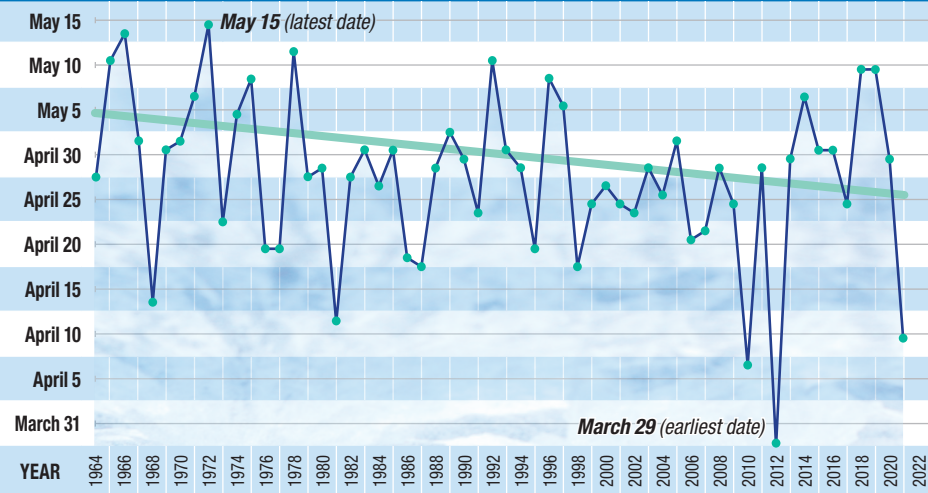


Lake Opeongo Ice-out Dates Showing Trend



Compiled by Ontario Ministry of Natural Resources and Forestry: Algonquin Fisheries Assessment Unit

Fishing Reminders

- No live baitfish are permitted.
- No fishing is permitted within 100 m of a water control dam.
- No fishing within 300 metres downstream of Lake Opeongo's Annie Bay dam.
- Daily catch and possession limit for Lake Trout is 2 per person (1 per person with a Conservation Licence).
- Daily catch and possession limit for trout is 5 per person, no more than two of which can be Lake Trout (2 per person with not more than one Lake Trout, with a Conservation Licence).
- Be aware some lakes have slot limits. Check the Algonquin Information Guide for a list.
- Worms are not native to Algonquin and remaining worms should be taken home or thrown in the trash – not on the ground!

Refer to the Ontario Recreational Fishing Regulations Summary for complete details.



New for 2022 !

The recreational angling season for Opeongo Lake Whitefish is now closed year-round. In Lake Opeongo a “Small-bodied” and a “Large-bodied” form of Lake Whitefish have evolved to fill two separate niches. This species-pair was recently assessed as Threatened, and as a result, the recreational fishery has been closed – recreational anglers are no longer

allowed to target or harvest Lake Whitefish in Opeongo. If you catch a Lake Whitefish on Lake Opeongo while targeting other species, you must release it immediately. The Opeongo Lake Whitefish are one example of the amazing aquatic diversity found in the park that will benefit from additional protection.

CONTRIBUTE TO COMMUNITY SCIENCE!

As of early 2022, the Algonquin Provincial Park iNaturalist project had over 67,000 observations of 4130 species!

By submitting your observations and photos to Community Science platforms like iNaturalist.ca, you can help park staff document biodiversity in the Park and even protect habitat. For more information join iNaturalist.ca, and check out Algonquin Provincial Park under projects.

- Upload a picture of any wild plant, animal or fungus.
- iNaturalist's community and image recognition software will help you identify it.
- Help out other naturalists by identifying their observations.
- Every observation becomes part of a growing record of Earth's biodiversity.



Available on iOS, Android and at inaturalist.org!

iNaturalist Canada is run by the Canadian Wildlife Federation, the Royal Ontario Museum, and iNaturalist.org at the California Academy of Sciences.



Algonquin Visitor Centre
April 23 to October 30, 2022
Open Daily 9 am - 5 pm
October 31 to December 23, 2022
Weekends 9 - 5 pm, full services
Weekdays 9 - 4 pm, limited services

ALGONQUIN VISITOR CENTRE
HOURS OF OPERATION
Museum • Bookstore & Nature Shop



Algonquin Logging Museum
June 11 to October 16, 2022
Open Daily 9 am - 5 pm
The 1.3-km trail with outdoor exhibits is available year-round.

OntarioParks.com • algonquinpark.on.ca

3K P.R. 06 01 22 | ISSN 0701-6972 (print) ISSN 1927-8624 (online) © Queen's Printer for Ontario, 2022



Algonquin

The Raven

A Natural and Cultural History Digest

Vol. 63, No. 1 • May 1, 2022

Another Fish Story

by David LeGros

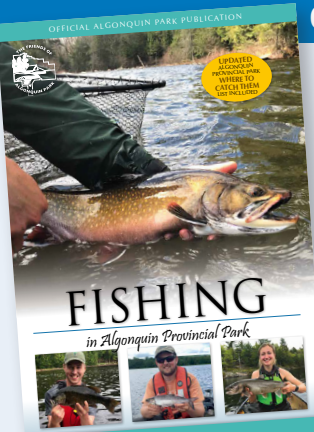


The process by which plants and animals adapt to new environments and conditions, and how new species emerge can take a long time and requires scientists to “work backwards” from what we can see around us today to understand how the process took place. In some cases, before a species has completely diverged from its ancestral form, we may get a rare glimpse at an “in-between” stage. Here in Algonquin, we get to have a peek at the process, in a very special yet familiar lake with an outwardly uninteresting fish.

