

WISCONSIN DEPARTMENT OF NATURAL RESOURCES
2024 Lake Winnebago Bottom Trawling
Assessment Report
Waterbody Code 131100



Image 1. DNR fisheries staff and volunteers with a variety of fish species commonly observed in the trawl survey. Photo credit: Wisconsin DNR



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11/12/2024

Introduction

The Lake Winnebago bottom trawl survey is one of the most insightful fisheries assessments on the system. The survey, in its modern capacity, dates back to 1986, providing a lengthy time series of catch data for comparison over the years. This allows readers to compare species abundance of the past and present, as well as the outlook for future years through the comparison of annual year class strengths. The main objectives of this survey include the assessment of year class strength, relative abundance, and general population trends for a multitude of species. The trawl survey is completed annually by a team of fisheries management staff, fisheries operations staff, and volunteer assistance. The interest in volunteering in 2024 was impressive with 46 volunteers signing up in under 48 hours. Volunteers throughout the surrounding area continue to be a major asset to the Oshkosh fisheries crew in the completion of this survey.



Image 2. DNR fisheries staff and volunteers counting fish and recording catch data during the 2024 trawl survey. Photo Credit: Michael Koppenhoefer

Methods



Image 3. Fisheries Staff Jason Kohls and Nate Schimanski deploying the trawl net during the 2024 trawl survey. Photo credits: Michael Koppenhoefer

The Lake Winnebago bottom trawling assessment has been conducted with the same standardized method for the last 39 years. This involves a total of 138 net pulls split up into three sampling events. There are 46 net pulls conducted during the first week of August, September, and October. An average day on the trawl consists of 10-12 net pulls (about 8 hours on the boat). The 27-foot-wide trawl net is deployed behind the boat and pulled along the bottom of the lake

at 4 miles per hour (mph) for 5 minutes, which results in each pull covering roughly 1 acre. When the net is pulled in, the fish are emptied onto the counting table, and the trawling crew counts the fish and separates the gamefish into a holding tank. The gamefish are then measured and released. The long-term data set from the survey allows for the comparison of year class strength and adult fish relative abundance over the past 39 years, giving fisheries managers and interested anglers insight on the status of the Winnebago fisheries.

Results

There was a total of 158,886 fish captured in the 2024 survey, representing 22 different species. Total young of year (YOY) catch was 136,459 individuals, representing 12 species. Notable YOY catch observations include significant walleye and yellow perch year classes, the highest white bass catch observed in over a decade, a record-breaking trout perch catch, a small but observable sauger year class, and the 8th consecutive year of low gizzard shad catch. Total adult fish catch was 22,427 with 21 different species present. Most notable adult catch observations include a relatively high age 2+ walleye catch, a significant decrease in yellow perch catch, a record low white bass catch, a record low freshwater drum catch, and a measurable sauger catch.



Image 4. DNR fisheries staff and volunteers counting fish captured in the 2024 trawl survey. Photo credit: Michael Cooney

WALLEYE

On the Wolf River, low water levels typically cause low expectations for walleye spawning success. In 2024, the Wolf River experienced one of the lowest water level years in recent history (Appendix 1); however, YOY catch results from the 2024 trawl survey indicate a relatively strong year class was produced, with a catch rate of 9.7

YOY/trawl (Figure 1A and Image 5). This is almost double the long-time survey average of 5.0 YOY/trawl. While water levels were low on the Wolf River, there was a pulse of water observed right around the peak walleye spawning period that allowed moderate marsh access. In addition to the well-timed water influx, the temperature profile on the Wolf River this spring was favorable with a relatively stable climb in water temperatures during the spawn (Appendix 2). In addition to these observations, the adult walleye stock in the Winnebago System is relatively high which is directly related to reproductive potential.



Image 5. YOY walleye captured in the 2024 trawl survey. Photo credit: Wisconsin DNR

The large year class of 2022 led to expectations of increased catch rates for age 2+ fish in 2024, though a slight decrease was observed compared to 2023. This being said, the 2024 age 2+ catch still ranks in the top seven amongst the 39 years of data, indicating a relatively high population abundance (Figure 1B). Several fisheries surveys in the spring of 2024 documented high catch rates for walleye in the 10-to-13-inch range, representing the 2022-year class (Image 6). Anglers around the system also reported impressive numbers of fish in a similar size range. While the 2022-year class did not show up strong in the 2024 trawl survey, other surveys and angling reports indicated an impressive abundance of these fish. Male fish of the 2022-year class should be showing up on the spawning marshes for the first time in spring of 2025. It will be interesting to see if this is reflected in the male age composition in the 2025 survey (Figure 2). The mature male stock is currently dominated by fish from the 2016-year class (8-year-olds) accounting for 37% of the total sample. Since 2016, the walleye population of Winnebago System have consistently produced year classes ranging from slightly below average to near record highs. This



Image 6. A netful of mostly age 2 sized walleye captured in an electrofishing survey on the south shore of Lake Poygan in spring of 2024. Photo credit: Wisconsin DNR

has resulted in a robust population with a variety of year/size classes and overall excellent angling opportunities. Looking forward, the significant year class of 2022 will be entering its 4th growing season and reaching preferable harvest length for the majority of anglers. The current adult stock and observed 2024-year class provide a good fishing outlook for years to come.

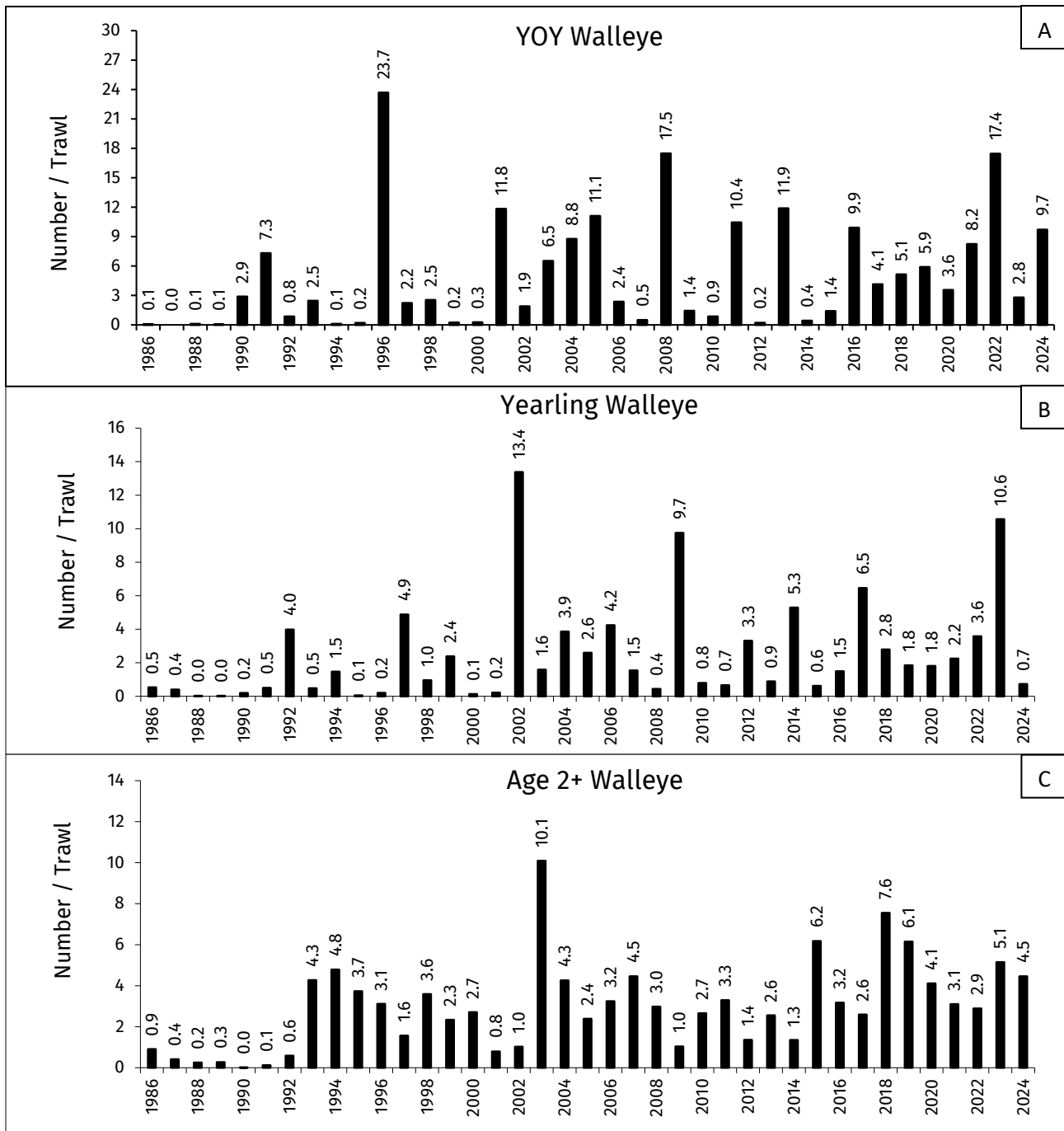


Figure 1. YOY (A), yearling (B), and age 2+ (C) walleye catch rates in the Winnebago trawl survey from 1986 through 2024.

