WISCONSIN DEPARTMENT OF NATURAL RESOURCES

Fishery Survey Summary
Thornapple Flowage
Rusk County, Wisconsin, 2022

Introduction

The Wisconsin Department of Natural Resources' (DNR) Fisheries Management Team from Park Falls completed a late-spring electrofishing survey in 2022 to assess the relative abundance and size structure of gamefish and panfish while obtaining limited but useful information on the fish community. Additionally, we conducted a fall electrofishing survey to assess walleye recruitment. Quality, preferred and memorable sizes referenced in this summary are based on standard proportions of world record lengths developed for each species by the American Fisheries Society.

HABITAT AND PUBLIC ACCESS CHARACTERISTICS

Thornapple Flowage is the farthest downstream in a series of nine impoundments on the Flambeau River. The 268-acre flowage is located about 3 miles southwest of Ladysmith, Wisconsin. Public access can be found at two boat landings and by portage below the dam. One boat landing is located near the head of the flowage on Port Arthur Road, and the other is north of County Highway P on the east side of the dam. The average depth is 9 feet, with a maximum depth of 19 feet. Like many waterbodies in the Flambeau River Basin, Thornapple Flowage's water clarity is stained by tannins leaching from the watershed's wetlands. The water has moderate conductivity and a slightly basic pH. Near shore, the lakebed material is composed of roughly 50% gravel, 35% sand, 10% rock and 5% muck.

SURVEY EFFORT

On June 16, 2022, we sampled 3 miles of shoreline with our large AC electrofishing boat at night when the water temperature averaged 68°F. We collected all fish encountered for 1.5 miles in 0.80 hours. We exclusively targeted gamefish for the remaining 1.5 miles in 0.75 hours.

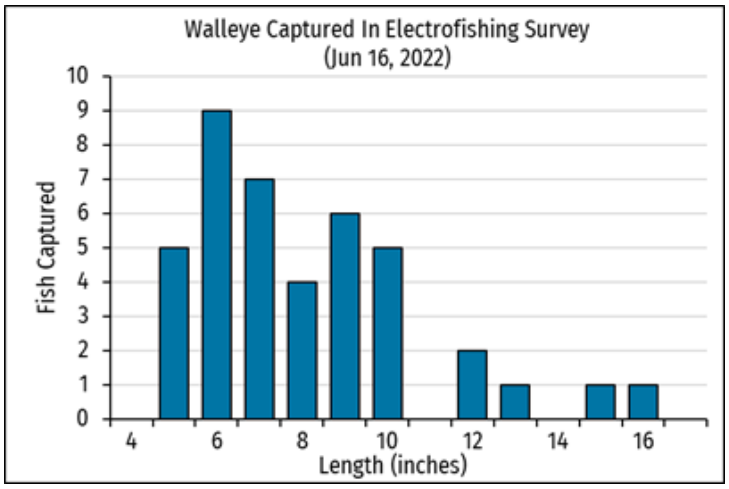
We targeted juvenile walleyes to assess recruitment in our nighttime electrofishing survey on October 4, 2022; however, we also measured all gamefish captured. The average water temperature was 63°F. In total, we sampled 3 shoreline miles in 1.43 hours. The late-spring and fall electrofishing surveys sampled the same 3 miles of shoreline in 2022.

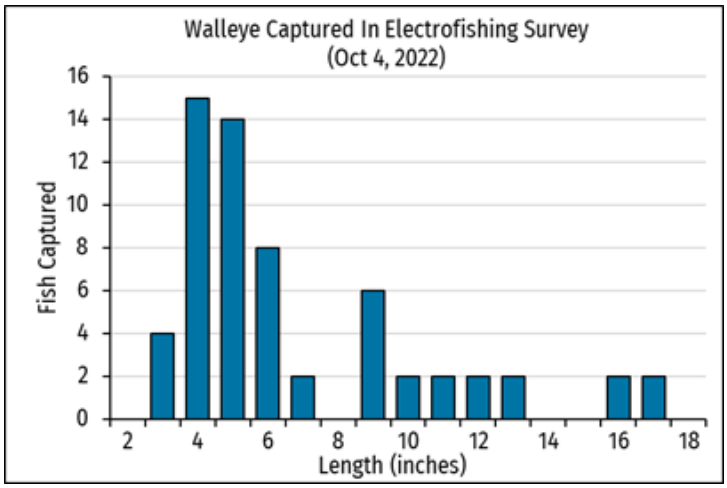
Results and Discussion

FISH COMMUNITY

Although these surveys are not designed to characterize species diversity, we can still gain valuable insight about the fish community. We captured 13 fish species in both surveys combined. Walleye and smallmouth bass were the predominant gamefish, and our samples included northern pike. We captured muskellunge in previous surveys but not in these two, probably because electrofishing gear is ineffective for capturing musky. Among the few panfish encountered, yellow perch were most common, black crappies were absent and bluegills were seen but not captured. Our samples also included emerald shiners, which are commonly called “Milwaukee shiners” in bait shops. Typically found in large rivers and reservoirs, emerald shiners are important native forage for predators in Thornapple Flowage.

