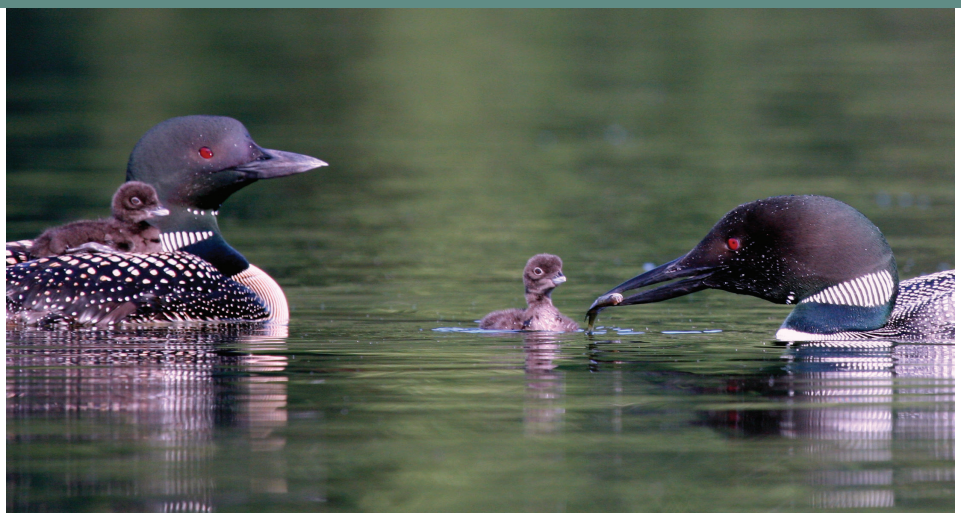
SUMMER 2019

# LOON CALLER

VERMONT CENTER FOR ECOSTUDIES

*Vermont Loon Conservation Project*



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## Chick Productivity:
### The Recipe for Success Remains a Secret

BY ERIC HANSON

Imagine you're a loon. You've just flown hundreds of miles from your wintering area off the Atlantic coast in search of a suitable inland waterbody to spend the summer raising a family. What are the "must haves" for your new home? Big lake or small pond? Up in the mountains or down in the valley? People nearby, or not so much? A study by the Environmental Protection Agency (Kuhn 2011) analyzed lakes and loons throughout the Northeast in an effort to determine this "ideal" habitat. Study results show greater chick productivity in lakes located at higher elevations, with clear water and small islands, nearby lakes also hosting loons, and minimal human activity. But why, then, do we sometimes find loon pairs on "ideal" lakes experiencing low productivity, and loons on sub-par habitat cranking out chicks year after year? (See Table 1 on page 2 for examples of this conundrum on some of Vermont's lakes and ponds.)

Hardwick Lake, a dam-created reservoir on the Lamoille River in Vermont, is two to five feet deep and so murky that one cannot see a paddle blade below the waterline. Its depth can fluctuate by up to two feet after a thunderstorm, and it's drained every winter. Yet, a loon pair established a territory on this unseemly lake in 2002, and to date has produced 19 chicks using a human-made nesting raft. The raft made the difference, of course, but every other aspect of this water body indicates that loons should not occupy it. Another atypical loon lake is Zack Woods Pond; while it features a suitable nesting island, its 24 acres is very small for a loon pair. But wouldn't you know it, this territory has produced 31 chicks over 24 years—very high productivity! The measure we use for chick productivity is chicks (ch) fledged per number of years that a territorial pair (tp) has been present (ch/tp). For Zack Woods Pond, the rate is 1.20 ch/tp, which translates to 12 chicks over a 10-year period. By comparison, the North America average is about 0.53 ch/tp, or about 5 chicks in a 10-year period.

On the other end *(continued on page 2)*

## How Big is a Loon?

BY ERIC HANSON

Have you ever had the privilege of watching a loon swim right under your boat and pop up mere feet away? If so, you may have noticed that loons are BIG. Many long-distance swimmers have told me that loons will often check them out up close, as if they are curious about what is flapping around in "their" water. Coming face to face with the bill of a 14-pound bird can be a little nerve-wracking, especially if it's pointed at you.

Over the years, banding studies and other research across North America has shown that adult Common Loons weigh from 6 to 16.5 pounds, with wing spans ranging from 52 to 65 inches—and surprisingly, that their size varies by geographic region (see Table 3 below). Loons that breed near the coasts are relatively large, while those that migrate into interior North America are smaller-bodied.

