

## Fish Research on Lake of Two Rivers

Over the next two years (2017-2019) the Harkness Laboratory of Fisheries Research is conducting an in-depth population assessment and monitoring of fish movement in Lake of Two Rivers.

In May 2017, fisheries researchers caught 20 Lake Trout and 10 Smallmouth Bass and surgically implanted them with acoustic transmitters. The transmitter (about the size of one AAA battery) emits a unique sound frequency every 5 to 10 minutes. The sound from the transmitter is picked up by acoustic receivers in the lake, which are installed one metre below the surface of the water. With 49 receivers in the lake, the exact location and depth of each fish with a transmitter

will be accurately determined. This study is anticipated to yield detailed information about habitat use.

If you happen to be fishing on Lake of Two Rivers, keep an eye out for fish with a small, red tag near the fin on the back. If you do catch one, please release it, so it may continue to contribute to our understanding of its species. If it cannot be released, please return the transmitter to a Park Office. Keep in mind the fishing regulations prohibit the harvest of Lake Trout from Lake of Two Rivers with a total length between 40-55 cm.

This valuable research helps improve our understanding of Lake Trout and Smallmouth Bass by producing accurate population estimates and determining where and when fish use specific habitat. The results of this study will help inform future fisheries management planning and resource management decisions, not only for Lake of Two Rivers, but all of Algonquin.

For more information see the bulletin boards or park office.



*If you catch a fish with a red tag, please release it.*



*Fisheries researcher implanting transmitter.*



### Fishing in Algonquin Provincial Park

Algonquin is renowned for some of the finest fishing in Ontario, with hundreds of clear, cold lakes which are ideal for trout. Many visitors come to the Park with little or no idea of how or where to fish, or even the kinds of fish that might be expected. This book is intended to give you the knowledge that may make the difference between success and failure.

ONLY \$4.95

Available at the Algonquin Visitor Centre Bookstore & Nature Shop, East Gate and West Gate, or online at

[algonquinpark.on.ca](http://algonquinpark.on.ca)

## Algonquin Park 2016 Loon Survey



Please give us a hand by reporting your loon sightings this year.

Report forms are available at park offices and the Visitor Centre or email to:

[wildlivesurveys@algonquinpark.on.ca](mailto:wildlivesurveys@algonquinpark.on.ca)

The haunting calls of the Common Loon symbolize Algonquin's wild country for many people. Nearly every small lake has a breeding pair and there are multiple pairs on the larger lakes. Unfortunately, there are environmental threats to loons throughout their range that could potentially affect numbers here in the Park. These include reduced reproductive success caused by acid precipitation, and loons dying during migration due to avian botulism.

In 1981, we began a project to help determine just how well loons were doing in Algonquin. Visitors and staff report the lakes where they see adult loons, their nests and young. On average, nests or young were observed on 40% of lakes where loons were reported during the 36 years from 1981 to 2016. Only a long-term monitoring program can distinguish real trends from normal yearly fluctuations and we need observations from as many lakes as possible.

### Loon Reproduction in Algonquin

Year	# of lakes surveyed	% with nest/young
1981	121	38
1982	184	28
1983	237	21
1984	298	34
1985	210	37
1986	216	35
1987	261	43
1988	260	40
1989	240	41
1990	248	40
1991	201	50
1992	203	39
1993	232	43
1994	183	46
1995	223	45
1996	219	42
1997	173	45
1998	175	42
1999	190	33
2000	216	44
2001	168	39
2002	143	41
2003	120	46
2004	144	41
2005	156	40
2006	147	41
2007	138	43
2008	169	39
2009	146	40
2010	138	36
2011	134	51
2012	128	48
2013	120	52
2014	152	41
2015	129	40
2016	117	44



Museum • Bookstore & Nature Shop • Café **WiFi**

Open Daily  
9 am - 7 pm

June 17 to October 9, 2017

Algonquin Logging Museum - Open 9 am to 5 pm June 17 to October 15, 2017.

The 1.3 km trail with outdoor exhibits is available year-round.

