



WISCONSIN DEPARTMENT OF NATURAL RESOURCES

Fishery Survey Summary

Shearer Lake

Taylor County, Wisconsin, 2022

Introduction

The Wisconsin Department of Natural Resources' (DNR) Fisheries Management Team from Park Falls completed netting and electrofishing surveys in 2022 to assess the abundance, size structure and reproductive success of important sportfish populations in Shearer Lake. The estimate of adult walleye population density derived from the early spring surveys also helped us evaluate the survival and growth of walleye raised in local ponds and stocked into Shearer Lake under a cooperative fish rearing agreement between the DNR and the Rib Lake Area Fish & Game Association. An electrofishing survey in late spring characterized the status of largemouth bass and bluegill, and fall electrofishing measured natural 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. "Keeper-size" is the team's description for black crappie and yellow perch 9 inches or longer and bluegill at least 7 inches long, based on observed angler behavior.

HABITAT AND PUBLIC ACCESS CHARACTERISTICS

Shearer Lake is a 22-acre seepage lake located about 15 miles north of Medford, WI. The average depth is 12 feet, and the maximum depth is 25 feet. The water color has a moderate brown stain. Secchi depth was 7 feet in August 1966. Shearer Lake is classified with lakes that have a "complex" fish community, "cool" thermal characteristics and "dark" water clarity. The lakebed is roughly comprised of 20% sand, 30% gravel and 50% muck. The silt and muck substrates along the north shore support submergent and emergent vegetation in moderate density. Submerged woody structure was plentiful along the south shoreline. About 80% of the shoreland vegetation is upland hardwood forest, and 20% is tag alder swamp. Seven fish cribs with a traditional "log cabin" design were installed along the east shore in 1999, and seven more were added along the north shore in 2001. The Chelsea Conservation Club maintains a boat landing for public use on the west shore with steep access from and parking along North Chelsea Avenue.

SURVEY EFFORT

Shortly after the ice thawed, when water temperature ranged from 41 to 43°F, we captured, marked and released spawning walleye in 16 net nights of fyke netting effort from April 29 to May 3, 2022. We also measured or counted all fish species encountered in that netting effort. On May 4, 2022, we targeted mature walleye again by nighttime electrofishing along the entire shoreline. We sampled 0.99 shoreline miles in 0.60 hours of electrofishing effort when the water temperature was 51.5°F. The proportion of marked walleye in our electrofishing survey allowed us to estimate adult walleye density.

With water temperature at 67°F, our June 2, 2022 electrofishing survey coincided with the early spawning and nest-building activities of largemouth bass and bluegill. We collected all fish species along Shearer Lake’s entire shoreline, sampling 0.95 miles in 0.47 hours.

Our September 21, 2022 electrofishing survey targeted young walleye, but we collected all gamefish along the entire lake perimeter, sampling 0.95 miles in 0.52 hours when the water temperature was 67.5°F.

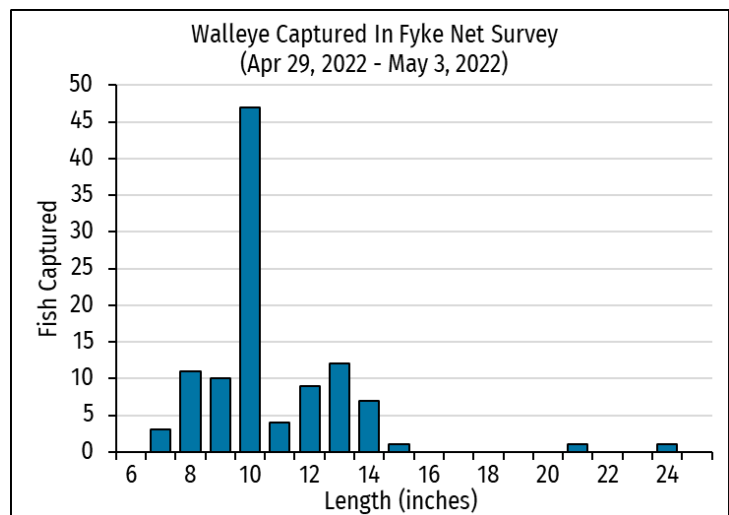
Results and Discussion

FISH COMMUNITY

Though these surveys were not designed to characterize the entire fish community, our combined netting and electrofishing efforts in the spring and fall of 2022 captured eight fish species, compared to seven collected by those methods in the spring of 2010. Species composition was nearly identical in both periods, with the same seven species encountered in 2010 and 2022. The samples from early spring 2022 included golden shiner. After stocking walleye as large fingerlings in the fall of almost every year since 2004, it appears that largemouth bass and walleye are the co-dominant predators in the fish community, and bluegill is the primary panfish population. Northern pike and smallmouth bass were both absent from all ten fishery surveys completed on Shearer Lake between 1962 and 2022.

