Minneapolis Park & Recreation Board

2024 Aquatic Invasive Species Inspection Report

12-18-2024

Boat Launch Hours for 2024

The 2024 season ran from May 1st through December 1st. While launches at Bde Maka Ska, Lake Harriet, and Lake Nokomis were open and staffed with a Minneapolis Park and Recreation Board (MPRB) DNR-trained inspector every day of the week, the dates and times differed by site.

Launch hours for Lake Nokomis and Lake Harriet were:

May 1 – September 2: 6am – 10pm
September 3 - October 14: 6am – 9pm
October 15- November 3, Inspector on-call hours: 7am – 8pm*
November 4 - December 1, Inspector on-call hours: 8am – 6pm*

*During on-call inspection hours from October 10 through December 1, a phone number was posted at the launches and listed on the MPRB website instructing boaters to call for an inspection. Boat launches were locked during non-staffed hours and on-call hours.

Number of Inspections and Customer Service Interactions

In 2024, MPRB watercraft inspectors conducted 5,480 watercraft, dock, and lift inspections. This was a decrease from 2023, following a declining trend of boating after an all-time high during the pandemic. The number of inspections from 2024 is similar to pre-pandemic levels. Following two years of contruction, the Bde Maka Ska launch was open for the full duration of the season for the first time since 2022.

A professional grant agreement between MPRB and Hennepin County was renewed in 2023, providing $40,000 per year through 2025 to support expanded water access. Hennepin County's grant reimbursement accounted for 22.5% of wages for operating hours in 2024. This funding accounts for 2,140 hours of staffing at the boat launches and 1,233 inspections. Funding from Hennepin County ensured we were able to provide satisfactory access to Minneapolis Lakes, at a level consistent with previous seasons.

In addition to educating the boating community, watercraft inspectors were trained to provide customer service to park patrons. All inspectors were required to read an online forum called Boat Inspector News (BIN) at the beginning of each shift to learn about local events, AIS happenings in the news, weather updates, and parkway closures. This ensured that the inspectors were equipped to answer a wide variety of questions from park patrons. Watercraft inspectors made contact with 17,689 park patrons in 2024. Bde Maka Ska had the most interactions at 6,966 interactions, followed by Lake Harriet at 6,282 interactions, and Nokomis at 4,441 interactions.

Timing of Inspections

As in previous years, 2024 boat launch traffic generally reflected weather patterns, scheduled events, and holidays. Noticeable upticks in inspection numbers were observed on weekends preceding federal holidays and the weekend before buoyed sailboats needed to be removed in October. Overall, launch use fell dramatically in October after sailboats were required to be taken off their buoys and the boat launch docks were removed. However, Lake Harriet launch use remained high through October, driven by anglers targeting Muskellunge (*Esox masquinongy)*.

In 2024, Sunday was the busiest day of the week for inspections (1,259 inspections; 23% of total); this was the similar in 2023 but contrasted with the prior five seasons where Saturday was the busiest day. The busiest hour of day was 5:00-6:00 PM (441 inspections; 7.2% of total). Weekday mornings and weekend evenings tended to be the slowest periods for inspections. As in previous years, weekday use patterns differed from weekend use patterns. Early boats arriving at 6:00 AM were more common on weekends than weekdays. Weekdays had a pronounced increase in inspections when people generally leave work between 3:00 and 6:00 PM. Weekends, on the other hand, had a more pronounced increase around the lunch hour and early afternoon. Typically, fewer inspections occurred after 5:00 PM on Saturdays and Sundays compared to weekdays. The most inspections occurred in the month of June at Bde Maka Ska and Lake Harriet, with 343 and 372 inspections, respectively. Lake Nokomis had its busiest month in July with 447 inspections.

Lake Harriet was the most popular lake from September through the end of the season. This trend has been observed in previous years as well and is likely attributable to Lake Harriet's healthy muskellunge (muskie) fishery. The Minnesota Department of Natural Resources (DNR) regularly stocks Lake Harriet with muskies and Lake Nokomis with hybrid tiger muskies (*Esox masquinongy* X *Esox lucius*). According to local anglers, the Lake Nokomis tiger muskies tend to be active in the spring months, while the Lake Harriet muskies tend to be active in the fall months.

The top five busiest days of the season include: June 1 (Saturday; 95 inspections); May 11 (Saturday; 93 inspections), July 17 (Wednesday; 79 inspections), June 23 (Sunday; 77 inspections), and June 30 (Sunday; 75 inspections). In previous years, Independence Day (4th of July) was one of the busiest inspection days of the year. However, in 2024, rain and storms led to only 8 inspections being conducted on Independence Day. Our busiest holidays this season were Juneteenth (64 inspections), Labor Day (60 inspections), Indigenous Peoples' Day (42 inspections) Memorial Day (29 inspections), Independence Day (8 inspections) and Veteran's Day (2 inspections). No inspections were conducted on Thanksgiving Day.