WALLEYE



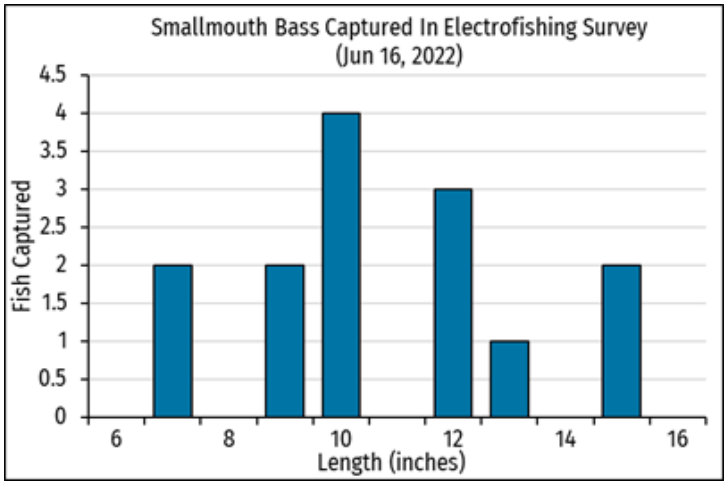


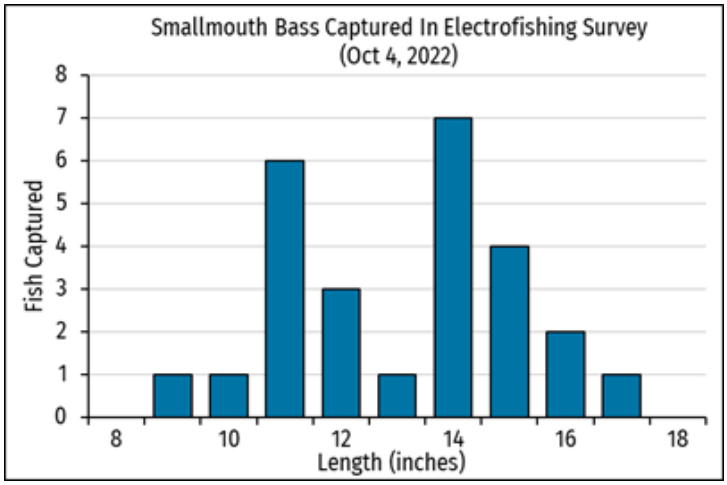
Although a late-spring electrofishing survey is not designed to represent walleye population status, we can still compare measures of relative abundance and size structure to previous surveys. Late-spring electrofishing captured 41 walleyes ranging from 5 to 16 inches with an average of 8.5 inches long. The electrofishing catch rate dropped from 6.0 fish ≥ 10 inches per mile in 2015 to 3.3 fish ≥ 10 inches per mile in 2022, but this decrease is most likely related to environmental variables. The late-spring 2015 electrofishing survey occurred earlier in the year at a lower water temperature. Therefore, more walleye occupied shallow water where they were vulnerable to capture by our electrofishing gear. The population’s size structure showed little change. The proportion of quality-size fish ≥ 15 inches remained similar at 20% in 2022 compared to 17% in 2015. No walleyes captured in 2015 or 2022 reached preferred size of 20 inches or longer. These

imperfect samples imply a walleye population in high abundance with mediocre size structure.

Historically, natural reproduction has sustained the walleye population in Thornapple Flowage, so there has not been any need for stocking. However, walleye recruitment declines throughout Wisconsin have prompted survey efforts to monitor natural reproduction across the state. Our fall electrofishing effort captured 61 walleyes, including 43 age-0 fingerlings. Our catch rate of 14.3 fingerlings per mile shows that natural recruitment provides a reliable source of new recruits to sustain the population. Thornapple Flowage benefits from a riverine habitat that attenuates environmental stressors on natural reproduction.

SMALLMOUTH BASS





Smallmouth bass catch rates and size structure differed greatly between the fall and late-spring electrofishing surveys in 2022. In the late-spring electrofishing survey, we captured 14 smallmouth bass ranging from 7.5 to 15.3 inches at a modest catch rate of 4.7 fish ≥ 7 inches per mile. Nearly 43% of smallmouth bass attained a quality size of 11 inches or longer, and 14% reached the preferred size of at least 14 inches. No smallmouth bass captured in the spring reached a memorable size of ≥ 17 inches long. However, in the fall electrofishing survey, the catch rate nearly doubled to 8.7 fish ≥ 7 inches per mile, indicating that smallmouth bass abundance in Thornapple Flowage was similar to populations in the nearby lower Flambeau River impoundments. The smallmouth bass size structure was also better in the fall than in the spring of 2022. About 92% of bass sampled in fall were quality size, 54% reached preferred size and one attained memorable size. These differences can likely be explained by the seasonal movements of smallmouth bass. Smallmouth bass typically occupy riverine habitat in spring and summer, and they return to lacustrine habitat in the fall and winter. In the fall of 2022, we sampled three shoreline

miles of lentic habitat in the middle and lower sections of the flowage where we observed forage fish in fair numbers. Also, the smallmouth bass appeared to be plump for their length. The smallmouth bass in our fall sample were likely feeding in shallow water near shore to prepare for winter. Of the two recent electrofishing surveys, we believe the fall sample offers a better representation of the smallmouth bass population status. Thornapple Flowage should offer above average angling opportunity for quality- and preferred-size smallmouth bass in moderate abundance.

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