WISCONSIN DEPARTMENT OF NATURAL RESOURCES

Lake Mendota Yellow Perch Summary Report 2020-2024

Lake: Mendota **County:** Dane **Years:** 2020-2024

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Introduction

Lake Mendota is in Dane County, surrounded by the Madison metropolitan area. It is the largest and northernmost lake in the Yahara chain of lakes. Lake Mendota is 9,781 acres with a maximum depth of 83 feet and a shoreline length of 21 miles. It is a high-profile lake that experiences immense angling pressure due to numerous boat launches and public shoreline accessibility. Yellow perch are a species of particular interest among anglers on Lake Mendota as a harvest-oriented fishery. Lake Mendota historically had a healthy yellow perch population but has unfortunately experienced declines. One of the suspected factors potentially influencing declines are spiny water fleas, an invasive species of zooplankton that became established in Mendota in 2009. Spiny Water Fleas eat native zooplankton species that are also eaten by juvenile yellow perch and other panfish species. This competition for food can potentially cause reduced recruitment of yellow perch. Another factor that could contribute to the lower population is harvest from anglers. Because of declining numbers, the Wisconsin Department of Natural Resources (DNR) started surveying yellow perch on Lake Mendota annually to monitor abundance and size structure beginning in 2014.

Methods

The DNR set eight gill nets during the fall of each year, when cooling water temperatures cause water densities to change. This mixes water throughout the water column in a process known as fall turnover. During fall turnover, yellow perch move out of their deep water summer habitat and move closer to shore, often gathering in schools. These conditions make yellow perch easier to sample with our gill nets. Each gill net is 150 feet in length, comprised of six panels of 25 feet constructed from monofilament mesh. Each panel has a different mesh size, from 1 inch to 3 inches. The gill nets have a weighted line along the bottom and a buoyant line along the top,

allowing them to sit stretched on the lakebed. Fish attempt to swim through the mesh and get caught behind the gills.

There are four locations where nets are set, which have remained consistent through the years: Governor's Island, Brearly Bar, University Bay, and Mendota County Park. Each location has a deep set in approximately 60 feet of water and a shallow set in approximately 20–40 feet of water. Nets are set and checked daily for two days before being removed. All fish caught in the net are tallied by species. All gamefish (including panfish) are measured in inches. Yellow perch are weighed in grams and anal fin rays are taken from a subsample of 5 fish per half inch group to estimate ages.

Results

Catch rates have fluctuated since 2020, with an overall downward trend (Figure 1). The highest catch rate was in 2020 at 61 fish per net-night, while the lowest was in 2024 at 14.4 fish per net-night. Average lengths of yellow perch change every year, with the lowest being 6.4 inches in 2023 and the highest being 7.9 inches in 2022. Growth of yellow perch has remained above state averages, with fish reaching 8 inches in 2 years and 10 inches by 3-4 years (Figure 3). However, age-0 numbers were inconsistent, with excellent numbers in 2021, decreases in 2022 and 2023 and then an increase again in 2024 (Figure 4). The last report written for 2014-2019 had similar trends for catch rates and average lengths, with fluctuations between the years.

Discussion

The yellow perch population on Lake Mendota has fluctuated greatly over the last ten years since this survey began. Currently, the population is on a declining trend approaching record low numbers. These changing population levels are not uncommon for yellow perch as they are known to have large fluctuations in recruitment based on environmental conditions. When conditions are good, such as highly available food or lower numbers of predators, populations boom. When conditions are less ideal, populations drop or "bust". Lake Mendota is no exception, this can be seen in data from the last report written for 2014-2019, where a similar pattern was observed (Notbohm 2019). The report can be found here: Lake Mendota Yellow Perch Summary Report 2014-2019. Because of this, it's difficult to know whether the population is currently at the bottom of a boom/bust cycle, or if it's declining due to other factors. The establishment of spiny water fleas and zebra mussels could be causing recruitment issues. These species compete for food sources with juvenile yellow perch. Angling pressure could also be contributing to a reduction of fish. This could be indicated by the lack of yellow perch found older than 2 years compared to those under 2 years, which is when they typically reach 8 inches. This has been observed in other years as well. A previously written report on Lake Mendota showed

