WISCONSIN DEPARTMENT OF NATURAL RESOURCES

2022 Comprehensive Fisheries Survey Report

Tichigan Lake, Racine County (WBIC 763600)

Photo Credit: greaterracinecounty.com

Travis Motl
DNR Fisheries Biologist
2025

WISCONSIN
DEPT. OF NATURAL RESOURCES

SPORT FISH RESTORATION

Table Of Contents

Executive Summary

In 2022, the Wisconsin Department of Natural Resources (DNR) conducted a comprehensive fishery survey on Tichigan Lake using a variety of sampling methods throughout the open water period to sample the major components of the fishery. The objectives of the survey were to 1) assess the status of the northern pike (*Esox lucius*), walleye (*Sander vitreus*), largemouth bass (*Micropterus salmoides*) and panfish populations, 2) attain a population estimate for northern pike and walleye and 3) update management recommendations for the fishery of Tichigan Lake. The results of the 2022 survey were compared to lakes with similar characteristics and the prior comprehensive fishery survey conducted by the DNR on Tichigan Lake in 2017. Based on 2022 survey results, Tichigan Lake continues to offer quality fishing opportunities for northern pike, walleye and channel catfish (*Ictalurus punctatus).*

Tichigan Lake offers a quality northern pike angling opportunity with over 30% of the fish being legal size (at least 26 inches). Good growth potential also produces a low abundance of memorable size fish.

Available survey data indicates that Tichigan Lake has potential to produce a high quality walleye fishery at times. In 2022, 66% of the walleye sampled were of legal size (at least 18 inches). However, the management and evaluation of the walleye population is challenging given the lake's open connection to the Fox River.

Tichigan Lake offers a quality largemouth bass angling opportunity. The management and evaluation of the largemouth bass population is challenging due to confounding environmental factors. Due to the observed decrease in abundance and size structure the next survey should focus on obtaining robust abundance, size structure and growth data to advise future management needs.

Panfish continue to offer an outstanding angling opportunity in Tichigan Lake. Observations from spring fyke netting (SNI) and electrofishing indicate bluegill abundance to be a common to abundant component of the fishery. Size structure data from both efforts show a high quality bluegill angling opportunity where 76% of the bluegill measured during 2022 fyke netting were 6 inches or greater. Pumpkinseed, black crappie, yellow perch and warmouth are all common to abundant in the fishery and all offer good size structure for anglers to enjoy.

Channel catfish represent a unique angling opportunity in Tichigan Lake because of the open connection to the Illinois Fox River. While harvest and consumption of this species is somewhat limited by the existing consumption advisory, the observed sizes and abundance represent a quality angling opportunity. Of the channel catfish measured during 2021 hoop netting 87% were 16 inches or greater and 48% were 24 inches or greater.

Management recommendations include:

1. The observed size structure and abundance of northern pike suggests the 26-inch minimum length limit and daily bag limit of two fish is a good fit for the fishery. No regulation change on northern pike is recommended at this time. Northern pike have not been stocked since 2017. Difficulty of evaluating the practice and ample available spawning habitat in the open system suggests stocking this species is not necessary. The next survey should monitor population trends through an update of abundance, size and growth.
2. The observed differences in abundance of walleye between the 2017 and 2022 surveys highlights the difficulty in evaluating the species in this system. The 2018 walleye regulation change from a 15-inch minimum length limt and daily bag limit of five fish to an 18-inch minimum length limit and daily bag limit of three fish offers greater protection yet the data suggests a decrease in abundance. In addition, biannual stocking of large fingerling walleye since 2014 should have increased abundance as well. Given all these factors it is recommended to discontinue walleye stocking by DNR. The next survey should monitor population trends through an update of abundance, size and growth.
3. Due to observed decreases in abundance and size structure of largemouth bass the next survey should focus on obtaining robust abundance, size structure and growth data to advise future management needs.
4. Panfish continue to offer a high quality angling opportunity with good abundance and quality size structure. The no minimum length limit and daily bag limit of twenty five adequatly protects these species in this productive system. No regulation change or stocking of these species is recommended at this time. The next survey should monitor population trends through an update of abundance, size and growth.
5. Channel catfish offer a unique angling opportunity with limited harvest due to the existing consumption advisory. Observed size structure and abundance represent a quality angling opportunity. No regulation change or stocking of channel catfish is recommended at this time. The next survey should focus on standardizing survey window and bait used to monitor population trends through an update of abundance and size structure.

Introduction

Tichigan Lake is a 279-acre drainage lake located in northwestern Racine County with a reported mean depth of 6 feet and maximum depth of 63 feet (Figure 1). The lake has an open connection to the Illinois Fox River near the Village of Waterford. Nearly the entire shoreline is developed as residential homes. A small swath of shoreline on the north end of Tichigan Lake remains in a more natural state. The lake generally has a muck bottom, but also has areas of more course material such as sand and gravel.

One measure of a lake's health is the trophic state, which relates to the amount of algae in the water. The average summer trophic state for Tichigan Lake is consistently in the eutrophic range. Available data shows the trophic state of Tichigan Lake is worse than other deep, lowland drainage lakes. In fact Tichigan Lake and the Fox River are on the Wisconsin impaired waters list due to phosphorus and polychlorinated biphenyls (PCBs). Other challenges include the following documented aquatic invasive species: common carp (*Cyprinus carpio*), curly-leaf pondweed (*Potamogeton crispus*), Eurasian water-milfoil (*Myriophyllum spicatum*), flowering rush (*Butomus umbellatus*), purple loosestrife (*Lythrum salicaria*) and zebra mussel (*Dreissena polymorpha*).

There is no direct public boat access to Tichigan Lake, but access is available via the Fox River. A public boat access with parking exists downstream of the lake in the Village of Waterford and upstream of the lake off Bridge Drive. Tichigan Lake provides diverse angling opportunities due to the open connection to the river. Largemouth bass, northern pike, walleye and channel catfish are the main gamefish species. Bluegill is the primary panfish species, but black crappie, pumpkinseed, yellow perch and warmouth are also common. Wisconsin Department of Natural Resources (DNR) fish stocking data shows a history of walleye and northern pike stocking in Tichigan Lake and this section of the Fox River and sporadic stocking from private sources of other species (Appendix, Table 1).

The significance of the fishery and public use justifies monitoring of the fish community to assess management options and maximize the fishery potential. The last comprehensive fish survey was conducted in 2017 and those results will be presented for comparison. The purpose of the 2022 comprehensive fish survey was to assess the overall health of the fish community, specifically the status of walleye, northern pike, largemouth bass, panfish and channel catfish populations.

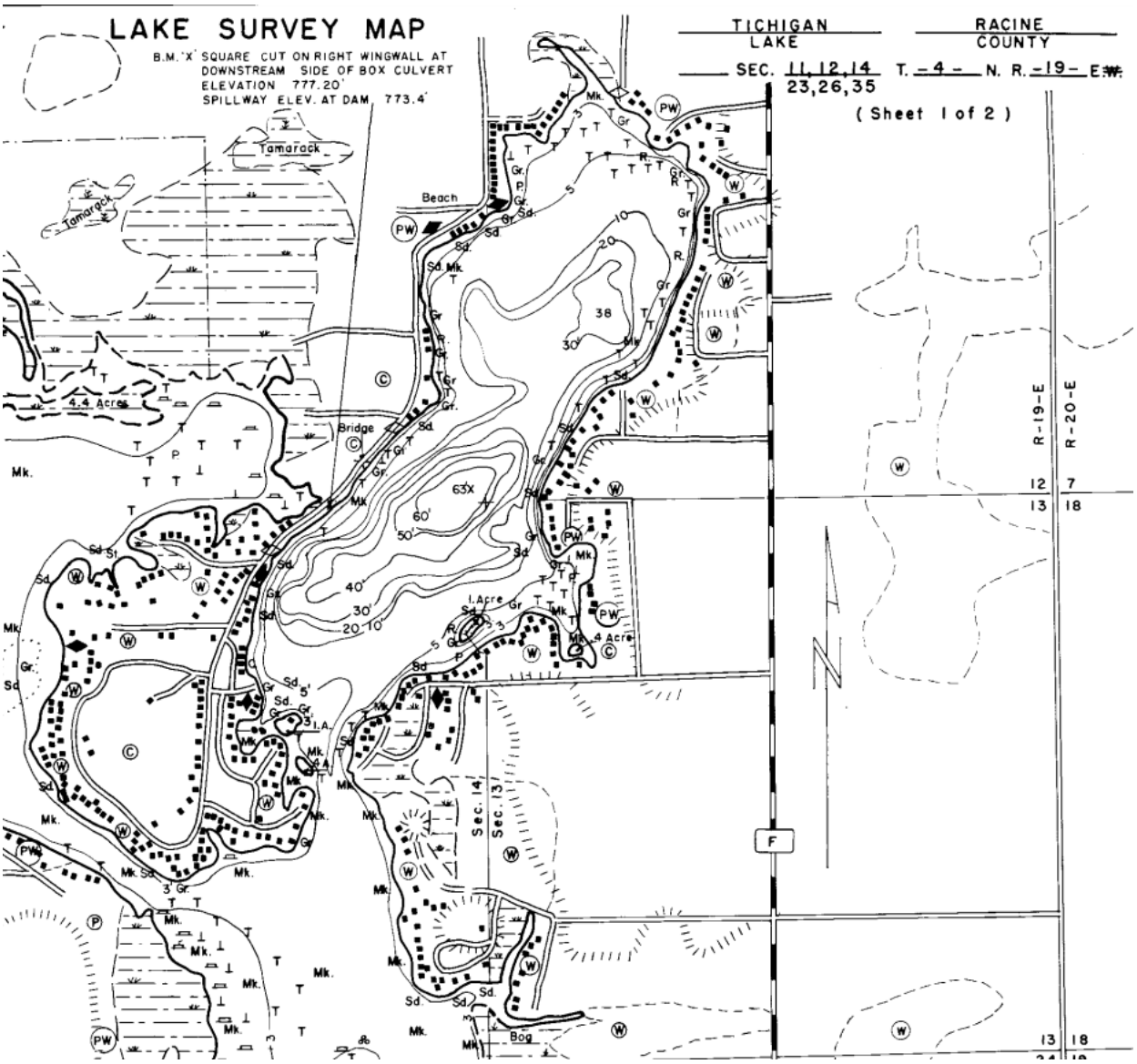

Figure 1. Contour map of Tichigan Lake, Racine County, WI.

