CONNECTIONS

Newsletter | July 2026

Photo taken at Pointe du Bois (2025)

Contents

What's New

As lots of monitoring was missed last year due to wildfires across the province, CAMP has a busy schedule catching up this year. In this issue of our newsletter, we'll provide an update on the monitoring schedule and explore the Saskatchewan River region. We'll also learn about a recent change in fish aging methods. Keep reading for this and more!

About the Program

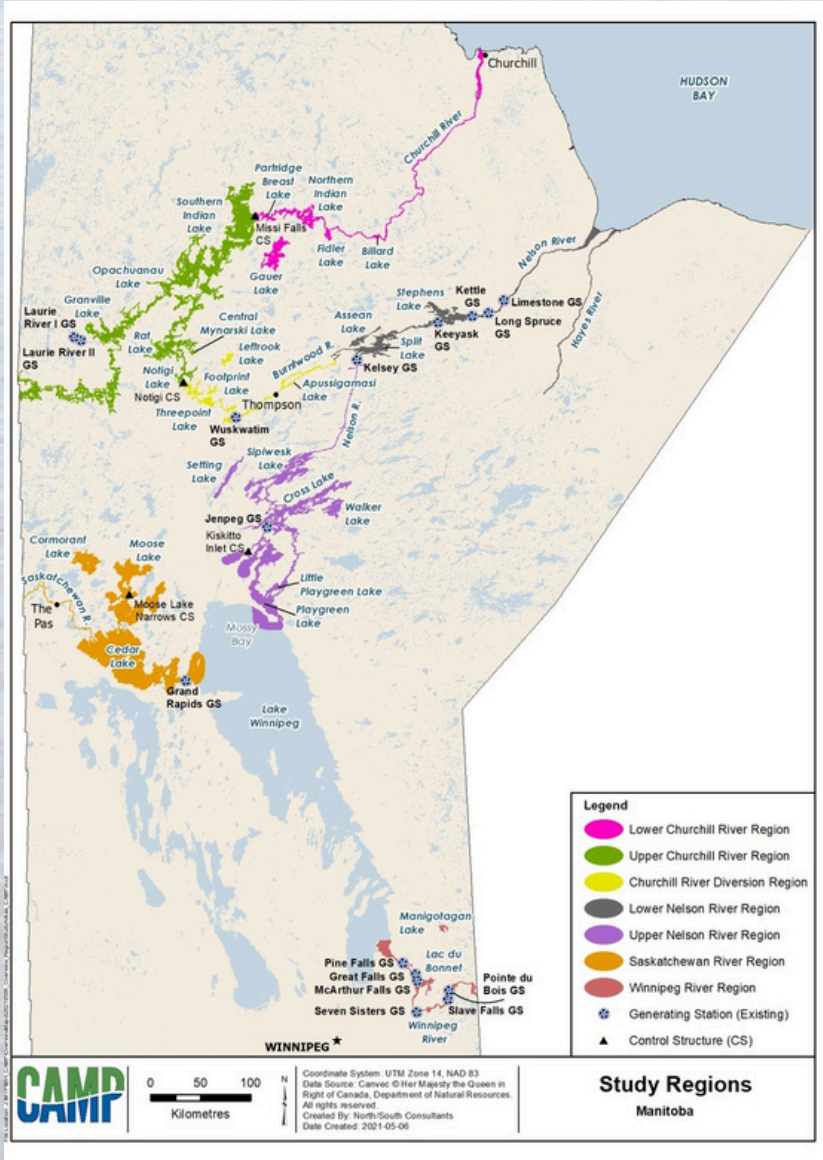
The Coordinated Aquatic Monitoring Program (CAMP) was established in 2006 as a partnership between the Manitoba government and Manitoba Hydro. CAMP is a long-term aquatic monitoring program to study and monitor rivers and lakes affected by Manitoba Hydro's generating system.