Why is this? It turns out that migration distances dictate how heavy loons can be, as factors such as wing loading and flying efficiency come into play. Just like a commercial *(continued on page 3)*

**TABLE 3. Common Loon Weights Across North America***

| | Average weight (lbs.) Male | Female | Migration one-way |
|---|---|---|---|
| Maine / eastern NH | 13.2 | 10.3 | 50 - 300 miles |
| Vermont / western NH | 13.0 | 10.2 | 200 - 350 miles |
| Canadian Maritimes | 12.3 | 9.9 | 100 - 600 miles |
| Ontario (south-central) | 10.9 | 8.0 | 800 - 1,100 miles |
| Western U.S. | 10.7 | 8.6 | 500 - 1,500 miles |
| Upper Great Lakes | 9.9 | 8.0 | 1,200 - 1,600 miles |
| Saskatchewan | 9.6 | 7.3 | 2,100 - 2,700 miles |

Vermont ➤ Heaviest male: 14.0 lbs. (Wolcott Pond) 260 miles

Vermont ➤ Lightest female: 9.0 lbs. (Martins Pond) 260 miles

*Status Assessment and Conservation Plan of the Common Loon in North America (2007)

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The Vermont Center for Ecostudies (VCE) is a nonprofit organization whose mission is to advance the conservation of wildlife across the Americas through research, monitoring, and citizen engagement.

The Vermont Loon Conservation Project (VLCP) is a joint program of VCE and The Vermont Fish & Wildlife Department (VFWD).

The VLCP's mission is to restore and maintain Vermont's Common Loon population through monitoring, management, education, and research.

The Vermont Fish & Wildlife Department's mission is to protect and conserve our fish, wildlife, plants, and their habitats for the people of Vermont.

Volunteer information and VLCP publications are available on the VCE website: vtecostudies.org

Communications about the VLCP and the *Loon Caller* may be addressed to:

**ERIC HANSON,**
**VLCP Coordinator**
PO Box 22, Craftsbury, VT 05826
(802) 586-8064
ehanson@vtecostudies.org

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*Uniting People and Science for Conservation*
PO Box 420,
Norwich, VT 05055

## Chick Productivity *continued from page 1*

of the "exceptions" spectrum are Vermont's northern-most territories, and Little Averill Lake in particular. Little Averill is 467 acres and sits at ~1,800 ft elevation, with a few other loon lakes nearby. Its clear waters even host a nesting raft (what perfection!). But... loons on this territory have produced only one surviving chick in 11 years of territorial occupancy, for a productivity measure of 0.09 ch/tp. Similarly, northern and Downeast Maine have some of the lowest productivity rates in North America (0.2–0.3 ch/tp), yet a good portion of the lakes in these areas would be categorized as "ideal" loon lakes. Since breeding-friendly lake attributes are a major contributor to a loon pair's success, conditions or events occurring at the local level are likely causing regional or individual lakes to deviate from expected chick productivity rates.

One causal factor is undoubtedly competition. "Intruder," or extraterritorial, loons disrupt nesting activity and cause nest failures. There are more interactions (and disputes) between loons on large, multiple-territory lakes compared to single-territory lakes, thus chick productivity tends to be lower on very large lakes. A good example of this occurred on May Pond in Barton, Vermont. From 1990–2007, a pair nested every year but one and produced 24 chicks (1.33 ch/tp). But then turmoil set in when intruder loons frequented the territory, resulting in the pair producing only three chicks from 2008 to 2018 (0.27 ch/tp).

Other factors causing unequal chick productivity include human disturbance and lakeshore development, fluctuating water levels, and appropriate nesting habitat. But an element that we don't fully understand is the effect of prey biomass productivity—what's the perfect balance? How many and what species of fish do these lakes produce? Northern and eastern Maine lakes, like northeastern Minnesota lakes, are situated on granite and low-fertility bedrock and soils. These lakes might not be as productive as lakes in Vermont, Michigan, southern Maine, and parts of New Hampshire. In contrast, too many nutrients can be counterproductive, as some studies have shown that "eutrophic" lakes with high phosphorous levels are far less likely to be used by loons.

Table 2 lists chick productivity rates across North America. After decades of data collection and analysis, researchers have determined that a productivity rate of 0.48 ch/tp will sustain a loon population (Evers 2007). So, are northern Maine loon populations declining or not sustainable? Loon numbers are relatively steady in the Rangely Lakes region, perhaps indicating that a lower productivity rate is sustainable for certain regions. Clearly, we have much more to learn and understand! The take-home message is this: if the loon pair on your lake produces five surviving chicks over a 10-year period, your loons are doing pretty well—but expect variability over time.

