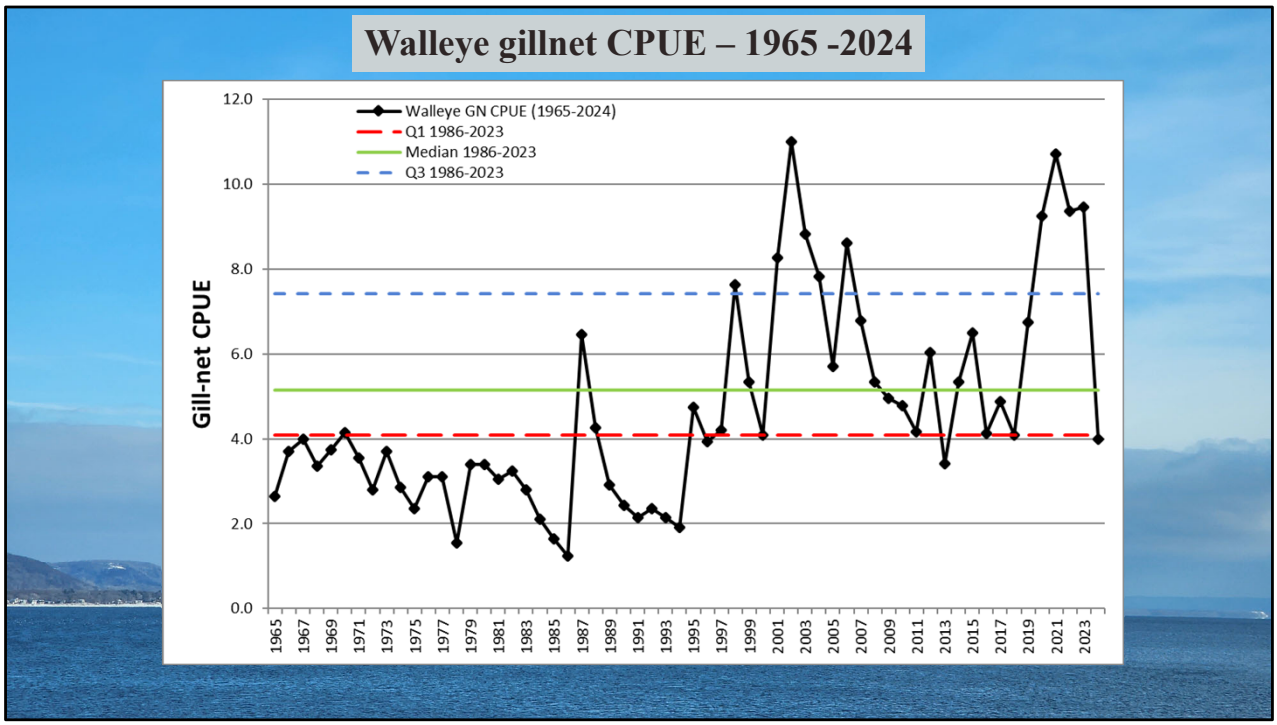
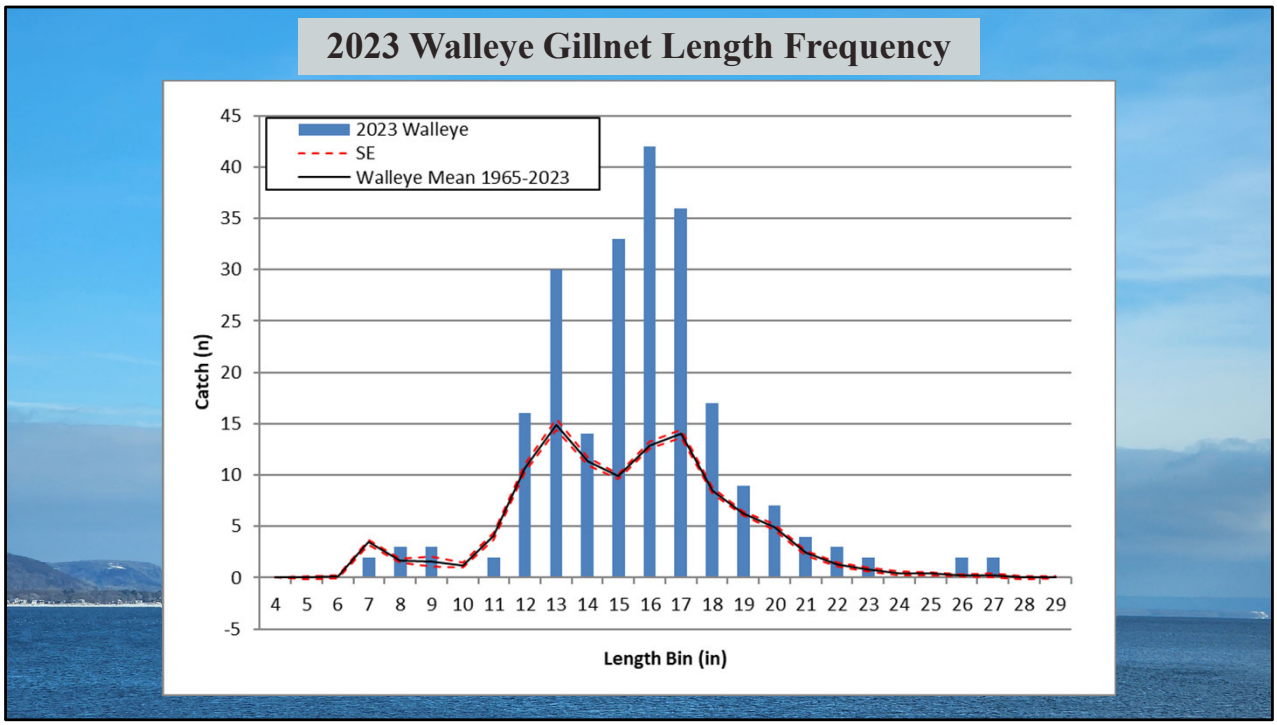
View of open water on Lake Pepin January 11, 2024. Limited or temporary ice cover was experienced during December 2023, but unseasonably warm temperatures resulted in one of the latest recorded ice-up dates for Pepin. A deep cold snap beginning on January 12th covered most of the lake and by January 13th Lake Pepin was fully ice covered. After two weeks of considerable cold warm temperatures returned creating treacherous ice conditions on most local lakes and rapidly reversing the main channel ice buildup in upper Pool 4 that occurred during the shutdown at the Prairie Island Nuclear Generating Plant (PINGP).