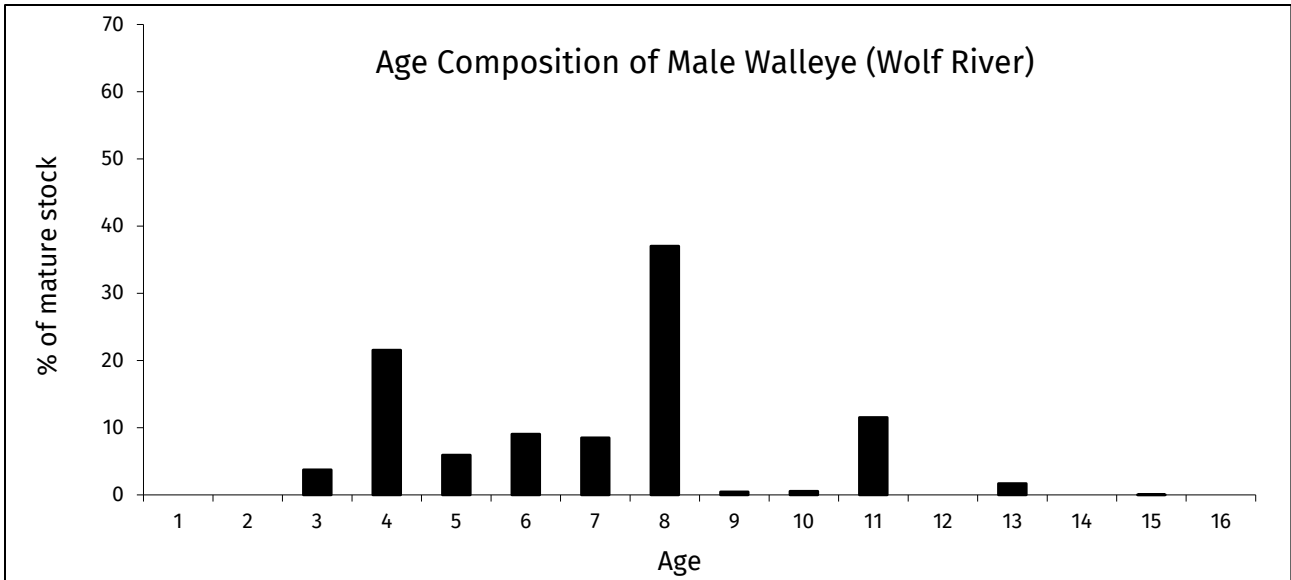


Figure 2. Age distribution of male walleye captured in the 2024 spring stock assessment on the Wolf River.

YELLOW PERCH

YOY yellow perch catch was 7.1/trawl (Figure 3A). The 2024 catch continues the trend of elevated YOY catch rates in recent years with the previous five years of the survey containing four of the highest catches on record. This being said,



Image 7. Fisheries staff and volunteers displaying five yellow perch, a walleye and a quillback captured in the 2024 trawl survey. Photo credit: Wisconsin DNR

adult catch rates have not shown a correlated increase, indicating that yellow perch recruitment in recent years has been less than optimal. Following the record year class of 2022, adult catch slightly decreased in 2023 and following the large year class of 2023 a rather significant decrease was observed in 2024 (Figure 3A and 3B). Length frequency of the 2024 survey shows that catch was dominated by fish over 8 inches, accounting for 65% of the total sample (Figure 4B). Length frequency of the 2023 survey show catch was dominated by fish under 8 inches, and fish over 8 inches only accounted for 34% of the total sample. The decrease in adult catch rates and the observation of catch dominance shifting to larger individuals is typical of an aging population. This being said, adult catch rates are still right around the long time

average (average adult yellow perch CPE = 4.6/trawl, 2024 CPE = 4.3/trawl) and size distribution is relatively large with catch rates for individuals > 9 inches still ranking in the top five across the 39 years of data.

Overall, trawling results show a decrease in adult fish abundance and an increase in size structure. Anecdotal angler reports agree with this trend with many reports of “quality over quantity.” The yellow perch population is still in relatively good health, with total adult catch right around the survey average, though we will be hoping to see the 2024-year class to recruit well in order to sustain the fishery moving forward.

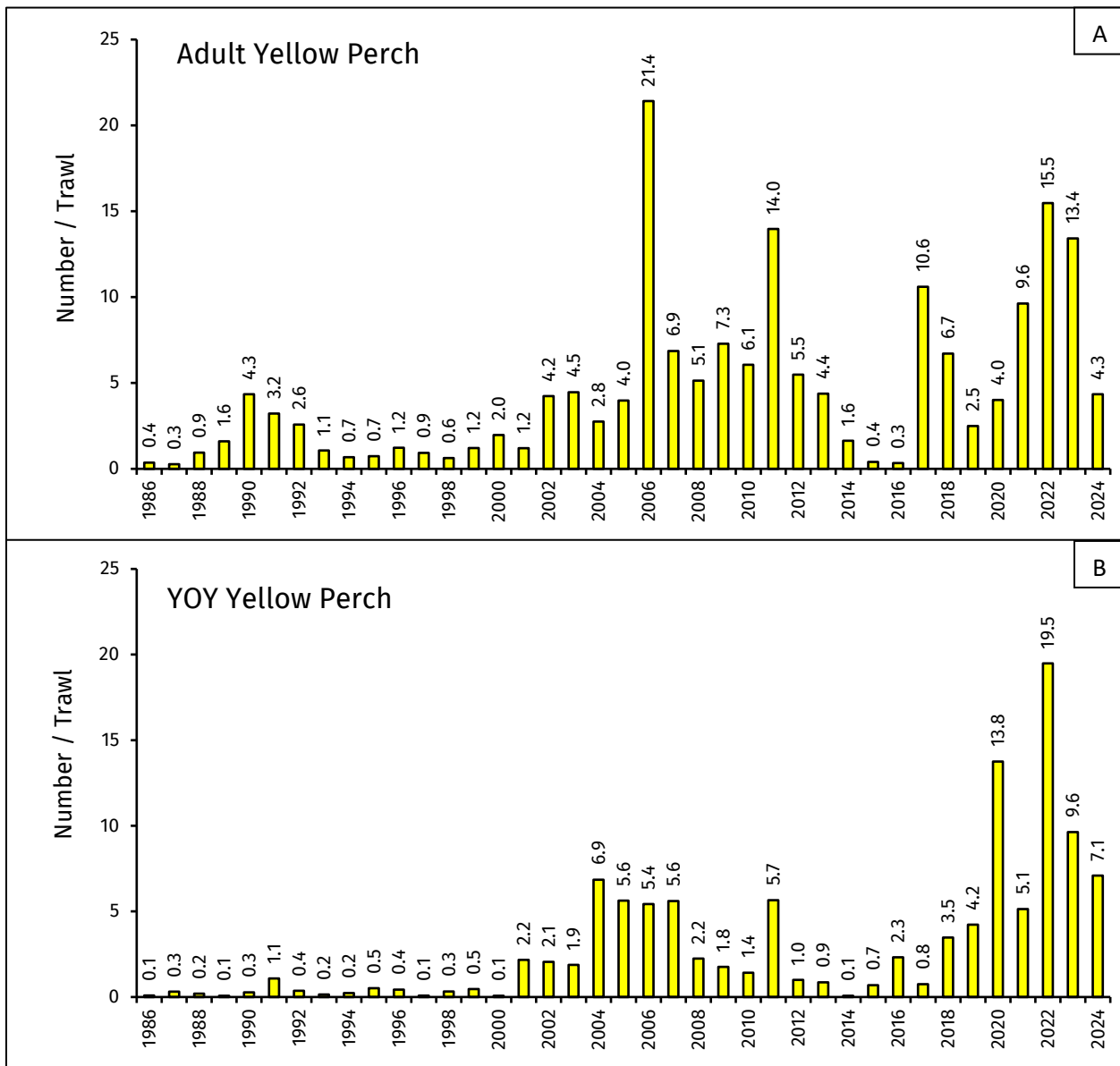


Figure 3. YOY (A) and adult (B), yellow perch catch rates in the Winnebago trawl survey from 1986 through 2024.