WALLEYE

Early spring fyke netting in 2022 captured 129 walleyes at a rate of 8.1 fish per net night. That catch rate was between the 50th and 75th percentile values among lakes in the complex-cool-dark category. Those 106 walleyes captured just once in nets ranged between 7.7 and 24.0 inches but averaged only 11.2 inches long. Sixty-nine percent were immature fish of unknown gender less than 15 inches long. Early spring electrofishing captured 55 walleyes, including 11 that we marked and released in our netting survey. Electrofishing catch rates were 35 walleyes \geq 10 inches per mile or 58 per hour. The catch rates increased to 56 walleyes per mile and 92 per hour when all sizes were pooled. The 44 walleyes not handled before ranged from 6.4 to 14.4 inches and averaged 9.7 inches long. After excluding 73 immature walleyes from the netting sample and 40 from the electrofishing sample, we estimated that Shearer Lake’s walleye population had 37 adults or 1.8 adults per acre. The walleye density in Shearer Lake matched the average value in populations maintained primarily by stocking in Wisconsin’s Ceded Territory. The ratio of males to females in our early spring samples was 0.7.



With no perennial connection between Shearer Lake and the riverine habitat in which walleye evolved, we doubt that walleyes are indigenous members of the fish community.

Instead, they were probably introduced into this ecosystem long ago. Shearer Lake's walleye fishery has always been dependent upon repeated stockings. Our predecessors concluded that the 1.7 million walleyes stocked as fry and fingerlings between 1937 and 1965 failed to establish a self-sustaining population, perhaps because of the lake's small size or lack of suitable spawning habitat. They speculated that the high hills surrounding the lake may limit the fetch and wave energy that is typically needed to maintain silt-free gravel for egg incubation along the windswept shorelines. The DNR suspended its walleye stocking commitment in 1965, but we still continue to support private and cooperative walleye stocking efforts in Shearer Lake.

Local stakeholders interested in re-establishing and maintaining a walleye fishery purchased 2,450 walleyes as 5- to 10-inch fingerlings and released them in seven years between 1992 and 2001. More recently, the DNR's cooperating partners stocked a total of 3,575 walleyes at rates ranging from 2 to 23 large fingerlings per acre in 19 doses from 2004 to 2022. Local conservation groups purchased and planted about 62% under DNR-approved fish stocking permits. The remainder came from two ponds near the Village of Rib Lake that serve as extensions of the DNR's fish hatchery system. In late June, the DNR's hatchery staff delivers about 15,000 walleyes 1.5 to 2.0 inches long shortly after the small fingerlings switch their diet from plankton to fish. The Rib Lake Area Fish & Game Association, with volunteer and financial support from several neighboring conservation organizations, purchases fathead minnows to feed and grow the walleye from small- to large-fingerling size from July through September. In early October, volunteers drain the ponds, collect the 5- to 7-inch walleye and transport them to 15 lakes in northern Taylor and southern Price counties. The *Cooperative Fish Rearing Agreement* strictly outlines the procedures and requirements for the entire operation, including fish health certifications for the walleye and their forage, stocking rates and a prioritized list of waters authorized to receive the fish. The DNR has renewed this cooperative agreement almost every year for decades. The stocked walleyes should help to control panfish abundance and offer "bonus" angling opportunities. Shearer Lake will never become a "go to" destination for walleye fishing. Stocking remains the sole source of new recruits to Shearer Lake's walleye population. Our electrofishing survey in the fall of 2022 detected no natural fingerlings and hence no evidence of in-lake walleye production. The four yearling walleyes from 7.8 to 8.3 inches long in that sample represented the contributing survivors from the 125 large fingerlings stocked in the fall of 2021. In light of the high number and frequency of walleye stockings, the population's survival and growth rates from fingerling to adult appear to be mediocre at best.