Catch per Unit Effort (CPUE) represents the average number of fish captured per net. Annually as part of the large lake survey 24 gill nets are set for ~24 hour periods in the first week of October. These gillnets provide a cross section look at the adult populations of some of the most popular gamefish in our lakes (Walleye, Sauger, Yellow Perch, etc). It should be noted that some gamefish like Largemouth and Smallmouth Bass are poorly sampled using this type of gear.

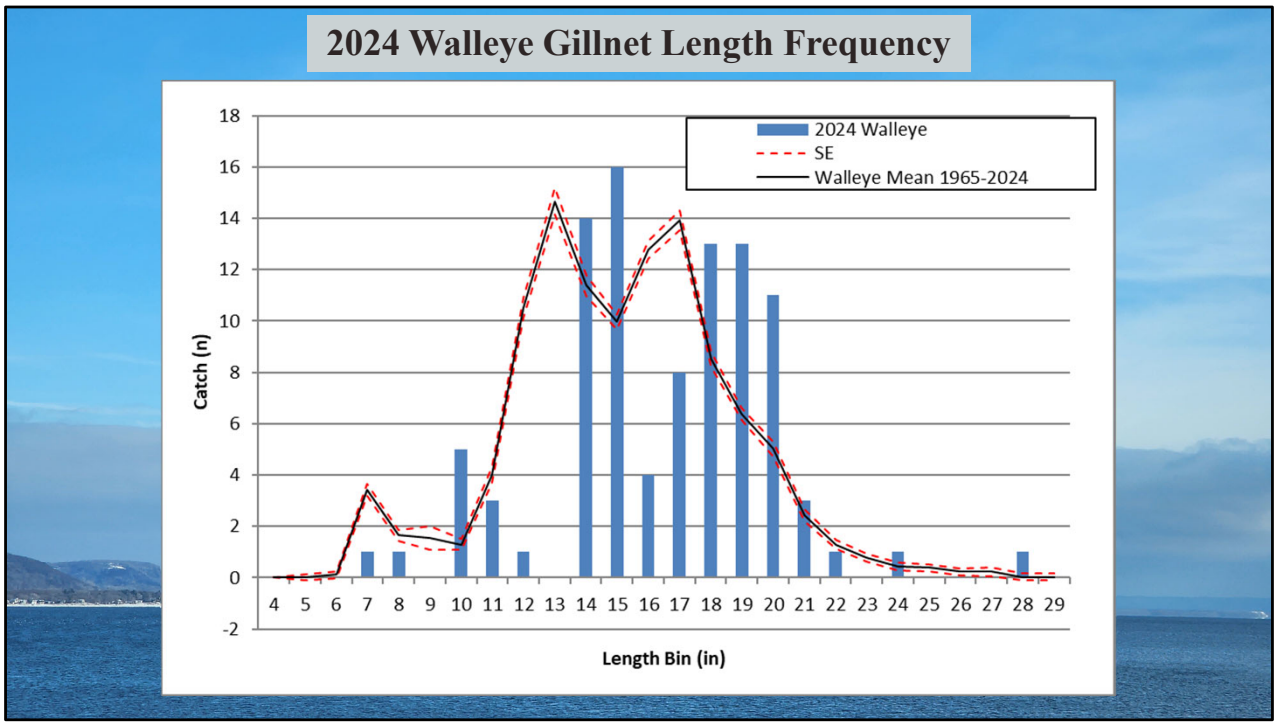
This figure shows that Lake Pepin's walleye population was at a high point from 2020-2023 similar to historic highs driven by the incredibly strong 2001 year class. This is driven by strong year classes (2018, 2019, 2020, and 2021) that have emerged in recent years. The 2021 CPUE was 7 Walleyes short of the all time record set in 2003, but unlike in that case there is a series of year classes feeding into this surge and the last of those strong year classes just fully recruiting to the gear in 2023.