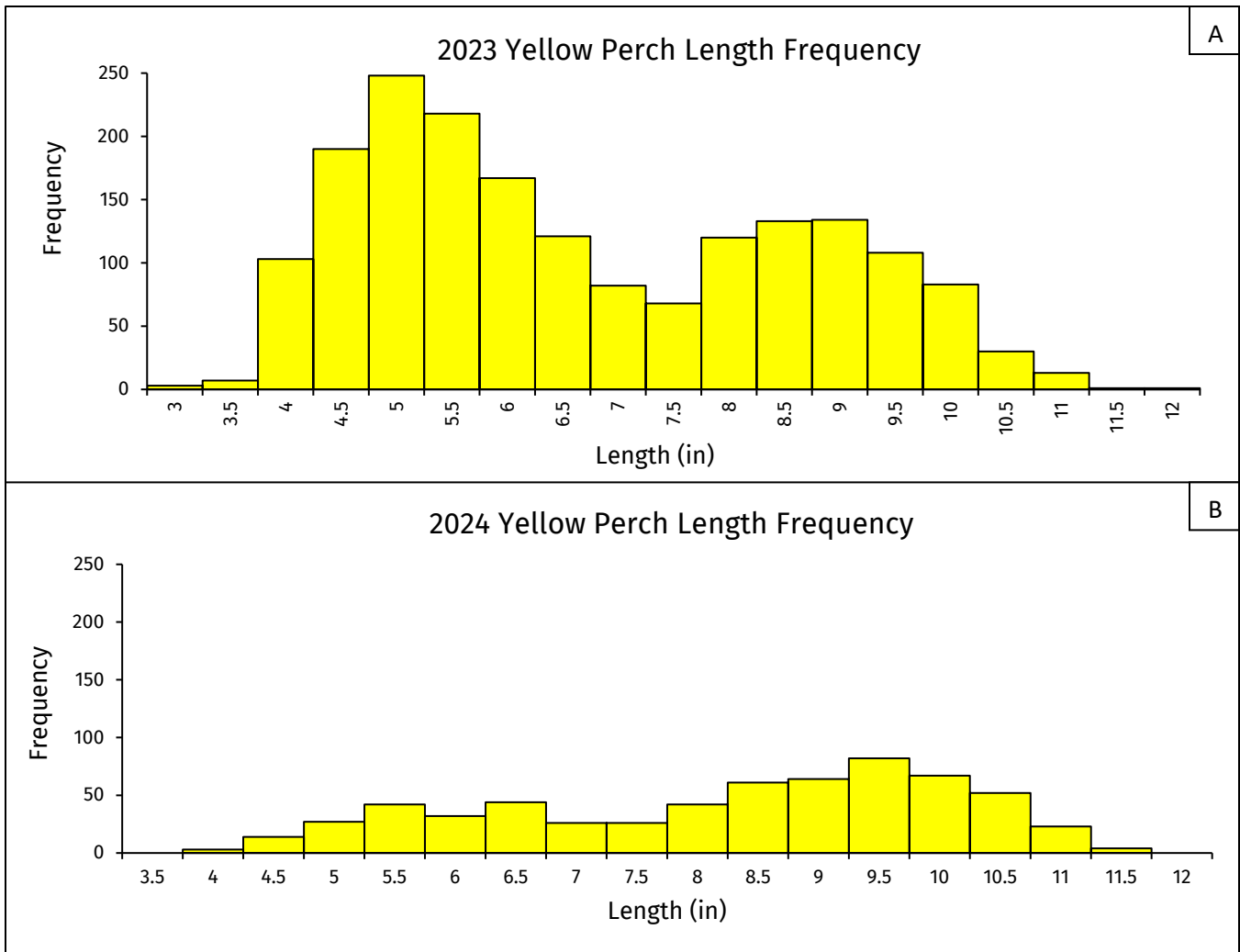


Figure 4. Length frequency of yellow perch captured in 2023 (A) and 2024 (B) in the trawl survey.

SAUGER

Sauger natural reproduction continues to be limited on the Winnebago System. There were five individual YOY fish captured in 2024, correlating to a catch rate of 0.04/trawl (Figure 5A). While this catch rate is low compared to other species captured in the survey, 2024 breaks a two-year streak of zero YOY sauger being captured. Adult sauger catch was 0.6/trawl (Figure 5B). The low catch rates for both YOY and adult sauger in the trawl



Image 8. Fisheries staff Nate Schimanski and Angelo Cozzola with two sauger captured in the 2024 trawl survey. Photo credit: Wisconsin DNR

continues a long-time trend. This being said, the lengthy data set the trawl provides shows persistence of the low density sauger population and that spawning is still successfully occurring at least on some level.

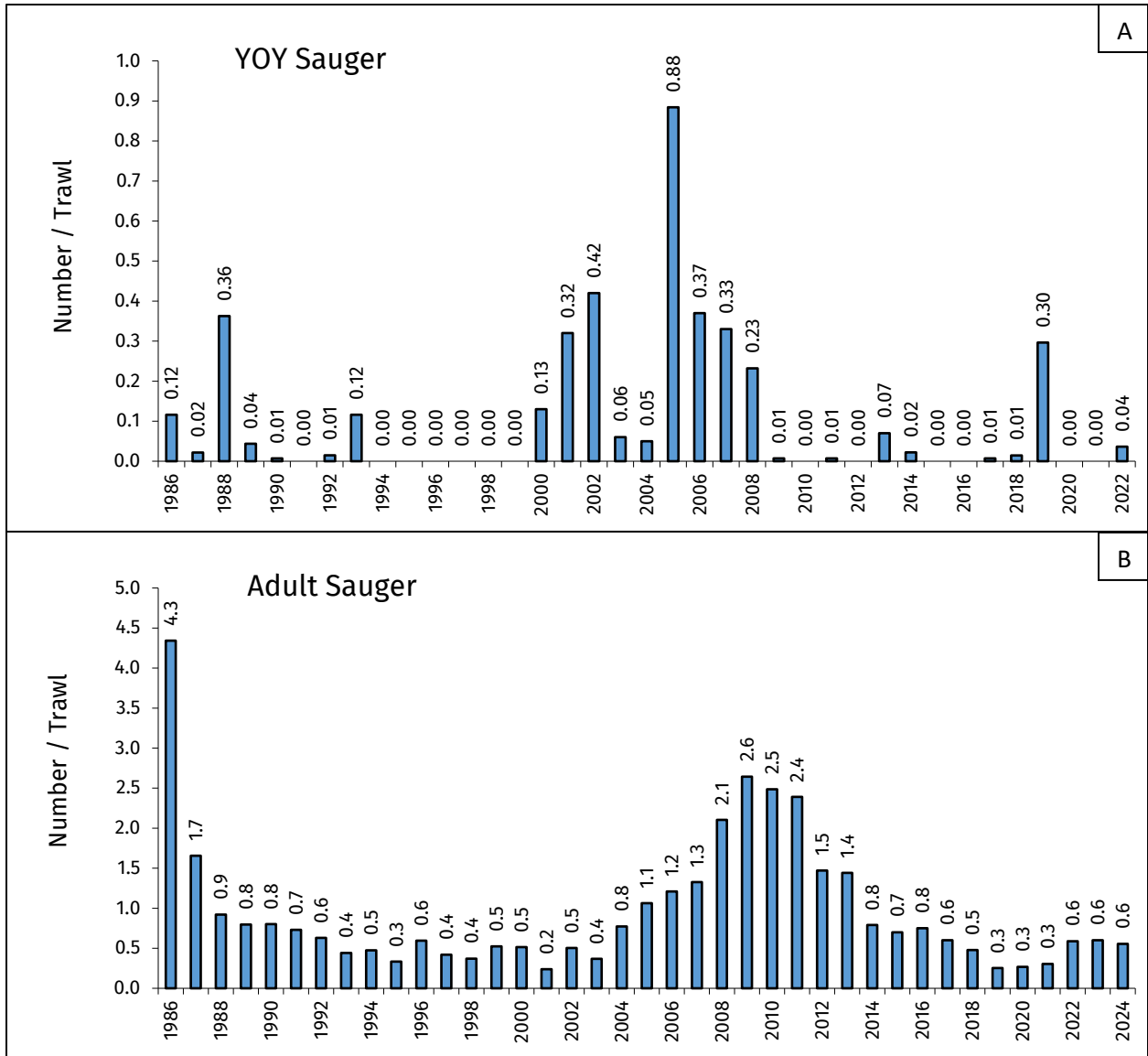


Figure 5. YOY (A) and adult (B), sauger catch rates in the Winnebago trawl survey from 1986 through 2024.

WHITE BASS

YOY white bass catch was 21.1/trawl, which is the highest catch recorded since 2012 (Figure 6A and Image 10). Adult white bass catch was the lowest ever recorded in the trawl survey at 1.0/trawl (Figure 6B). Looking forward, the measurable year class of 2024 will hopefully show strong recruitment and result in an increase in adult catch in the coming years.



Image 9. An adult white bass captured and tagged in the spring of 2024. Photo credit: Wisconsin DNR

White bass have recently been a discussion topic for Winnebago System fisheries management. Both adult and YOY catch rates in the trawl survey have been in decline for over a decade and complaints of excessive harvest are fairly common. This prompted a 2024 spring hearing advisory question being submitted to assess public opinion on the establishment of a 25-daily bag limit. In order to gain insight on white bass exploitation rates, fisheries staff conducted a preliminary tagging study. Results



Image 10. YOY white bass captured in the 2024 trawl survey. Photo credit: Wisconsin DNR

from the tagging effort have showed that white bass harvest was relatively low. Tag return data, updated as of 12/10/2024, show a harvest estimate for all fish of 8.3% and harvest rates of 9.2% and 7.2% for male and female fish, respectively. In order to gain confidence in the white bass harvest estimates, several more years of data will need to be collected. The future of this effort will be dependent on staff availability and funding sources for the purchase of tags. All things considered, the white bass fishery on Winnebago System

waters continue to provide angling opportunities. Further monitoring in the trawl survey and continuation of the tagging effort could provide support in either direction for the establishment of a daily bag limit.