Methods

A comprehensive fisheries survey following standard Wisconsin Department of Natural Resources (DNR) protocols was conducted on Tichigan Lake and the Fox River in Racine County during late summer and fall of 2021 and spring of 2022. Survey activities were primarily limited to the 279 acres of Tichigan Lake proper. However, a channel catfish hoop netting survey in late summer 2021 included portions of the Fox River and Waterford impoundment. The primary goal of the surveys was to assess gamefish and panfish population abundance, size structure and growth.

Up to 11 fyke nets were set on Tichigan Lake to target spawning northern pike and walleye (SNI) (Figure 2). Nets were lifted and reset every day possible from March 20 through April 15, 2022 for a total of 158 net nights of effort.

During the SNI in both 2022 and 2017 all walleye, northern pike and a subsample of panfish were measured to the nearest tenth inch for size structure analysis. In 2022 a subsample of all captured walleye was weighed to the nearest tenth-pound and dorsal spines were collected to estimate age. In 2017 a subsample of all captured northern pike was weighed to the nearest tenth-pound and anal fin rays were collected to estimate age.

Captured northern pike and walleye were given differential finclips (female – right pectoral, male – left pectoral, unknown or immature – top caudal) to identify recaptures and facilitate an adult population estimate. Unfortunately due to a low number of northern pike recaptures a population estimate could not be calculated. Population estimates in lakes with open connections to river systems, such as Tichigan Lake, can be difficult to obtain.

Early spring electrofishing (SEI) using a DNR standard pulsed direct current (Pulsed DC) boom shocker boat was conducted at night on April 19, 2022 for a total of 3.0 miles and targeted walleye. A total of 46 walleye were captured during SEI, 37 were considered mature adults. All walleye captured during the electrofishing run were inspected for existing finclips to facilitate a population estimate. The adult walleye population estimate was calculated using the Chapman modification of the Petersen index:

$$N = \frac{(M+1)(C+1)}{(R+1)} - 1$$

where M is the number of marked fish at large, C is the number of fish examined for marks during the recapture run, and R is the number of marked fish captured during the recapture run.

Late spring electrofishing (SEII) using a DNR standard PDC boom shocker boat was conducted at night on May 26, 2022 targeting largemouth and smallmouth bass and panfish species for a total of 3.5 miles of shoreline (0.5 miles targeting all species and 3.0 miles targeting bass). All bass and panfish were measured to the nearest tenth inch for size structure analysis.

Fall electrofishing (FE) using a DNR standard PDC boom shocker boat was conducted at night on November 2, 2021. FE targeted walleye for a total of 3.5 miles of shoreline. All walleye were measured to aid in identifying young of the year walleye.

Up to 10 baited hoop nets were set on the Fox River and Waterford impoundment to target channel catfish (Figure 3). Nets were lifted and reset every day possible from

August 24 through August 27, 2021 for a total of 37 net nights of effort (figure 2). All catfish were measured to the nearest tenth inch for size structure analysis.

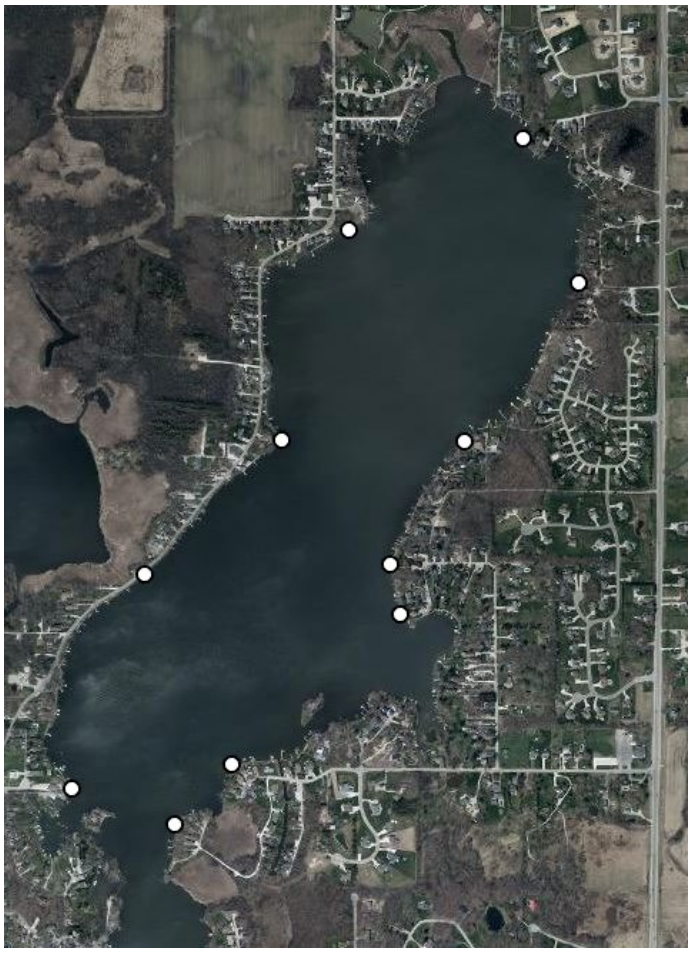

Figure 2. Fyke net locations during the 2022 Spring Netting (SNI) of Tichigan Lake, Racine County, WI. County, WI..

Figure 3.Baited hoop net locations during the 2021 baited hoop netting survey of the Illinois Fox River, Racine County, WI.

Results and Discussion

NORTHERN PIKE

In 2022 a total of 85 northern pike were captured during the SNI. The total catch in the 2017 SNI was much higher at 280 northern pike. Catch rate (# fish/net night) allows a standardized comparison between surveys. The 2022 catch rate was 0.5 northern pike/net night which was half of the 2017 catch rate of 1 northern pike/net night. Both catch rates were below average when compared to similar waters. Ice out in 2017 was much earlier which allowed for an earlier start to SNI and may account for the higher total catch and catch rate of northern pike that year.

The average length of northern pike from the 2022 SNI was 25.5 inches and the maximum observed length was a 38.5 inch female. The average (25.2 inches) and maximum (38.5 inches) lengths from the 2017 SNI were almost identical indicating a very stable size structure (Figure 3). The percent of legal sized fish (26 inches and greater) was also nearly identical between the two survey years (34% in 2022 and 37% in 2017).

Age estimates allow calculation of growth rates and comparison to similar waters. The 2017 age estimates indicated growth of Tichigan Lake northern pike is similar to average growth rates in southern Wisconsin waters (Figure 4). This data suggests that northern pike are reaching the current minimum size limit of 26-inches in about years.

The average relative weight calculated from all northern pike weighed during the 2017 survey was 98. This indicates that northern pike condition is good in Tichigan Lake as the calculated relative weight is close to a 1:1 ratio with the standard weight.

In general Tichigan Lake offers a quality northern pike angling opportunity with over 30% of the fish sampled in the 2022 SNI being of legal size. Good growth potential also produces a low abundance of memorable size fish for anglers to enjoy.

