

Leech Lake Fishery Update, Winter, 2025-2026

Starting in June 2025, a group of 15 individuals, known as the Leech Lake Fisheries Input Group (LLFIG), met monthly through January to update the Leech Lake Fisheries Management Plan. The group was led by staff from the MN DNR Walker Fisheries Office. The LLFIG includes representatives from Leech Lake-oriented businesses (guides, resort owners, equipment companies), Leech Lake Band of Ojibwe Division of Resource Management, area resource management organizations (including the Leech Lake Association), MN DNR regional staff, and MN DNR fisheries research staff. The Leech Lake Fisheries Management Plan synthesizes sampling data from the Large Lake Program to outline objectives and actions to achieve fish resource goals. Revisions to the plan aim to strike a balance between the predator/prey relationships in the lake and direct effort toward sportfish species that provide angling and ecological significance to citizens including walleye, muskellunge, yellow perch, northern pike, bluegill, black crappie, and several additional species. The revised plan will be available for public comment by early summer of 2026.

Stocking of 7.5 million walleye fry was carried out last spring (2025) in accordance with objectives outlined in the 2021-2025 Leech Lake Management Plan. Walleye eggs hatch into fry in the spring and eat zooplankton until reaching the juvenile stage. By fall young walleye are referred to as fingerlings and eat fish and aquatic invertebrates. Stocked fry were marked with oxytetracycline (OTC), which produces a fluorescent mark on the fish's inner ear bone, a structure roughly the size of the letter zero (0). One hundred forty-seven walleye fingerlings were collected to determine how many possessed the OTC mark. Knowing the ratio of marked to unmarked fish allows biologists to estimate natural fry production in the lake and identify potential factors limiting walleye survival. Results showed that egg and fry production in the lake were suitable, however survival of fry (both wild and stocked) was low based on catch rates of fingerlings. Low survival of fry in recent years is thought to be related to reduced zooplankton abundance (Figure 1) as zebra mussels have expanded around the lake (Figure 2).

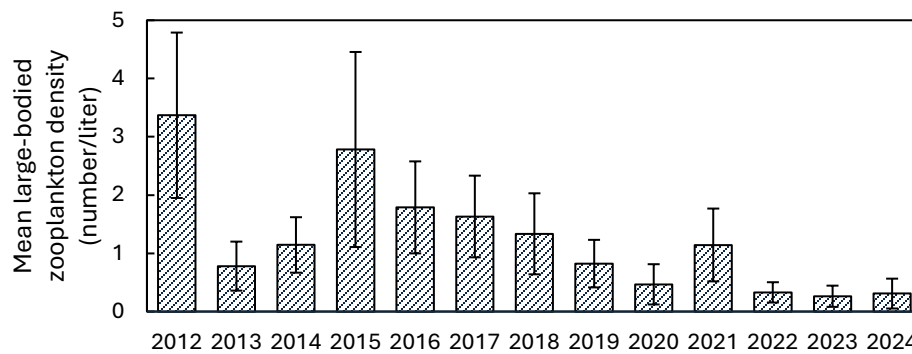


Figure 1. Mean large-bodied (large daphnia and calanoids) zooplankton density (number/liter), including 95% confidence intervals from vouchers collected in May (3 in Western Bays, 2 in Main Lake) by year (2012 – 2024).