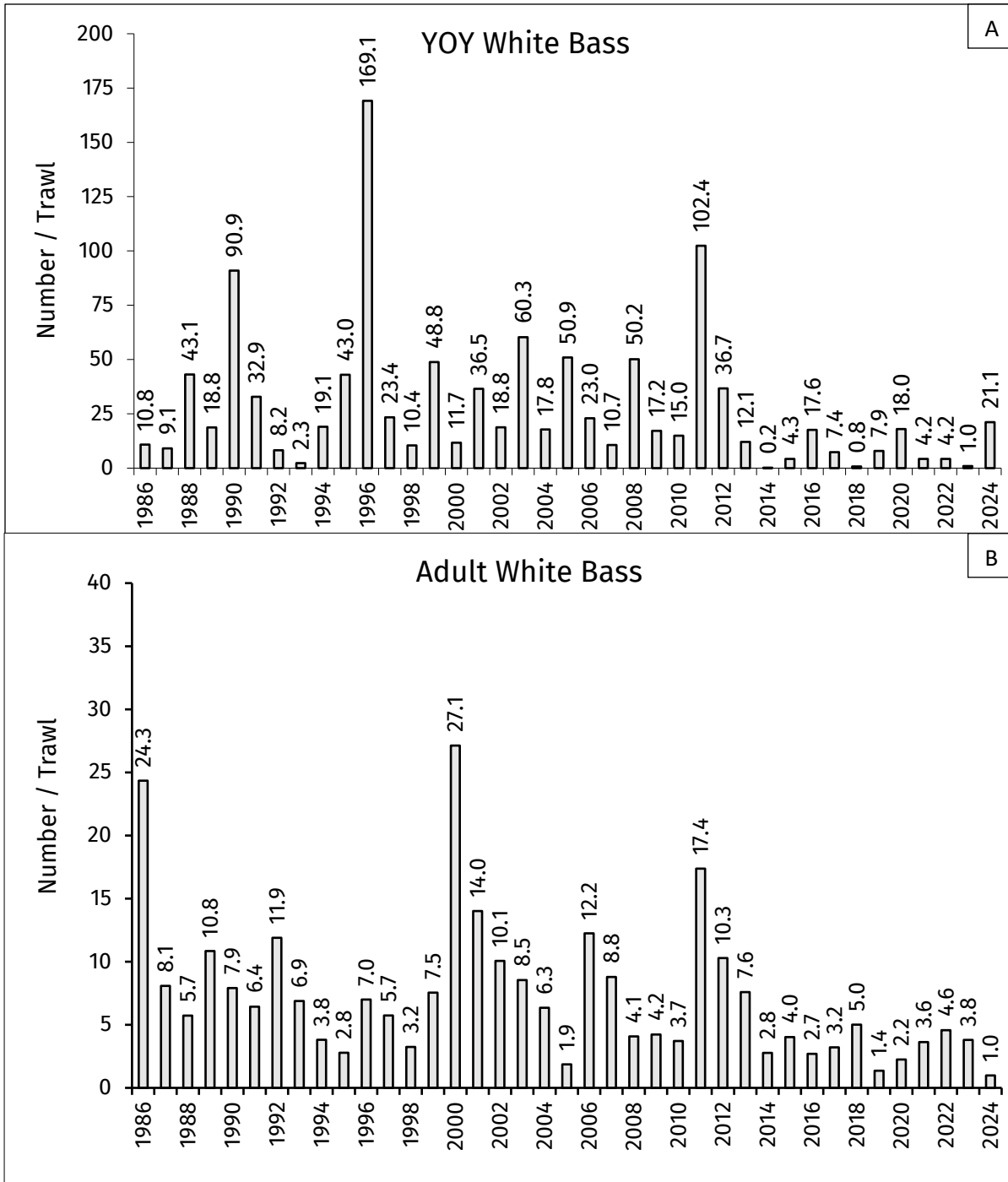


Figure 6. YOY (A) and adult (B), white bass catch rates in the Winnebago trawl survey from 1986 through 2024.

Forage Species

TROUT PERCH

YOY trout perch were caught in record numbers in 2024 at a rate of 881/trawl (Figure 7). This is the second time in three years the catch record has been broken. As always, it is good to see high catch rates for forage species on the system. The continuation of abundant trout perch should benefit the gamefish populations by providing an abundant food source and shielding from angling harvest.



Image 11. A pile of trout perch captured in the 2024 Winnebago trawl survey. Photo credit: Micheal Koppenhoefer

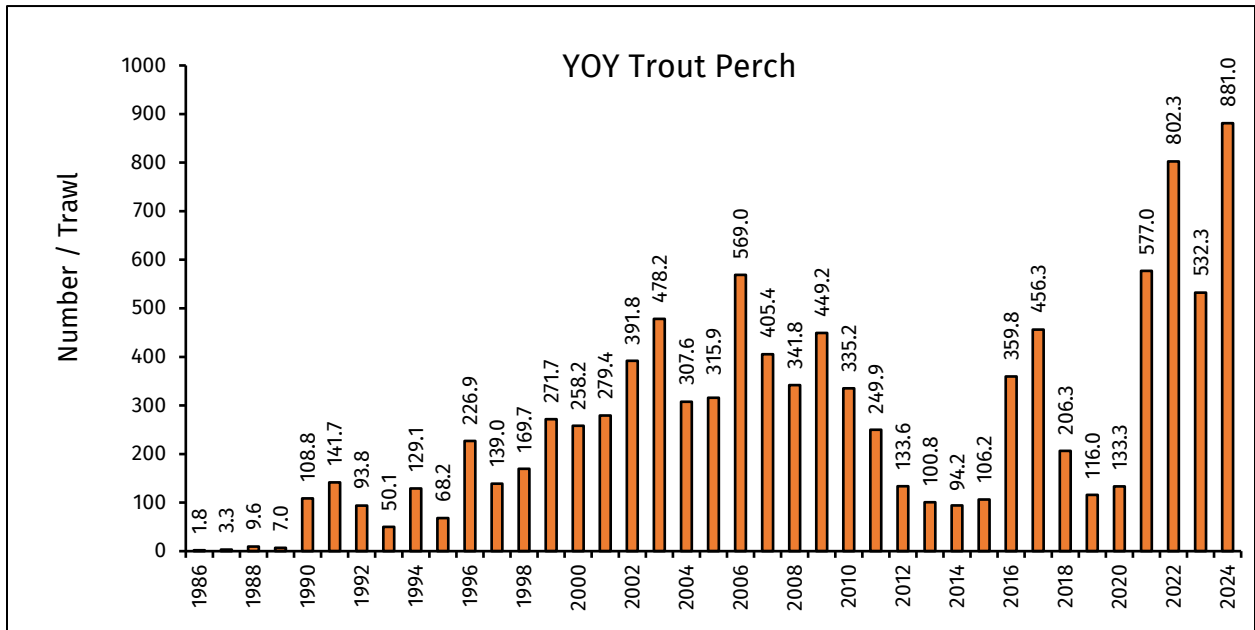


Figure 7. YOY trout perch catch rates in the Winnebago trawl survey from 1986 through 2024.

EMERALD SHINERS

Comparatively to other forage fish in the system, emerald shiners are typically caught in lower numbers with an average YOY catch of 1.3/trawl and an average adult catch of 2.0/trawl (Figure 8A and 8B). In 2024, YOY catch was 2.4/trawl and adult catch was 0.5/trawl. While catch data shows, limited numbers of emerald shiners captured in the trawl survey, reports of impressive shiner observations in many of the systems near shore habitat have been common recently by both fisheries staff and anglers. The most impressive numbers are found in channels and protected harbors.

