being investigated
- **Type E Botulism** – bacteria outbreaks have significantly affected loon populations in Canada, killing several thousand each fall
- **Invasive Species** – both invasive plants and animals can compromise the integrity of a lake ecosystem making it less suitable to loons

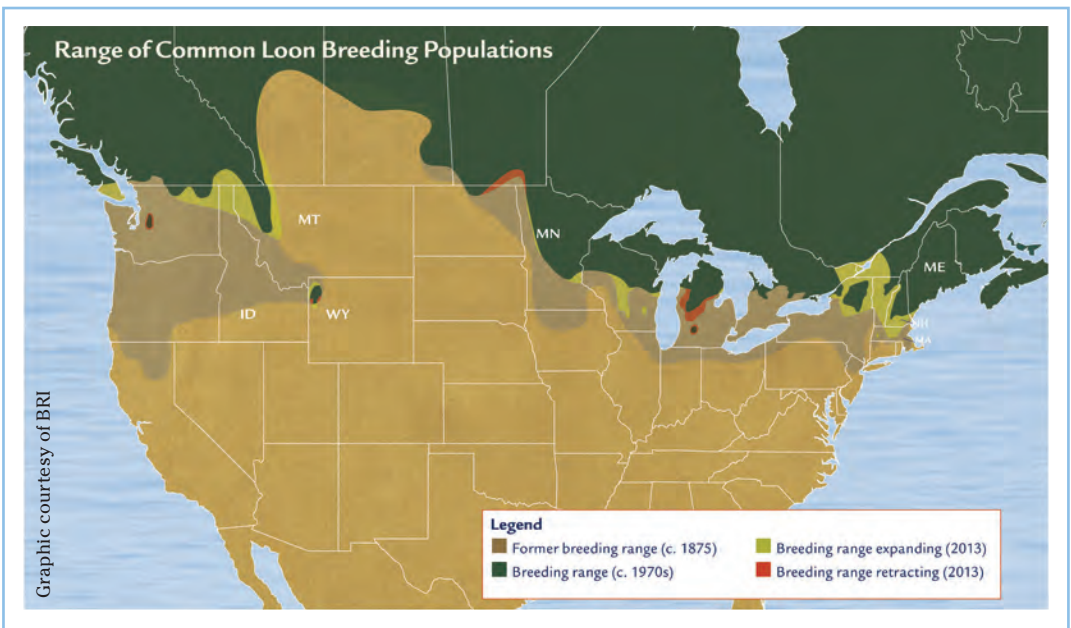


Photo by Bill Eyrne/MassWildlife

A loon raft on Quabbin Reservoir guards nesting Common Loons from wide swings in water levels that could either inundate eggs and hatchlings or strand nesting loons too far from water.



Photo by Bill Byrne/MassWildlife



Continued from page 13

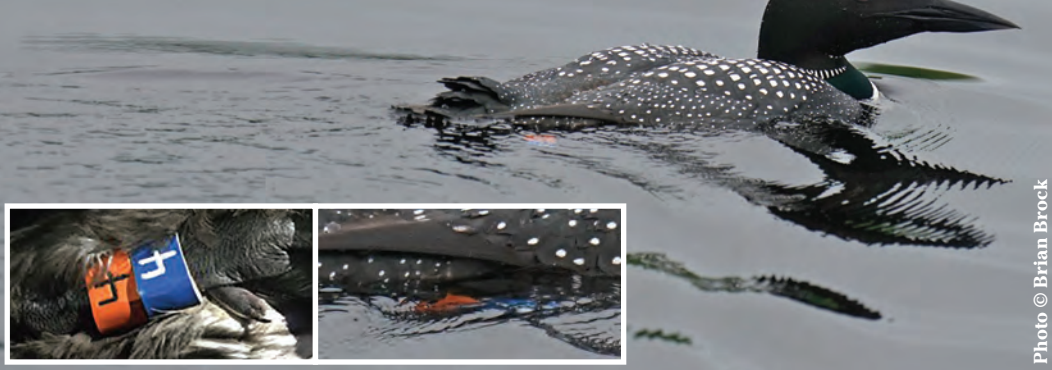
adult in an area that hasn't had loons for decades, and there is a good chance these birds were from the translocation project. It's a matter of time; perhaps the next breeding season will bring confirmation of returning translocated loons to Minnesota.

In southeastern Massachusetts, Glenn McAvoy's May 2018 confirmation of an adult loon (project chick #4–2015) was significant. The BRI team believed loons would return to the release lake, but to

actually confirm a return was momentous. Confirmation of the chick's identification is evidence that translocated loons will return to the lakes from which they fledged. Most likely, any future summer loon sightings in this area will be of banded birds from Restore the Call. At the same time, the project partners also understand the reality of their work. The effort is still experimental and the expected final outcome is not a guarantee.

The next step requires patience and persistence. Researchers, wildlife veteri-

Returning loon on Assawompset Pond Complex. (Inset left) Photo of the bands taken when the chick was released in 2015. (Inset right) Close-up of leg bands on adult loon identified as chick #4–2015.



Photos © (inset left) Michelle Kneeland; (inset right) Brian Brock

Photo © Brian Brock

narians and biologists, birders, and other conservationists are eagerly waiting and watching for returning loons in the hope that these very special birds reach the final project benchmarks—establishing breeding territories and recolonizing southeastern Massachusetts.



About the Author

Deborah McKew is the Communications and Publications Director for Biodiversity Research Institute in Portland, Maine. For more information on BRI's Restore the Call initiative and other programs, projects, and studies visit briloon.org.

Biologist Lee Attix releases a 9-week-old loon chick after captive rearing.



Photo © Shawn P. Carey/ Migration Productions

Loon Restoration in the Northeast

Restore the Call is part of a larger ongoing loon conservation story in the Northeast. In 1974, New Hampshire marked the southern edge of the loon's range, which at that time was shrinking. Recovery efforts carried out by loon conservation groups such as the Loon Preservation Committee in New Hampshire and Vermont were helpful in the restoration of those states' loon populations. Because loons in those states were not fully driven out by human influences and the abundance of suitable lakes and ponds, there were differences in the population recovery dynamics. Geographically, New England is small. Since loons don't recognize state boundaries, an increased loon population in one state may benefit other states in the region. Massachusetts, a state considered to be on the edge of the Common Loon range and positioned in the middle of New England, provides an excellent opportunity to study loon translocation recolonizing activities.

MASSACHUSETTS WILDLIFE



**Like what you read?
Become a subscriber!**

Massachusetts Wildlife magazine is a quarterly publication packed with award-winning articles and photos on the environment, conservation, fishing, hunting, natural history and just about everything relating to the outdoors in Massachusetts.

Subscribe online through our licensing system: mass.gov/massfishhunt or mail subscription requests to:

Magazine Subscription
Division of Fisheries & Wildlife
251 Causeway St, (9th floor)
Boston, MA 02114

Please include the following with mailed subscription requests:

1. The name and mailing address of the subscriber.
2. A check payable to Massachusetts Wildlife Magazine. You will be billed if a check does not accompany your request. We cannot accept credit card payments by mail.

**1 year subscription (4 issues) \$6.00
2 year subscription (8 issues) \$10.00**