Note: As I have mentioned in these presentations many times before when interpreting these figures the most important thing to consider is trends. Individual values are meaningful, but can be influenced by conditions like water temperature or in the case of Lake Pepin flow/water level. This includes the 2024 netting which was influenced by extreme wind at the beginning of the survey likely contributing to across the board reductions in catch for most species.



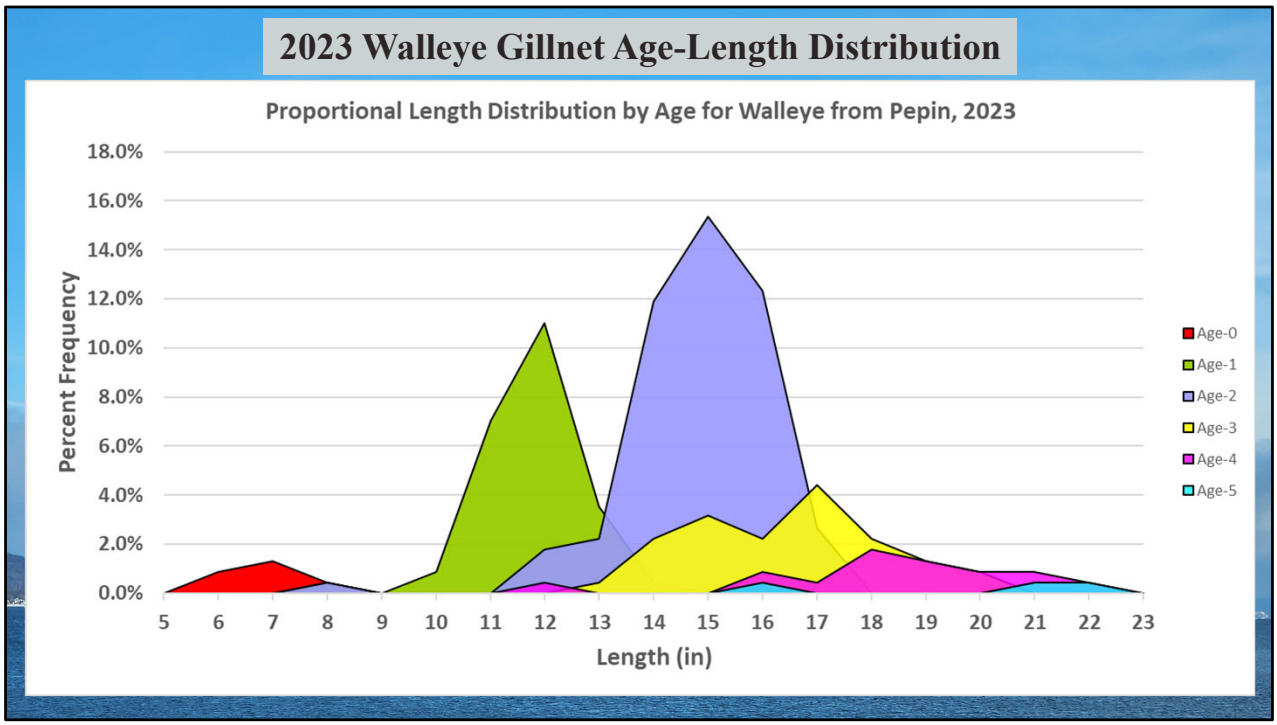
This slide represents the number of Walleyes from each 1 inch size group that was captured in the 2023 gillnets (blue bars) and the long term mean for the same information from 1965-2023 represented by the black line.

As you can see almost all length ranges of Walleyes seem to be over performing the long term mean as indicated by the black line.