high mortality after age 2 (Notbohm 2019). This is especially of concern as technology continues to improve, potentially leading to greater success rates for anglers, possibly leaving yellow perch more susceptible to harvest. In 2022, a citizen resolution was presented at the Wisconsin Conservation Congress spring hearings to reduce the panfish bag limit on Lake Mendota. This was widely supported by attendees and was already being considered by the DNR. In 2023, the DNR proposed a rule change that was voted on favorably, leading to a panfish bag limit reduction from 25 to 10 fish per day. This new regulation went into effect April 1, 2024. Future data should show if this new regulation influences the population. A beneficial tool to learn more about the effect of anglers on yellow perch on Lake Mendota would be a creel survey. This would provide more information on effort, catch and harvest of fish, which would help determine if anglers are causing a decline. More monitoring will need to be done to see if the decline continues. If it does, more information is needed to find out what the cause is – whether its invasive species, angler harvest, other environmental factors, or a combination of the three.

Acknowledgements

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References

Notbohm, A. 2019. Lake Mendota Yellow Perch Summary Report 2014-2019. Wisconsin Department of Natural Resources, Madison, Wisconsin. 6pp.

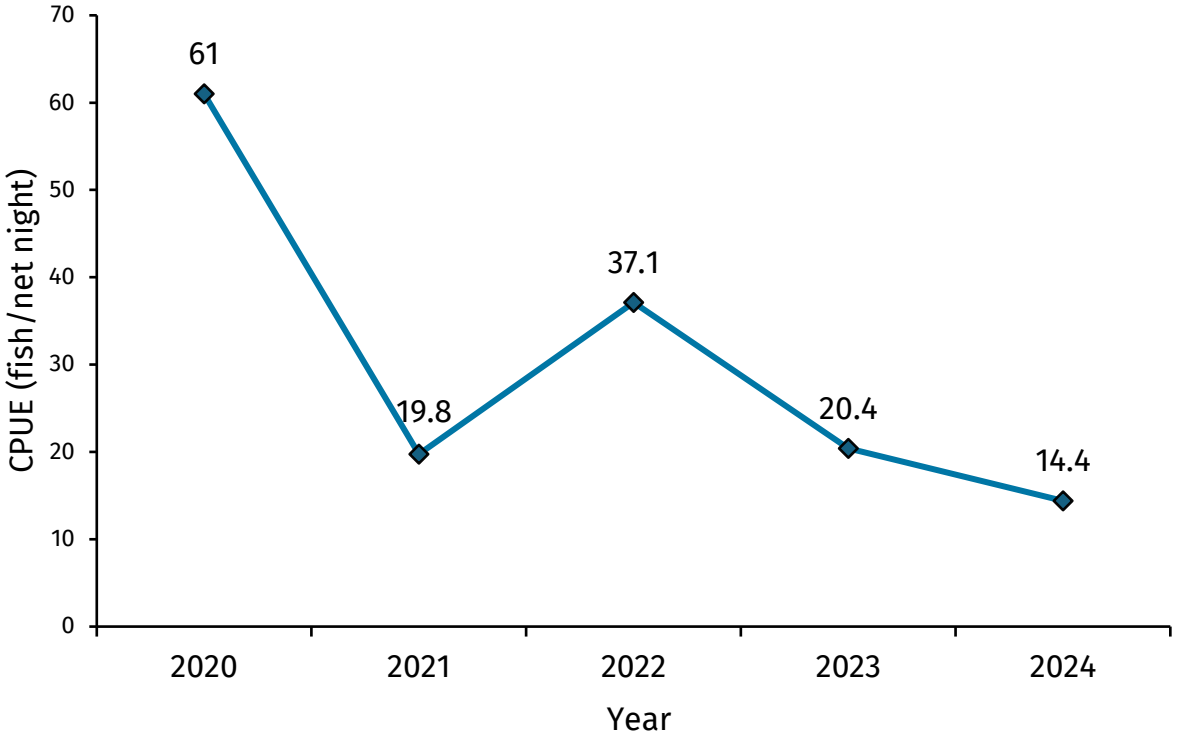

Figure 1. *Catch per effort (CPUE) of yellow perch caught in gillnets set on Lake Mendota during 2020-2024.*