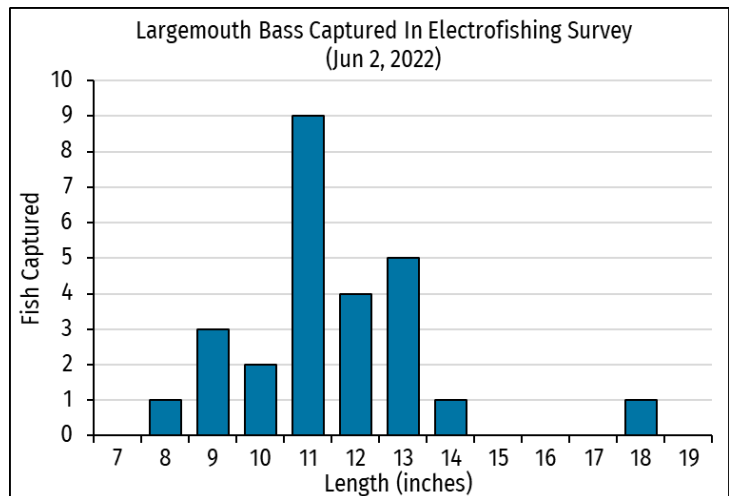
The walleye population's length distribution was mediocre, too, with only 4% of walleye in fyke nets at least 15 inches and 2% at least 20 inches long. Walleye size structure will undoubtedly disappoint anglers who want to keep a meal. A daily bag limit of three walleyes from 15 inches but less than 20 inches long may be kept, except one of the three may be over 24 inches. Our fyke netting sample included only one legal-size fish 15-19.9 inches and one legal-size walleye over 24 inches long.

Some walleye matured at a young age and small size in Shearer Lake. We found four age-2 males that were 8.0 to 8.6 inches and one age-2 female 11.9 inches long. Early maturation at small size typically occurs in high-density walleye populations, but certainly not at 1.8 adults per acre. Perhaps the high proportion of walleye with unknown gender in the total

population is influencing age and size at maturity. Ring counts on sectioned dorsal spines revealed that, on average, males grew to 9.0 inches in two years (range 8.0-11.0; n=6). Males and females both grew to 13.2 inches in three years (range 12.2-13.8; n=3 and range 12.6-14.1; n=6, respectively). Some female walleye reached 14.4 inches in four years (range 13.1-15.8; n=5), but other females needed five growing seasons to reach that same length (range 14.0-14.7; n=2). The growth rate varied quite a bit in a pooled sample of males, females and walleye whose gender was unknown. Their mean length trailed the regional averages by 0.2, 1.2 and 2.5 inches at ages 2, 5 and 6. However, Shearer Lake’s walleye surpassed the regional average lengths by 1.5 and 0.1 inches at ages 3 and 4 and by 2.1 and 3.1 inches at ages 8 and 9. Ideally, we would prefer to examine more than the six dorsal spines we analyzed to estimate walleye ages 5 through 9. Nonetheless, we can cautiously infer that the slower-than-average growth noted in several age classes does not promote a desirable size structure in the walleye population.

LARGEMOUTH BASS

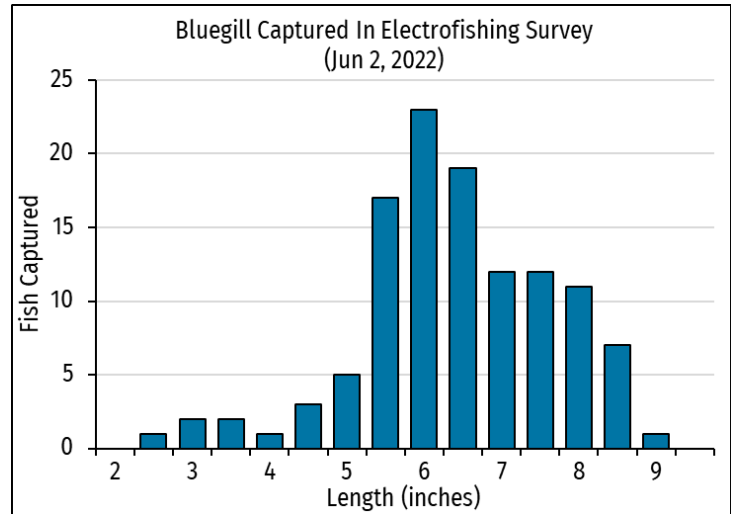
In our late-spring electrofishing survey, we captured 26 largemouth bass ranging from 8.5 to 18.1 inches and averaging 11.8 inches long. Our catch rates of 27 bass \geq 8 inches per mile or 56 per hour suggest that population abundance was about twice as high in 2010 when late-spring electrofishing captured 62 bass per mile and 99 per hour. The electrofishing capture rate of 27 largemouth bass per mile in Shearer Lake in the spring of 2022 ranked above the 75th percentile value among lakes that have a “complex” fish community, a “cool” thermal regime and “dark” water.