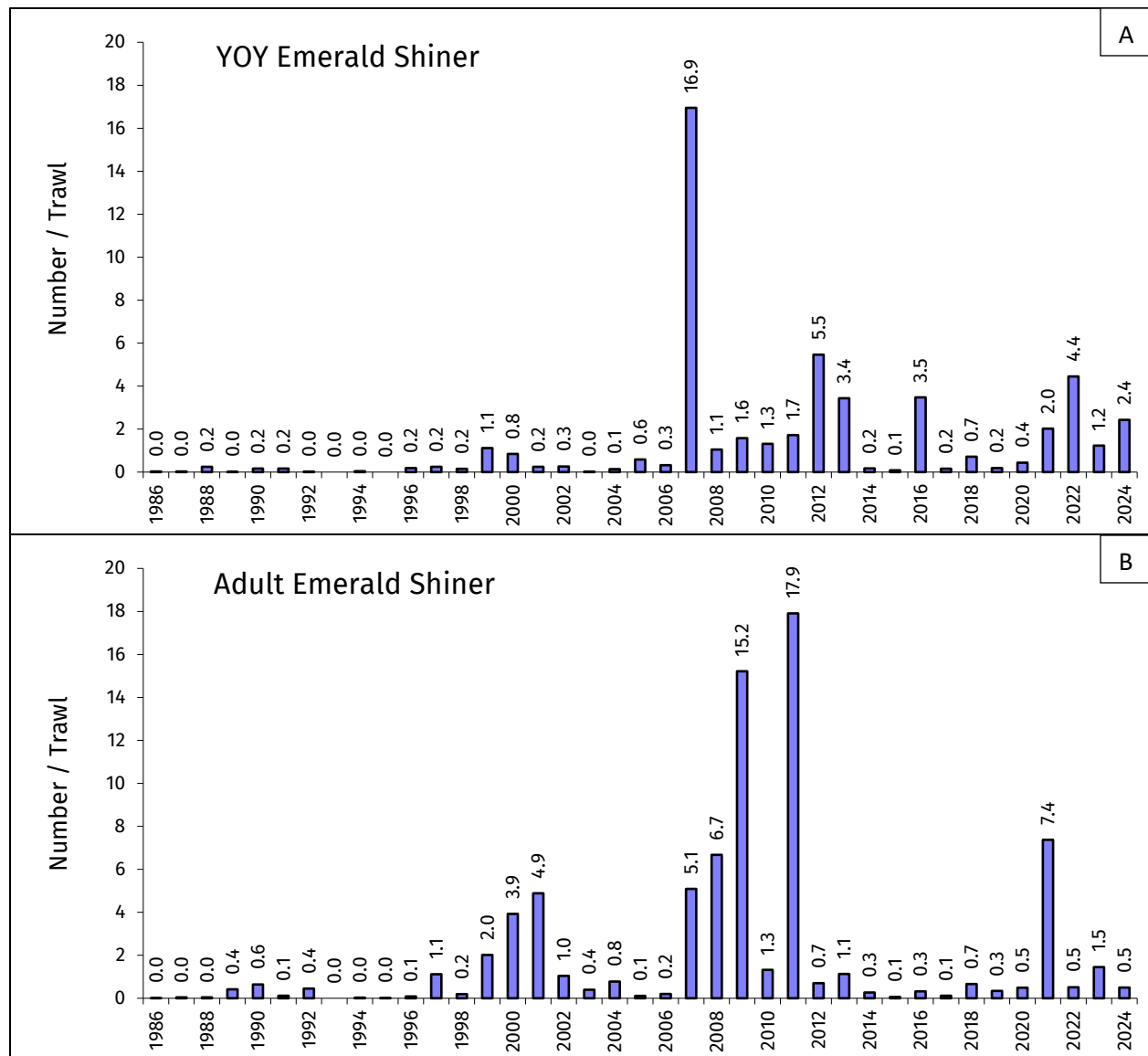


Figure 8. YOY (A) and adult (B), emerald shiner catch rates in the Winnebago trawl survey from 1986 through 2024.

FRESHWATER DRUM

Adult freshwater drum catch in 2024 was the lowest ever observed in the trawl survey at 145.7/trawl. This continues the trend of decreased catch rates for the 7th consecutive year (Figure 9B). While the length of the trawl data set makes this a notable observation, freshwater drum are by no means in low abundance.

Freshwater drum continue to dominate total adult fish catch numbers and overall biomass. The freshwater drum YOY catch

rate was 73.8/trawl, which is right around the survey average of 88.7/trawl (Figure 9A).

The decline in adult freshwater drum catch began in 2018 following a Viral Hemorrhagic Septicemia (VHS) event. There have been several notable year classes since 2018, though there has not been a correlation in adult catch rates. Only time will tell if adult numbers rebound to pre-2018 levels. YOY freshwater drum provide forage in the system and adult fish provide plentiful angling opportunities, even though they are considered by-catch to most anglers. As always, I encourage anglers to try harvesting their freshwater drum catch alongside their typical favorites as many truly enjoy eating this underappreciated species.



Image 12. Fisheries staff and volunteers with large freshwater drum captured in the 2024 Winnebago trawl survey. Photo credit: Wisconsin DNR

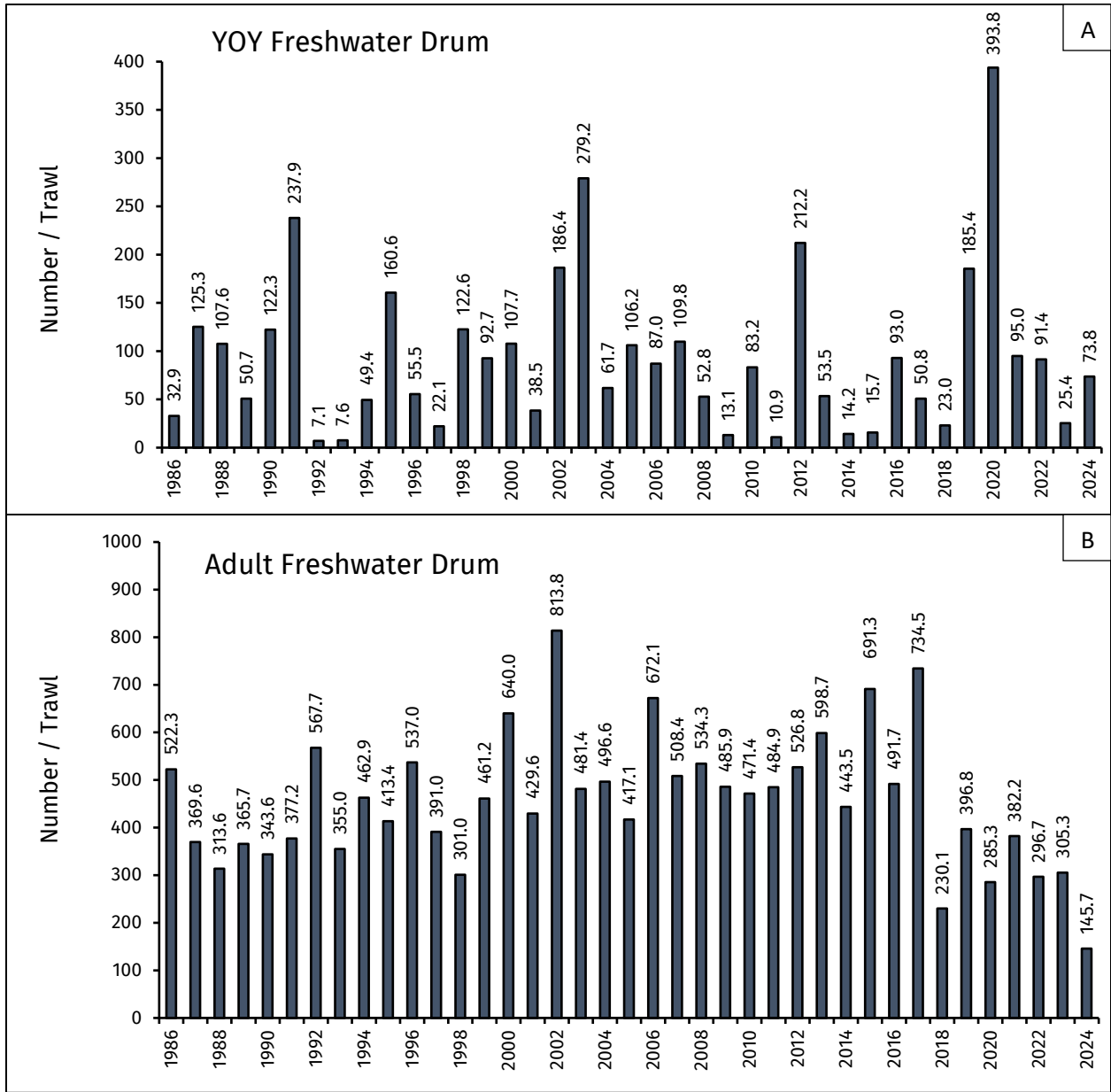


Figure 9. YOY (A) and adult (B), freshwater drum catch rates in the Winnebago trawl survey from 1986 through 2024.

GIZZARD SHAD

2024 trawl results indicate another “bust” year for gizzard shad with a YOY catch rate of 0.3/trawl (Figure 10). The last “boom” year was in 2016 with 102.4/trawl and numbers have remained close to zero since then. This being said, gizzard shad are still commonly found throughout the system, sometimes in impressive numbers in certain localities. While the trawl results indicate a relatively low abundance for gizzard shad, the population persists at a level that makes it reasonable to believe that another “boom” gizzard shad catch could occur any given year if the environmental conditions line up.