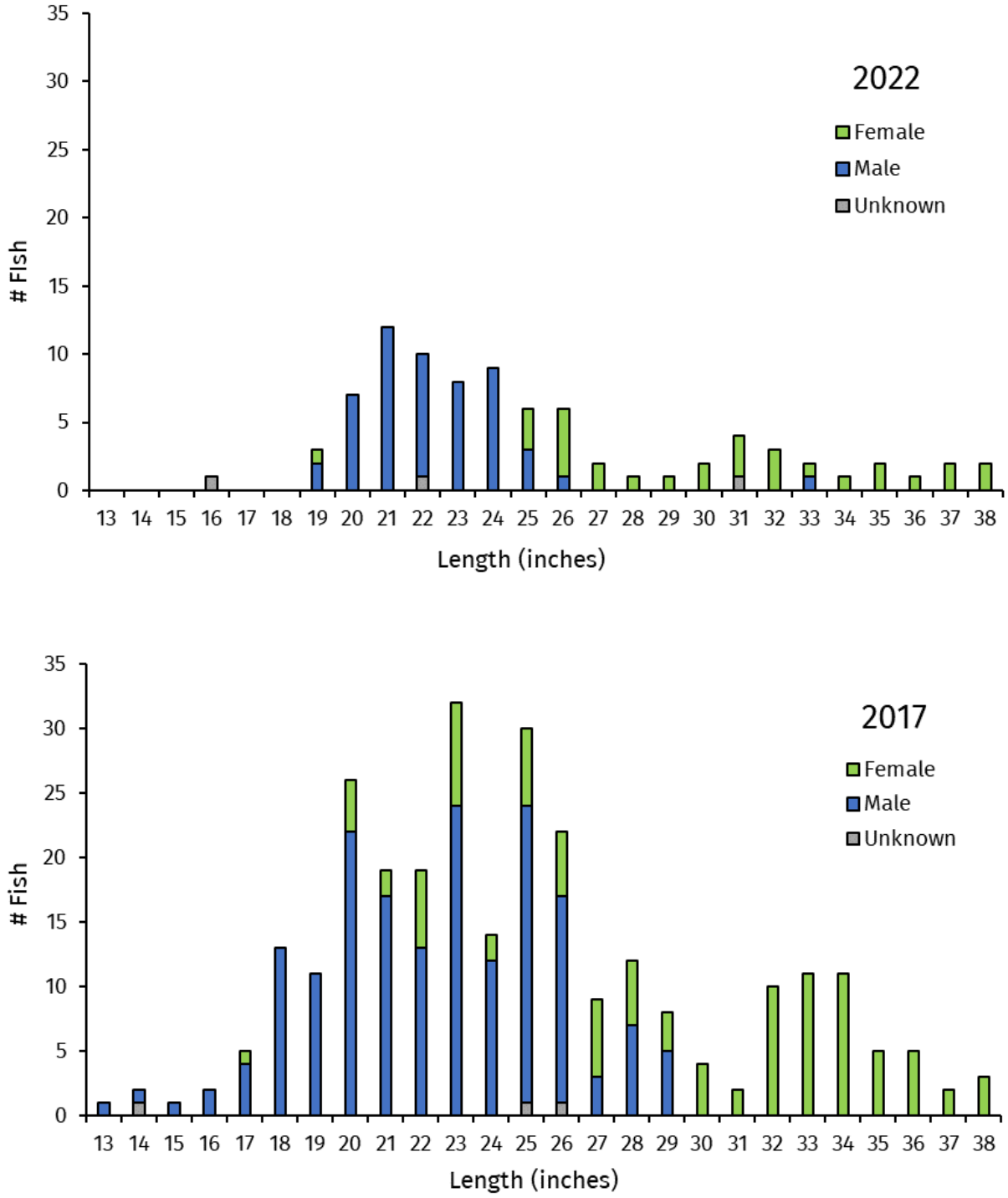

Figure 3. Length-frequency histograms of female, male and unknown sex northern pike sampled during the 2017 and 2022 SNI surveys of Tichigan Lake, Racine County, WI.

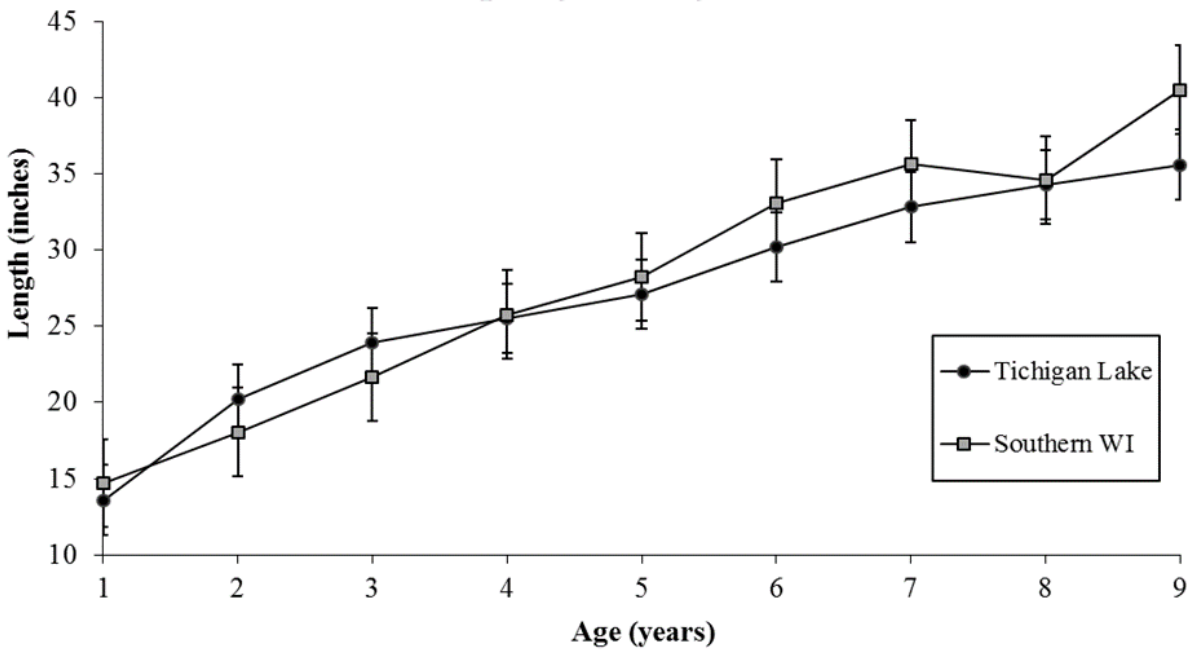

Figure 4. Northern pike mean length at age determined using anal fin rays collected during the 2017 spring fyke netting (SNI) survey of Tichigan Lake, Racine County, WI compared to the Southern Wisonsin mean length at age from spring (January-May) surveys.

WALLEYE

A total of 118 walleye were sampled during the 2022 SNI. The total SNI catch in 2017 was much higher at 475 walleye. The 2022 SNI catch rate was 0.7 walleye/net night which was much lower than the 2017 SNI catch rate of 1.8 walleye/net night. The 2022 SNI catch rate was below average and the 2017 SNI catch rate was average when compared to similar waters.

An adult walleye population estimate of 275 fish or 0.98 fish per lake surface acre 95% CI [195.6 – 432.9] was calculated for the 2022 survey. In 2017 an adult walleye population estimate was calculated using the same methods and was estimated at 6.5 fish per lake surface acre. The 2022 population estimate is considered a relatively low population density while the 2017 population estimate is considered a relatively high population density. This highlights the difficulty in achieving a reliable population estimate in a lake with an open connection to a river system.

The average length of walleye from the 2022 SNI was 18.7 inches and the maximum observed length was a 25.1 inch female. The 2022 average length showed about a one inch increase from the 2017 average length of 17.8 inches. The 2017 SNI maximum length (25.7 inches) was very similar to the 2022 SNI maximum length (Figure 5). The percent of legal sized fish (18 inches and greater) increased between survey years (41% in 2017 and 66% in 2022). The shift in size structure is likely due to a regulation

change put into effect in 2018 that increased the minimum length limit from 15 inches to 18 inches and reduced the daily bag limit from five to three walleye.

The 2022 age estimates indicated that the growth of walleye in Tichigan Lake is similar to the average growth rate in southern Wisconsin waters (Figure 6). This data suggests that walleye are reaching the current minimum size limit of 18 inches in about years.

The average relative weight calculated from all walleye weighed during the 2022 survey was 96. This suggests that walleye condition is good in Tichigan Lake as the calculated relative weight is close to a 1:1 ratio with the standard weight.

Fall electrofishing surveys provide a walleye young of the year catch rate which gives an indication of natural reproduction of walleye. No young of the year walleye were collected in the 2021 FE of Tichigan Lake. FE has been conducted each year from 2014 through 2020 and no young of the year walleye were observed in any of the surveys. This suggests that no natural reproduction of walleye occurs in Tichigan Lake or that the young of the year walleye produced in the lake move into the river system.don’t stay in the lake.

Available survey data indicates that Tichigan Lake has the potential to produce a high quality walleye fishery at times. However, management and evaluation of the population is challenging given the open connection to the Fox River.

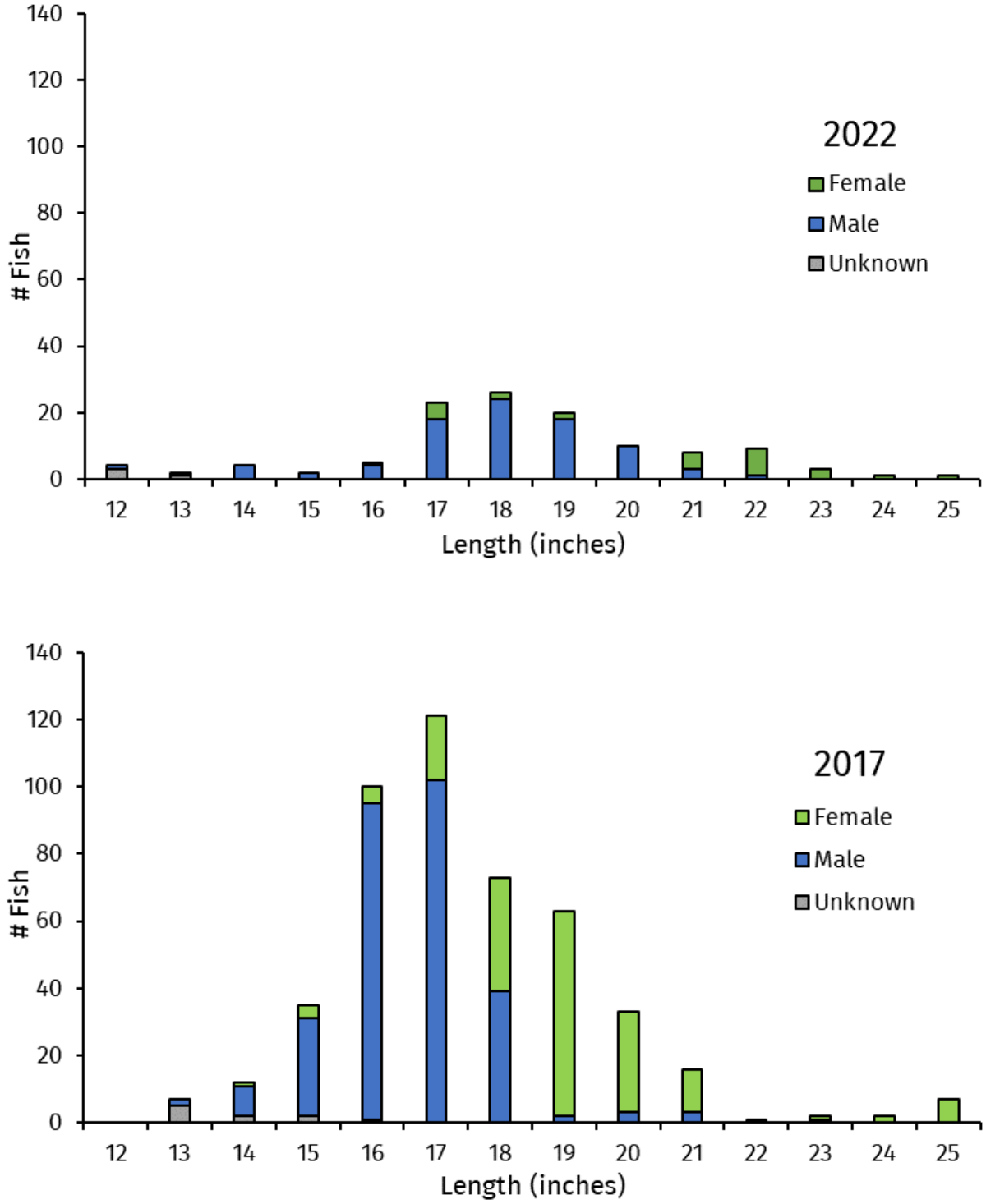

Figure 5. Length-frequency histograms of female, male and unknown sex walleye sampled during the 2017 and 2022 SNI surveys of Tichigan Lake, Racine County, WI.