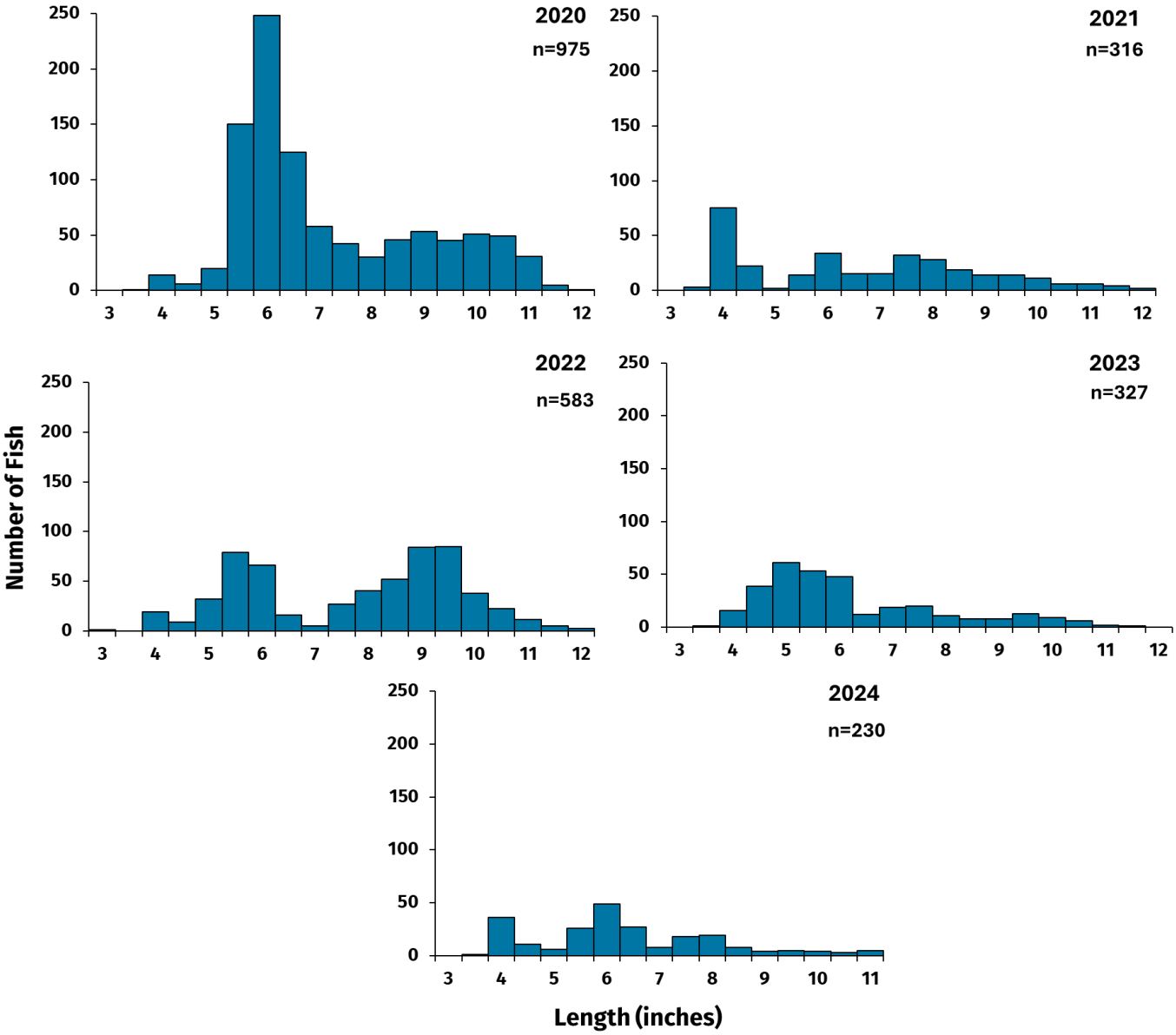

Figure 2. *Length frequency distribution of yellow perch caught in gillnets set on Lake Mendota during fall 2020-2024.*