Fall boat launch hours and the implementation of the seasonal on-call program started October 15. During the seasonal on-call program a phone number was posted at the boat launches for boaters to call for inspection. The number of inspectors working at any given time decreased from three during the summer to two during the on-call season. September and October of 2024 had 731 and 599 inspections, respectively, which was similar to the 2013-2023 median. Unseasonably warm temperatures occurred throughout the fall season, particularly in November. In November a total of 147 inspections were performed, which was higher than the 2013-2023 median.

When inspectors were not performing inspections during the on-call program, they helped complete projects for MPRB Environmental Management staff in the office. For example, inspectors prepared a document with facts about AIS that occur in the area or are a threat, they helped make a map of angler behavior, updated the common customer service questions document, and performed various other duties.

Types of Watercraft Inspected

The majority of watercraft inspected in 2024 were categorized as fishing boat (36%), canoe/kayak/or similar (35%), or sailboat (21%), followed by other types of watercraft (pontoons, jon boats, etc.; 8%). While there was an initial insurgence of watercraft categorized as canoe/kayak/or similar launching during the pandemic, those numbers have leveled off over the previous two seasons; however, they are still significantly higher than pre-pandemic levels.

Hundreds of sailboats are buoyed on the lakes all summer, commonly only being inspected at the boat launches once when they enter the lake in the spring and a second time when they exit the lake in the fall.

Consequently, there is more sailboat usage on the lakes than shows up in the inspection survey data. This summary only reflects inspections at boat launches, not the percentage of boats actively being used on the water at any given time. The data collected for the AIS program is not a measurement of sailing use at MPRB lakes.

Violations

According to Minnesota state law, owners of watercraft and water-related equipment are not allowed to transport aquatic plants, prohibited aquatic animals, lake water, or excessive mud between waterbodies, nor are they allowed to travel with their drain plugs in place. Inspectors are required to log any boats in violation with these laws during inspections. Inspectors require removal of these items before allowing a boat to launch. If the items cannot be removed by hand, requiring a pressure washer or other specialized equipment, the inspectors give the boater a DNR one-way authorization permit and ask the boaters to decontaminate their watercraft offsite before they attempt to launch again.

In total, plants, animals, mud or water were found on 251 entering watercraft and 4 exiting watercraft in 2024. The number of instances that these items were found on exiting watercraft is likely was markedly lower this season compared to previous seasons. This is likely related to additional clarification in the DNR inspector training that exiting boats are not in violation until after they have had time to inspect and clean their own watercraft and would leave the launch with a violation. It is also common for boats and trailers to pick up Eurasian watermilfoil and other plants when leaving the lake and for inspectors to assist the boater in removing threats prior to an inspection.

Of the 251 entering watercraft that were in violation of AIS laws, aquatic plants accounted for 52% of incoming AIS violations; the drain plug being in upon arrival accounted for 39%; mud accounted for 7%; water accounted for 4%; and snails accounted for under 1%. These discoveries highlight the value of the program, as plants, animals, mud, and water are all capable of contributing to new AIS infestations in the Minneapolis lakes.

MPRB watercraft inspectors logged no zebra mussel violations in 2024. The number of zebra mussel violations in previous years has ranged from zero in 2020 to 18 in 2014. Zebra mussel violations have occurred 85 times in the history of the program. Of those 85 violations, 38 were at Lake Harriet, 26 were at Lake Nokomis, and 21 were at Bde Maka Ska.

The zebra mussel violation rate from 2013-2023 is not evenly distributed among watercraft types. For example, sailboats have accounted for 21% of the total inspections since 2013 but have accounted for 48% of the total zebra mussel violations (40 of 85). Thus, inspectors have found a disproportionately high number of zebra mussel violations on sailboats compared to other boat types. MPRB staff continue to work with local sailing organizations to spread awareness about zebra mussels and other AIS. Canoes and kayaks account for 32% of the inspections performed since 2013 and only account for 2% of the zebra mussel violations. Fishing boats account for 41% of the inspections since 2013 and 52% of the zebra mussel violations.