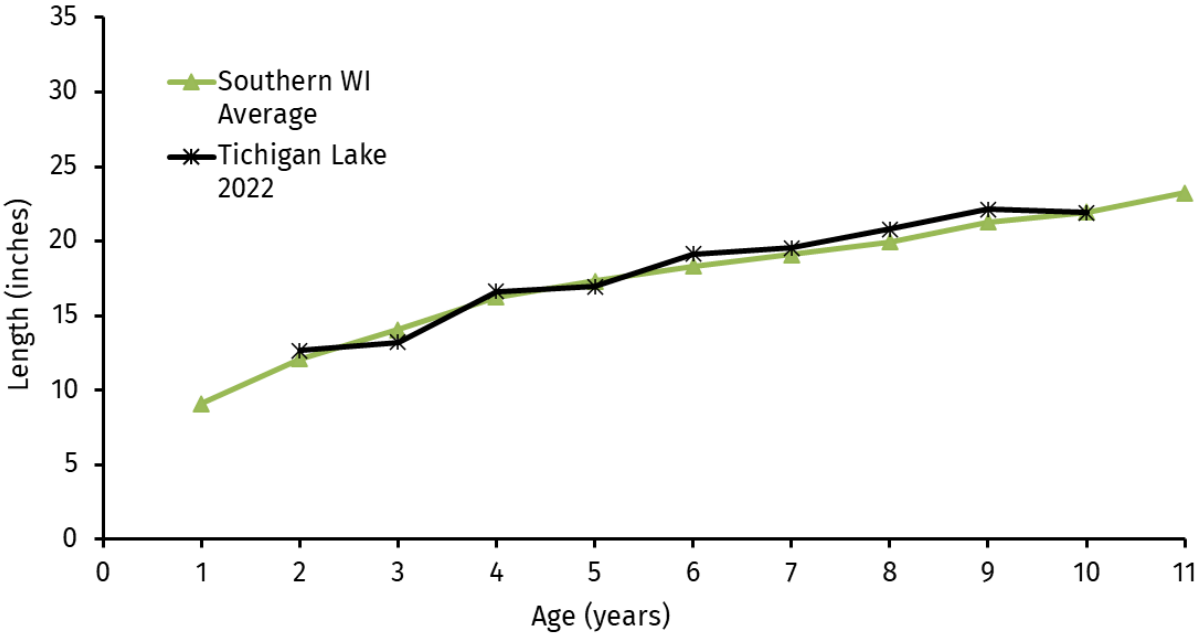

Figure 6. Walleye mean length at age determined using dorsal spines collected during the SNI survey of Tichigan Lake in 2022 compared to the Southern Wisonsin mean length at age from spring (April-May) surveys.

LARGEMOUTH BASS

In 2022 a total of 70 largemouth bass were captured during SEII. Total catch in 2017 was much higher at 154 largemouth bass. Catch rate (# fish/mile of electrofishing) allows a standardized comparison between surveys. The 2022 catch rate was 20 largemouth bass/mile which was about half of the 2017 catch rate of 38.5 largemouth bass/mile. Catch rates are known to be highly variable but are often the best available measure of abundance for somespecies. The catch rates from both survey years are above average when compared to similar waters.

The average length of largemouth bass from the 2022 SEII was 12.6 inches and the maximum observed length was 18 inches. The average (14.0 inches) and maximum (20.2 inches) lengths in the 2017 SEII were higher. The percent of legal sized fish (14 inches and greater) decreased between survey years (60% in 2017 and 34% in 2022). The size structure from both survey years suggests consistent recruitment and good growth potential (Figure 7).

The changes in abundance and size structure of the largemouth bass population are possibly due to differences in sampling windows. Standard DNR sampling protocols suggest electrofishing prior to peak bass spawn at water temperatures between 55° to 70° F. In 2022 electrofishing was conducted on May 26 when water temperatures were 65° F. In 2017 electrofishing was conducted on April 25 when water temperatures

were 60° F. The 2022 sample was also likely influenced by a higher pier density as more residential piers had been installed by the later date. The differences in submerged aquatic plant density may have been a factor as well since the 2022 survey was conducted later in the growing season. In general, little largemouth bass harvest occurs in Wisconsin so these environmental factors may explain the differences in results rather than changes at a population level. The next survey should focus on monitoring the largemouth bass population during the optimal sampling window.

Another dataset related to the bass population of Tichigan Lake and the Fox River is available from DNR permitted fishing tournaments. The first record of a permitted bass fishing tournmanet on Tichigan Lake was one tournament in 2013. Since then there has been a relatively steady increase in the number of permitted tournaments including five in 2022. This suggests a quality bass angling opportunity as tournaments tend to frequent waterbodies with potential for larger fish and/or good abundance.

Available survey data indicates that Tichigan Lake offers a quality largemouth bass angling opportunity. The management and evaluation of the population is challenging due to confounding environmental factors. Due to observed decreases in abundance and size structure the next survey should focus on obtaining robust abundance, size structure and growth data to advise future management needs.

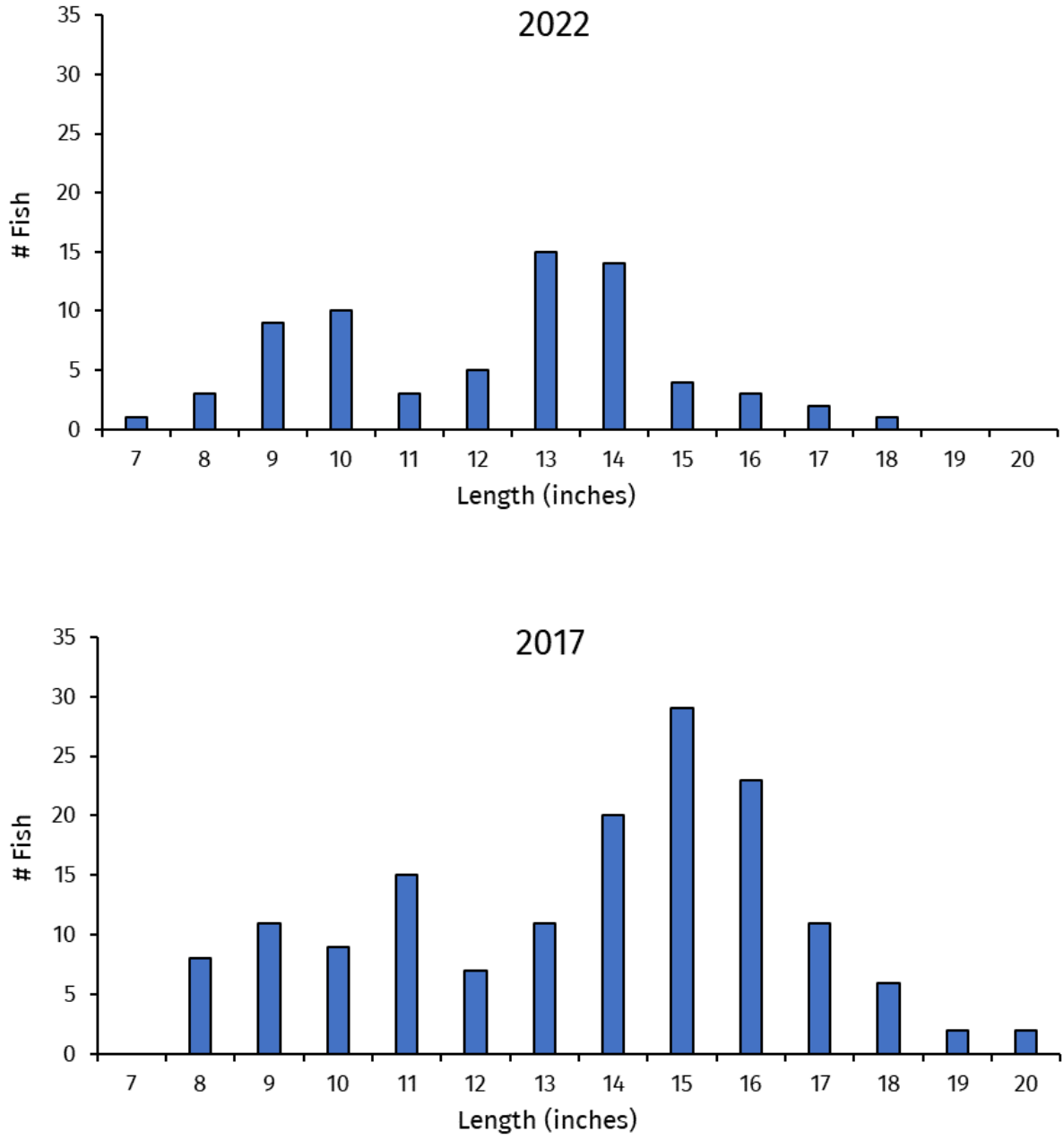

Figure 7. Length-frequency histograms of largemouth bass sampled during the 2017 and 2022 SEII surveys of Tichigan Lake, Racine County, WI.

