

What can gull and tern eggs tell us about contaminants in Dinàgà Wek'èhodì?

Contaminants are released by human activities and can be transported through the air over long distances. Dinàgà Wek'èhodì Candidate Protected Area in the North Arm of Great Slave Lake is being monitored for levels and types of contaminants accumulating in the aquatic food web. Waterbirds, including gulls and terns, feed on local fish and breed in Dinàgà Wek'èhodì; their eggs provide a useful indicator of contaminants present.

Why is the monitoring important?

Herring Gull eggs have been collected from breeding sites on Great Slave Lake since the 1990s. Repeated measurement of contaminants in eggs allows us to track changes in levels and types of contaminants over time. This information supports long-term environmental management of Dinàgà Wek'èhodì. Other sites across Canada are also being monitored by Environment and Climate Change Canada for contaminants in gull eggs. We can use that information to better understand the transport of contaminants to the Northwest Territories.



Who is involved?

Since 2021, Herring Gull egg monitoring in Dinàgà Wek'èhodì has been a partnership between the Government of the Northwest Territories, the Tłıchǫ Government, the North Slave Métis Alliance, the Yellowknives Dene First Nation, and Environment and Climate Change Canada.

What have we done?

Community-based collections of Herring Gull eggs have been completed annually in June from islands in Dinàgà Wek'èhodì since 2021. Earlier collections of Herring Gull eggs from 2010 to 2017 on Great Slave Lake provide more information to track contaminant trends. In 2024, eggs of two more species of waterbirds, Ring-billed Gull and Common Tern, were included for egg

monitoring to investigate possible effects of 2023 wildfires in Dinàgà Wek'èhodi on contaminant bioaccumulation in the aquatic food web.

Two trail cameras were installed on islands in 2023 to determine the arrival and departure of birds at the breeding sites.



After collection, the eggs are shipped to the National Wildlife Research Centre in Ottawa for chemical analysis. Once the laboratory analyses are completed, the remaining egg material is stored at the facility for possible future use such as to measure additional chemicals.

Several types of contaminants are measured in the eggs including organic chemicals and inorganic elements. The organic chemicals are produced by humans and do not occur naturally in the environment. Two examples are brominated flame retardants (PBDEs) and fluorinated chemicals (PFAS, also known as “forever chemicals”), which are applied to a variety of commercial products. Inorganic elements such as mercury, arsenic, and rare earth elements are naturally occurring, but human activities have increased their release into the environment.

What are we finding?

- The monitored organic chemicals, PFAS and PBDEs, were at low levels in Herring Gull eggs from Dinàgà Wek'èhodì. The levels of those contaminants were either declining or stable between the years 2010 and 2022, and they were lower than levels found in gull eggs at sites in southern Canada.
- Metals such as cadmium and lead, and rare earth elements were at low levels in the Herring Gull eggs.
- Mercury levels in Herring Gull eggs from Dinàgà Wek'èhodì were higher than monitoring sites in southern Canada. Levels change each year but have not increased in the last decade. Mercury in the eggs is unlikely to pose a risk to the health of the birds. It remains unclear what environmental processes are influencing the mercury trends.
- Study is on-going to assess potential effects of recent wildfires on contaminant exposure in waterbirds of Dinàgà Wek'èhodì.



What does this mean?

With the exception of mercury, the monitored contaminants in waterbird eggs show limited accumulation in the aquatic food web of Dinàgà Wek'èhodì. These observations partially reflect the long distance of the area from emission sources in southern Canada.

What's next?

Our goal is to continue annual community-based collections of gull and tern eggs in Dinàgà Wek'èhodì to monitor changes in contaminants over time. This monitoring initiative will contribute to environmental stewardship of the area.

Mahsi Cho!

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