

# **2025 AIS Monitoring Summary**

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MARCH 2026

## **AIS Monitoring Program Structure**

The overall goal of the aquatic invasive species (AIS) monitoring program is to understand and report the profile of AIS in Manitoba waterbodies. The strategic value of understanding this profile is to: 1) understand the spatial extent of AIS presence in Manitoba to inform management decisions; 2) test the effectiveness of AIS prevention activities in keeping Manitoba waterbodies AIS free; 3) support *Early Detection and Rapid Response* and 4) understand the AIS threat in adjacent areas that can threaten Manitoba's waterbodies.

The monitoring program is broadly grouped into three categories that determine the frequency and quantity of samples taken:

**Surveillance monitoring** focuses on monitoring non-invaded waterbodies to confirm AIS free status or trigger the *Early Detection and Rapid Response* protocol if a detection occurs. The locations, frequency and quantity of samples taken is based on a risk assessment, with high-risk water bodies being sampled the most. Risk assessments are based on data from the Watercraft Inspection Program, proximity and hydrologic connectivity to known invaded waterbodies, water chemistry, environmental factors and expert opinion. Increased effort has been exerted by the province to increase the probability of detecting AIS invasions early which may assist in eradication efforts as well as controlling their spread to other waterbodies.

Active surveillance monitoring is centered on Dreissenid mussels (i.e., Zebra and Quagga Mussels) as invasive mussels are the AIS that pose the greatest environmental, economic and societal threat to Manitoba. While zebra mussels are the focus, samples are also analyzed for other AIS (e.g., Spiny Waterflea) which may also trigger the *Early Detection and Rapid Response* protocol.

**Validation monitoring** is initiated by the Early Detection and Rapid Response protocol following an AIS detection. This involves more frequent sampling of the waterbody to determine if a detected AIS is truly present and/or the extent to which it is established. If an AIS detection cannot be validated within an established timeframe, a waterbody is de-listed from the Rapid Response protocol and returns to surveillance monitoring protocols. The decision to de-list a water body is complex and determined by several factors including the nature of the detection(s), size of water body and monitoring effort.

**Colonization and Establishment monitoring** involves demarcating the extent of an invading population and/or population dynamics within a waterbody to inform containment and adaption efforts. For example, Zebra Mussels and Spiny Waterflea are incapable of moving against the natural flow of water, therefore monitoring upstream of an AIS detection location can provide valuable insight into the contribution of human-mediated transport moving AIS within a waterbody. Colonization and Establishment monitoring efforts are initiated based on a need to guide future decision making and management plans.

## How we monitor

The monitoring program is primarily designed to target zebra mussels, particularly in their larval form (veligers) by conducting plankton tows with fine mesh nets. Veliger collections can be advantageous for early detection monitoring programs because they are free-floating and therefore are generally more widely distributed within a waterbody relative to adult / settled Zebra Mussel populations that can be highly localized. Veliger collections also allow for concurrent monitoring of Spiny Waterflea and other AIS of concern.

In addition to veliger monitoring with plankton tows, we periodically employ environmental DNA (eDNA) monitoring. eDNA describes the genetic material which is shed from individuals through natural phenomena, such as release of mucus and feces, or through decomposition. This genetic material can be collected in water or sediment samples and analyzed against bioassays for target species to determine whether or not it is present. eDNA is extremely sensitive and requires specialized technology and analytical interpretation. More recently, Manitoba is benefiting from some early generation eRNA monitoring work. RNA found in the environment provides important distinguishing information from eDNA.

The other primary monitoring method used to screen waterbodies for invasive mussels are substrate samplers. Substrate samplers are constructed of ABS and PVC materials as these materials are preferred by Dreissenid mussels for settling. Plankton tows, eDNA and substrate monitoring are frequently used concurrently in high-risk waterbodies to increase the likelihood of detection. Substrate samplers belong to the class of monitoring known as passive sampling, since these devices are deployed and then sit in place awaiting colonization by plant and animal life within the water column. Once removed from the waterbody, they require significant effort to analyze. Tactile searching under floating docks and other similar water infrastructure is a field-based approach that utilizes this infrastructure as a second form of passive sampler.

