

# STOP AQUATIC INVASIVE SPECIES

## 2020 AIS Monitoring Summary

In 2020, the Manitoba Aquatic Invasive Species (AIS) Unit and eight partners<sup>1</sup> sampled 160 sites at 100 waterbodies, primarily for zebra mussels. In total, 590 water samples were analysed for zebra mussel veligers, 287 water samples were analysed for zebra mussel eDNA, 38 substrate samplers were set and available infrastructure was checked for settled adult zebra mussels. In water samples collected by or for the AIS Unit, the samples were also analysed for spiny waterflea.

Of the 100 water bodies sampled, 92 were part of surveillance monitoring (i.e. to confirm zebra mussel free status), six were sampled as part of validation monitoring (i.e. to confirm an earlier detection) and two were sampled as part of established monitoring (i.e. to follow the movement and establishment within and into connected water bodies – i.e. Lake Winnipeg/Nelson River).

Some water bodies were sampled more intensely (e.g. sampled more often, by more than one agency, and using multiple sampling methods), based on information from the Manitoba AIS Watercraft Inspection Program, such as the proximity to water bodies with zebra mussels, the likelihood of establishment based on environmental parameters and expert opinion.

## Results

### Surveillance Monitoring

There were no new detections of zebra mussel eDNA, veligers or adults in the 92 surveillance water bodies sampled. For those waterbodies where substrate samplers were set (n= 22), the initial visual inspection did not show any obvious zebra mussels. However, a detailed analysis of each plate has not been completed for 20 of the samplers.

There were two new spiny waterflea detections. A single spiny waterflea was detected in one of three samples collected from Manigotagan Lake. Fourteen spiny waterflea were found in three of 12 samples taken from Cedar Lake near Easterville. The AIS Unit is following up with more intense monitoring of these lakes in 2021. In the case of Cedar Lake, monitoring will be used to determine the establishment and spread of spiny waterflea throughout the lake. Since Manigotagan Lake showed only a single detection, validation monitoring will determine if the detection was a false positive. False positives can occur because of lab or field contamination.

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<sup>1</sup> Partners: City of Winnipeg, DFO Science and DFO AIS (Ontario and Prairies Region), Manitoba Hydro, Lake Winnipeg Research Consortium, Riding Mountain National Park (RMNP), Swan Valley Sport Fish Enhancement (SVSFE), Norway House Cree Nation and Treaty 2. Some samples collected by partners were only for Zebra Mussel, the results of which form a portion of this report.



## Validation Monitoring

Assean Lake, Cedar Lake, Lake Winnipegosis, Shoal Lake, Lake of the Woods (i.e. Buffalo Bay) and Lake St. Andrew were monitored as part of the Early Detection and Rapid Response program to confirm previous detections of zebra mussel veligers. For Assean Lake, Lake Winnipegosis and Lake St. Andrew, these were single zebra mussel veligers found in a single sample in 2019. All six lakes were sampled more intensely utilizing one or more sampling methods in 2020. With the exception of Assean Lake, no zebra mussel eDNA veligers or adults were detected.

In Assean Lake, zebra mussel veligers were detected in three of twelve samples collected. However, there was no detection of zebra mussel DNA which suggests, along with veligers not being found in all 12 samples, that this is an early stage of invasion. The 2020 monitoring confirms the detection of this species and the AIS Unit is working with affected parties on a response.

Note that in the U.S. portion of Lake of the Woods, follow-up sampling occurred after an initial detection of zebra mussel veligers in 2019. The 2020 results show a low-level continued presence of veligers from mid-July onward. U.S. counterparts indicate that these data suggest the zebra mussels in that portion of the lake may be slowly increasing in population size and distribution.

## Established Monitoring

The intent of this sampling is to follow the spread and establishment of zebra mussels into the north basin of Lake Winnipeg, and ultimately into the Nelson River. Manitoba Hydro also hired a consultant to monitor for zebra mussel veligers at a number of their generating stations, including those on the Nelson and Saskatchewan Rivers.

Because of COVID-19 logistics constraints, the Lake Winnipeg Research Consortium was only able to operate the MV Namao for the fall cruise. Although water samples were collected in the north basin for zebra mussel veligers and at all stations for spiny waterflea, analysis could not be completed on these samples. This was due to an error in the preservative provided by the manufacturer.

From Manitoba Hydro, from coordinated aquatic monitoring sampling efforts on the Nelson River, and reports from community members, it is evident that zebra mussels are becoming well established throughout the entire river. Zebra mussel veligers were detected from Playgreen Lake downstream to the Limestone Generating Station in greater numbers than in 2019. Adult zebra mussels are also being reported in York Factory First Nation and Tataskweyak Cree Nation. Both these communities are situated on Split Lake. Juvenile zebra mussels were also found in benthic samples obtained below the Limestone Generating Station through the Coordinated Aquatic Monitoring Program.

