



**GRAND COUNCIL
TREATY #3**
THE GOVERNMENT of THE ANISHINAABE NATION in TREATY #3

ENVIRONMENTAL MONITORING REPORT

**2025 Invasive Species Report Summary:
Zebra Mussels**

**REPORT PREPARED BY THE GRAND COUNCIL TREATY #3
TERRITORIAL PLANNING UNIT**

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**PLEASE DIRECT ANY QUESTIONS OR COMMENTS REGARDING THE CONTENT IN
THIS REPORT TO MICHAELA NOVAK, MICHAELA.NOVAK@TREATY3.CA.**

Why We Monitor

Grand Council Treaty #3's Territorial Planning Unit (TPU) coordinates invasive Zebra Mussel monitoring across the Treaty #3 territory, following the guidance and traditional protocols of the Treaty #3 communities within the territory. The TPU works to protect, conserve, and defend the traditional lands and waters of the Anishinaabe Nation of Treaty #3.



WHAT IS A ZEBRA MUSSEL?

Invasive Zebra Mussels (*Dreissena polymorpha*) are small, striped freshwater mollusks that were introduced to Canada from the Eurasian Seas in the 1980's. Zebra Mussels have two life stages: veligers (larvae) and adults. While veligers are microscopic, adults can grow up to 5cm during their 15-year lifespan.

By the time a female reaches one year old, they can release upwards of one million eggs in a spawning season. Within their first month, the developing veligers drift to new locations and can quickly spread throughout any connected waterbodies. The Zebra Mussels use their foot, equipped with a cluster of long strands called byssal threads, to secure a strong attachment to underwater structures, often outcompeting native freshwater mussels, predators, and removal methods (Non-Native Species Secretariat, 2018).

WHAT ARE THE IMPACTS CAUSED BY ZEBRA MUSSELS?

Zebra Mussels that have successfully spread into lakes and rivers can have significant environmental impacts. As filter feeders, they often remove phytoplankton from the waterbody, which severely diminishes a critical food source for many local species. Furthermore, toxins that they filter from the water are retained in their tissues and can ultimately cause illnesses in predators that consume them.

Their high reproductive rate and strong foot attachment allow for rapid infestation causing biofouling, such as coverage of boat hulls and blockages in water pipes. Their microscopic size during the veliger stage allows them to pass through small openings, including intake pipe filters.

WHERE ARE ZEBRA MUSSELS FOUND?

Invasive Zebra Mussels are a threat to ecosystems worldwide. No waterbodies in the Treaty #3 territory are confirmed hosts to established populations*, but confirmed host waterbodies surround the territory, including Lake Winnipeg, Lake Superior, and several in Minnesota. The detection of veligers within the territory began in 2018, when a single

* Includes Canadian portions of binational waterbodies. While no established populations have been confirmed in the transboundary waters, the Minnesota Department of Natural Resources has confirmed establishment of Zebra Mussel population(s) in the Rainy-Lake of the Woods basin since 2013.

veliger was found in Shoal Lake. Detections were also reported in 2019 and 2021 just outside the Treaty #3 territory boundaries in the U.S. portions of Lake of the Woods and Rainy Lake. In 2023, the TPU found a single veliger in Christie Creek, a tributary of Rainy Lake. Minnesota has since confirmed the presence of veligers upstream from Rainy Lake, including in Lake Kabetogama and Sand Point Lake.

A waterbody is deemed to host an established population of Zebra Mussels when all life stages are present. A population spanning multiple age classes indicates that the species' requirements are met and the habitat can sustain Zebra Mussels throughout their lifecycle (from development to reproduction). As requirements change throughout a mussel's lifetime, certain habitats may support only a specific life stage. For example, a waterbody may have confirmed the presence of Zebra Mussels but not an established population.

HOW CAN INVASIVE ZEBRA MUSSELS BE CONTROLLED?

Removing Zebra Mussels can be very challenging. Physical removal requires scraping off the mussels from the substrate, with caution taken to ensure the removed mussels do not re-enter the waterbody from which they were removed or enter a new one. While the introduction to a new waterbody must occur within 5 days for optimal reproductive viability, adult Zebra Mussels can seal their shells and survive up to 30 days of air exposure (Province of Manitoba, 2023; Fisheries and Oceans Canada, 2023). High-pressure and high-temperature washing of the boat hull immediately after it is unlaunched strongly decreases the spread potential of invasive species. All gear and equipment (e.g., fishing rods, life preservers, live wells and bait buckets, paddles/oars, trailers, trolling motors and props) that are exposed to the waterbody should also be decontaminated this way.

How We Monitor

Our Monitoring Methods



In 2025, the TPU visited sites across Treaty #3 and collected samples using an 80 micron mesh plankton net, towed through the water at ~1 meter per second.