Along with these active and passive methods for sampling within the water column, AIS monitoring is conducted through visual surveillance of the margins and littoral zone of the waterbody. This visual scan adds another layer to the overall AIS monitoring program.

All water-users play an important role as additional eyes and ears on the landscape to protect waterbodies from new AIS invasions. If you suspect you have found an AIS, report it by emailing: [AIS@gov.mb.ca](mailto:AIS@gov.mb.ca) or following the attached link: [www.manitoba.ca/stopais/ais\\_reporting.html](http://www.manitoba.ca/stopais/ais_reporting.html)

## Results

During the 2025 open-water season, a total of 144 waterbodies were monitored for Aquatic Invasive Species. This effort would not have been possible without the invaluable support from partners, which includes First Nations, other government agencies, research organisations, environmental groups and civic minded individuals, namely:

*Brokenhead Ojibway Nation*

*Norway House Cree Nation*

*Tataskweyak Cree Nation*

*Skownan First Nation*

*Fisheries and Oceans Canada (DFO) Science and DFO AIS (Ontario and Prairies Region)*

*Environment and Climate Change Canada*

*Riding Mountain National Park (RMNP)*

*Manitoba Hydro*

*Coordinated Aquatic Monitoring Program (CAMP)*

*Lake Winnipeg Research Consortium*

*Dr. Brenda Hann, Professor Emeritus, University of Manitoba*

*The City of Winnipeg*

*Citizens Protecting our Northern Waterways (CPNOW)*

*Swan Valley Sport Fish and Enhancement (SVSFE)*

*Poplar Bay Park Cottagers Association*

## Surveillance Monitoring

In 2025, 133 waterbodies were sampled under surveillance monitoring, of which, 131 had no new detections of Zebra Mussels or Spiny Waterflea. Spiny Waterflea were detected in the Bird River near its confluence with Lake Lac du Bonnet, a waterbody with a known Spiny Waterflea infestation. While this is a first detection, this result is unsurprising given the hydrologic connectivity and subsequent boater movement between these two waterbodies. This reach of Bird River is already within the Winnipeg River Control Zone established for Spiny Waterflea. Given these factors, this detection did not trigger Manitoba's AIS Early Detection and Rapid Response protocol. A single Zebra Mussel veliger was detected in the Rat River downstream of St Malo Reservoir and is discussed below.

## Early Detection and Rapid Response

No new Early Detection and Rapid Response protocols were triggered in 2025 related to Zebra Mussel or Spiny Waterflea detections. For a summary of response activities, including those related to aquatic invasive plants, go here: [https://manitoba.ca/asset\\_library/en/ais/manitoba-ais-2025-early-detection-and-rapid-response-summary.pdf](https://manitoba.ca/asset_library/en/ais/manitoba-ais-2025-early-detection-and-rapid-response-summary.pdf)

### On-going Responses

Six waterbodies currently fall under the validation monitoring protocol of the *Early Detection and Rapid Response* program: St Malo Reservoir, Upper Assiniboine River, Foot Print Lake, Assean Lake, Lake of the Woods and Shoal Lake (Manitoba-Ontario Border).

#### St Malo Reservoir

Live zebra mussel veligers were found within the St Malo Reservoir in 2024, with samples indicative of an early-stage invasion. Monitoring efforts throughout 2025 demonstrated a growing population with veliger counts increasing substantially, including downstream movement of veligers from the reservoir into the lower Rat River. No Zebra Mussel positive samples were detected upstream of the reservoir in the Rat River, indicating the introduction is to the reservoir and not from upstream sources.

To assess the feasibility of eradicating Zebra Mussels within the reservoir, Manitoba conducted a partial drawdown of the St Malo reservoir. In September, water levels were lowered approximately 2.1 metres below full supply to assess reservoir bank stability, as well as to understand how biota in this reservoir respond to receding water levels. During this project, adult Zebra Mussels were found to be nearly continuously distributed along the shoreline. A summary of the 2025 partial drawdown project can be found here: [https://manitoba.ca/asset\\_library/en/ais/manitoba-ais-2025-early-detection-and-rapid-response-summary.pdf](https://manitoba.ca/asset_library/en/ais/manitoba-ais-2025-early-detection-and-rapid-response-summary.pdf)

St Malo Reservoir remains under *Restricted Access*, requiring all watercraft and water-related equipment to be clean, drain, dry and decontaminated before moving to other waterbodies within Manitoba. The Manitoba AIS Unit continues to assess the feasibility eradicating Zebra Mussels within the reservoir.