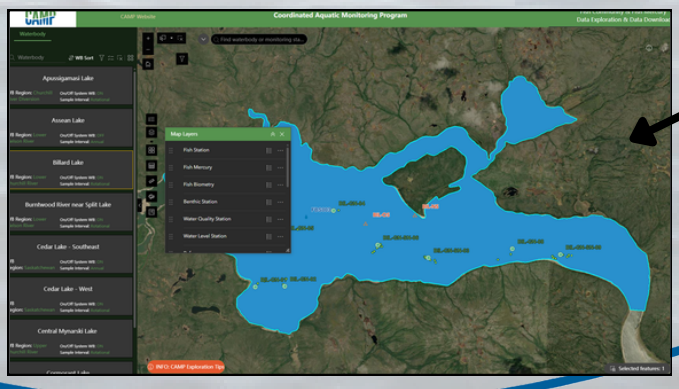
We monitor waterbodies in regions all around the province in relation to Manitoba Hydro's infrastructure.

Components currently monitored under CAMP include:

- hydrometrics
- water quality
- benthic invertebrates
- fish community
- mercury levels in fish
- phytoplankton
- sediment quality
- physical environment

CAMP monitors some waterbodies on an annual basis and some on a three-year rotational basis.





CAMP's online data platform is now live!

Visit https://www.campmb.ca/data-hub to explore and download data

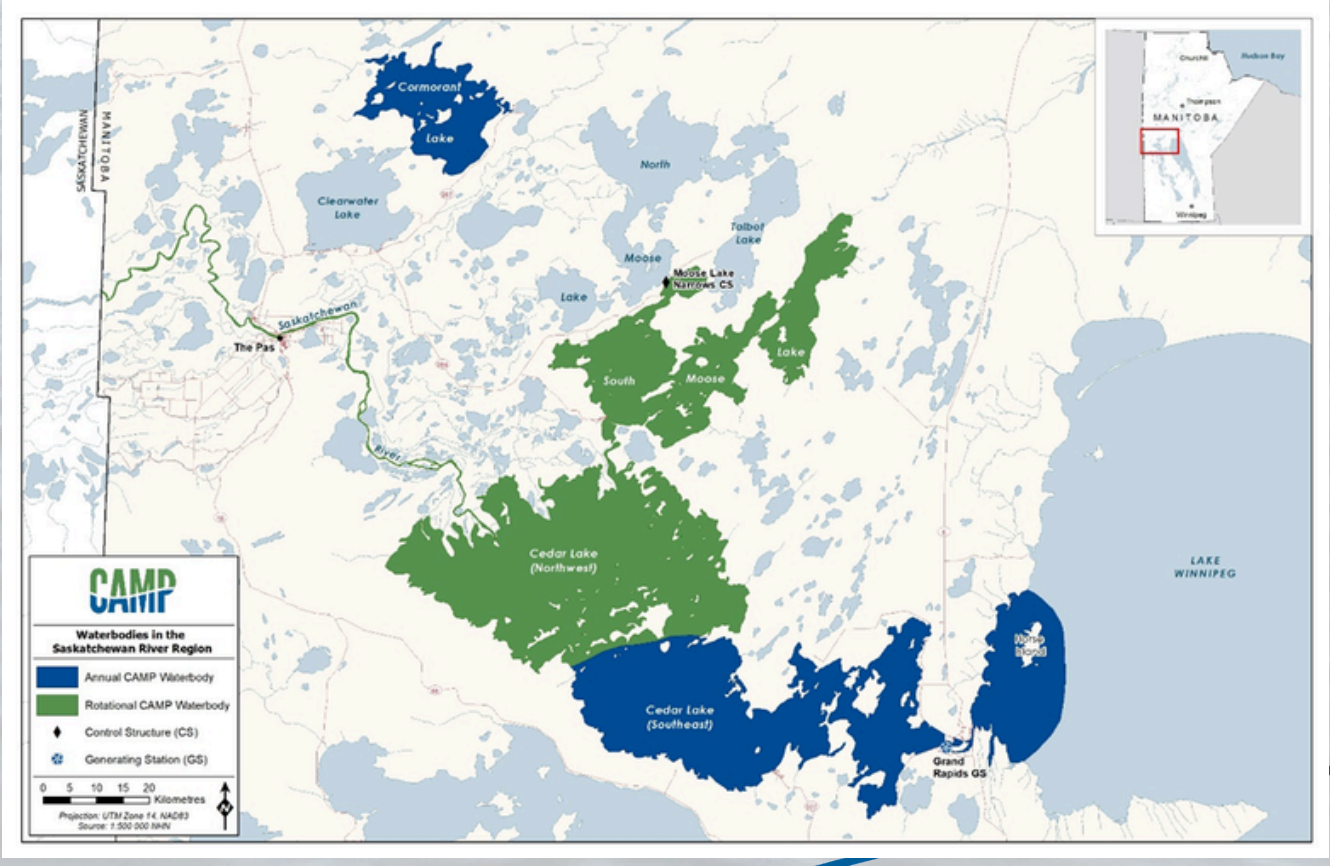
CAMP Study Region Profile

Saskatchewan River Region

It's time to explore the Saskatchewan River Region, one of seven regions monitored by CAMP. There are a number of First Nations and communities in the Saskatchewan River Region. Many of the waterbodies within the surrounding area are encompassed by the Cedar Lake, Cormorant, Moose Lake, and Opaskwayak Cree Nation Resource Management Areas.

The Saskatchewan River flows east across the Saskatchewan/Manitoba border into Cedar Lake, which is the reservoir for the Grand Rapids Generating Station. The generating station controls water levels on Cedar Lake and the outflow of the Saskatchewan River into Lake Winnipeg. Incoming flows are heavily influenced by upstream precipitation and water management from as far away as the east-facing slopes of the Rocky Mountains.

As a prairie river that flows through the Boreal Plains and prairies of western Canada, the Saskatchewan River has a significant sediment load, meaning it carries a lot of soil. A lot of that sediment is deposited into the Saskatchewan River delta between The Pas and Cedar Lake.



CAMP monitors the following waterbodies in this region:

- Cedar Lake – southeast (annual)
- Cedar Lake – northwest (rotational)
- Cormorant Lake (annual)
- South Moose Lake (rotational)
- Saskatchewan River – downstream of The Pas (rotational)
- Lake Winnipeg – Grand Rapids (annual)

CAMP began monitoring in the region in 2008. Recent data has shown that the most common fish species in the region include White Sucker and Walleye. Other frequently caught species were Sauger upstream in the Saskatchewan River and Cedar Lake - west; Cisco in Cedar Lake - southeast; Northern Pike at South Moose Lake; and Yellow Perch in Cedar Lake - southeast, South Moose Lake, and Lake Winnipeg - Grand Rapids. Water clarity varied across the region, with clarity increasing as it moved downstream, being lowest in the Saskatchewan River and highest in Cedar Lake. This is likely due to the suspended sediment settling as it moves through the river delta and into Cedar Lake.