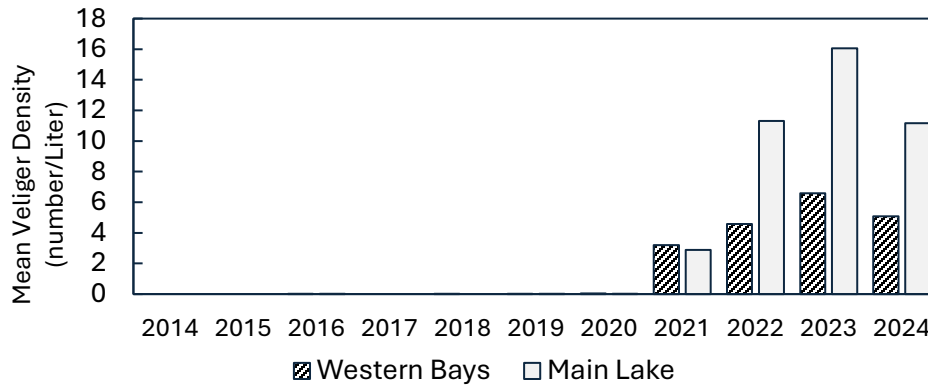


Figure 2. Average zebra mussel veliger density from May through October at five sampling stations in Leech Lake (3 in Western Bays, 2 in Main Lake) by year (2014 – 2024).

Zebra mussels were first documented in Leech in 2016, although veligers (juvenile mussels) were not found in large numbers in samples until 2021 (Figure 2). Zebra mussels are filter feeders that consume microscopic plant-like organisms called phytoplankton. Phytoplankton are the basis of the lake’s food web and are consumed by small animals called zooplankton (Figure 3). Walker DNR fisheries staff collect monthly water samples at 5 stations around the lake and have documented reduced zooplankton in recent years. Declines in phytoplankton have been observed in samples collected by the Leech Lake Association between 2017 and 2024. Declines in large-bodied zooplankton have been documented in May (Figure 1), a critical period for larval walleye growth. In essence, zebra mussels consume phytoplankton, reducing the food for zooplankton, which reduces the food for larval walleye. Zebra mussels, like many invasives, often show a boom-and-bust pattern, characterized by an initial population explosion, followed by a decline to a lower stable density. It is hard to say where the Leech population is now on that timeline, but we are optimistic that densities are past the explosion stage and headed toward stabilization.

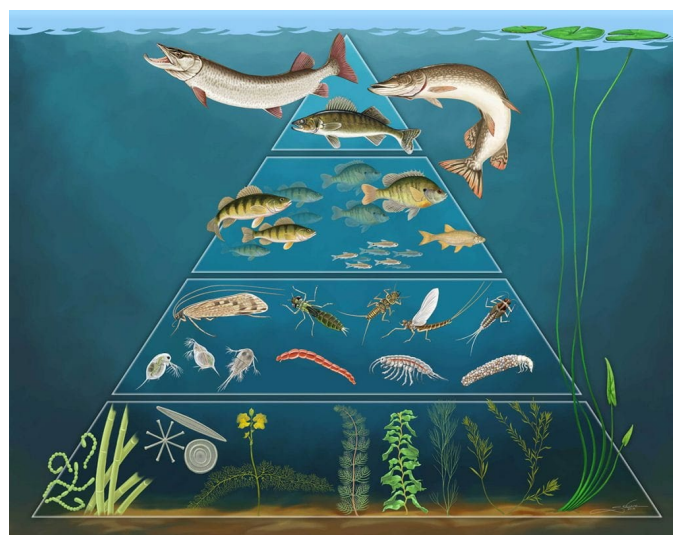


Figure 3. Aquatic biomass pyramid. MN DNR Detroit Lakes Fish Hatchery mural.

Walleye abundance in Leech is being driven by the historically large 2021-year class, now measuring 17-21 inches. Year class strength (i.e., the measure of the contribution of a given year to the fishable population) for the 2022, 2023, and 2024 cohorts of walleye have been low to moderate. We have not had an exceptionally large year class in Leech since 2021, and those walleyes are now age-5. Based on walleye population metrics over the last decade, natural reproduction has maintained a robust walleye population in Leech.