#### Central Assiniboine River

In 2024, Dead zebra mussel veligers were detected in the Upper Assiniboine River at the Brandon Generating Station as part of *Manitoba Hydro's* routine monitoring program. Throughout 2025, the Assiniboine and Little Saskatchewan Rivers were extensively monitored with veliger tows and eDNA in effort to demarcate the potential invasion. No positives detections were observed throughout 2025. The Assiniboine and Little Saskatchewan Rivers remain under *Restricted Access* – further information related to this response can be found here: [www.manitoba.ca/stopais/ais-detections.html](http://www.manitoba.ca/stopais/ais-detections.html)

### **Foot Print Lake**

Foot Print Lake had an initial detection of Spiny Waterflea in 2022 and a subsequent detection in 2023. Despite high-effort sampling, no Spiny Waterflea were detected in 2024 or 2025. Spiny Waterflea are notoriously patchy and highly seasonal, a lack of findings over the past two years does not provide a high level of confidence that a population is not present. Further monitoring of the waterbody is required to confirm this detection and therefore, will continue to undergo validation monitoring. Foot Print Lake remains under *Restricted Access*.

### **Assean Lake**

Zebra Mussel veligers were first detected within Assean Lake in 2019 and found again in 2020, albeit at low densities. Intensive monitoring with traditional and molecular methods from 2021 to 2025 failed to find further evidence of a Zebra Mussel infestation. Given the five years of no detections, Assean Lake will be de-listed from Manitoba's Early Detection and Rapid Response protocol.

### **Lake of the Woods**

Zebra Mussel veligers were detected in the U.S portion of Lake of the Woods in 2019. Subsequent monitoring by U.S counterparts continues to find low densities of veligers, suggesting a slowly increasing population. No Zebra Mussel veligers have been detected in the Manitoba portion of the lake between 2019 and 2024. In 2025, a single Zebra Mussel veliger was detected approximately two kilometres offshore from Buffalo Point. This finding is consistent with monitoring results found by U.S. counterparts and is indicative of a low-density population.

### **Shoal Lake**

Shoal Lake, a waterbody of shared jurisdiction between Manitoba and Ontario and the source of the City of Winnipeg's drinking water, had a detection of a single Zebra Mussel veliger in 2018. Joint monitoring efforts by Manitoba and Ontario authorities have yet to find other Zebra Mussel positive samples since the initial detection. Shoal Lake will be de-listed from Manitoba's Early Detection and Rapid Response protocol although it will continue to be monitoring regularly. Of note, Shoal Lake is within a Control Zone established for Spiny Waterflea.

## Colonization and Establishment Monitoring

Colonization and Establishment monitoring has largely been carried out by sampling partners for research purposes and/or to guide management programs. Lake Winnipeg has been monitored for Zebra Mussel adults and Spiny Waterflea annually to assess how populations have fluctuated through time and to screen for the presence of Quagga Mussels. These works have largely been supported by the *Lake Winnipeg Research Consortium* through operation of the MV Namao cruises.

*Manitoba Hydro* continues to monitor Zebra Mussel populations in the Nelson River system to guide management programs and infrastructure maintenance, as well as screen for Quagga Mussels. Riding Mountain National Park continues to monitor Zebra Mussels extensively in Clear Lake. While this waterbody is managed by the Parks Canada Agency, downstream transport of Zebra Mussels from Clear Lake into Clear Creek pose a risk to the province. Parks Canada and Manitoba continue to collaborate about this invasion based on our shared risks and mandates.