Image 13. Gizzard shad captured in the 2024 trawl survey. Photo credit: Michael Koppenhoefer

Gizzard shad are one of the most inquired about species in the trawl survey. There is good reason for this as the gizzard shad population in Lake Winnebago follows a “boom” or “bust” recruitment cycle, and the year class strength of this forage fish has many implications on the rest of the fishery. For example, when there is a “boom” year class, gizzard shad are found in very high densities, and this can result in an abundance of natural forage for gamefish, which can lead to less angler success. Alternatively, when there is a “bust” year class and other forage in the system are relatively low, such as trout perch and freshwater drum, anglers tend to have higher success. This can lead to increases in gamefish exploitation, specifically our walleye harvest estimates the year following a gizzard shad “boom” year. Sturgeon spearers are also interested in the gizzard shad catch as winter die off of gizzard shad is common resulting in an abundant food source for sturgeon and potentially heavier fish coming in on the spear.

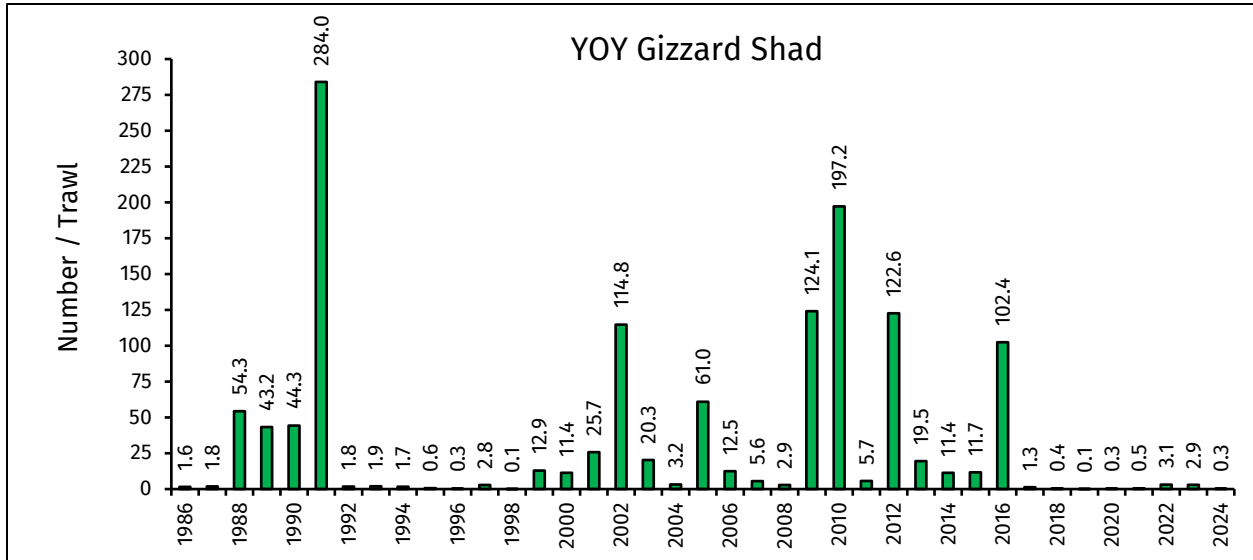


Figure 10. YOY catch rates for gizzard shad in the Winnebago trawl survey from 1986 through 2024.

Summary

As always, this year’s trawl survey provided some valuable insight on the fisheries of the Winnebago System. While catch rates for age 2+ walleye did not show the hoped-for correlation with the large year class of 2022, we still observed well above average catch, indicating an abundant population. Conditions this spring led many to have low

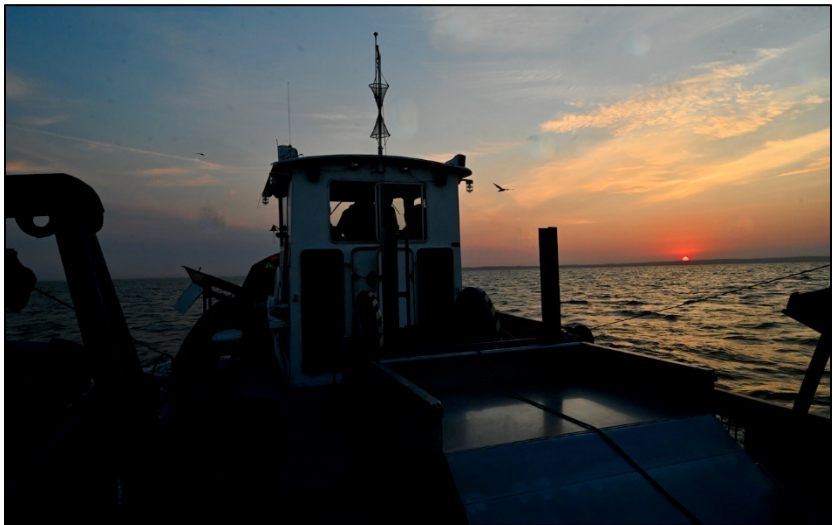


Image 14. A sunrise on Lake Winnebago as the RV Calumet heads out for a day of trawling. Photo credit: Michael Cooney

expectations for a strong walleye year class in 2024, however a rather significant year class was observed, providing a good outlook for the future of the walleye fishery. Yellow perch have their own story with strong hatches observed for the last three consecutive years in the survey. However, the adult catch showed a sharp decline in 2024 indicating that these young perch did not survive into adulthood as well as we hoped. This being said, adult catch is still right around the survey average, and size structure is high. While adult white bass catch hit a record low in the 2024, we

observed the highest YOY catch rate in over a decade. We will hope to see a correlating increase in adult catch in the coming years. Adult freshwater drum were caught in the lowest numbers ever observed in the 39-year-old survey. While gizzard shad catch indicated another “bust” year, YOY trout perch catch hit a record high and YOY freshwater drum catch was right around the average, indicating relatively strong forage availability.

The Winnebago trawl survey is the single largest survey effort on the system. It provides highly anticipated insight on the fish community composition and the current status for many species. It takes an impressive amount of time, people, and resources in order to conduct this survey and summarize the results. This large task is made much more manageable through the utilization of our dedicated volunteers. I would like to extend one final thank you to everyone who came out on the Calumet with us this season. Your time is very appreciated, thank you! I would also like to acknowledge the fisheries operations staff at Asylum Bay. The Asylum Bay crew’s operation and maintenance of the equipment needed for this survey is critical in its completion. See Appendix 5 for an update on the Asylum Bay teams recent restoration project of the RV Calumet.



Image 15. Winnebago System gamefish management team Jason Kohls, Nate Schimanski, and Angelo Cozzola with a large lake sturgeon captured in the 2024 trawl survey. Photo credit: Wisconsin DNR

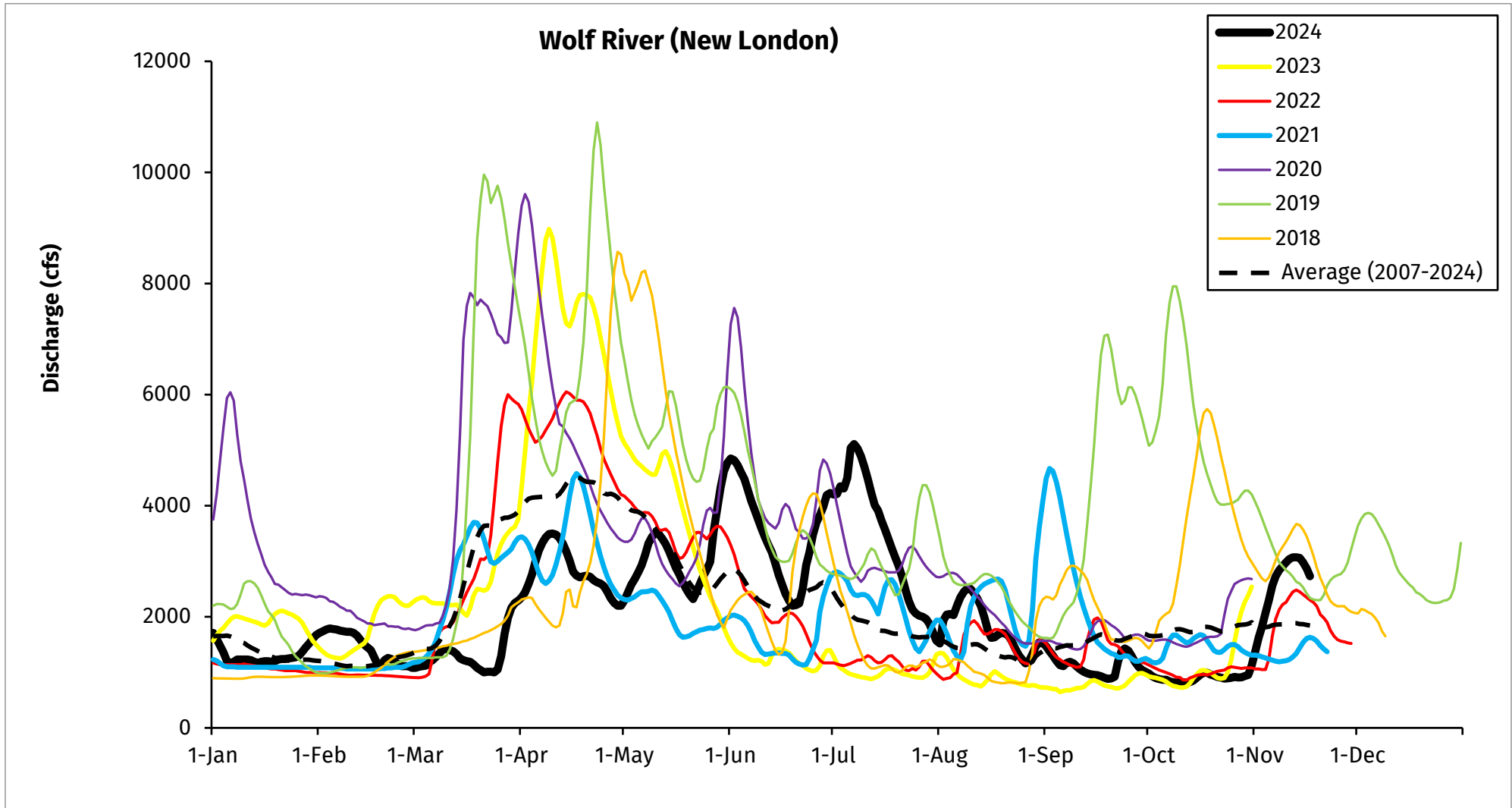
I hope you enjoyed reading the 2024 Winnebago Trawling Report. If you are interested in becoming a trawl volunteer, please contact myself at the number or email below or fisheries technician Jason Kohls at (920) 420-9943 or Jason.Kohls@wisconsin.gov for more information. Best of luck to all Winnebago System anglers in 2025!