As each site depth was less than 7 meters, collection methods included horizontal tows and shoreline tosses when required. The TPU collected samples in early summer and fall, when the water temperatures were optimal for Zebra Mussel reproduction.

The TPU prioritizes sample areas in Treaty #3 communities, as well as high-traffic public boat launches and docks. Treaty #3 communities are considered a priority due to potential impacts on community infrastructures, whereas high-traffic public boat launches and docks are a priority due to their potential to act as an entry point for Zebra Mussels into Treaty #3 waters.

In addition to Minnesota's detections of veligers in the binational lakes and other waterbodies within the basin, in fall 2023, the TPU detected the presence of Zebra Mussels in Rainy Lake when a single veliger was found in a tributary. Therefore, the TPU's 2024 and

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2025 sampling prioritized Rainy Lake and other nearby binational waterbodies. Whenever possible, Treaty #3 youth and other youth groups participated in the sample collection process. All samples collected in 2025 were sent to the Invasive Species Centre (ISC) to test for the presence of invasive Zebra Mussel veligers.

Note: all samples were analyzed for the presence of Zebra Mussel veligers and Spiny Waterfleas (*Bythotrephes longimanus*). While this report will highlight and discuss all the results, the spread/infestations of Spiny Waterfleas are well documented; therefore, a focus is placed on the monitoring of Zebra Mussels.

SETTING UP SAFE MONITORING PROTOCOLS



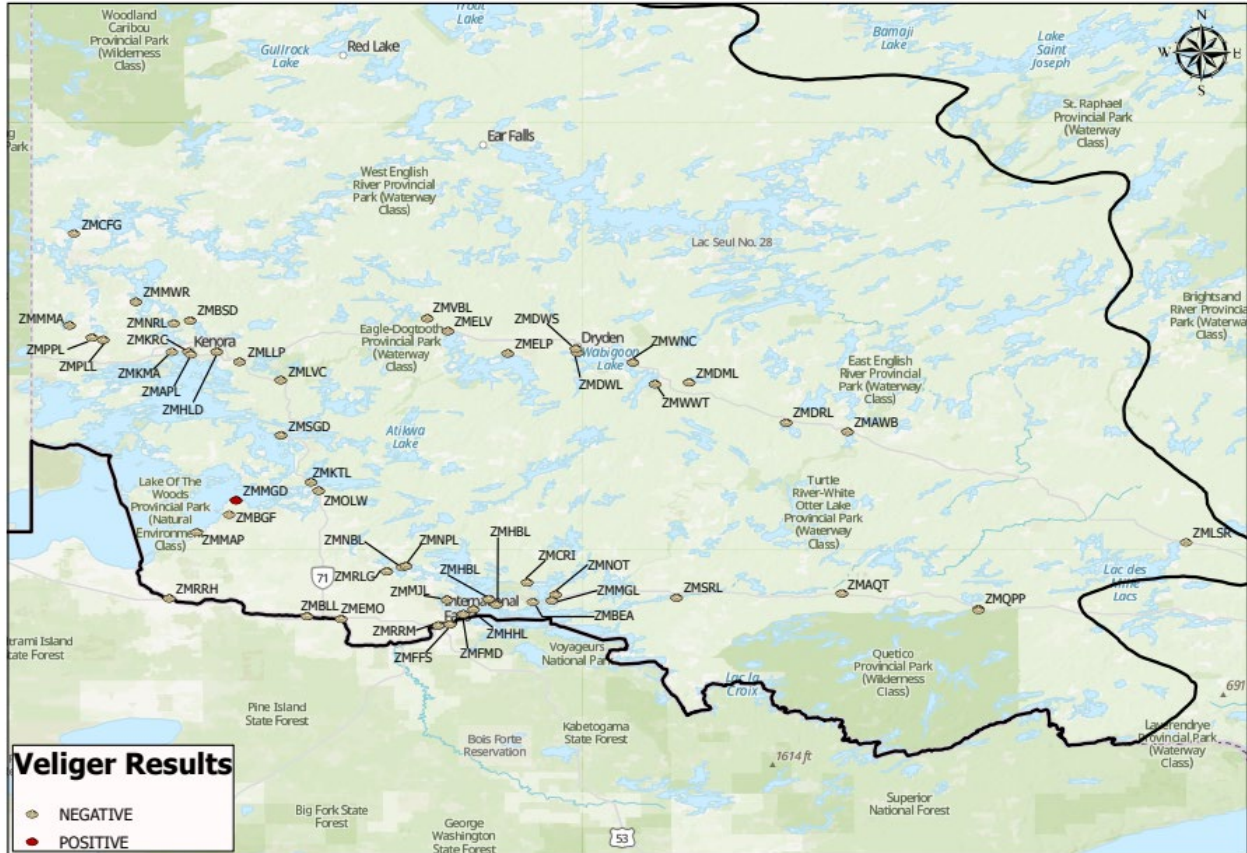
To ensure monitoring efforts are safe and productive, the TPU utilized two different sanitation methods to kill and remove potential Zebra Mussel veligers attached to the monitoring equipment. These methods are the hot water method and the vinegar method.