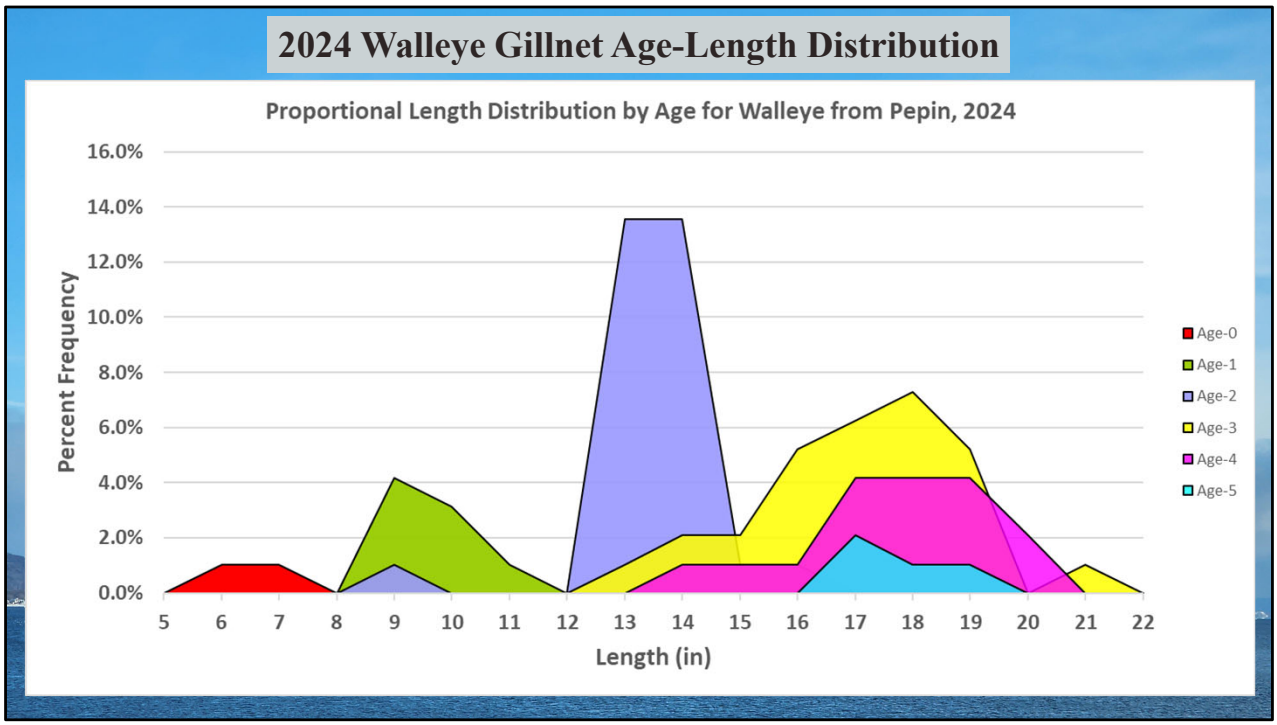
This slide represents the number of Walleyes from each 1 inch size group that was captured in the 2024 gillnets (blue bars) and the long term mean for the same information from 1965-2023 represented by the black line.

Compared to the previous slide note the bars at 10”-11” and 14”-15”. These are the result of reduced growth in our Age 1 and Age-2 Walleye. During a “normal” year they would have fallen roughly under the peaks in the Walleye mean (black line) at 13” and 16”-17” respectively. This shift is likely due to a late shad spawn we believe occurred due to the cold June conditions in 2024. This late spawn seems to have decoupled the portion of the walleye population that is “gape limited” (has mouths too small to continue to eat shad from the previous year) in this case Age-2 and younger from the high energy food source that shad represent in the river fishery.



Similar to the length frequency slide (1 slide back) this slide shows the proportion of the Walleye catch in 2023 that fell in each (1") length group. I have color coded these fish by age so that you can see how each of the age groups (0-5) contributes to the catch. Additional ages are not displayed to prevent confusion, but would largely overlap what is seen for Age-4 and Age-5 Walleye, with an ever broader spread as more differential growth between sexes and individuals causes a wider range of lengths with increasing age.

The dual peaks in Age-4 and Age-5 fish are likely due to differing growth rates between the sexes and can be seen developing in the Age-3 (yellow) band as well.