4.5K P.R. 08 01 2017 | ISSN 0701-6972 (print) ISSN 1927-8624 (online) © Queen's Printer for Ontario, 2017

[algonquinpark.on.ca](http://algonquinpark.on.ca)



# Algonquin

# The Raven

A Natural and Cultural History Digest

Vol. 58, No. 3 • August 1, 2017

## Mussels that Hustle

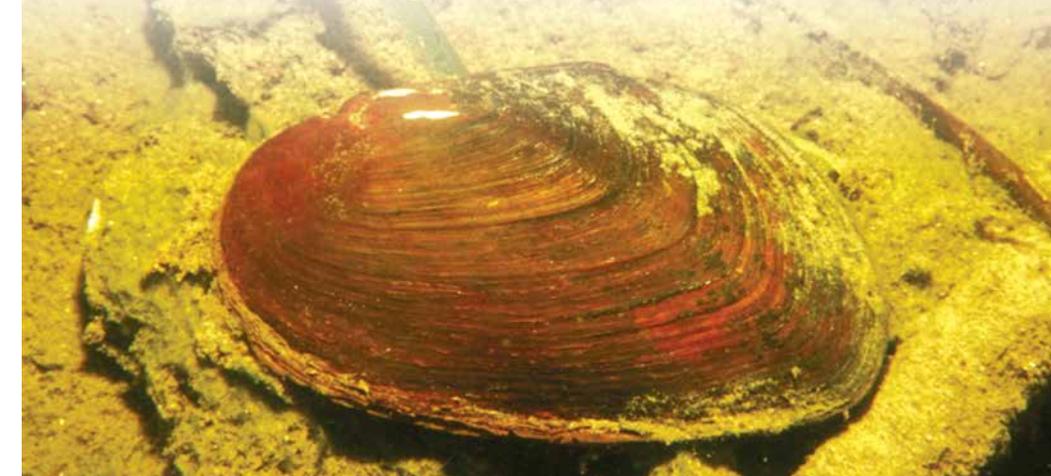
by David LeGros

We may be forgiven if we don't know our aquatic neighbours too well. After all, what lies beneath the surface is a foreign world where we are but strangers. We cannot breathe there, and we even have difficulty seeing under water without the help of a diving mask. While on a canoe trip or wading around the edge of a lake, you might have noticed a clam, or more properly, a freshwater mussel. You might even paddle over impressive beds of them, dozens of mussels per square metre, almost wholly unnoticed. Freshwater mussels do not captivate Park visitors like reeling in a fine trout, watching a heron stalk prey or seeing a Moose slosh through a marsh, but these mussels do have their charm. Despite their inert appearance, the lifestyle of our freshwater mussel is really quite astounding. It is a story of

deception, hitch-hiking, and beating the odds.

The freshwater mussels of Algonquin Park live in lakes, rivers, streams and sometimes ponds with soft, sandy or muddy bottoms. In some places, abundance can be very high, usually where a river flows into a lake. The flow of water means there is a constant flow of food and high levels of oxygen. The oval-shaped shells are stuck into the bottom with one end pointed towards the surface. The two halves of the shell are slightly open, and two openings can be seen within. The inhalant siphon brings in food-laden water and filters it through the gills, collecting algae, bacteria and small particles of organic matter from the water as well as oxygen. The exhalant siphon is for discharging the filtered water. Often, inedible and indigestible matter such as sand and sediment is ingested

*The Eastern Elliptio, the common freshwater mussel in Algonquin waters. While not much to look at here, each adult mussel tells the story of hitch-hiking and beating the odds.* DR. ANDRÉ L. MARTEL, CANADIAN MUSEUM OF NATURE



too, and this is expelled through the exhalant siphon as well, and are known as pseudofeces (not real droppings). A large, cream-coloured fleshy lobe, called the foot, may also protrude from the open shell. This is used to move slowly across the lake bottom.



Here, the mussel is concealed in the sediment, but we can see its larger, fringed inhalant siphon (left) and smaller exhalant siphon (right).

There are 41 species of native mussels in Ontario and an estimated 10 species in Algonquin and its watersheds. The most common species in the Park is the Eastern Elliptio (*Elliptio complanata*). The shell is very dark brown to blackish on the outside, often with pearl or golden coloured pitting or wear on part of the shell. The inside of the shell can be a whitish, pink or even light purple in colour. Eastern Elliptio shells average about 8 cm in length.