Even after relative abundance decreased by half, the size structure of Shearer Lake’s largemouth bass population remained quite similar to our preceding measures. Comparing late spring electrofishing samples, average length increased only two-tenths of an inch from our last survey twelve years ago, and the proportions of quality-size bass \geq 12 inches, legal-size bass \geq 14 inches and preferred-size bass \geq 15 inches changed minimally from 35%, 13% and 6% in 2010 to 42%, 8% and 4% in 2022. Electrofishing aimed toward young walleye in the fall of 2022 incidentally captured 32 largemouth bass that ranged from 3.5 to 19.8 inches and averaged 11.1 inches long. The best measure of bass size structure came from the bycatch in the spring of 2022 when fyke nets captured 21 largemouth bass that ranged from 10.4 to 21.5 inches and averaged 13.1 inches. Two-thirds of that small sample were quality-size bass, 14% were legal-size fish, 10% attained preferred-size, and one surpassed memorable-size of 20 inches or longer. Shearer Lake lies within the Northern Bass Management Zone, where anglers may keep largemouth bass from the first Saturday in May through the first Sunday in March. Smallmouth bass may be kept from the third Saturday in June through the first Sunday in March. A daily bag limit of five largemouth bass or smallmouth bass in any combination may be kept, but they must be at least 14 inches long.

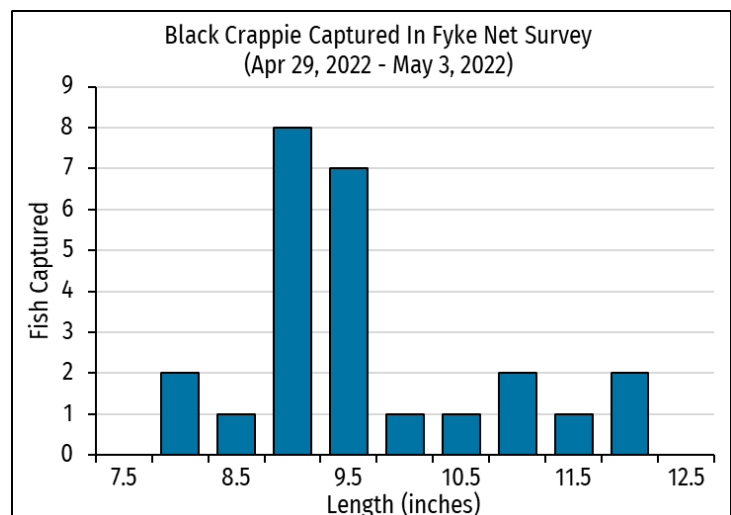
BLUEGILL

Our surveys revealed the excellent status of Shearer Lake's bluegill population. Electrofishing along the entire shoreline produced a robust sample of 116 bluegills that ranged from 2.6 to 9.1 inches and averaged 6.6 inches long. Electrofishing catch rates of 122 bluegills per mile and 249 per hour indicate the moderate population abundance needed to grow them fast to the sizes anglers like to keep. The late-spring electrofishing catch rate in 2022 ranked just above the median value among complex-cool-dark lakes. The electrofishing catch rate of 136 bluegills per mile held a similar rank in the spring of 2010, so bluegill abundance has changed little since our last assessment. Likewise, the population's length distribution was just as good as it was twelve years ago. The average size and the proportions of quality-size fish ≥ 6 inches and keeper-size fish ≥ 7 inches were virtually unchanged from 6.6 inches, 75% and 34% in 2010 to 6.6 inches, 74% and 37% in 2022. The share of preferred-size fish ≥ 8 inches increased slightly from 9.3% to 16.5% in that period. Sometimes fyke nets will capture the largest bluegills that go undetected in our electrofishing surveys. Fyke netting directed toward walleye incidentally captured 157 large bluegills that ranged from 4.6 to 10.0 inches and averaged 8.4 inches long. In that sample, 92% were keeper-size, 70% were preferred-size, and 3% attained memorable-size of 10 inches or longer. Evidently, largemouth bass and stocked walleye can together exert enough predatory pressure to control bluegill numbers, so the bluegill population can maintain a satisfactory growth rate to produce these favorable percentages of large fish. Shearer Lake has no special harvest restrictions. Anglers may keep a daily bag limit of 25 panfish of any size and species. Nonetheless, we recommend that anglers should voluntarily limit their take of the largest fish to protect and prolong the good bluegill fishing they can enjoy here.