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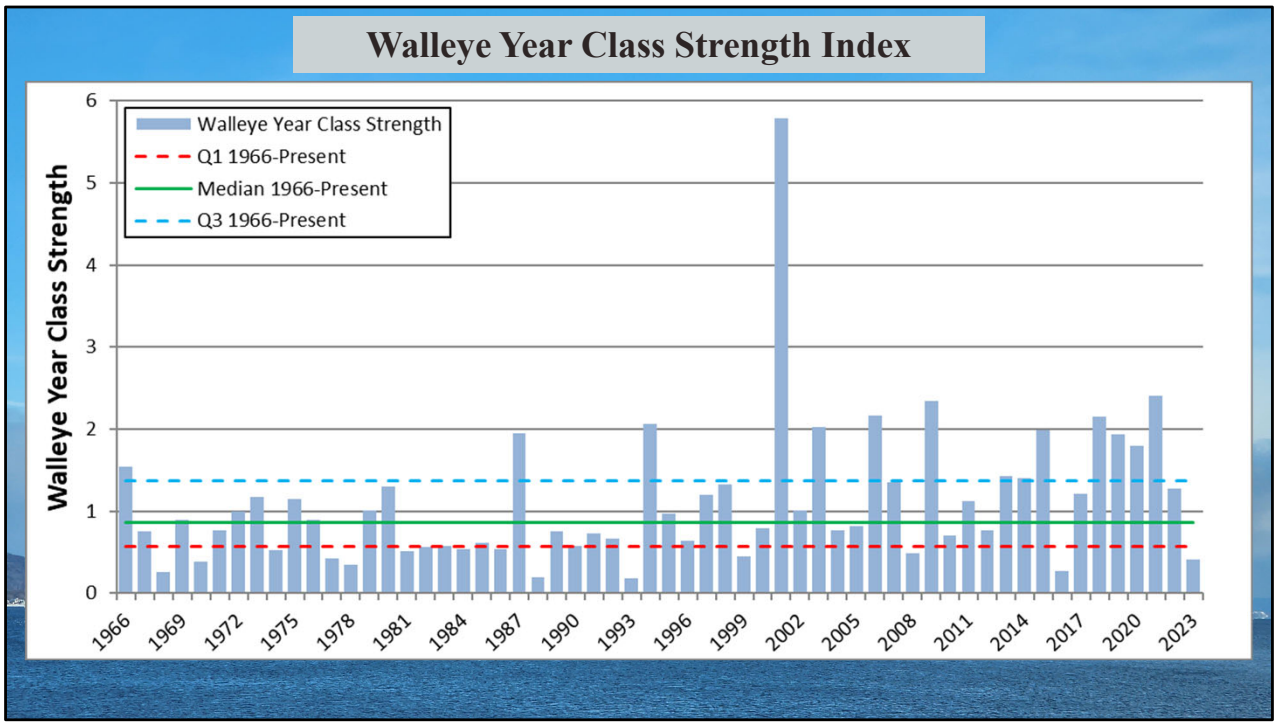
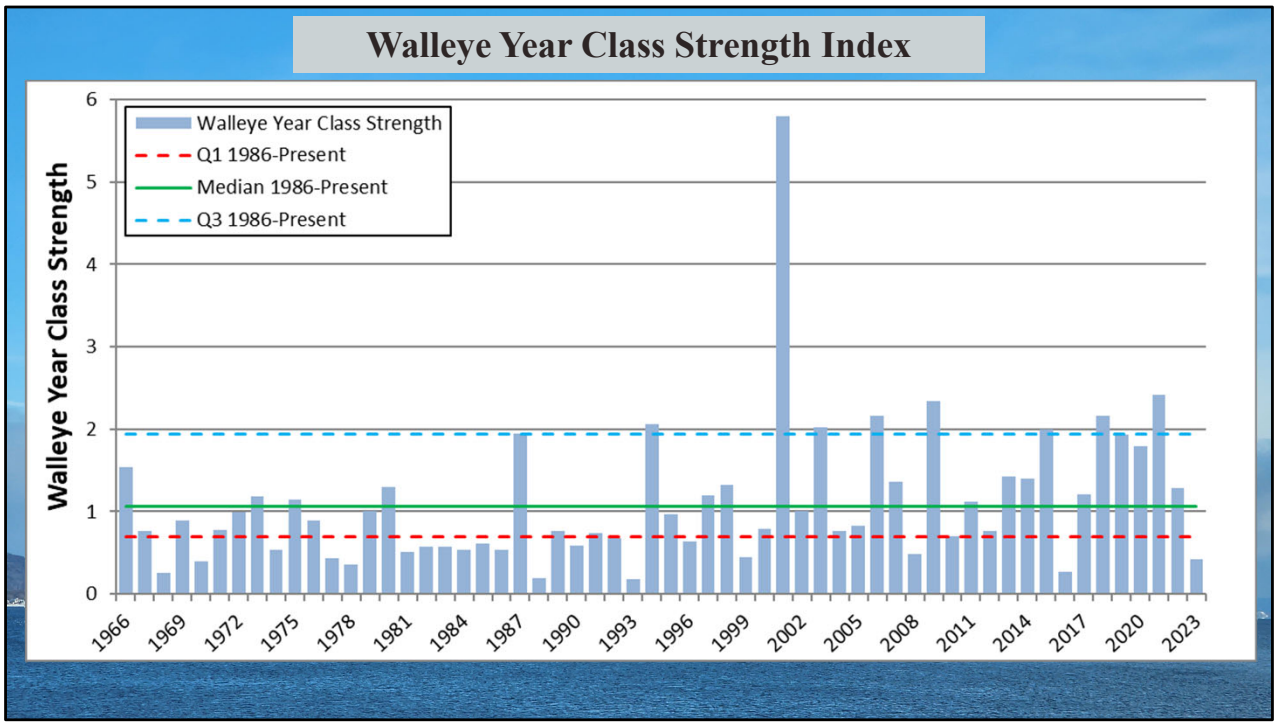
In this case the green and blue peaks representing Age-1 and Age-2 Walleyes respectively can be seen to have shifted to the left from the previous slide. This is a visual representation (by age) of what was described in the composite length frequency slides earlier.