A very long time ago, when much of North America was covered with ice, there was little life here. But as the ice melted roughly 10 000 years ago, and the land was flooded with frigid, rushing, meltwater, fish started moving into new habitat from refuges to the south. Algonquin, which is among the highest parts of Ontario, was likely one of the last places to be colonized by fish, which means that there are fewer species here than other places, and the species that are here are generally cold-water species.

Whitefish (*Coregonus ssp.*) are a diverse group of fish found in North America and Eurasia, that typically live in cold and deep waters. Lake Whitefish (*C. clupeaformis*) is a large fish (up to 65 cm, but a big one in Opeongo is just over 40 cm), with large silvery scales, a deep body and small pointed head. The mouth of the whitefish is noteworthy as the snout extends past the opening of the mouth, so the mouth opens under the fish's head. The underslung jaw gives some evidence as to where whitefish eat—they are generally bottom feeders that consume invertebrates like insect larvae, small crustaceans such as amphipods and mysis shrimp, and mollusks like snails and small clams. They will even eat small fish and fish eggs. Animals that make their living on the bottom of lakes are called benthic, which means “to live at the bottom”. In contrast, animals that swim and feed throughout the water column are limnetic. Lake Whitefish need cold water to spawn and their eggs develop best at temperatures around 1°C. Eggs are laid

Continued on Next Page...



Official Park Publication

ONLY \$6.95

Fishing in Algonquin Provincial Park

This revised edition provides interesting facts about Algonquin's clear, cold lakes; threats to lake ecology; and fisheries research and management. It has lists of all fish species in Algonquin, plus gamefish present in 233 lakes. Park visitors often have limited knowledge of how or where to fish, or the kinds of fish to expect. This book is intended to provide you with the information needed to plan your next angling adventure in Algonquin Park.

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

Continued from Page One...

over a rocky bottom in fairly shallow water in November and December. The newly hatched fish, called fry, develop over winter and become free-swimming, living along steeply dropping shorelines.

The aquatic community of Lake Opeongo became established following the melt of the last glacier. Important components included the other organisms living in the lake, such as algae, invertebrates, fish, parasites and predators, and the roles that each would occupy. Just as important are the non-living components, like the temperature, available nutrients, sunlight penetration into the water, wave action and more. All these factors shaped the Opeongo we know today, creating unique conditions — which influenced Opeongo’s population of Lake Whitefish.

Opeongo, the largest lake in Algonquin, is 5800 hectares (which, for trivia buffs is 3.2 times the size of the very popular Killbear Provincial Park). This large, cold and relatively deep lake is near the height of land, which made it relatively inaccessible for many species of fish. Lake Opeongo has served as the Petri dish for a multi-millennia experiment involving Lake Whitefish. In the absence of a competitor, which in most lakes is the Cisco (another type of limnetic whitefish) and ample food, a new kind of Lake Whitefish emerged. From the normal form of whitefish emerged another benthic form. The new form grows slowly and stays small, attaining 13 cm in length and is generally short-lived; up to

10 years, compared to the 40 cm and 25 years of the normal form in Lake Opeongo. This small form of whitefish has been found in the South Arm of Opeongo, but more work is needed to determine its true distribution throughout the lake. While researchers don’t know much about the small form of Lake Whitefish in Opeongo, exploratory work shows it lives in deeper water and has a different life history strategy, and presumably a different diet. You may also be wondering; how do they know they aren’t just small normal whitefish? Reproductively mature individuals have been found at the small size, which is very different than the normal form.

There are many examples where a species adapts to a novel environment, becoming radically different from the “normal” version, but it is indeed uncommon for both to occur in the same place — the more successful version usually takes over. But in Opeongo, there is room for both versions, what we call a species-pair. One species, in two forms to occupy two different niches, slowly diverging one from the other, becoming genetically different and maybe reproductively incompatible with the other.

You may have never heard of this small Lake Whitefish from Opeongo before, but scientists have noticed it since the 1940s. Only recently has the morphological, ecological and genetic data been combined to fully identify this species-pair in Lake Opeongo. While all of this is exciting for us here in Algonquin, fisheries scientists have identified 22 other lakes spread across Canada, with only four in Ontario, where Lake Whitefish have specialized independently in a similar way.

It should be noted that all other species-pairs involve whitefish that specialized into both a benthic and limnetic form. Opeongo is unique in having two benthic forms.

Lake Whitefish are found throughout Algonquin, and indeed over much of Canada, but the species-pair observed in Opeongo is very rare. Big Trout Lake is also home to an independent species-pair, and its story is only emerging now. Interestingly, scientists have noted that another natural experiment occurred in Algonquin. Despite apparently normal deep-water conditions, there is no benthic form of Lake Whitefish in Lake La Muir; however, there is a limnetic form — and a total lack of competing Cisco.