Sincerely,

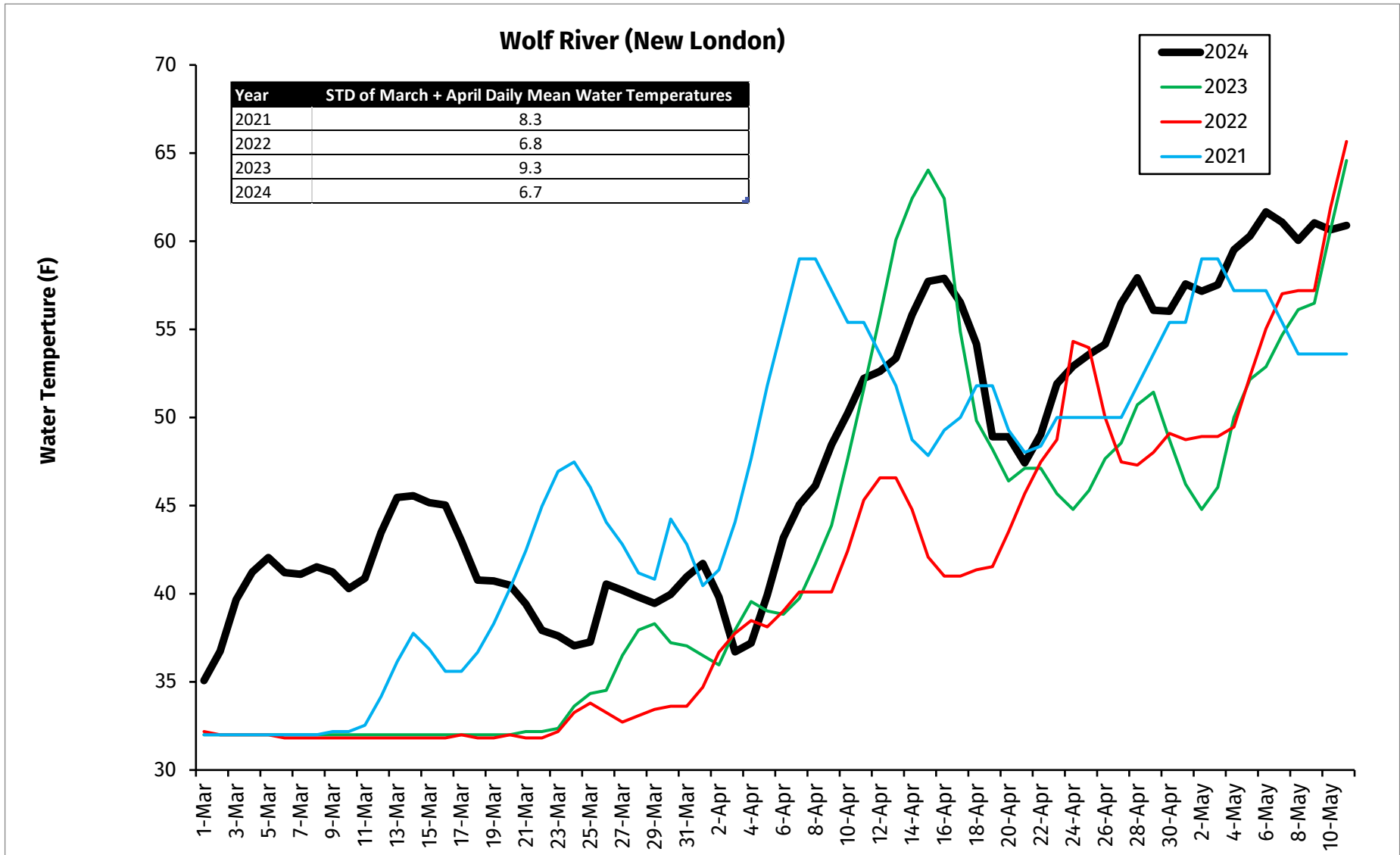
Angelo Cozzola

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Appendix 1. Wolf River hydrograph displaying discharge as cubic feet per second (CFS) at the New London gauge from 2018 through 2024 as well as the average calculated from 2007 to 2024.



Appendix 2. Temperature data at the New London gauge on the Wolf River from 2021 through 2024. Standard deviation (STD) for March and April water temperatures displayed in table.



Appendix 3. Catch rates (#/trawl) for the most common adult fish species captured in the Lake Winnebago trawl survey.

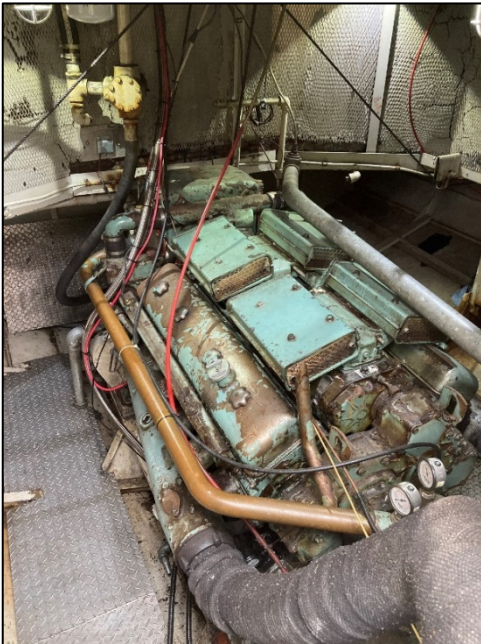
Year	Freshwater Drum	Yellow Perch	Emerald Shiner	Walleye	White Bass	White Sucker	Channel Catfish	Common Carp	Bluegill	Quillback
1986	522.3	0.4	0.0	1.4	24.3	1.6	0.3	1.1	0.0	0.4
1987	369.6	0.3	0.0	0.8	8.1	1.5	0.1	0.8	0.0	0.4
1988	313.6	0.9	0.0	0.3	5.7	1.2	0.3	0.9	0.0	0.3
1989	365.7	1.6	0.4	0.3	10.8	1.2	0.4	1.3	0.0	0.9
1990	343.6	4.3	0.6	0.2	7.9	1.4	0.3	0.8	0.0	0.8
1991	377.2	3.2	0.1	0.6	6.4	1.1	0.5	0.7	0.0	0.3
1992	567.7	2.6	0.4	4.6	11.9	1.8	0.6	1.2	0.0	0.4
1993	355.0	1.1	0.0	4.7	6.9	2.2	0.4	1.6	0.0	0.6
1994	462.9	0.7	0.0	6.3	3.8	1.6	0.5	2.3	0.0	0.5
1995	413.4	0.7	0.0	3.8	2.8	1.2	0.4	1.4	0.0	0.3
1996	537.0	1.2	0.1	3.3	7.0	2.0	0.3	0.8	0.0	0.6
1997	391.0	0.9	1.1	6.4	5.7	1.7	0.6	0.9	0.0	1.0
1998	301.0	0.6	0.2	4.5	3.2	2.0	0.6	1.5	0.0	1.3
1999	461.2	1.2	2.0	4.7	7.5	2.0	0.6	1.9	0.0	1.4
2000	640.0	2.0	3.9	2.8	27.1	2.2	0.9	1.9	0.0	1.0
2001	429.6	1.2	4.9	1.0	14.0	1.6	0.7	1.1	0.0	1.0
2002	813.8	4.2	1.0	14.4	10.1	2.9	0.9	1.0	0.0	1.6
2003	481.4	4.5	0.4	11.7	8.5	2.1	1.4	1.4	0.0	0.8
2004	496.6	2.8	0.8	8.2	6.3	1.2	0.8	1.8	0.0	0.7
2005	417.1	4.0	0.1	5.4	1.9	1.8	0.6	1.4	0.1	0.3
2006	672.1	21.4	0.2	7.5	12.2	1.4	0.8	2.3	1.7	0.5
2007	508.4	6.9	5.1	6.0	8.8	2.7	0.7	2.4	2.0	1.0
2008	534.3	5.1	6.7	3.4	4.1	2.0	0.8	3.4	0.1	0.5
2009	485.9	7.3	15.2	10.8	4.2	2.3	0.9	2.2	0.6	1.3
2010	471.4	6.1	1.3	3.4	3.7	2.0	0.8	2.7	0.1	1.0
2011	484.9	14.0	17.9	3.9	17.4	5.1	1.3	3.6	0.2	1.0
2012	526.8	5.5	0.7	4.7	10.3	5.4	2.2	1.9	0.0	0.8
2013	598.7	4.4	1.1	3.4	7.6	4.0	3.3	2.0	0.0	0.5
2014	443.5	1.6	0.3	6.6	2.8	4.6	1.7	1.6	0.0	0.3
2015	691.3	0.4	0.1	6.8	4.0	4.4	1.5	1.8	0.0	0.8
2016	491.7	0.3	0.3	4.6	2.7	3.6	1.7	0.8	0.0	0.6
2017	734.5	10.6	0.1	9.0	3.2	3.0	1.5	1.3	0.4	0.6
2018	230.1	6.7	0.7	10.3	5.0	3.2	1.4	1.6	0.1	0.9
2019	396.8	2.5	0.3	8.0	1.4	4.4	1.7	2.3	0.2	1.1
2020	285.3	4.0	0.5	5.9	2.2	2.9	1.4	2.1	0.1	1.1
2021	382.2	9.6	7.4	5.4	3.6	2.7	1.9	1.8	1.4	1.2
2022	296.7	15.5	0.5	6.4	4.6	1.9	1.3	1.4	1.6	0.8
2023	305.3	13.4	1.5	15.7	3.8	2.5	1.4	0.9	3.1	0.8
2024	145.7	4.3	0.5	5.2	1.0	1.8	1.2	1.3	0.1	0.4
Average	455.0	4.6	2.0	5.5	7.3	2.4	1.0	1.6	0.3	0.8