The province continues to monitor Zebra Mussel and Spiny Waterflea populations in the Saskatchewan River/Cedar Lake control zone. Since the initial detection in Cedar Lake in 2021, Zebra Mussels had only been found in the Cross Bay portion the lake. In 2025, Zebra Mussels were detected near Easterville in Cedar Lake 'proper' for the first time. Both Zebra Mussels and Spiny Waterflea cannot move against the natural flow of water, therefore this within lake expansion of Zebra Mussel distribution was most likely facilitated by human-mediated transport upstream. This is an important reminder to remain diligent when working and recreating in waterbodies with patchy populations of AIS. Planning activities ahead of time to move from upstream to downstream areas can help minimize the spread of AIS within a waterbody.

**Table 1:** List of waterbodies monitored between 2019 to 2025 for Zebra Mussels and/or Spiny Waterflea. Black circles (•) indicate surveillance monitoring, red squares (■) indicate validation monitoring and red Xs (X) indicate establishment and colonization monitoring OR a new confirmed detection.

Waterbodies	2019	2020	2021	2022	2023	2024	2025	Major Findings
Adam Lake		•	•	•		•		
Aime Lake						•		
Anton's Lake	•	•	•	•				
Apussigamsi Lake			•			•		
Arrow Lake							•	
Assean Lake	•	X	■	■	■	■	■	Zebra mussels first detected in 2019; no detections last 5 years
Assean River						•	•	
Assiniboine River								
<i>Downstream of Portage Diversion</i>	X	X	X	X	X	X	X	Zebra mussels only found near the confluence with the Red River
<i>Upstream of Portage Diversion</i>	•	•	•	•	•	X	■	Detection of zebra mussels at Brandon Generation Station in 2024
Athapapuskow Lake	•	•		•	•	•	•	
Audy Lake	•	•	•		•	•	•	RMNP Authority
Barbe Lake					•	•	•	
Barren Lake							•	
Beautiful Lake	•	•	•	•	•	•	•	
Beaver Lake	•	•	•	•		•	•	
Bell Lake	•	•	•	•	•	•	•	
Betula Lake						•		
Big Island Lake						•	•	
Big Whiteshell Lake		•	•	•	•	•		
Billard Lake	•			•				
Bird River							X	Spiny Waterflea detected in 2025 near Lake Lac du Bonnet confluence
Birdtail River	•			•				
Bobhill Lake	•	•	•	•	•	•	•	RMNP Authority
Boissevain Reservoir							•	
Bowden Lake		•					•	
Bower Lake		•	•			•	•	
Brereton Lake						•		
Burntwood River		•	•	•	•	•	•	
Butneau River				•	•			
Caddy Lake		•	•	•		•		

Waterbodies	2019	2020	2021	2022	2023	2024	2025	Major Findings
Cedar Lake								
<i>Cross Bay</i>	•	X	X	X	X	X	X	Spiny Waterflea detected in 2020; Zebra Mussels detected in 2021
<i>Cedar Lake Proper</i>	•	•	•	•	•	•	X	Spiny Waterflea detected in 2020; Zebra Mussels detected in 2025
Chain Lakes						•		
Childs Lake	•	•	•	•	•	•	•	
Churchill River		•			•			
Clarke Lake		•		•				
Clear Creek					•	•	•	
Clear Lake	•	•	•	•	X	X	X	RMNP Authority; zebra mussels detected in 2023
Clearwater Lake	•	•	•	•	•	•	•	
Cormorant Lake	•	•	•	•	•	•	•	
Corstophine Lake	•	•	•	•	•			
Crawford Lake						•		
Cross Lake	X	X	X					Zebra mussels detected in 2019
Dauphin Lake	•	•	•	•	•	•	•	
Davidson Lake			•	•	•			
Deep Lake	•	•	•	•	•	•		
Deloraine Reservoir	•			•			•	
Ditch Lake	•	•	•	•	•	•	•	
Eaglenest Lake	•			•			•	
East Blue Lake	•	•	•	•	•	•	•	
East Goose Lake	•			•		•	•	
Echimamish River			•	X	X	X		Zebra mussels detected in 2022
Elgin Reservoir						•	•	
Elm Creek							•	
Fairford River				•	X		X	Zebra mussels detected in 2023
Falcon Lake	•	•	•	•		•	•	
Fidler Lake		•			•			
First Cranberry Lake	•			•	•	•	•	
Foot Print Lake	•	•	•	X	■	■	■	Spiny waterflea first detected in 2022 and 2023
Footprint Lake	•			•				
Gauer Lake	•	•	•	•	•	•	•	
George Lake (Western)						•		
Glad Lake	•	•	•	•	•	•	•	
Granville Lake	•	•	•	•	•	•	•	
Grass River		•				•	•	