**TABLE 1. Chick Productivity on Most and Least Successful Vermont Lakes**

| | Lake Name | Nest Type | # Years Nested | Total # Surviving Chicks | # Years w/TP | Mean Annual # Surviving Chicks per Territory Year |
|---|---|---|---|---|---|---|
| Most productive island/raft nest territories | Fosters Pond | raft | 16 | 25 | 16 | 1.56 |
| | Ninevah Lake | island | 24 | 30 | 24 | 1.25 |
| Small pond | Zack Woods Pond | island | 22 | 31 | 24 | 1.29 |
| Very shallow, murky water | Hardwick Lake | raft | 15 | 19 | 17 | 1.12 |
| Most productive marsh nest territories | Baker Pond | marsh | 14 | 17 | 14 | 1.21 |
| | Wallingford Pond | marsh | 18 | 21 | 19 | 1.11 |
| Most chicks of any territory in Vermont since 1978 | Green River Reservoir- NW | island | 40 | 42 | 41 | 1.02 |
| Most productive shoreline nest territories | Keiser Pond | shoreline | 14 | 9 | 14 | 0.64 |
| | Shadow Lake | shoreline | 11 | 6 | 12 | 0.50 |
| Lower productivity island/raft nest territories | Holland Pond | island/raft | 21 | 16 | 39 | 0.41 |
| | Little Hosmer Pond | island | 18 | 9 | 22 | 0.41 |
| | Little Averill Lake-North | raft | 6 | 1 | 11 | 0.09 |
| Lower productivity marsh/shoreline nest territories | Maidstone Lake-North | marsh | 8 | 4 | 14 | 0.29 |
| | Buck Lake | marsh | 11 | 6 | 21 | 0.29 |
| | Holland Pond-North | shoreline | 4 | 0 | 13 | 0.00 |
| | Bruce Pond/Clark Pond | marsh | 8 | 0 | 13 | 0.00 |

Green - unexpected high productivity | Orange - unexpected low productivity | TP - Territorial Pair

Loon chick productivity records from the most and least successful lakes in Vermont with different nest types (only territories with more than 10 years of records included). Some nest failures and chick loss is normal (but lake residents on Holland Pond might like a bit more luck on the part of their loons).

**TABLE 2. Chick Productivity Across North America** (Evers, 2007)

| Location | # Surviving Chicks per Territory Pair Years |
|---|---|
| Michigan - Ottawa National Forest | 0.76 |
| Vermont | 0.7 |
| Montana | 0.66 |
| New York - Adirondacks | 0.59 |
| New Hampshire | 0.52 |
| Michigan - Eastern Upper Peninsula | 0.51 |
| Alaska – Kenai NWR | 0.48 |
| Minnesota – Boundary Waters Canoe Area | 0.37 |
| Maine - Rangeley Lakes | 0.29 |
| Nova Scotia | 0.28 |

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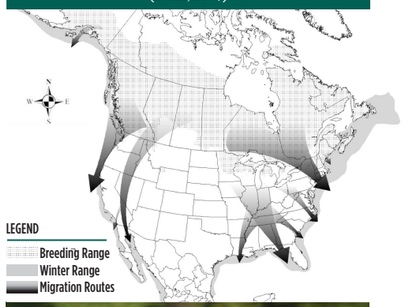
### A LOON'S LEGACY: HOW MANY CHICKS OVER A LIFETIME?

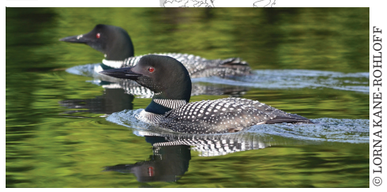
With an average age of first-breeding at six years and last-breeding at 30 years, adult common loons are capable of reproducing over roughly 24 years. At a chicks fledged / territorial pair rate of 0.53 (Evers 2007), each pair would produce 12 young on average over its breeding lifespan. Of these 12 chicks, only four to five are expected to survive to breeding age.

However, not all loons manage to breed for 24 years. If an adult of an established pair loses a fight in a territorial challenge, it will likely forego breeding for several years. As well, loons probably produce fewer young in their later years, although some keep going strong. For example, a known pair in northern Michigan consisting of a 32-year-old male banded as a chick in 1987 and a 33-year-old (or older) female banded as an adult (age estimated) in 1990 have been a pair now for 23 years. This is the longest stable pair bond ever recorded, and they've produced 31 chicks together since 1997!

## Loon Size *continued from page 1*

*North America Common Loon Migration Routes*
(Evers, 2007)



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airliner, wing loading relates the body mass of a bird to its total wing area. So, while bigger loons can defend territories more effectively than smaller loons, those that have to fly more than 1,000 miles to reach their breeding lakes can make the journey far more efficiently if they are lighter (and therefore, smaller). Our New England loons can fly directly to the Northeast coast—where most overwinter—in a single day. A loon from Manitoba or Minnesota might spend several weeks staging on the Great Lakes before continuing on to the Gulf of Mexico. Over evolutionary time, loons have developed the optimum weight for the regions where they breed and overwinter.