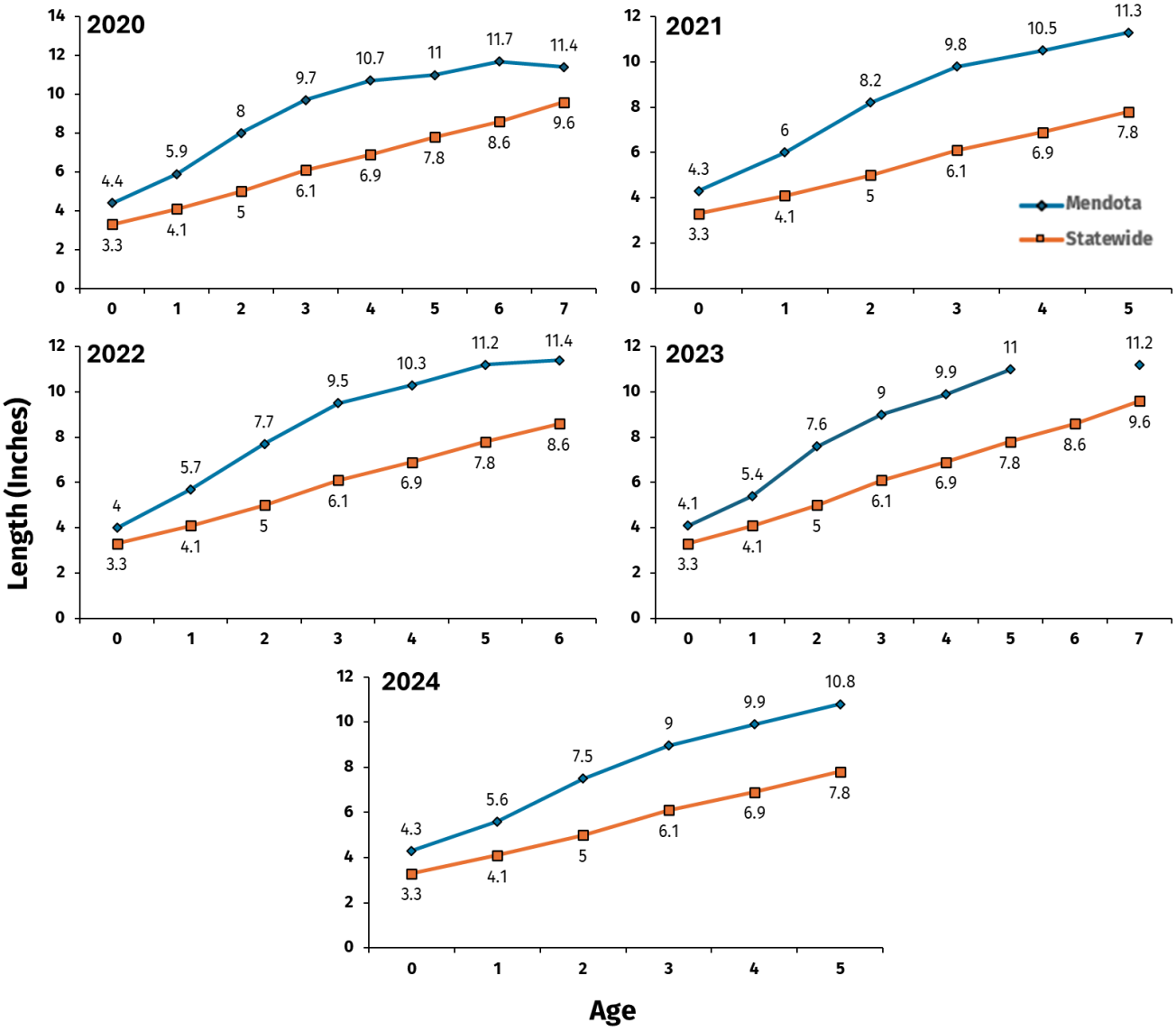

Figure 3. *Mean length at age of yellow perch caught in gillnets set on Lake Mendota during fall 2020-2024 compared to statewide averages.*