So far, our story of freshwater mussels has not been too extraordinary; however, as with many kinds of wildlife, reproduction is rather strange. Male and female mussels aren't very mobile so finding each other to mate is not efficient. Rather, the males broadcast sperm into the water where females take it in. The eggs are fertilized internally in a specialized part of the females' gills. Once fully developed, mussel larvae are ejected into the water. The tiny larvae, known as glochidia, are 0.5 mm in size and look like a tiny clam; two halves which clamp closed. Glochidia are usually released in spring or late summer depending on the species of mussel. What happens next is rather surprising – the glochidia need to find a host, which means the baby mussel is a parasite! The glochidia must attach itself to the gills or fins of a fish by clamping closed. The baby mussel becomes embedded in the fish's tissue,

absorbing nutrients directly from the hosts' body fluids! Many species of mussel are very specific as to which host species they attach to; without the right host fish, the mussels cannot reproduce. After a period of about a week to over 6 months (depending on the species), the glochidia transforms from a parasite to a filter feeder and drops off the host fish. In that intervening time, however, the host fish has not stayed still. In fact, it may have travelled some distance from where the fish contacted the adult female releasing the glochidia. This is how mussels disperse to new areas – that's the hustle! Our native freshwater mussels can only get to places where their specific host fish can get to, whether within a single lake, or an entire watershed. While this seems like an amazing way to start life, it is not a sure thing. The odds of attaching to a suitable host by chance are not very high and surviving to become a small free-living mussel has a low probability, too. To increase the odds, some female mussels have a trick hiding under their shells. The females of some species will slightly open their shells to show off a specialized body part which looks and wiggles like a small fish – it even has an eye spot and tail fin! This lure looks like a rather convincing injured fish as it wiggles, which attracts predatory fish. The fish may try to bite the lure, but at that moment the female mussel ejects her glochidia into the direct path of the potential host fish, helping to ensure attachment to the host!

With any luck, the juvenile mussel will land on some suitable lake bottom; not too deep or shallow, with some current. For the first few years of life, the small mussels burrow deeply into the sediment and begin filter feeding. The growth and age of a young mussel can be easy to see if you happen to find one; look for growth rings on the shell. These can be counted and a rough estimate of age can be made, not unlike the growth rings of a tree.

Freshwater mussels might be abundant, fascinating and have a strange life cycle, but they aren't exactly making their presence known. Despite this, many visitors to Algonquin have enjoyed what mussels do. Because they feed extensively on algae, bacteria and other small



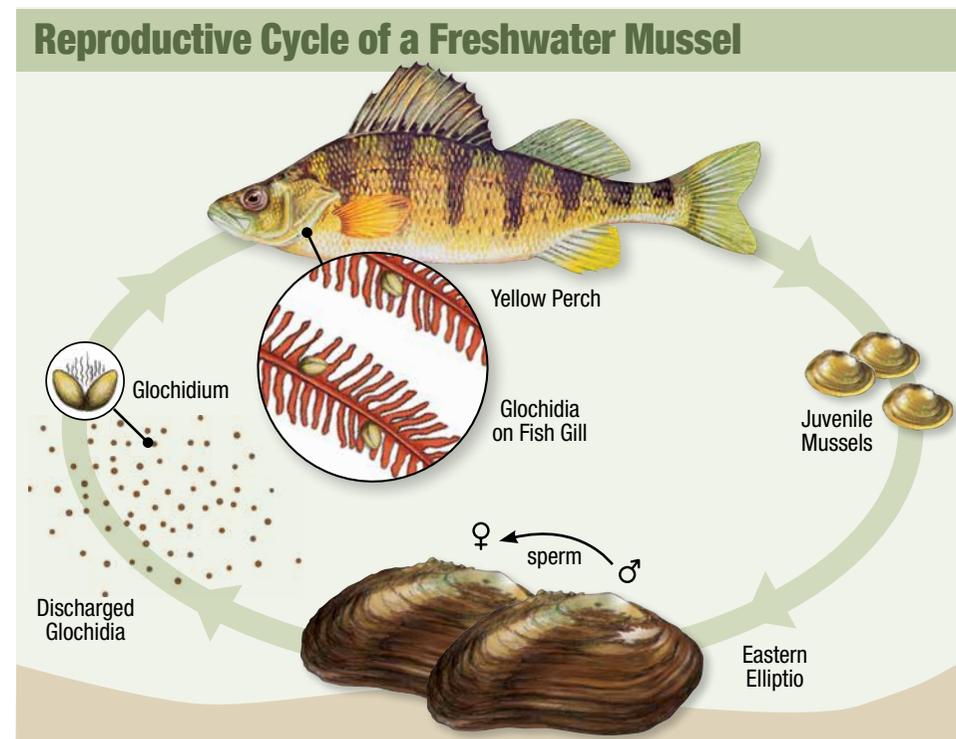
A shell pile on the lakeshore left by Common Muskrats.