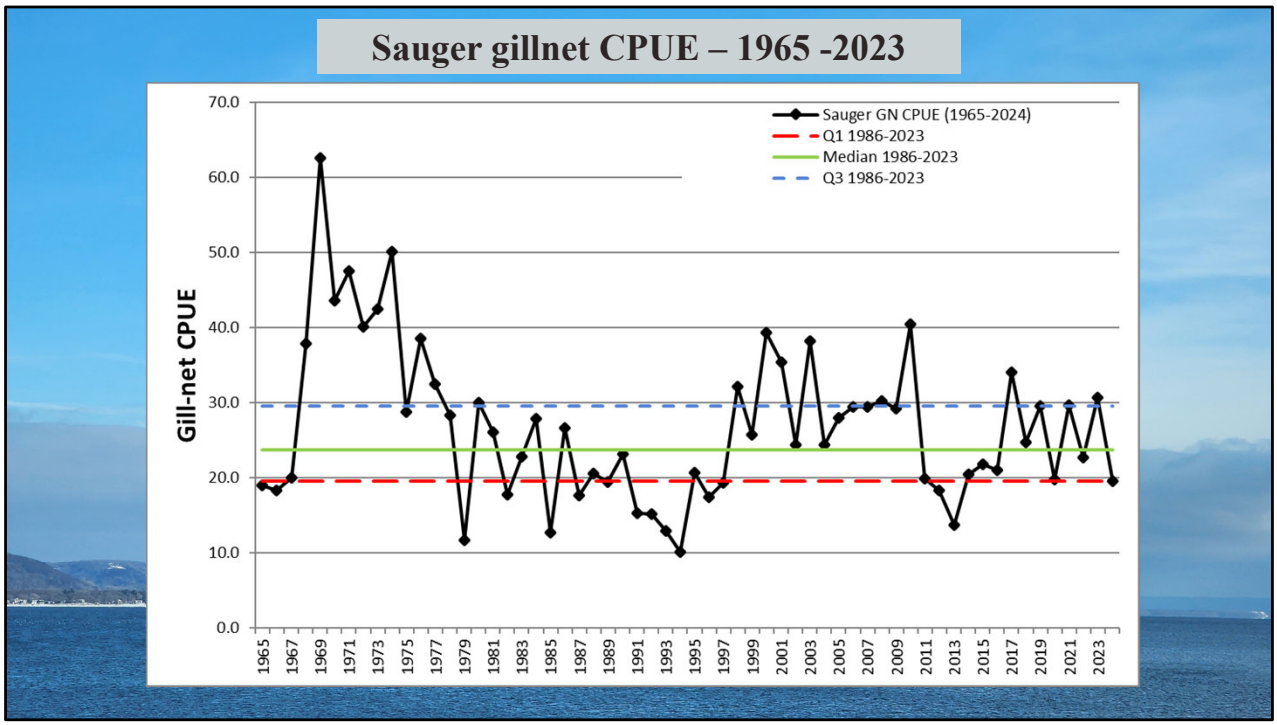
Year class strength estimate for Walleye with the familiar quartiles that have been used to describe year classes as strong (above the dashed blue line), average (between the dashed blue and dashed red lines), or weak (below the dashed red lines). The quartile lines in this case are based on the entire gill netting history for Lake Pepin and includes year classes from 1966-present. Using this extended data set as a reference you can see a fairly dramatic increase in the number of “strong” year classes in recent decades.

Note: The estimate of year class strength relies on 3 years of catch data, so the last two estimates are estimates with only partial data.