Algonquin is a very interesting place for aquatic biodiversity. Its remote lakes, at the height of land, are often thought of as time capsules or snapshots of what lakes in Ontario, and even the precursors to the modern Great Lakes were like shortly after the glaciers melted. The communities of aquatic plants and animals in some of these lakes haven’t changed too much over thousands of years. Unfortunately, today many aspects are changing quickly. New species are making it to some of these lakes transported by people. Introducing fish to one part of a distant watershed can have dramatic impacts even hundreds of kilometres downstream. Rainbow Smelt, for example, are a voracious predator of plankton and larval fish, which are known to have devastating impacts on many species of whitefish. In contrast, the Spiny Waterflea, an invasive crustacean from Eurasia,

is the greater threat. This species has invaded many lakes in Ontario and is easily transported on fishing gear. While small, it has a big impact on aquatic ecology by consuming zooplankton and being difficult to eat, due to its spines. Another Lake Whitefish species-pair in Como Lake in the Lake Superior watershed, had suffered an invasion of Spiny Waterflea. The result was an erosion of the food web that produced the two forms, which quickly turned to a uniform population of large, benthic whitefish. It will require efforts from us all to keep this invader out of Algonquin and Opeongo. What took Nature millennia to fine tune to specific conditions could be forever lost in a human lifetime.

Algonquin’s fishery is a cherished resource, and what we still have today exists largely through extensive research and care by fisheries scientists, Park staff and visitors. The confirmation of the species-pair of Opeongo Whitefish, the rare circumstances by which it

evolved, and the looming threats to it mean that it must be conserved. Both the benthic and limnetic types of this species in Lake Opeongo are considered Threatened by the Committee on the Status of Species at Risk in Ontario (COSSARO), and as of January 1, 2022 the recreational fishery has been closed— recreational anglers are no longer allowed to target or harvest Lake Whitefish in Opeongo. The new regulation only applies to Lake Whitefish in Opeongo, and other species-pairs in the park will be assessed as we learn more about them. If you catch a Lake Whitefish from Opeongo while targeting other species, you must release it immediately. Whitefish weren’t a terribly popular gamefish here in Algonquin, but any amount of harvest could have implications for a population that is facing several other threats. But there are other ways to really help Opeongo Whitefish, and all other lakes in Algonquin.

Features	Normal form Opeongo Lake Whitefish	Small form Opeongo Lake Whitefish
Body length	Up to 40 cm, > 1000 g	About 13 cm, <100g
Sexual maturity	More than 2 years	In 1 year
Lifespan	Up to 25 years	Up to 10 years
Diet	Benthic invertebrates & small fish	Unknown benthic prey
Average number of gill rakers	27.4	25.4

- **Do not transport invasive species.** Always drain, wash and dry your boat and motor between lakes. This prevents the spread of Zebra Mussels, Spiny Waterflea, and many kinds of plants. Under the Invasive Species Act it is now illegal to transport any plants or animals on your boat between water bodies.
- **The use and possession of live baitfish are prohibited in Algonquin.** Don’t bring them or use them.
- **No fishing within 100 m of most dams in Algonquin, and no fishing for 300 m downstream of the Annie Bay dam on Opeongo.** Moving fish from one waterbody to another can devastate a fishery and ecosystem.
- **Submit any observations of aquatic organisms to iNaturalist.ca.** Reporting fish and other creatures helps biologists determine the distribution of these species, especially in the backcountry. Early detection of invasive species gives the best opportunity to reduce their impacts.
- **If you do happen to catch an Opeongo Lake Whitefish, release it immediately.**

The story of Algonquin’s aquatic biodiversity is a fascinating one. Understanding the story of our lakes over the past 10 000 years following the melt of the glaciers requires a deep dive into fish ecology and dispersal, post-glacial landscapes, and how humans and fish interact. We owe a debt of gratitude to the Harkness Laboratory of Fisheries Research and their dedicated staff scientists who have led some incredible research on Algonquin’s fishery. Our countless lakes, streams and rivers are special places. In the coming decades, a warming climate and invasive species will cause many parts of Ontario to be inhospitable to cold water species, like Brook and Lake Trout and many kinds of whitefish. Here, at least in Algonquin we have a chance of preventing some of this loss and these species may hang on a bit longer.

We would like to thank the dedicated fisheries biologists from the Harkness Laboratory of Fisheries Research on Lake Opeongo for their assistance with technical aspects of this article.



(Above) Inhabiting the deep, cold water of Opeongo, Lake Whitefish can be challenging to study. *Photo: David LeGros.* (Right) Two individuals of the small form of Lake Whitefish (lower) collected from Lake Opeongo in 1958. Note the small size, roughly 13 cm, and the larger form (above), over twice the size of the small form. *Photo: Nick Mandrak*



For over 85 years, staff and scientists based out of the Harkness Laboratory of Fisheries Research have been conducting ground-breaking and important research on Algonquin’s aquatic ecosystems. *Photo: Lev Frid*