particles in the water, they help maintain water quality and lake health. Clear water means more sunlight can reach deeper into the water column, helping small and large plants grow, which in turn provide food for insects and other invertebrates that are eaten by fish. Even the waste produced by the mussels, either from the pseudofeces or actual feces, provides nutrients and food for plants growing in the water and for many tiny aquatic creatures. If you have paddled, gone swimming or fished in a clear Algonquin lake, you can thank mussels!

Because there is no chase involved in capturing a mussel, many animals do eat them. You can find evidence of this by walking the

shoreline of a sandy-bottomed lake. Eventually, you will happen upon a pile of empty shells, sometimes covering 2 square metres and many layers of shells deep! These piles, known as middens, are often made by Muskrats which collect the mussels and feed on shore. Middens are used repeatedly and by generations of Muskrats. Coincidentally, if the shell middens end up under water, they may serve as nesting sites for some kinds of fish. Other mammals, like River Otters, Mink and Raccoons also eat mussels.

Freshwater mussels, like the Eastern Elliptio may be very common here in Algonquin, but this might give us the wrong impression.



Freshwater mussels are among the most critically imperilled groups of animals in North America. In Ontario, habitat loss due to altering the flow and quality of water is a serious threat, as is pollution. Mussels are surprisingly long-lived, several decades in many cases. Because they filter vast quantities of water for decades, they are at particular risk of absorbing huge quantities of toxins. Since Algonquin is a large protected area, there is little habitat destruction or pollution, but real threats are just beyond the gates and access points. Perhaps the most important threat to freshwater mussels is other mussels. Commercial shipping has inadvertently introduced invasive Zebra Mussels to the Great Lakes and they have spread quickly into many inland lakes. Zebra Mussels attach themselves to rocks on the bottom of lakes, but may also live on the submerged parts of boats. If the boat is transported to another lake without being thoroughly washed and dried, the boater may unwittingly introduce one of the worst invasive species possible to

a lake. Zebra Mussels reproduce very quickly and soon overrun a lake. They also filter feed and remove huge quantities of food from the water, reducing food for native mussels, fish and wildlife. Zebra Mussels can literally cover nearly any hard substrate in a lake, including native mussels, rocks, water intake pipes as well as boats. The edge of their shells are extremely sharp and can easily cut the feet and limbs of people swimming in the lake. To date, Zebra Mussels have not been recorded from Algonquin Park, but we need everyone's help to keep them out. Algonquin is a very special place in Ontario. This is in part because there are few invasive species found here—let's keep it that way.

We are just tourists in aquatic habitats, so we only get brief peeks at life there. What at first appeared perhaps dull and uninteresting turned out to have some unexpected twists and turns. After all, surviving in any landscape takes some specialized adaptations and as we now know, our freshwater mussels have shown good hustle.

# STOP Invasive Species

Algonquin's biodiversity is under threat

**Anglers & Boaters**  
You can help!

**DO NOT USE LIVE BAITFISH**  
in Algonquin Park!

**BEFORE YOU LEAVE THE BOAT LAUNCH:**

- Remove all aquatic plants, mussels and other visible organisms and put them in the garbage.
- Drain the water from your boat including the motor, livewell, and bilge.
- Remove organisms you can't see on your boat by:
  - rinsing with hot water, or
  - spraying with high-pressure water, or
  - drying in the sun for five days.



**Invading Species Hotline 1-800-563-7711**  
[www.eddmaps.org/ontario](http://www.eddmaps.org/ontario)

REPORT YOUR OBSERVATIONS



rusty crayfish (left)



rainbow smelt (centre)



and spiny waterflea