BLUEGILL

In 2022 a total of 39 bluegill were captured during the SEII. The total SEII catch in 2017 was similar at 42 bluegill. The 2022 catch rate was 78 bluegill/mile which was almost double 2017 catch rate of 42 bluegill/mile. Catch rates are known to be highly variable but are often the best available measure of abundance for some speices. Catch rates from both survey years are below average when compared to similar lakes. Based on observations during the SNI and SEII surveys these abundance estimates are very conservative. During the 2022? SEII there were obvious concentrations of bluegill along certain stretches of the shoreline. The standard bluegill sampling protocol didn't adequately capture the patchy distribution of the bluegill population in Tichigan Lake.

The average length of bluegill from the 2022 SEII was 6.2 inches and the maximum observed length was 8.4 inches. The average (5.6 inches) and maximum (8.5 inches) lengths in the 2017 SEII were similar. In bvoth survey years a subsample of bluegill were measured during the SNI to facilitate a more robust estimate of size structure (Figure 8). The average length of bluegill from the 2022 SNI was 6.8 inches and the maximum observed length was an impressive 10.0 inches. The average (6.7 inches) and maximum (9.2 inches) lengths in the 2017 SNI were similar to 2022. The literature suggests that 6 inches is considered quality size for bluegill (Gabelhouse 1984). Of the bluegill measured during the 2022 SNI 76% were 6 inches or greater.

While the electrofishing data suggests below average abundance, observations from SNI and SEII indicate bluegill abundance to be at least average. Size structure data from both surveys show a high quality bluegill angling opportunity.

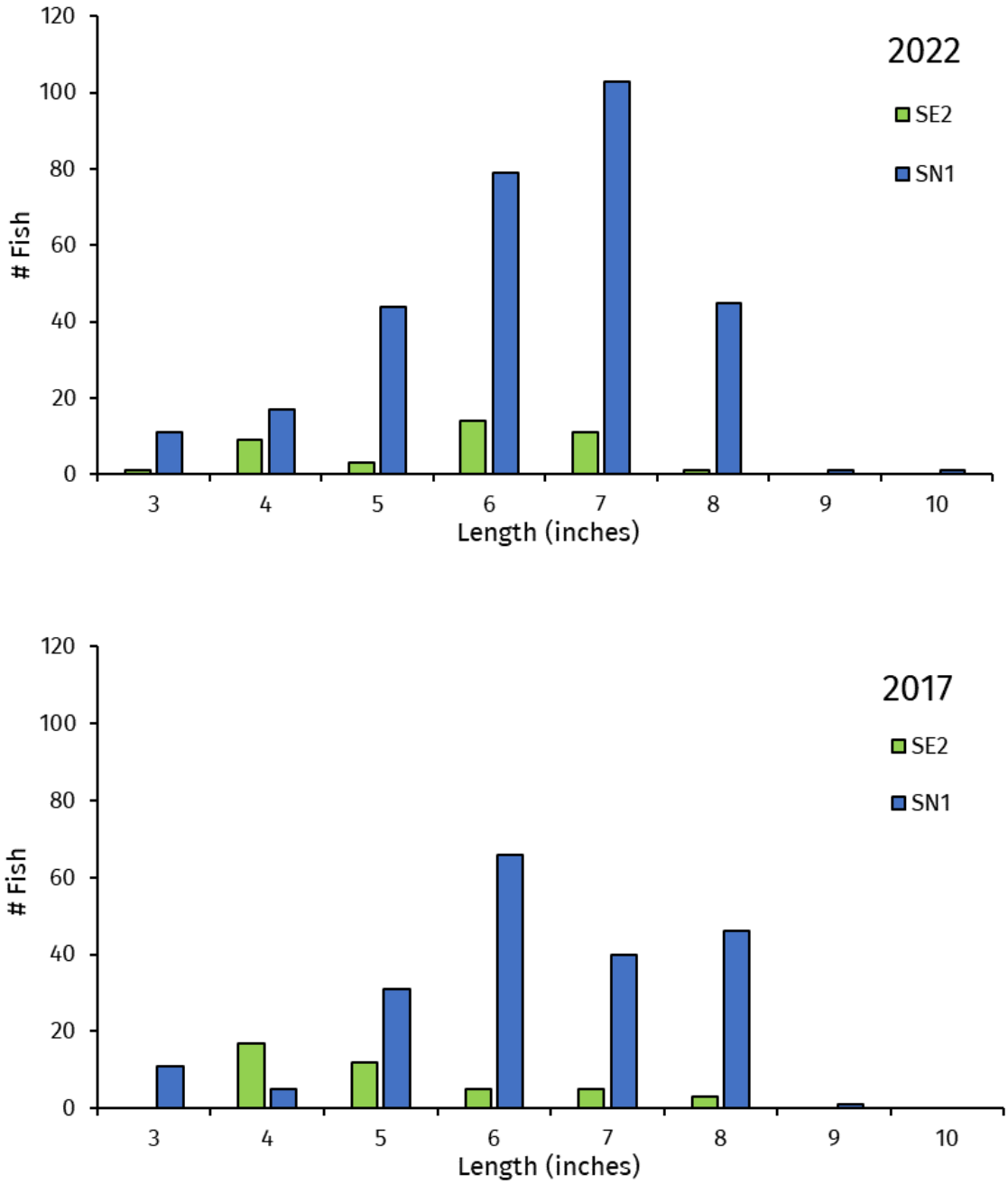

Figure 8. Length-frequency histograms of bluegill sampled during the 2017 and 2022 SNI and SEII surveys of Tichigan Lake, Racine County, WI.

PUMPKINSEED

In 2022 and 2017 a subsample of pumpkinseed were measured during the SNI to facilitate an estimate of size structure (Figure 9). The average length of pumpkinseed from the 2022 SNI was 6.3 inches and the maximum observed length was 8.1 inches. The average (6.4 inches) and maximum (7.9 inches) lengths in the 2017 SNI were almost identical to 2022. The literature suggests that 6 inches is considered quality size for pumpkinseed (Gabelhouse 1984). Of the pumpkinseed measured during the 2022 SNI, 77% were of quality size of 6 inches or greater Overall the data indicates a stable population size structure and a quality pumpkinseed angling opportunity. No quantitative abundance estimate is available but qualitatively pumpkinseed are a common component of the fishery in Tichigan Lake.

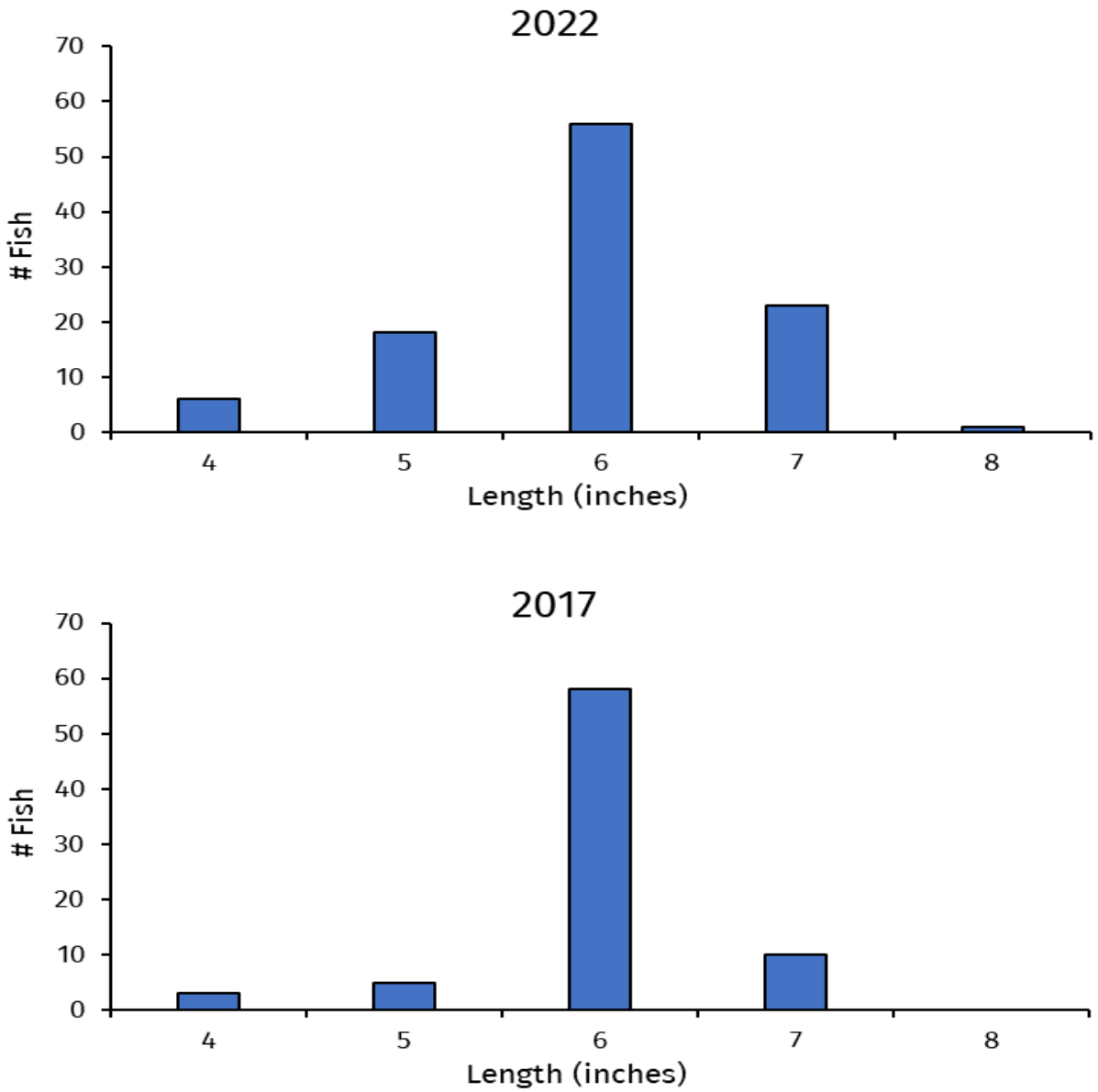

Figure 9. Length-frequency histograms of pumpkinseed sampled during the 2017 and 2022 SNI surveys of Tichigan Lake, Racine County, WI.