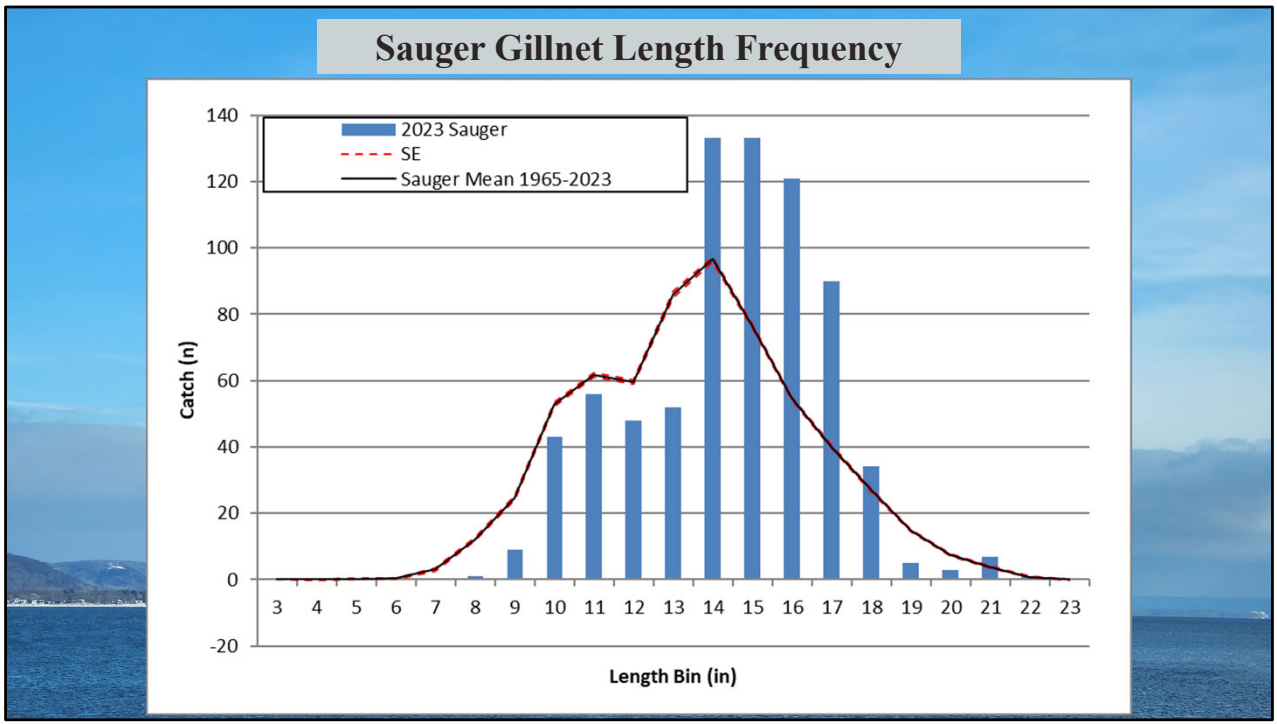
Year class strength estimate for Walleye with the familiar quartiles that have been used to describe year classes as strong (above the dashed blue line), average (between the dashed blue and dashed red lines), or weak (below the dashed red lines). The quartile lines in this case are based on the gill netting results during the Large Lake Program includes year classes from 1986-present. Because this does not take into account the generally lower year class strengths from the 60s, 70s, and early 80s the quartile lines are shifted up a bit from the previous slide. Based on this frame of referencethere were no strong year classes measured prior to 1987.

Note: The estimate of year class strength relies on 3 years of catch data, so the last two estimates are estimates with only partial data.



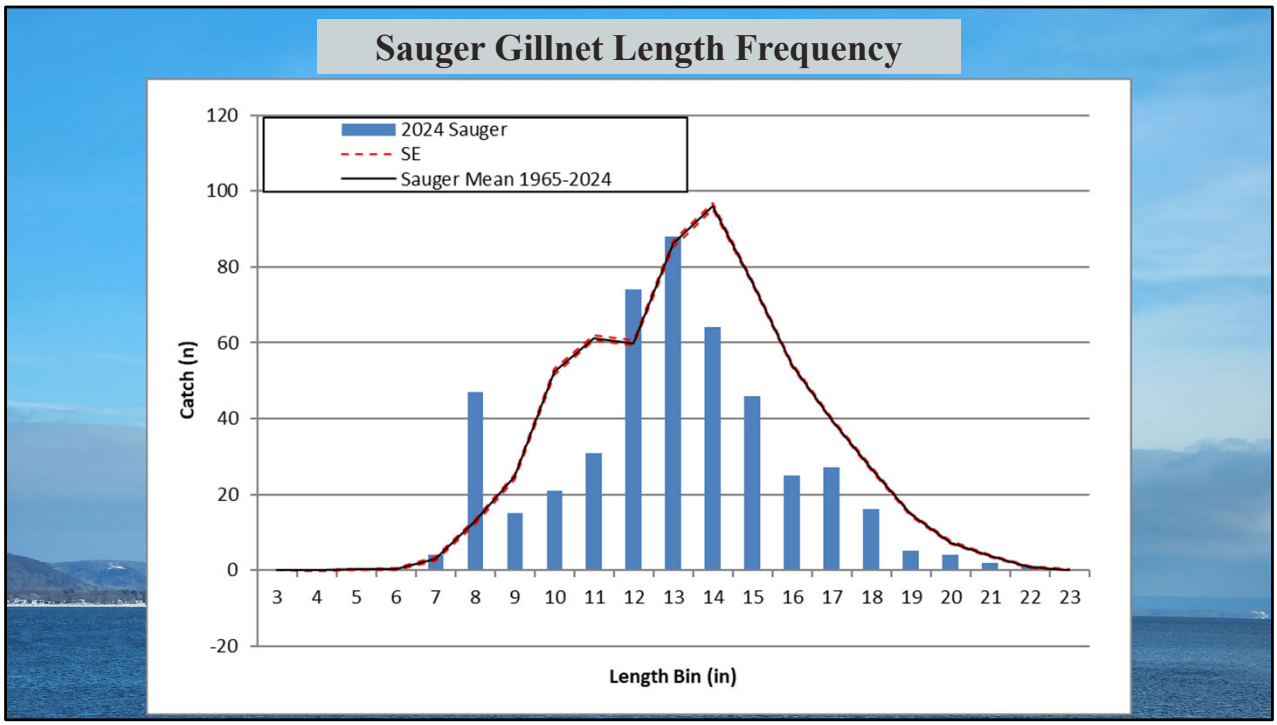
See Slide 3 for more complete description of this type of figure.