Waterbodies	2019	2020	2021	2022	2023	2024	2025	Major Findings
Grayling Lake	•	•	•	•	•	•	•	RMNP Authority
Gull Lake (Eastern)	•	•	•	•	•	•	•	
Gull Lake (Western)	•	•	•	•	•	•	•	
Hairy Lake			•	•	•	•		Zebra mussels detected in 2024
Hayes River	•	•	•	•	•	•		
Henday Quarry				•	•			
Hunt Lake		•	•	•				
Imrie Lake						•	•	
Iskwasum Lake		•		•		•	•	
Jackpine Lake			•	•	•	•		
Jackson Lake						•	•	
Kenton Reservoir						•		
Kerrs Lake	•	•	•	•		•		
Kettle River			•		•			
Killarney Reservoir	•					•	•	
Kississing Lake				•	•	•	•	
La Salle River						•		
Lac du Bonnet	•	•	•	•	•	•	•	Spiny waterflea detected in 2009; also positive for flowering rush
Lake Irwin	•	•	•	•	•	•	•	
Lake Katherine	•	•	•	•	•	•	•	RMNP Authority
Lake Manitoba	•	•	X	X	X			Zebra mussels detected in 2021
Lake Metigoshe	•	•	•	•		•	•	
Lake Minnewasta	•	•	•	•			•	
Lake of the Prairies	•	•	•	•	•	•	•	
Lake of the Woods	•	X	■		■	■	■	Confirmation monitoring for zebra mussels - none detected; spiny waterflea detected in 1990s
Lake St Andrew	•	•	•		•	•	•	
Lake St George	•				•	•	•	
Lake St Martin	•	•	•	•	X		X	Zebra mussels detected in 2023
Lake Wahtopanah	•	•	•	•	•	•	•	
Lake Winnipeg	X	X	X	X	X	X	X	Zebra mussels detected in 2013; Spiny Waterflea in 2011
Lake Winnipegosis	•	•	•	•	•	•	•	Single veliger detected in 2019, no detections in subsequent years
Laurie Lake	•	•	•	•	•	•	•	
Lee River		•	•			•	•	Spiny waterflea detected in 2009; also positive for flowering rush
Leftrook Lake	•	•	•	•	•	•	•	

Waterbodies	2019	2020	2021	2022	2023	2024	2025	Major Findings
Little Jackfish Lake						•	•	
Little Limestone Lake		•			•	•	•	
Little Saskatchewan River						•	•	
Little Waterhen River						•	•	
Manigotagan Lake	•	X	■	■	■	•	•	Single spiny waterflea detected in 2020, no detections in subsequent years
Mantagao Lake	•			•				
Marge lake	•	•	•	•		•	•	
Mary Jane Reservoir						•	•	
Max Lake	•	•	•	•		•	•	
Mid Lake							•	
Mill Creek							•	
Minnedosa Lake	•	•	•	•	•	•	•	
Molson Lake		•	•	•	•	•	•	
Moon Lake	•	•	•	•	•	•	•	RMNP Authority
Moose Lake	•	•	•	•		•	•	
Mossy River						•	•	
Mynarski Lakes		•						
Mystery Lake							•	
Nelson River	X	X	X	X	X	X	X	Zebra mussels detected in 2019
Neso Lake						•	•	
Nesosap Lake							•	
Norris Lake	•			•		•	•	
North Shoal Lake						•	•	
North Steeprock Lake	•	•	•	•	•	•	•	
North Thomas Lake	•	•	•	•	•	•		
Northern Indian Lake	•	•	•	•	•	•	•	
Notigi Lake			•			•		
Nutimik Lake	•	•	•	•	•	•		Spiny waterflea detected in 2009
Oak Lake	•	•	•	•	•	•	•	
Octopus Lake	•	•	•	•	•	•		
Odei River						•	•	
Opachuanau Lake		•			•			
Ospwagan Lake							•	
Otter Lake	•	•	•	•	•			
Overflowing River						•	•	
Paimusk Creek					•	•	•	
Paint Lake		•	•	•	•	•	•	