## Reporting Results

Table 1 shows, by region, the water bodies sampled, sampling effort and results.

Table 1. Summary of water bodies sampled, sampling effort and results by region.

|                              | Sampling Effort by Method |      |                    |         |
|------------------------------|---------------------------|------|--------------------|---------|
|                              | Water Samples             |      | Substrate Samplers |         |
| Water body                   | VELIGERS                  | eDNA | Adults             | Results |
| <b>Northwest Region</b>      |                           |      |                    |         |
| Athapapuskow Lake            | 12                        | 6    |                    | tactile |
| Cedar Lake                   | 38                        | 12   |                    | tactile |
| Clearwater Lake              | 18                        | 9    |                    |         |
| Cormorant Lake               | 3                         |      |                    |         |
| Footprint Lake               |                           | 3    |                    |         |
| Grass River at Wekusko Falls | 3                         |      |                    |         |
| Iskwasum Lake                | 3                         |      |                    |         |
| Little Limestone Lake        | 10                        |      |                    |         |
| Reed Lake                    | 9                         |      |                    |         |
| Saskatchewan River - The Pas | 9                         |      |                    |         |
| Wekusko Lake                 | 10                        | 6    |                    |         |

|                       |    |    |   |                    |
|-----------------------|----|----|---|--------------------|
| <b>Central Region</b> |    |    |   |                    |
| Lake Irwin (Neepawa)  | 1  |    |   |                    |
| Lake Manitoba         | 31 | 22 | 1 | tactile            |
| Lake St Andrew        | 11 |    |   |                    |
| Lake St Martin        | 9  |    |   |                    |
| Lake Winnipeg         | 55 |    |   | Samples destroyed  |
| Lake Winnipeg         | 11 | 8  |   | 86,975 ZM veligers |
| Waterhen River        |    |    | 1 |                    |

|  |    |    |    |         |
|--|----|----|----|---------|
| <b>Eastern Region</b>                    |    |    |    |         |
| Big Whiteshell Lake                      | 6  |    |    |         |
| Caddy Lake                               | 9  |    |    |         |
| Falcon Lake                              | 9  | 9  |    | tactile |
| Gull Lake (Grand Beach)                  | 9  | 4  |    |         |
| Hunt Lake                                | 9  |    |    |         |
| Lake of the Woods (ON/MB)<br>Buffalo Bay | 9  |    |    | tactile |
| Lee River                                | 9  | 12 |    |         |
| Manigotagan Lake                         | 3  |    |    | 1 SWF*  |
| Moose Lake Sprague                       | 9  |    |    |         |
| Shoal Lake Ontario                       | 18 | 18 | 11 |         |
| Winnipeg River                           | 3  |    |    |         |
| <i>Pine Falls FB</i>                     |    |    |    |         |
| <i>McArthur Falls upstream</i>           | 3  |    |    |         |
| <i>McArthur Falls downstream</i>         | 3  |    |    |         |
| <i>Lac du Bonnet</i>                     | 9  | 6  |    |         |
| <i>Nutimik PP Boat Launch</i>            | 9  |    |    |         |
| <i>Pointe du Bois upstream</i>           | 6  |    |    |         |
| <i>Pointe du Bois downstream</i>         | 3  |    |    |         |

\*A positive result does indicate a water body is invaded. Almost always more monitoring is required to confirm the detection and rule out any possibility of a false positive.

|            | Sampling Effort by Method |      |                    |         |
|------------|---------------------------|------|--------------------|---------|
|            | Water Samples             |      | Substrate Samplers |         |
| Water body | VELIGERS                  | eDNA | Adults             | Results |