It is also worth noting that trawl catch rates of young-of-the-year (YOY) yellow perch were below the long-term average between 2012 and 2022, likely tied to the high abundance of walleye in the lake. Further evidence of limited food (perch) for walleye was their reduced condition or “plumpness” during that period. A high trawl catch rate of YOY yellow perch in 2023 and a moderate catch rate in 2025 showed the first signs of a potential increase in yellow perch abundance at the juvenile stage since 2011 (Figure 4). Given, also, that there has been relatively fewer young walleye in the lake in the last couple years, competition for food has been reduced from levels observed before 2023. These could be contributing to walleyes’ reduced eagerness to swallow baits being offered by anglers.

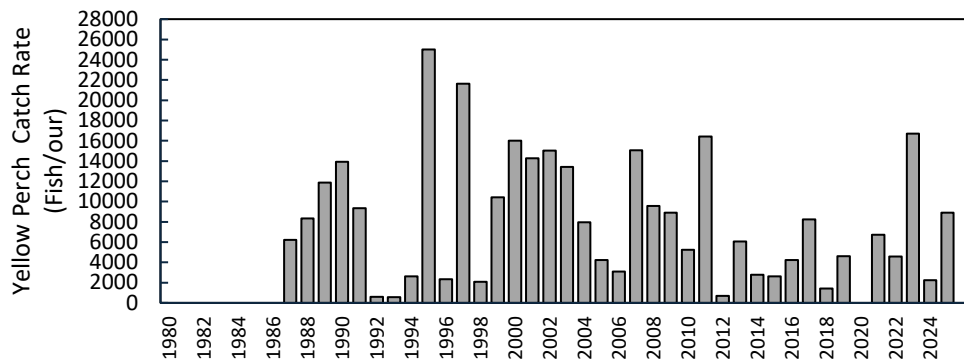


Figure 4. Catch rate (fish per hour) of yellow perch during trawling assessments on Leech Lake, 1987 – 2025.

Most of you avid fishermen (and women) are probably aware of the three-year muskie project started this past spring involving muskie anglers, the Leech Lake Band of Ojibwe Division of Resource Management, Bemidji State University, and MN DNR Fisheries. The muskie population in Leech, in addition to being prized widely by muskie anglers, possesses a unique genetic strain characterized by its large size potential. Leech Lake serves as the brood source of eggs for supplementing populations in other stocked lakes around the state. Project objectives aim to answer questions related to muskie movement, habitat use, and mortality in Leech Lake. To date, 41 muskies have been captured and fitted with either passive PIT or Floy tags, and 21 muskies were implanted with acoustic telemetry tags transmitting location, movement, and other data to 32 receivers in the lake. State-of-the-art science and technology are underway here, so stay tuned!

Fisheries Glossary:

- Acoustic telemetry tag – surgically implanted or attached transmitter recording habitat and life history data about a fish that is transmitted to and stored by a receiver in the water body, or that is being monitored or retrieved from a boat
- Cohort – fish produced in a given year, usually used when several year classes are being discussed, such as “...the 2023 cohort was...”
- Floy tag – An inch or two long spaghetti-looking plastic tube with a unique identifier written along it and attached to fish by a tiny “t” at one end that is embedded under a fish’s skin and scales
- Fingerling walleye – young fish that have grown past the stage of subsisting on zooplankton and are feeding primarily on other fish; from birth until the first winter of life
- Fluorescent mark – a dye-stained area shining brightly under ultraviolet light
- Forage – food
- Larval walleye – recently hatched fish that depend on their yolk sac and then zooplankton for nourishment
- Otolith – the inner ear of fish
- Phytoplankton – tiny, free-floating, plant-like organisms
- PIT tag – Passage Integrated Transponder; an implanted microchip about the size of a rice grain providing the identity of the bearer to a receiver with a matching magnetic field
- Recruitment – term describing the addition of new individuals to a population
- Trawl – a fish collecting system consisting of a large net being towed behind a boat between 2 side boards in 6 to 12 feet of water
- Veliger – the just-hatched free-floating stage of Zebra mussels
- Zooplankton – tiny free-floating animals (daphnia, calanoid copepods, rotifers, etc.)