Another characteristic in considering the size of loons is that adult males in a given region are usually 25–35% larger than their female counterparts. The next time you're lucky enough to watch a pair of loons, see if you can guess who is who. Here's a tip: the male's head may look a little larger. (Here's another tip: if you see one give a territorial yodel, you'll know for sure that's the male, because females do not yodel.) However, it is typically very difficult to tell males from females unless they are right next to each other, and even then, if one loon is riding lower or higher in the water, appearances can be deceiving.

## HOW YOU CAN HELP

Please support the Vermont Loon Conservation Project and Vermont's loons through a tax-deductible contribution to the Vermont Center for Ecostudies today.

YOUR DONATION SUPPORTS:

- Statewide loon monitoring
- Loon nesting platforms and nest warning signs
- Volunteer coordination
- Public outreach programs
- Loon rescues
- Research on threats to loons

Constituents receive the *Loon Caller* and VCE's biannual *Field Notes*.

***Mail your donation to:***
Vermont Center for Ecostudies
PO Box 420, Norwich, VT 05055
*Or donate online:*
**vtecostudies.org/give**
(Please include a note stating the donation is for the VLCP.)

## SHOW YOUR SUPPORT


VLCP is funded in part by The Vermont Fish & Wildlife Department's Nongame Wildlife Fund.

Please support the Nongame Wildlife Fund by purchasing the Conservation License Plate and through the tax check-off on your VT income tax form.

*VLCP would like to thank its many volunteers and contributors for their continued support.*

## LOON CALLER REFERENCES


Evers, D.C. 2007. Status assessment and conservation plan for the common loon (*Gavia immer*) in North America. *BRI Report 2007-20*. US Fish & Wildlife Service Technical Report, Hadley, MA.

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SPOTLIGHT


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# Eric Hanson wins GMP-Zetterstrom Environmental Award

BY KAREN BOURQUE

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We're eager to share good news with you, our Loon Caller readers: this past April, our own Eric Hanson was presented with one of Vermont's top environmental awards—the 2019 Green Mountain Power (GMP) Zetterstrom Environmental Award! The award ceremony took place at Lake Iroquois in Williston, one of the state's most recently established loon nesting waterbodies.

The GMP-Zetterstrom Award honors Meeri Zetterstrom, a Milton, Vermont resident who inspired recovery efforts that led to removal of the Osprey from Vermont's Endangered Species list. "Eric's remarkable dedication, leadership and engagement of Vermonters is inspiring in the same way as Meeri Zetterstrom," said GMP Vice President Steve Costello. "When a Vermonter hears the haunting and distinct call of a loon, we have Eric to thank for his restoration work and leadership."

As Loon Caller readers well know, Eric has led the Vermont Loon Conservation Project (VLCP), including the annual state-wide LoonWatch event, for 21 years. During this time, he has worked to educate people about loons and their nesting needs, protected nest sites, assisted injured and sick loons, and ultimately built a sustainable breeding population of nearly 100 pairs. Eric will be the first to tell you that the project's success wouldn't be possible without help from the Vermont Fish & Wildlife Department, hydroelectric dam operators like GMP, anglers, lake associations, game wardens, The Nature Conservancy, Vermont Institute of Natural Science, individual property owners, wildlife veterinarians, and hundreds of volunteers and supporters like you.

Even though Eric's volunteer "army" is comprised of hundreds of people, he knows them all and involves each in the real work of conservation—such as monitoring lakes and individual loons, lending a hand on adventurous loon rescues, or the less adventurous (but equally important) task of building and deploying nesting rafts across the state. Many volunteers enjoy recapping stories of helping with daring night-time or iced-in loon rescues; others are fiercely protective of "their" loons and keep Eric apprised of issues and situations as they arise.

The GMP-Zetterstrom Environmental Award is a fitting acknowledgment of Eric's leadership and deep commitment to conserving Vermont's loons. The award is given annually to one person, business, group, or nonprofit that has made a significant contribution to Vermont's environment. And it's accompanied by a $2,500 donation to the winner's environmental cause—in Eric's case, to VCE, earmarked for the VLCP.

It is no understatement that Eric has accomplished more for conservation of Vermont's environment, focusing on the Common Loon, than any of us will ever truly realize. The results speak for themselves: Vermont's loons are back and thriving. Congratulations, Eric!