BLACK CRAPPIE

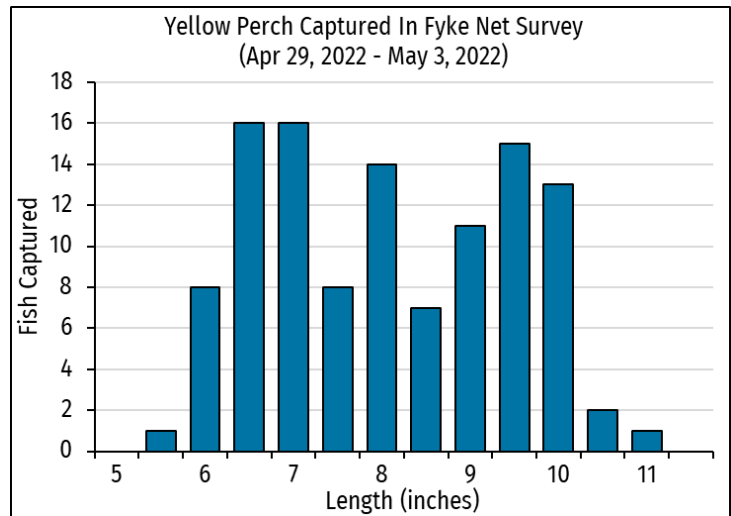
Fyke netting captured 25 black crappies ranging from 8.0 to 12.2 inches and averaging 9.9 inches long. The catch rate of 1.6 crappies ≥ 5 inches per net night points to moderately low population abundance. Among the crappies ≥ 5 inches in this small fyke net sample, 88% were keeper-size fish at least 9 inches long, and 28% attained preferred-size 10 inches or longer. Our late-spring electrofishing sample included only four crappies between 4.2 and 10.9 inches long. The fyke netting survey in the spring of 2022 showed lower abundance



and slightly weaker size structure in the crappie population compared to the spring of 2010 when fyke nets captured 3.7 crappies per net night, and 41% were ≥ 10 inches long. In our recent survey, fyke nets caught crappies in several age classes, so the population should offer good fishing for a while as the population's young crappies grow to the sizes that anglers like to keep for a meal.

YELLOW PERCH

It has been difficult for us to properly characterize the status of yellow perch populations by our traditional survey methods. Perch seem to show up episodically in our netting and electrofishing samples. We may capture perch by handfuls on one day, then by hundreds or thousands on the next day. Keeping that challenge in mind, our fyke netting survey in the spring of 2022 produced a sample of 112 yellow perch ranging from 5.9 to 11.3 and averaging 8.3 inches long at a catch rate of 7.0 perch ≥ 5 inches per net-night. This netting



sample portrayed a favorable size distribution that we seldom find in the waters we manage. Fifty-six percent of the perch in fyke nets were quality-size fish ≥ 8 inches, 38% were keeper-size fish 9 inches or longer, and 14% were preferred-size perch at least 10 inches long. By contrast, the fyke net sample from the spring of 2010 had 37% quality-size and 5% keeper-size perch, but none reached preferred-size. Electrofishing in the late spring of 2022 captured only two yellow perch 7.6 and 9.2 inches long. Our fyke net sample had perch in a broad range of sizes and ages that serve as the preferred food of walleye, largemouth bass and anglers. If anglers practice voluntary restraint in their harvest, Shearer Lake's perch population should continue to provide delicious table fare.

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