Benthic invertebrate sampling at Cormorant Lake

Saskatchewan River

Science Corner

Finding Clarity: Improving Age Determination for Lake Whitefish

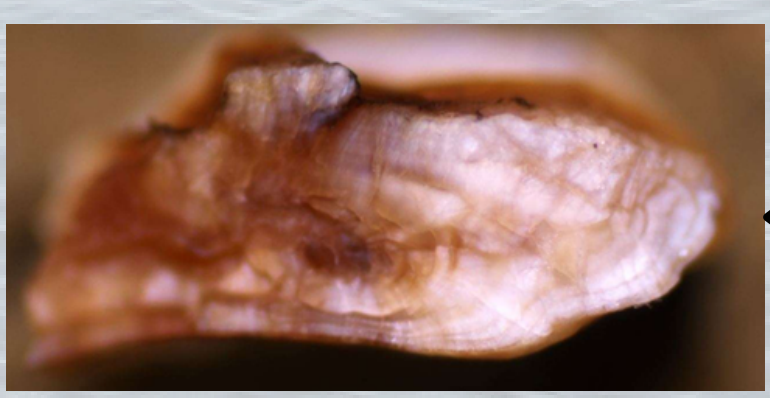
To "crack and toast" or "set and section"? This question was recently explored by fisheries biologists working on CAMP to find the best method for determining the age of Lake Whitefish. In our August 2023 Newsletter, we explained how the "crack and toast" method uses a Bunsen Burner to "toast" a cracked fish otolith (ear bone) to reveal layers similar to tree rings that can be counted to estimate a fish's age. While this method is effective for other species, Lake Whitefish otoliths are more fragile and often shatter when cracked for the "crack and toast" method, rendering them difficult or impossible to age.

Recognizing this problem, Manitoba Fisheries Branch biologists decided to do a study comparing the "crack and toast" method with an alternative, to see if they could get better results. The "set and section" method starts by embedding the otolith in epoxy and setting it aside to cure for at least 24 hours. Once set, the otolith is cut into sections using a low-speed saw. Each section is approximately 0.5mm thick, and depending on the size of the otolith, often three or four cross-sections can be obtained. The sections are then placed and sealed onto microscope slides so they can be viewed under a microscope.

The study compared the "crack and toast" and "set and section" methods by attempting to age otoliths from 64 Lake Whitefish from various Manitoba waterbodies using both methods. For each fish, one otolith was prepared using "crack and toast" and the second was prepared using "set and section". The results were clear, the "set and section" method was far more effective at aging Lake Whitefish. Thirteen of the 64 otoliths prepared using the "crack and toast" method were un-ageable as the structures fell apart when cracked. None of the 64 otoliths prepared using the "set and section" method were damaged or destroyed, and multiple ageable sections were obtained for each otolith. When comparing clarity, over 50% of the otoliths aged using "crack and toast" were considered to be Poor or Very Poor while over 90% of those aged using "set and section" were considered to be Good or Fair. The study also looked at the longevity, or how quickly the otoliths degrade using each method, and repeatability, or how often two people agreed on the age of an otolith. The "set and section" out-performed "crack and toast" in both categories.

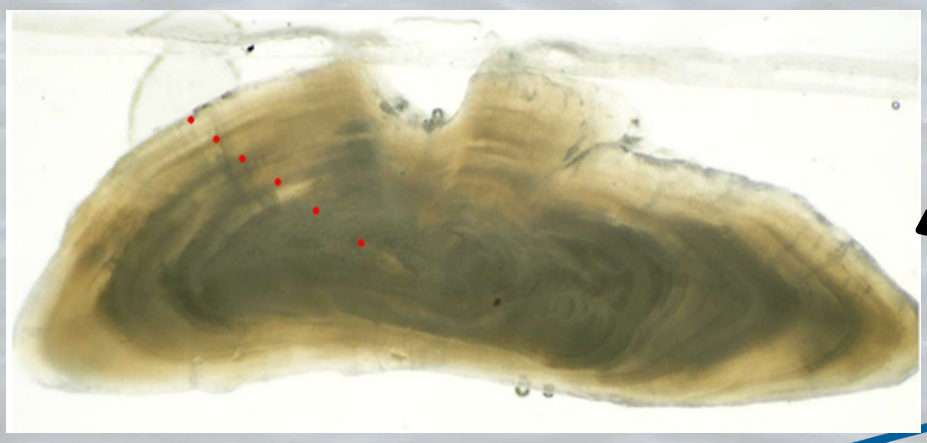
A cracked Walleye otolith prior to ageing using the CT method. An even break is obtained at the exact point of applied pressure, intersecting the nucleus.