It is illegal to transport a watercraft between waterbodies while the drain plug is in place. One of the first steps during a watercraft inspection involves the inspector recording whether or not the watercraft's drain plug(s) are in place. If the drain plug happens to be in at the time of an incoming inspection, the inspector asks the boater if the drain plug was in or out when they arrived at the lake (because the boater could have put the drain plug in before the inspection started). This data is recorded in the inspection survey. According to the survey data, 2,831 entering inspections were conducted in 2024. At the time those inspections were conducted, over 96% of boaters had their drain plugs out and 91 (3.2%) had their drain

plugs in. When considering drain plug compliance rates, it is important to acknowledge how they are influenced by watercraft that do not have drain plugs (kayaks, paddleboards, canoes, some sailboats, etc.). For those types of boats, the electronic survey instructs the inspectors to choose “Drain plug is out”. There is not an option in the survey to select “watercraft does not have a drain plug”. This applies to a large proportion of the boats that were inspected in Minneapolis. To address this bias, we can limit the data to just entering fishing boats. Of the 1,004 inspections were performed in 2024, 66, or 6.6% had their drain plugs in when arriving to the launch. This is markedly higher than previous seasons, indicating an educational opportunity to target with anglers.

Last Waterbody Visited

During a watercraft inspection, boaters are asked which waterbody their watercraft was most recently in. The answers that boaters provide give insight into how AIS move around Minnesota. According to the 2024 data, 1,346 boaters, who together account for 25% of the total inspections, reported that they had previously been at a Minneapolis lake. While some boaters may not have been entirely truthful and provided this answer to avoid scrutiny, it is clear that many boaters remain in the Minneapolis area throughout the entire season. Beyond Minneapolis lakes, some of the most frequent previous waterbodies include: Lake Minnetonka (99 boaters), Mississippi River (69 boaters), St. Croix River (35 boaters), White Bear Lake (25 boaters), Bryant Lake (18 boaters), and Medicine Lake (15 boaters). Boaters came in lesser quantities from lakes all over the state, as well as from 23 boaters that came from 9 different states and 6 boaters that came from Canada. The last waterbody data was also filtered for sailboat inspections to understand which waterbodies are most popular with sailboat owners. After Minneapolis lakes, the most common waterbodies for sailboats included: Lake Minnetonka (26 boaters), White Bear Lake (10 boaters), Lake Superior (5 boaters), Gull Lake (3 boaters), and Leech Lake (2 boaters).

Threat of New AIS

The last waterbody data can also be used to assess the risk of new AIS being introduced to MPRB waterbodies. Three AIS species of particular concern are zebra mussels, starry stonewort (*Nitellopsis obtusa*), and spiny water flea (*Bythotrephes longimanus*).

In 2024, MPRB staff performed inspections on 316 watercraft that had previously been in zebra mussel-infested waterbodies, 91 watercraft that had previously been in starry stonewort-infested waterbodies and 34 watercraft that has previously been in spiny water flea-infested waterbodies.

Zebra mussels are an invasive mollusk that are found in more than 500 lakes in Minnesota. Zebra mussels impact ecosystems in several ways, including filtering algae that native species need to survive and outcompeting native mussels. Over 10 zebra mussel infested lakes are in Hennepin County, posing large threat to Minneapolis Lakes. In 2024, MPRB staff performed inspections on 316 watercraft that had previously been in zebra mussel-infested waterbodies, excluding Bde Maka Ska, Lake Harriet, and Lake Nokomis.

Starry stonewort is an invasive macro-algae that is found in more than 25 lakes in Minnesota. Starry stonewort has the potential to grow in dense beds that can outcompete native vegetation and significantly deter recreational activities like boating and swimming. The closest that starry stonewort is currently found to Minneapolis is in Medicine Lake near Plymouth, MN. In 2024, watercraft inspections were performed on 91 watercraft that had previously been in starry stonewort-infested waterbodies.

Spiny water fleas are an invasive zooplankton that are found in more than 25 lakes in Minnesota. Spiny water fleas are small (≈1 centimeter) and have a long tail that makes up over half of their total body length. The spiny water flea’s long barb-covered tail serves as a defense against fish predation. Spiny water fleas

have the potential to disrupt lake food chains because they compete with small fish for the same food resource. The closest that spiny water fleas are currently found to Minneapolis is Mille Lacs Lake. In 2024, watercraft inspections were performed on 34 watercraft that had previously been in spiny water flea-infested waterbodies.

Theoretically, it would only take one boat to infest one of the Minneapolis lakes. It is extremely important that the AIS Program remain robust and the inspectors remain vigilant to protect the lakes from these and other AIS that are not currently found in Minneapolis.

2024 AIS Early Detection Activities
MPRB staff used a variety of early detection techniques in 2024 and did not find an established zebra mussel population or any new AIS species in the Chain of Lakes or Lake Nokomis. Veliger sampling and Environmental DNA (eDNA) analysis were performed in 2024 for the first time since 2021. The early detection techniques that were used include:

Zebra Mussel Settling Plate Program
MPRB staff and volunteers from the Friends of Lake Nokomis monitored zebra mussel settling plates at the following lakes in 2024: Wirth, Cedar, Lake of the Isles, Bde Maka Ska, Harriet, Nokomis, and Hiawatha. Zebra mussel sampling plates were deployed on each lake in late-May and removed in mid-October. No zebra mussels were detected on sampling plates at any lake in 2024, except Lake Hiawatha which has an established population of zebra mussels due to its connectivity with Minnehaha Creek.