**Western Region**

|                                |    |    |   |         |
|--------------------------------|----|----|---|---------|
| Adam Lake                      |    | 6  |   |         |
| Anton's Lake                   | 1  |    |   |         |
| Assiniboine River              | 3  | 3  |   |         |
| Audy Lake                      | 2  | 1  |   |         |
| Beautiful Lake                 |    | 3  | 1 |         |
| Beaver Lake DMPP               |    |    | 1 |         |
| Bell Lake DMPP                 |    |    | 1 |         |
| Bobhill Lake                   | 2  | 1  |   |         |
| Bower Lake                     |    | 3  |   |         |
| Childs Lake                    |    | 6  | 2 |         |
| Clear Lake                     | 10 | 8  |   |         |
| Corstophine Lake               | 1  |    |   |         |
| Dauphin Lake                   | 1  | 13 |   | tactile |
| Deep Lake                      | 2  | 1  |   |         |
| Ditch Lake                     | 1  | 1  |   |         |
| East Blue Lake                 |    | 3  | 1 |         |
| Glad Lake                      |    |    | 1 |         |
| Grayling Lake                  | 2  | 1  |   |         |
| Gull Lake DMPP                 |    |    | 1 |         |
| Kerrs Lake                     | 1  | 1  |   |         |
| Lake Katherine                 | 2  | 3  |   |         |
| Lake Metigoshe                 |    | 3  |   |         |
| Lake Minnewasta (Morden)       | 9  | 5  |   | tactile |
| Lake of the Prairies           | 9  | 15 |   | tactile |
| Lake Winnipegosis              | 44 | 20 |   | tactile |
| Laurie Lake                    |    | 3  | 1 |         |
| LSR Lake Wahtopanah            |    | 9  |   |         |
| LSR Minnedosa Lake (Minnedosa) | 1  |    |   |         |
| Marge lake DMPP                |    |    | 1 |         |
| Max Lake TMPP                  |    | 3  |   |         |
| Moon Lake                      | 2  | 1  |   |         |
| North Steeprock Lake DMPP      |    |    | 1 |         |
| Oak Lake                       |    | 6  |   |         |
| Octopus Lake                   | 1  | 1  |   |         |
| Otter Lake                     | 1  | 1  |   |         |
| Patterson Lake (olha)          | 1  | 1  |   |         |
| Pelican Lake                   | 9  | 5  |   | tactile |
| Perch Lake                     |    |    | 1 |         |
| Pybus Lake                     | 1  |    |   |         |
| Rossmann Lake                  | 1  | 1  |   |         |

|            | Sampling Effort by Method |      |                    | Results |
|------------|---------------------------|------|--------------------|---------|
|            | Water Samples             |      | Substrate Samplers |         |
| Water body | VELIGERS                  | eDNA | Adults             |         |

| Western Region Continued |   |   |   |  |
|--------------------------|---|---|---|--|
| Sandy Lake               | 1 | 1 |   |  |
| Seech Lake               | 1 |   |   |  |
| Shoal Lake               | 1 |   |   |  |
| Silver Beach Lake        | 1 |   |   |  |
| Singush Lake             |   | 3 | 1 |  |
| Spray Lake               |   |   | 1 |  |
| Stuart Lake              | 1 | 1 |   |  |
| Thomas Lake              | 1 | 1 |   |  |
| Tokaryk Lake             | 1 | 1 |   |  |
| Two (2) Mile Lake        |   |   | 1 |  |
| Wellman Lake             |   | 3 | 1 |  |
| West Blue Lake           |   |   | 1 |  |
| Whirlpool Lake           | 2 | 1 |   |  |
| Whitefish Lake (Swan R)  |   |   | 1 |  |

| Northeast Region                        |    |   |   |                     |
|---|----|---|---|---------------------|
| Assean Lake                             | 15 | 6 |   | 12 ZM veligers*     |
| Bowden Lake                             |    | 3 |   |                     |
| Burntwood River                         | 12 |   |   |                     |
| Central Mynarski                        | 3  |   |   |                     |
| Churchill River_lower weir              | 3  |   |   |                     |
| Clarke Lake                             |    | 3 |   | tactile             |
| Fidler Lake                             | 3  |   |   |                     |
| Gauer Lake                              | 3  |   |   |                     |
| Granville Lake                          | 3  |   |   |                     |
| Hayes River                             | 3  |   |   |                     |
| Leftrook Lake                           | 3  |   |   |                     |
| Molson Lake                             | 9  |   | 1 | tactile             |
| Nelson River -<br><i>Playgreen Lake</i> | 9  |   |   | 817,200 ZM veligers |
| <i>Jenpeg GS</i>                        | 3  |   |   | 12,690 ZM veligers  |
| <i>Cross Lake</i>                       | 6  |   |   | 37,224 ZM veligers  |
| <i>Kelsey GS (Split) upstream</i>       | 3  |   |   | 4,200 ZM veligers   |
| <i>Kelsey GS (Split) downstream</i>     | 3  |   |   | 4,070 ZM veligers   |
| <i>Sipiwisk Lake</i>                    | 3  |   |   |                     |
| <i>Split Lake</i>                       | 6  |   |   | 13,798 ZM veligers  |
| <i>Stephens Lake Butnau Marina</i>      | 3  |   |   | 11,160 ZM veligers  |
| <i>Kettle GS</i>                        | 3  |   |   | 6,120 ZM veligers   |
| <i>Limestone GS downstream</i>          | 6  |   |   | 2,816 ZM veligers   |
| Northern Indian Lake                    | 3  |   |   |                     |
| Opachuanau Lake                         | 3  |   |   |                     |
| Paint Lake                              | 10 | 9 |   |                     |
| Setting Lake                            | 3  | 3 |   |                     |
| Threepoint Lake                         | 3  |   |   |                     |

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