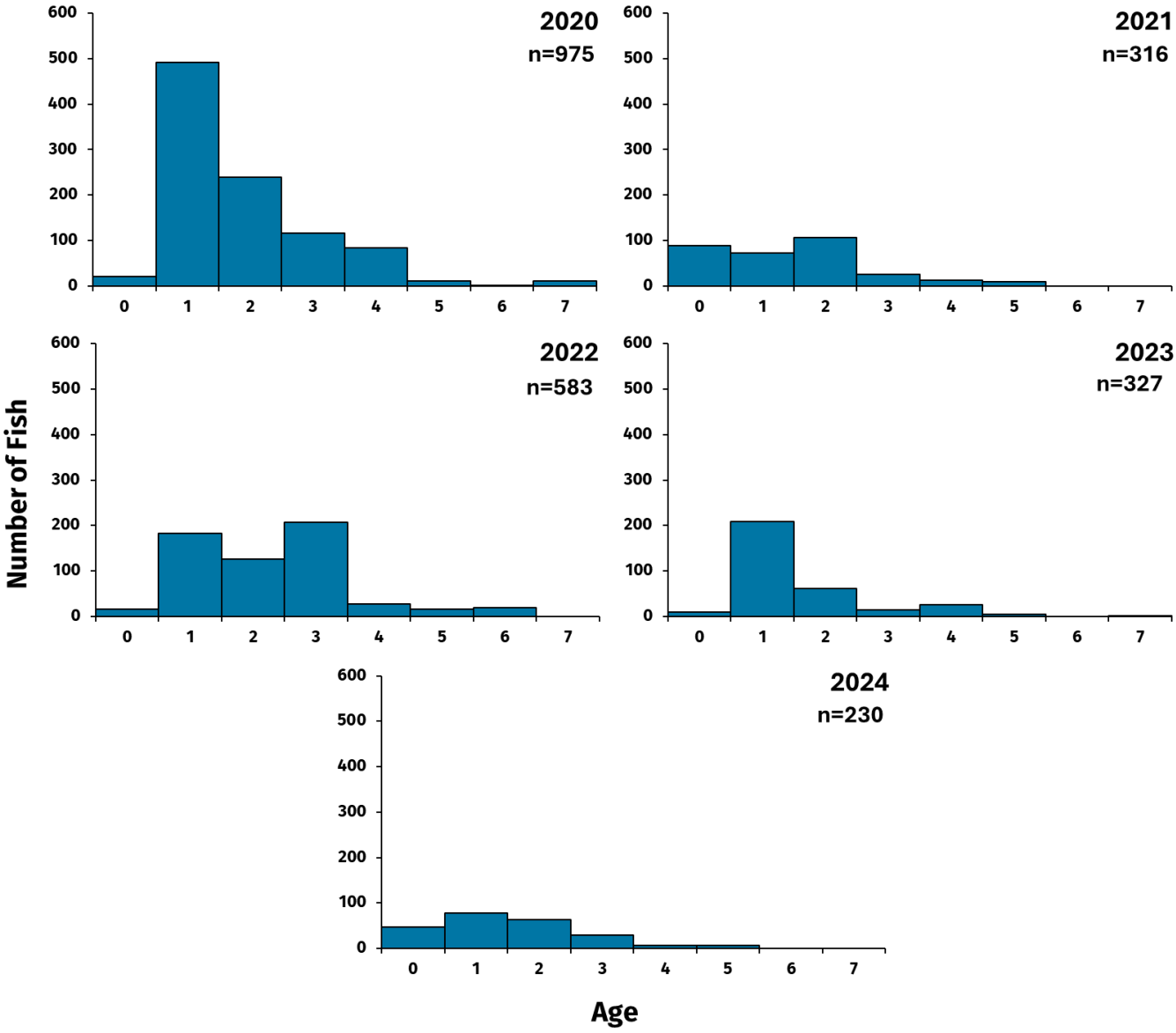

Figure 4. *Age frequency distribution of yellow perch caught in gillnets set on Lake Mendota during fall 2020-2024.*