Un-ageable shattered remnants of a Lake Whitefish otolith after applying even pressure along the transverse plane using the CT method.



This image is a crack and toast Lake Whitefish. It is very unclear and was determined to be un-ageable.

This image shows a set and section Lake Whitefish. Due to the epoxy and thin slice, age lines are visible. This Whitefish is 6 years old.



CAMP is an adaptable monitoring program. As new and improved methods are learned, changes can be proposed through the program's change management process. In this case, Manitoba Fisheries Branch submitted their analysis and proposal to change the aging method for Lake Whitefish and it was approved. Going forward, all Lake Whitefish aged though CAMP will follow the "set and section" method. "Crack and toast" continues to be used for other species where it is more effective due to the composition and strength of their otoliths.

Granville Lake

CAMP Expansion Update

As mentioned in our previous newsletters, CAMP is expanding to include shoreline monitoring, opportunities for inclusion of Indigenous knowledge, and community participation. We're rolling out the expansion in a phased approach, starting in Northern Manitoba. So far, we have had a number of meetings with representatives from First Nations, the Manitoba Métis Federation, and Indigenous communities to discuss how we can work together to grow CAMP with their participation in three regions. The CAMP team is grateful to all those who have participated so far, and we look forward developing regional monitoring plans together. We will also be reaching out to community leadership in the Saskatchewan River area to start working together on CAMP in that region.

Photo taken at Lower Churchill River - Churchill Weir

CAMP Species Feature

Lake Whitefish

Found in cool waters across Manitoba, Lake Whitefish are an important species economically, ecologically, and culturally. Many Indigenous communities fish for Lake Whitefish and lakes across Canada support commercial fisheries.

Lake Whitefish live in deep freshwater lakes and rivers across Canada, Alaska, and the northwestern United States. Through CAMP monitoring, this species has been found in the Winnipeg River in the south, all the way to Churchill in the north. Lake Whitefish are bottom feeders, whose diets consist of benthic invertebrates like snails and clams who live at the bottom of lakes and rivers. Data collected through CAMP's benthic invertebrate program can help identify areas with food sources that support Lake Whitefish habitat.

While many other species spawn in the spring, the Lake Whitefish lifecycle consists of spawning between September and December, once water temperatures drop. Eggs laid in the fall hatch in the spring.

Lake Whitefish are a target species for CAMP's fish community monitoring program. This means we collect data including length and weight, sex and maturity, age, and external conditions, such as the occurrence of any deformities. Data collected can be looked at over time to understand how Lake Whitefish populations are doing in different waterbodies.

For more information about Lake Whitefish: https://www.dfo-mpo.gc.ca/species-especes/profiles-profils/lake-whitefish-grand-coregone-eng.html

CAMP Monitoring Calendar

CAMP's winter water quality program was completed and the open water field season is underway. CAMP monitors waterbodies across Manitoba, some on an annual basis, and some on a three-year rotational basis. Last year, several sites were skipped due to wildfires throughout the province. As we schedule this year's monitoring, we are planning to go back and sample sites we missed last year. This includes fish community monitoring at rotational sites Southern Indian Lake – Area 6, Billard Lake, Rat Lake, and Walker Lake, and benthic invertebrate monitoring at Southern Indian Lake – Area 6 and Walker Lake. Mercury in fish monitoring was also missed at many waterbodies, most of which are annual fish community sites. We will collect those missed mercury samples this year from Cormorant Lake, Southern Indian Lake – 4, Granville Lake, Southern Indian Lake – Area 6, Rat Lake, Setting Lake, the Lower Nelson River downstream of Limestone Generating Station, and the Hayes River.

We are also planning some habitat surveys in the Churchill and Winnipeg River regions. The full monitoring schedule for 2026/27 is posted on the CAMP website. As always, dates may change due to weather or wildfire conditions.

Conducting water quality monitoring at Eaglenest Lake

Two-Mile Channel Inlet

For more information on the program, visit our website www.campmb.ca