Appendix 4. Catch rates (#/trawl) for the most common YOY fish species captured in the Lake Winnebago trawl survey.

Year	T. PERCH	DRUM	B. CRAPPIE	WALLEYE	Y. PERCH	W. BASS	EM. SHINER	G. SHAD	SAUGER	BLUEGILL
1986	1.8	32.9	1.2	0.1	0.1	10.8	0.0	1.6	0.00	0.0
1987	3.3	125.3	2.7	0.0	0.3	9.1	0.0	1.8	0.00	0.0
1988	9.6	107.6	5.1	0.1	0.2	43.1	0.2	54.3	0.12	0.0
1989	7.0	50.7	3.8	0.1	0.1	18.8	0.0	43.2	0.02	0.0
1990	108.8	122.3	3.3	2.9	0.3	90.9	0.2	44.3	0.36	0.0
1991	141.7	237.9	0.4	7.3	1.1	32.9	0.2	284.0	0.04	0.0
1992	93.8	7.1	0.3	0.8	0.4	8.2	0.0	1.8	0.01	0.0
1993	50.1	7.6	0.1	2.5	0.2	2.3	0.0	1.9	0.00	0.0
1994	129.1	49.4	0.6	0.1	0.2	19.1	0.0	1.7	0.01	0.0
1995	68.2	160.6	3.3	0.2	0.5	43.0	0.0	0.6	0.12	0.1
1996	226.9	55.5	0.1	23.7	0.4	169.1	0.2	0.3	0.00	0.0
1997	139.0	22.1	0.3	2.2	0.1	23.4	0.2	2.8	0.00	0.0
1998	169.7	122.6	1.1	2.5	0.3	10.4	0.2	0.1	0.00	0.1
1999	271.7	92.7	5.0	0.2	0.5	48.8	1.1	12.9	0.00	0.0
2000	258.2	107.7	0.3	0.3	0.1	11.7	0.8	11.4	0.00	0.0
2001	279.4	38.5	0.2	11.8	2.2	36.5	0.2	25.7	0.00	0.0
2002	391.8	186.4	2.3	1.9	2.1	18.8	0.3	114.8	0.13	0.0
2003	478.2	279.2	1.7	6.5	1.9	60.3	0.0	20.3	0.32	0.0
2004	307.6	61.7	0.7	8.8	6.9	17.8	0.1	3.2	0.42	0.0
2005	315.9	106.2	4.4	11.1	5.6	50.9	0.6	61.0	0.06	0.1
2006	569.0	87.0	1.0	2.4	5.4	23.0	0.3	12.5	0.05	0.0
2007	405.4	109.8	3.5	0.5	5.6	10.7	16.9	5.6	0.88	0.1
2008	341.8	52.8	0.5	17.5	2.2	50.2	1.1	2.9	0.37	0.0
2009	449.2	13.1	6.8	1.4	1.8	17.2	1.6	124.1	0.33	0.0
2010	335.2	83.2	11.4	0.9	1.4	15.0	1.3	197.2	0.23	0.4
2011	249.9	10.9	1.2	10.4	5.7	102.4	1.7	5.7	0.01	0.0
2012	133.6	212.2	3.1	0.2	1.0	36.7	5.5	122.6	0.00	0.4
2013	100.8	53.5	1.0	11.9	0.9	12.1	3.4	19.5	0.01	0.0
2014	94.2	14.2	0.2	0.4	0.1	0.2	0.2	11.4	0.00	0.0
2015	106.2	15.7	1.4	1.4	0.7	4.3	0.1	11.7	0.07	0.0
2016	359.8	93.0	24.1	9.9	2.3	17.6	3.5	102.4	0.02	0.0
2017	456.3	50.8	0.9	4.1	0.8	7.4	0.2	1.3	0.00	0.0
2018	206.3	23.0	2.1	5.1	3.5	0.8	0.7	0.4	0.00	0.1
2019	116.0	185.4	2.7	5.9	4.2	7.9	0.2	0.1	0.01	0.0
2020	133.3	393.8	13.9	3.6	13.8	18.0	0.4	0.3	0.01	1.3
2021	577.0	95.0	10.4	8.2	5.1	4.2	2.0	0.5	0.30	0.1
2022	802.3	91.4	3.0	17.4	19.5	4.2	4.4	3.1	0.00	0.1
2023	532.3	25.4	4.7	2.8	9.6	1.0	1.2	2.9	0.00	0.3
2024	881.0	73.8	0.5	9.7	7.1	21.1	2.4	0.3	0.04	0.1
Average	264.1	93.8	3.3	5.0	2.9	27.7	1.3	33.6	0.1	0.1

RV Calumet Restoration Project

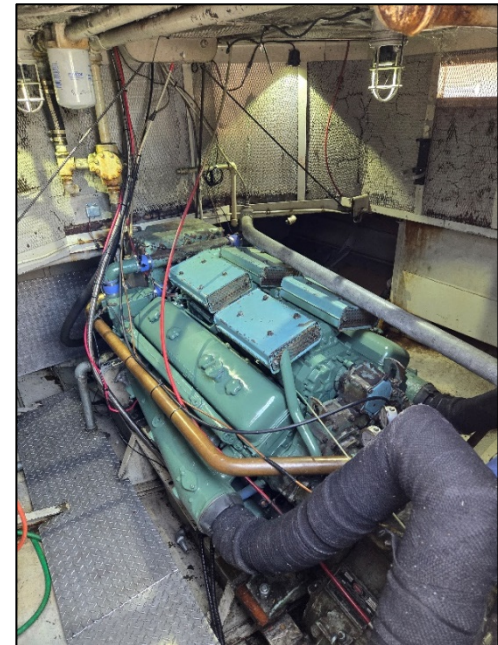
In the spring of 2024, an in-chassis engine rebuild was completed on the RV Calumet. The engine is a 1977 Detroit 12V71. This in-chassis rebuild consisted of installing new rod and main bearings, liners, pistons, rings, connecting rods, fuel injectors, fuel pump, reconditioned cylinder heads, reconditioned blowers, and all new gaskets and hoses. The exhaust was also removed and cleaned. The engine also received a fresh coat of paint after the rebuild was completed. In addition to the engine rebuild, the electrical system was updated from the antiquated 32-volt system to a more modern 12/24-volt system. Other work completed included an ultrasonic hull thickness test, the bilges were cleaned and painted, and routine annual maintenance. – Kyle Olsen, DNR Fisheries Technician, Advanced



Pre-rebuild.



Blowers, heads, pistons, and cylinder liners removed.



Post-rebuild.