BLACK CRAPPIE

In 2022 and 2017 a subsample of black crappie were measured during the SNI to facilitate an estimate of size structure (Figure 10). The average length of black crappie from the 2022 SNI was 8.4 inches and the maximum observed length was 15.9 inches. The average (8.5 inches) and maximum (15.4 inches) lengths in the 2017 SNI were almost identical to 2022. The literature suggests that 8 inches is considered quality size for black crappie (Gabelhouse 1984). Of the black crappie measured during the 2022 SNI? 56% were of quality size of 8 inches or greater. Overall the data indicates a stable population size structure and a quality black crappie angling opportunity. No

quantitative abundance estimate is available but qualitatively black crappie are a common component of the fishery in Tichigan Lake.

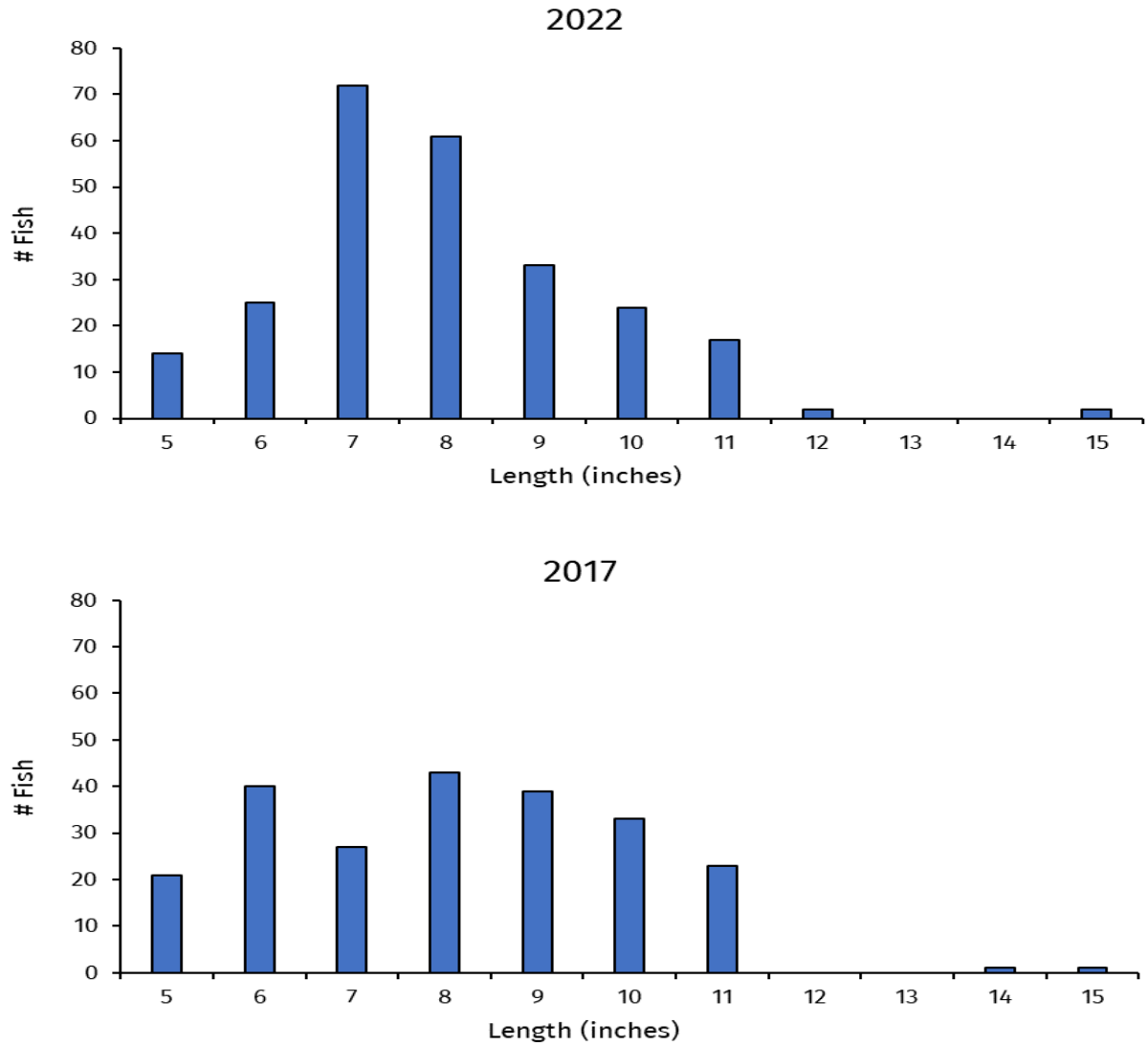

Figure 10. Length-frequency histograms of black crappie sampled during the 2017 and 2022 SNI surveys of Tichigan Lake, Racine County, WI.

YELLOW PERCH

In 2022 and 2017 a subsample of yellow perch were measured during the SNI to facilitate an estimate of size structure (Figure 11). The average length of yellow perch from the 2022 SNI was 7.0 inches and the maximum observed length was 10.7 inches. The average (7.9 inches) and maximum (11.8 inches) lengths in the 2017 SNI were slightly higher than 2022. A larger proportion of 8 to 10 inch fish were observed in 2017 which accounts for the higher average length. This slight shift in size structure

may be an indication of the harvest of preferred sizes, or part of a natural cycle. The literature suggests that 8 inches is considered quality size for yellow perch (Gabelhouse 1984). Of the yellow perch measured during the 2022 SNI, 21% were of quality size of 8 inches or greater. Overall the data indicates a slight decrease in the population size structure and an average yellow perch angling opportunity. No quantitative abundance estimate is available but qualitatively yellow perch are an abundant component of the fishery.

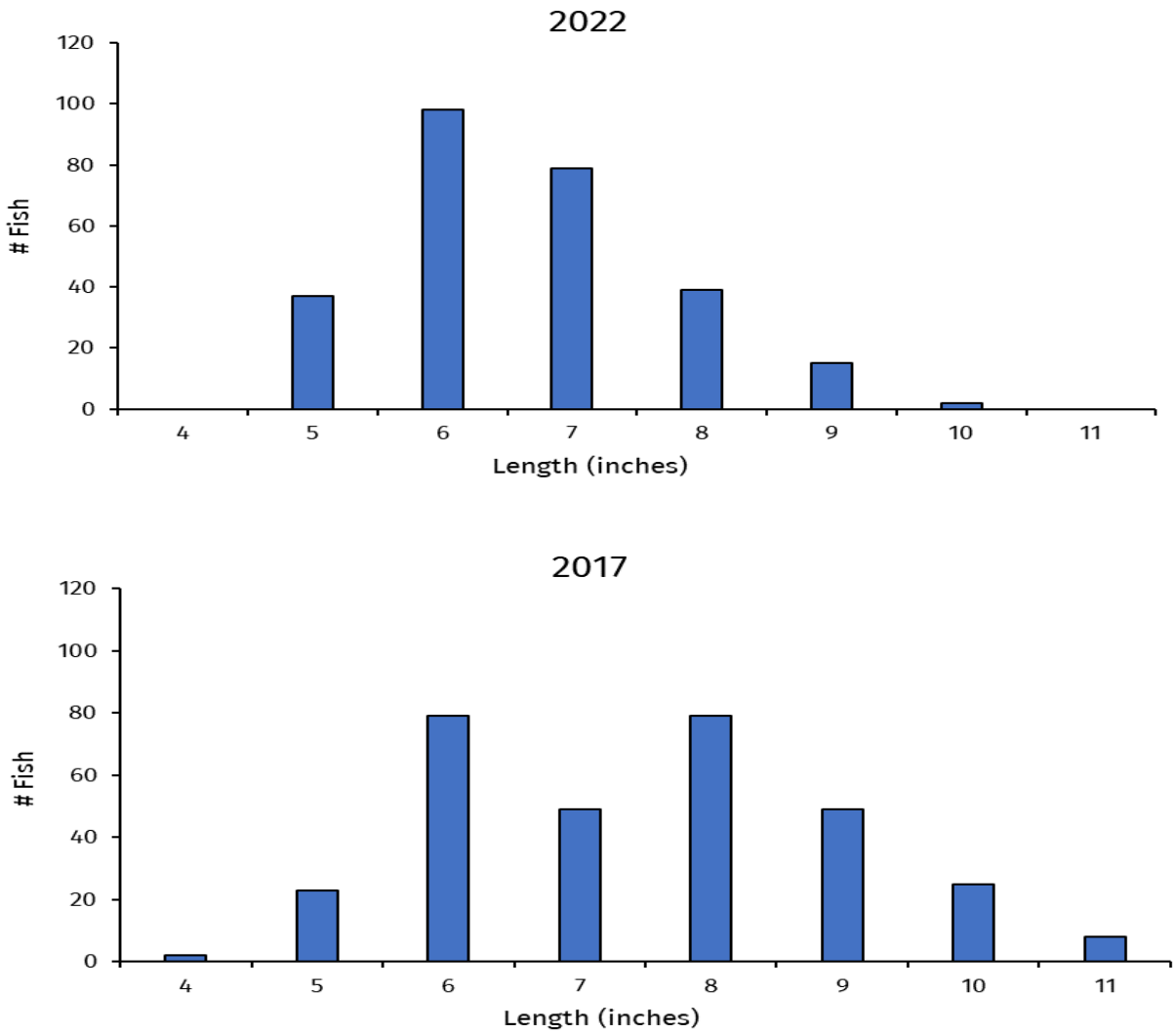

Figure 11 . Length-frequency histograms of yellow perch sampled during the 2017 and 2022 SNI surveys of Tichigan Lake, Racine County, WI.