The hot water method submerges all equipment in hot water (>60°C) for at least 10 minutes. The TPU used this method when moving between waterbodies, and between sample collection days, including when the equipment was returning to the same waterbody upon its next use. The vinegar method submerges all equipment in a 5% acetic acid solution (white vinegar) for a minimum of 24 hours, followed by a thorough rinse with water. This method was used between sampling in each of the four Treaty #3 geographic directions, and between the summer and fall rounds of collection.

Findings

RESULTS FROM 2025 MONITORING EFFORTS

Between June 16 and October 2, 2025, the TPU collected 90 samples from 50 unique sites across 25 waterbodies within the Treaty #3 territory. The samples were sent to the ISC for analysis to confirm the presence of Zebra Mussel veligers. After analysis, one sample returned positive, as the presence of a single veliger was confirmed.



Zebra Mussel Veliger Testing Locations - 2025

0 20 40 80 120 160 Kilometers



Map Created By: GCT3, GIS Specialist, R. Parsons
 Map Created: January 12, 2026
 Coordinate System: NAD 1983 UTM 15N
 Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, ©
 OpenStreetMap contributors, and the GIS User Community,



A full, in-depth 2025 Zebra Mussel Monitoring Report, complete with a results table for all samples, is also available to view or download [here](#), or accessible using the QR code. For any further inquiries about the results, or to inquire about the sites tested, email Michaela.Novak@treaty3.ca.

Conclusion

SUMMARY OF THE 2025 MONITORING SEASON

Over the course of the 2025 monitoring season, the TPU sampled 25 waterbodies across Treaty #3 for the presence of invasive Zebra Mussels and Spiny Waterfleas. Ultimately, the Invasive Species Centre's laboratory analyzed 90 samples from 50 unique sites.

Zebra Mussel veliger presence was detected in a single waterbody, Lake of the Woods. One sample collected from a public boat launch in Morson, ON, contained a singular veliger. Adult zebra mussels were not the target of the project and therefore, were not identified at any site. 24 samples, collected from 7 waterbodies, were positive for the presence of Spiny Waterfleas. All waterbodies with positive results are known as hosts; no new introductions of Spiny Waterfleas were identified.

WHAT DO THE RESULTS MEAN?

One of ten unique samples collected from Lake of the Woods confirmed veliger presence, with a single individual identified. The single veliger is one of the first confirmed veligers in the Canadian portion of Lake of the Woods; however, veligers were previously identified in multiple samples from the American portion in 2019. The origin of the veliger is unknown; possibilities include an undiscovered established population of invasive Zebra Mussels active in the American portion or transported on a watercraft.

Positive results indicate there is a potential for Zebra Mussels to establish an adult population; however, the average calcium concentration in Southern Lake of the Woods (Canadian portion) is lower than required to maintain their shell. While zero detections of Zebra Mussel veligers is the desired result, it is not definitive evidence that there are zero present in the sampled waterbody. A single negative result relates solely to the sample; a waterbody can host Zebra Mussels and receive a negative test result if no individuals are caught during the sampling process.

In addition, a positive veliger sample result does not definitively indicate a successful introduction/invasion; reproductively capable adults must be found as well. Long-term monitoring is required.

NEXT STEPS & FUTURE MONITORING EFFORTS

Further monitoring and management efforts are needed for aquatic invasive species in Treaty #3. The TPU continues to expand and increase monitoring in waterbodies across the territory for Zebra Mussels veligers. The positive 2025 result from Lake of the Woods and the positive 2023 result from a tributary of Rainy Lake will greatly influence monitoring in the upcoming 2026 season.

The TPU will continue to sample for the presence of invasive Zebra Mussels, prioritizing Treaty #3 communities and high-risk potential introduction locations (e.g., public boat launches, binational waterbodies).

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To increase the prevention and reduce the spread of aquatic invasive species within Treaty #3, the TPU will install and maintain three decontamination units (i.e. boat wash stations) between the hub cities over the next few years. This past summer, 2025, the TPU deployed the first unit in the Kenora area. Trained TPU staff operated the unit free of charge. The unit will be deployed again in the upcoming 2026 season.

Increased education on the pathways and the impacts of invasive species is required to prevent and slow their spread. As opportunities arise, the TPU will continue taking on new projects, partnerships, and monitoring methods as directed by the Nation.

Review the full 2025 Zebra Mussels Monitoring Report. For any further inquiries, please email the TPU's Invasive Species Coordinator, Michaela.Novak@treaty3.ca.