Buoy Inspections
Similar to zebra mussel settling plates, beach and sailboat buoys serve as suitable zebra mussel substrate. MPRB watercraft inspectors inspected over 96% of the beach buoys from Bde Maka Ska, Lake Harriet, Lake Nokomis, Lake Hiawatha, and Cedar Lake after they were removed from the lakes in the fall. Zebra mussels were not found on any of the beach buoys, except for at Lake Hiawatha where zebra mussels were expected. No evidence of zebra mussels or any other unexpected AIS was observed otherwise.

Weekly Boat Launch Surveys
Once per week from June to September specially trained watercraft inspectors came early to their shift or stayed late at their shift to conduct early detection surveys of the boat launches at Bde Maka Ska, Lake Harriet, and Lake Nokomis. The surveys involved entering the water while wearing waders and a life jacket and inspecting the dock, the boat ramp, plants, rocks, sticks, and other debris for approximately a half hour. The inspectors were trained to identify native and invasive plants and animals, so they used the surveys to look for a variety of plant and animal AIS. No unexpected AIS were observed during the surveys in 2024.

Eurasian Watermilfoil Delineations
MPRB staff delineated Eurasian watermilfoil at Wirth Lake, Cedar Lake, Lake of the Isles, Bde Maka Ska, Lake Harriet, and Lake Nokomis in August. For all the surveys except Wirth Lake, staff boated around the entire perimeter of each lake and periodically collected rake toss samples of the aquatic plant community. The Wirth Lake delineation was limited to a small portion of the lake and was conducted on foot from the shoreline and the floating dock in the swimming area. During all delineations, relative abundancies of native and invasive plant species were determined via visual observation and rake toss sampling and recorded on a lake map. No new invasive plant species were detected.

SCUBA and Shoreline Wading Survey
Staff from the MPRB and Blue Water Science conducted surveys for zebra mussels at Bde Maka Ska on September 17. Blue Water Science SCUBA dived during the survey while MPRB staff checked rocks and other substrate along the shoreline using waders. In total, over 20 hours of searching was conducted, and no zebra mussels were found.

Zebra Mussel eDNA Survey
MPRB tested seven water bodies for the presence of zebra mussel eDNA in 2024. Water quality staff took five or 10 water samples, depending on lake size, from high-risk areas of each of the eight waterbodies. Water samples were brought through the lab and all samples from a single lake were passed through a single 10-micron filter using vacuum suction. Filters were preserved according to laboratory instructions and sent to Pisces Molecular Lab in Boulder, Colorado, who specialize in eDNA analysis.

Two of the seven water bodies had a positive presence of eDNA, Bde Maka Ska and Lake Hiawatha. The result from Lake Hiawatha was expected, as MPRB knows of an established population of zebra mussels within the lake. The presence of zebra mussel eDNA at Bde Maka Ska was unexpected, leading MPRB to take additional samples. Ten additional samples were taken approximately a month after initial sampling. The 10 in-lake water sample locations remained consistent between the two surveys, however, all water samples were passed through their own filter to try to better understand where in the lake eDNA was present.

The second round of eDNA analysis revealed that all 10 locations contained low levels of zebra mussel DNA. The highest DNA detection from Bde Maka Ska was 294 copies per sample, in stark contrast to 138,000 copies per sample detected in Lake Hiawatha. These levels of material indicate a weak positive detection of zebra mussel DNA. While this indicates the presence of some zebra mussel genetic material, it does not confirm the existence of live, adult mussels. Additionally, we cannot completely rule out contamination or the presence of DNA from dead mussels or those ingested by birds; however, the eDNA evidence increasingly demonstrates Bde Maka Ska may be infested with low levels of zebra mussels.

Zebra Mussel Veliger Survey
MPRB tested seven water bodies for the presence of zebra mussel veligers in 2024. Veliger sampling occurred three times between June and August. Water quality staff conducted veliger surveys by pulling a 50cm diameter, 63-micron mesh plankton net from 3 meters above the lake bottom to the surface at three locations on each lake. Samples are then preserved in alcohol and sent to RMB Laboratory, who assess presence of veligers under microscope.

No zebra mussel veligers were detected in any of our surveys, including in Lake Hiawatha which has a known population of zebra mussels. The laboratory conducting the analyses indicated level of of zooplankton in the samples that would make detecting zebra mussel veligers difficult. MPRB will work with the laboratory to refine methods such that future sampling could be more informative.