WARMOUTH

In 2022 a subsample of warmouth were measured during the SNI to facilitate an estimate of size structure (Figure 12). The average length of warmouth from the 2022 SNI was 7.5 inches and the maximum observed length was 9.2 inches. The literature

suggests that 6 inches is considered quality size for warmouth (Gabelhouse 1984). Of the warmouth measured during 2022 SNI, 94% were of quality size of 6 inches or greater. Warmouth are not typically targeted by anglers but the species offers another quality sunfish havest opportunity. No quantitative abundance estimate is available but qualitatively warmouth are a common component of the fishery in Tichigan Lake.

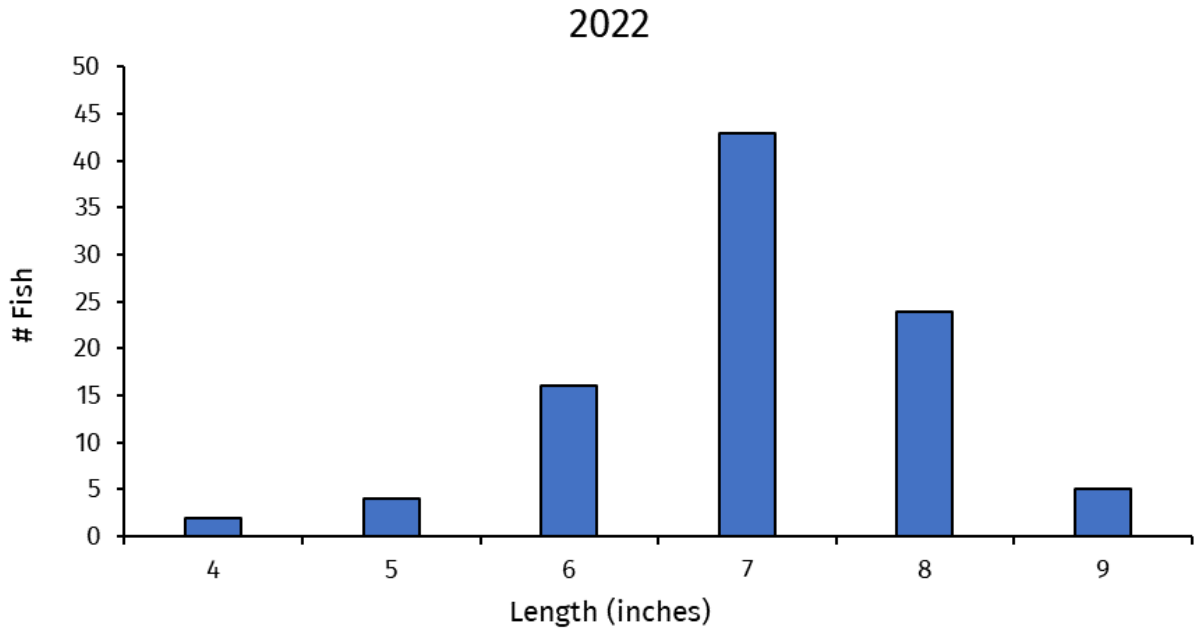

Figure 12. Length-frequency histogram of warmouth sampled during the 2022 SNI survey of Tichigan Lake, Racine County, WI.

CHANNEL CATFISH

In 2021 a total of 154 channel catfish were captured during the late summer baited hoop netting. Similar surveys were conducted in 2014 and 2019 and the total catch was higher both years (1211 and 405 total channel catfish respectively). The 2021 catch rate was 4.2 channel catfish/net night which was less than either of the previous surveys. The 2014 catch rate was 23.3/net night and the 2019 catch rate was 6.5/net night. When compared to similar waters the 2019 and 2021 catch rates are about average and the 2014 catch rate is above average.

There are a number of factors which may contribute to the differences in total catch and catch rate of channel catfish in these surveys. The survey dates were slightly different each year with 2014 being the earliest and 2021 being the latest. The WDNR protocol suggests that surveys should be conducted post spawn when water temperatures are greater than 70° F. Depending on latitude this may occur from mid-June through August. It is not recommended to sample beyond August; while

temperatures may be appropriate, fish may have already begun their migration from their summer habitats. All the surveys were conducted in August but 2019 and 2021 were conducted in late August so some channel catfish may have migrated out of the survey reach by that time. Other factors that varied between surveys were the bait used in the hoop nets, water levels and flows (USGS Water Data) which all likely contributed to the differences observed.

The average length of channel catfish from the baited hoop netting in 2021 was 22.7 inches and the maximum observed length was 32.6 inches. The average length (23.4 inches) and maximum length (31.6 inches) were very similar in 2019. In 2014 the average length of 18.7 inches was significantly lower while the maximum length of 30.1 inches was relatively similar to the other surveys. In 2014 there was a greater proportion of channel catfish 14 inches and under which contributed to the lower average length (Figure 13). This again may be related to the differences between the surveys in timing, techniques and environmental factors. Literature suggests that 16 inches is considered quality size for channel catfish and 24 inches is considered preferred (Gabelhouse 1984). Of the channel catfish measured during the 2021 baited hoop netting, 87% were of the quality size of 16 inches or greater and 48% were of the preferred size of 24 inches or greater.

Exloitation or angler harvest is not likely a contributing factor to differences observed in the channel catfish population between surveys. There is a consumption advisory related to polychlorinated biphenyls (PCBs) for channel catfish and common carp on the Fox River and Tichigan Lake. The advisory states no more than one meal a month of these species be consumed from these waters. Further, access to Tichigan Lake and this stretch of the Fox River is somewhat limited. These factors suggest that angler harvest would not drive population level changes in channel catfish.

Channel catfish represent a unique angling opportunity in Tichigan Lake because of the connection to the Illinois Fox River. While harvest and consumption of this species is somewhat limited by the existing consumption advisory and access, the observed sizes and abundance present represents a quality angling opportunity.

OTHER SPECIES

Other species observed during the survey that were found in low abundance and do not warrant analysis or discussion included (total catch in parentheses): bowfin (3), golden shiner (2), green sunfish (1), rock bass (19), smallmouth bass (4), white sucker (1) and yellow bass (4).

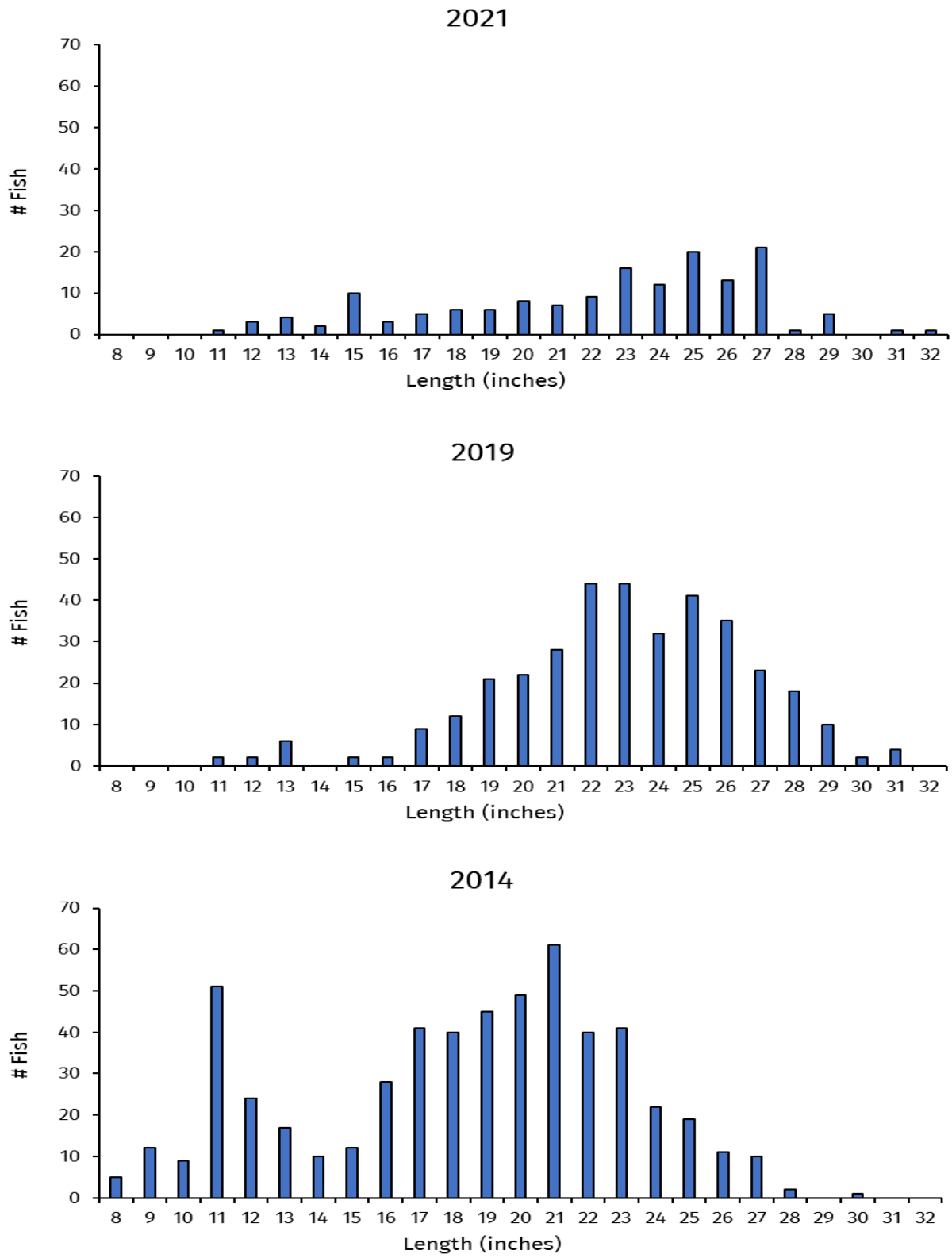

Figure 13 Length-frequency histograms of channel catfish sampled during the 2014, 2019 and 2021 baited hoop net surveys of the Fox River, Racine County, WI.