Waterbodies	2019	2020	2021	2022	2023	2024	2025	Major Findings
Partridge Breast Lake			•			•		
Patterson Lake	•	•	•	•	•		•	
Pelican Lake	•	•	•	•	•	•	•	
Pembina River						•	•	
Perch Lake	•	•	•	•	•	•	•	
Persse Lake						•		
Playgreen Lake	X	X	X	X				Zebra mussels detected in 2019
Pybus Lake	•	•	•	•	•			
Rat Lake	•			•				
Rat River (Eastern)						•	X	
Rat River (Northern)						•		
Red Deer River						•	•	
Reed Lake		•		•		•	•	
Rock Lake	•				•	•	•	
Rocky Lake	•	•			•	•	•	
Rossmann Lake	•	•	•	•	•	•	•	
Sandy Lake	•	•	•	•	•	•	•	
Saskatchewan River	•	•	•	•	•	•	•	
Schist Lake						•	•	
Seech Lake	•	•	•	•	•	•	•	
Setting Lake	•	•	•	•	•	•	•	
Shoal Lake (Eastern)	•	X	■	■	■	■	■	Validation monitoring for zebra mussels; spiny waterflea detected in 2018
Shoal Lake (Western)	•	•	•	•	•	•	•	
Silver Beach Lake	•	•	•	•	•	•	•	
Simonhouse Lake			•		•	•	•	
Singush Lake	•	•	•	•	•	•	•	
Sipiwesk Lake		X	X					Zebra Mussels detected in 2019
Snow Lake						•	•	
Souris River						•	•	
South Moose Lake			•			X		New detection of spiny waterflea in 2024
Southern Indian Lake	•		•	•	•	•	•	
Spears Lake							•	
Split Lake	X	X	X	X				Zebra mussels detected in 2019
Spray Lake	•	•	•	•	•	•	•	
St. Malo Reservoir						X	X	New detection of zebra mussels in 2024; also positive for flowering rush and purple loosestrife
Stephenfield Reservoir				•		•	•	

Waterbodies	2019	2020	2021	2022	2023	2024	2025	Major Findings
Stephens Lake	X	X	X	X	X	X		Zebra mussels detected in 2019
Stuart Lake	•	•	•	•	•	•		
Swan Lake (Southwestern)							•	
Threepoint Lake	•	•	•	•	•	•	•	
Tokaryk Lake	•	•	•	•	•		•	
Tramping Lake						•	•	
Twin Lake						•	•	
Twin Lakes						•	•	
Two Mile Lake	•	•	•	•	•	•	•	
Verrall Lake	•			•				
Walker Lake	X			X				Zebra Mussel detected in 2019; Spiny Waterflea in 2022
Wargatie Lake							•	
Waterhen Lake	•				•	•		
Waterhen River	•	•	•	•	•	•		
Wekusko Lake		•		•	•	•		
Wellman Lake	•	•	•	•	•	•		
West Blue Lake	•	•	•	•	•	•		
West Hawk Lake	•					•		
West Shoal Lake						•		
West Waterhen River						•		
West Watjask Lake							•	
Whirlpool Lake	•	•	•	•	•	•		RMNP Authority
Whitefish Lake	•	•	•	•	•	•		
William Lake (Northern)			•	•	•	•		
William Lake (Western)						•		
Winnipeg River	•	•	•	•	•	•		Spiny waterflea detected in 2009; also positive for flowering rush
Wuskwatim Lake						•	•	

Number of Waterbodies by Year	2019	2020	2021	2022	2023	2024	2025	
<b>Surveillance</b>	92	94	93	103	89	138	133	
<b>Validation</b>	6	6	5	5	5	4	6	
<b>Colonization and Establishment</b>	7	8	10	8	10	7	5	
<b>TOTAL</b>	<b>105</b>	<b>109</b>	<b>108</b>	<b>116</b>	<b>104</b>	<b>149</b>	<b>144</b>	