Management Recommendations

1. The observed size structure and abundance of northern pike suggests the 26-inch minimum length limit and daily bag limit of two fish is a good fit for the fishery. No regulation change on northern pike is recommended at this time. Northern pike have not been stocked since 2017. Difficulty of evaluating the practice and ample available spawning habitat in the open system suggests stocking this species is not necessary. The next survey should monitor population trends through an update of abundance, size and growth.
2. The observed differences in abundance of walleye between the 2017 and 2022 surveys highlights the difficulty in evaluating the species in this system. The 2018 walleye regulation change from a 15-inch minimum length limt and daily bag limit of five fish to an 18-inch minimum length limit and daily bag limit of three fish offers greater protection yet the data suggests a decrease in abundance. In addition, biannual stocking of large fingerling walleye since 2014 should have increased abundance as well. Given all these factors it is recommended to discontinue walleye stocking by DNR. The next survey should monitor population trends through an update of abundance, size and growth.
3. Due to observed decreases in abundance and size structure of largemouth bass the next survey should focus on obtaining robust abundance, size structure and growth data to advise future management needs.
4. Panfish continue to offer a high quality angling opportunity with good abundance and quality size structure. The no minimum length limit and daily bag limit of thwenty five adequatly protects these species in this productive system. No regulation change or stocking of these species is recommended at this time. The next survey should monitor population trends through an update of abundance, size and growth.
5. Channel catfish offer a unique angling opportunity with limited harvest due to the existing consumption advisory. Observed size structure and abundance represent a quality angling opportunity. No regulation change or stocking of channel catfish is recommended at this time. The next survey should focus on standardizing survey window and bait used to monitor population trends through an update of abundance and size structure.

References

Gabelhouse, D. W., Jr. 1984. A length-categorization system to assess fish stocks. North AmericanJournal of Fisheries Management 4:273–285.

Appendix

Table 1. Number of fish stocked in the Waterford Impoundment section of the Fox River and Tichigan Lake since 2012 including year, stocking date, waterbody name, species, age class, number of fish stocked and average length.

Year	Stocking Date	County	Waterbody Name	Species	Age Class	# Fish Stocked	Average Length Inches
2022	10/19/2022	Racine	FOX RIVER	WALLEYE	LARGE FINGERLING	728	7
2022	10/19/2022	Racine	FOX RIVER	WALLEYE	LARGE FINGERLING	1066	
2021	11/04/2021	Racine	FOX RIVER	WALLEYE	LARGE FINGERLING	1526	7
2020	10/16/2020	Racine	FOX RIVER	WALLEYE	LARGE FINGERLING	417	7
2020	10/16/2020	Racine	FOX RIVER	WALLEYE	LARGE FINGERLING	415	7
2019	09/13/2019	Racine	FOX RIVER	SMALLMOUTH BASS	YEARLING	540	6
2019	10/18/2019	Racine	FOX RIVER	WALLEYE	LARGE FINGERLING	726	7
2018	09/10/2018	Racine	FOX RIVER	SMALLMOUTH BASS	LARGE FINGERLING	540	5
2018	10/17/2018	Racine	FOX RIVER	NORTHERN PIKE	LARGE FINGERLING	1214	9
2018	11/01/2018	Racine	FOX RIVER	WALLEYE	LARGE FINGERLING	726	7
2017	07/26/2017	Racine	FOX RIVER	WALLEYE	LARGE FINGERLING	1872	3.06
2017	09/19/2017	Racine	FOX RIVER	WALLEYE	LARGE FINGERLING	540	7
2016	09/23/2016	Racine	FOX RIVER	MUSKELLUNGE	LARGE FINGERLING	175	11
2016	10/03/2016	Racine	FOX RIVER	WALLEYE	LARGE FINGERLING	556	7
2015	09/21/2015	Racine	FOX RIVER	WALLEYE	LARGE FINGERLING	570	7
2014	06/10/2014	Racine	FOX RIVER	WALLEYE	SMALL FINGERLING	22500	1.34
2014	11/11/2014	Racine	FOX RIVER	SMALLMOUTH BASS	LARGE FINGERLING	698	5
2013	06/14/2013	Racine	FOX RIVER	WALLEYE	SMALL FINGERLING	11340	1.5
2012	09/05/2012	Racine	FOX RIVER	NORTHERN PIKE	LARGE FINGERLING	1296	7.9
2012	09/10/2012	Racine	FOX RIVER	NORTHERN PIKE	LARGE FINGERLING	1164	7.54
2022	09/23/2022	Racine	TICHIGAN LAKE	WALLEYE	LARGE FINGERLING	1414	7.5
2020	09/28/2020	Racine	TICHIGAN LAKE	WALLEYE	LARGE FINGERLING	1395	6.4
2018	09/21/2018	Racine	TICHIGAN LAKE	SMALLMOUTH BASS	LARGE FINGERLING	3000	5
2018	10/01/2018	Racine	TICHIGAN LAKE	WALLEYE	LARGE FINGERLING	1395	7
2017	05/24/2017	Racine	TICHIGAN LAKE	NORTHERN PIKE	SMALL FINGERLING	2429	2.32
2016	10/07/2016	Racine	TICHIGAN LAKE	WALLEYE	LARGE FINGERLING	1395	6.2
2015	05/21/2015	Racine	TICHIGAN LAKE	NORTHERN PIKE	SMALL FINGERLING	2350	3
2014	10/16/2014	Racine	TICHIGAN LAKE	WALLEYE	LARGE FINGERLING	1272	7.6
2014	10/22/2014	Racine	TICHIGAN LAKE	WALLEYE	LARGE FINGERLING	120	7.1
2014	11/11/2014	Racine	TICHIGAN LAKE	LARGEMOUTH BASS	LARGE FINGERLING	1998	6.5
2013	10/15/2013	Racine	TICHIGAN LAKE	NORTHERN PIKE	LARGE FINGERLING	1793	10
2012	06/01/2012	Racine	TICHIGAN LAKE	WALLEYE	SMALL FINGERLING	39620	1.52

Table 2. Catch summary of the the 2022 spring fyke netting (SNI) of Tichigan Lake, Racine County, WI. .

Species	Total Catch (netting)	CPE (catch/net night)	Total Catch (electrofishing)	CPE (catch/mile)	Average Length (inches)	Min Length (inches)	Max Length (inches)
Northern pike (all)	85	0.54	NA	NA	25.5	16.5	38.5
Northern pike (male)	52	0.33	NA	NA	22.7	19.1	33.0
Northern pike (female)	30	0.19	NA	NA	30.6	19.7	38.5
Northern pike (unknown)	3	0.02	NA	NA	23.7	16.5	31.9
Walleye (all)	118	0.75	46	15.3	18.2	11.5	25.1
Walleye (male)	86	0.54	30	10.0	18.2	12.9	22.0
Walleye (female)	28	0.18	7	2.3	20.6	16.3	25.1
Walleye (unknown)	4	0.03	9	3.0	12.6	11.5	13.2
Largemouth bass	NA	NA	70	20.0	12.6	7.1	18.0
Bluegill	301 (subsample)	NA	39	78.0	6.8	3.4	10.0
Pumpkinseed	104 (subsample)	NA	0	NA	6.3	4.1	8.1
Black crappie	250 (subsample)	NA	0	NA	8.4	5.0	15.9
Yellow perch	270 (subsample)	NA	3	6.0	7.0	5.2	10.7
Warmouth	94 (subsample	NA	0	NA	7.5	4.2	9.2
Channel catfish	154	4.2	NA	NA	22.7	11.4	32.6

Table 3. Catch summary of the 2022 spring electrofishing (SEII) survey of Tichigan Lake, Racine County, WI.

Species	Total Catch (netting)	CPE (catch/net night)	Total Catch (electrofishing)	CPE (catch/mile)	Average Length (inches)	Min Length (inches)	Max Length (inches)
Northern pike (all)	85	0.54	NA	NA	25.5	16.5	38.5
Northern pike (male)	52	0.33	NA	NA	22.7	19.1	33.0
Northern pike (female)	30	0.19	NA	NA	30.6	19.7	38.5
Northern pike (unknown)	3	0.02	NA	NA	23.7	16.5	31.9
Walleye (all)	118	0.75	46	15.3	18.2	11.5	25.1
Walleye (male)	86	0.54	30	10.0	18.2	12.9	22.0
Walleye (female)	28	0.18	7	2.3	20.6	16.3	25.1
Walleye (unknown)	4	0.03	9	3.0	12.6	11.5	13.2
Largemouth bass	NA	NA	70	20.0	12.6	7.1	18.0
Bluegill	301 (subsample)	NA	39	78.0	6.8	3.4	10.0
Pumpkinseed	104 (subsample)	NA	0	NA	6.3	4.1	8.1
Black crappie	250 (subsample)	NA	0	NA	8.4	5.0	15.9
Yellow perch	270 (subsample)	NA	3	6.0	7.0	5.2	10.7
Warmouth	94 (subsample	NA	0	NA	7.5	4.2	9.2
Channel catfish	154	4.2	NA	NA	22.7	11.4	32.6