This figure shows that Lake Pepin's Sauger catch rate dropped in 2024 (as did most species). Several strong year classes in the past 6 years have contributed to the recent higher catch rates. The very strong (3rd highest recorded) year class from 2020 is the primary driver for the numbers of Sauger in the system now as indicated in the next two slides.



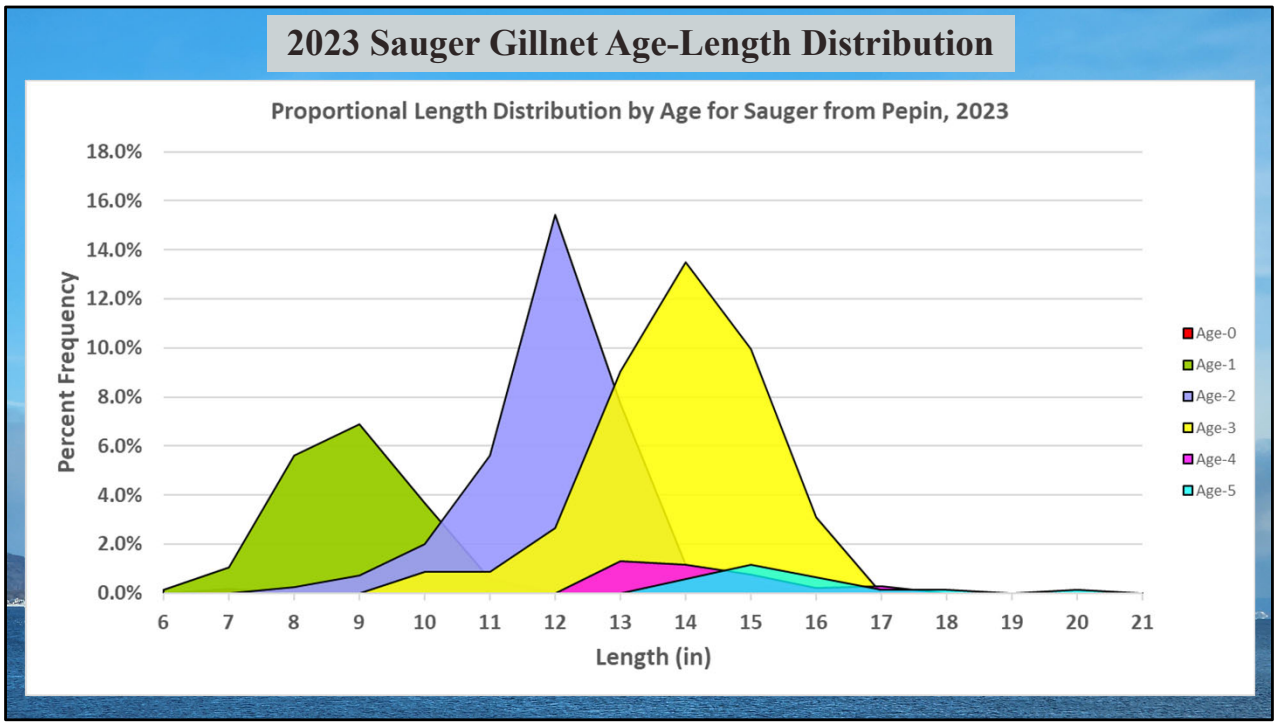
This slide represents the number of Sauger from each 1 inch size group that was captured in the gillnets (blue bars) and the long term mean for the same information from 1965-2023 represented by the black line.

As you can see Sauger seem to be over performing the long term mean as indicated by the black line from 14”-18” with most of this section of the graph displaying members of the 2020 year class (roughly 13”-17”).



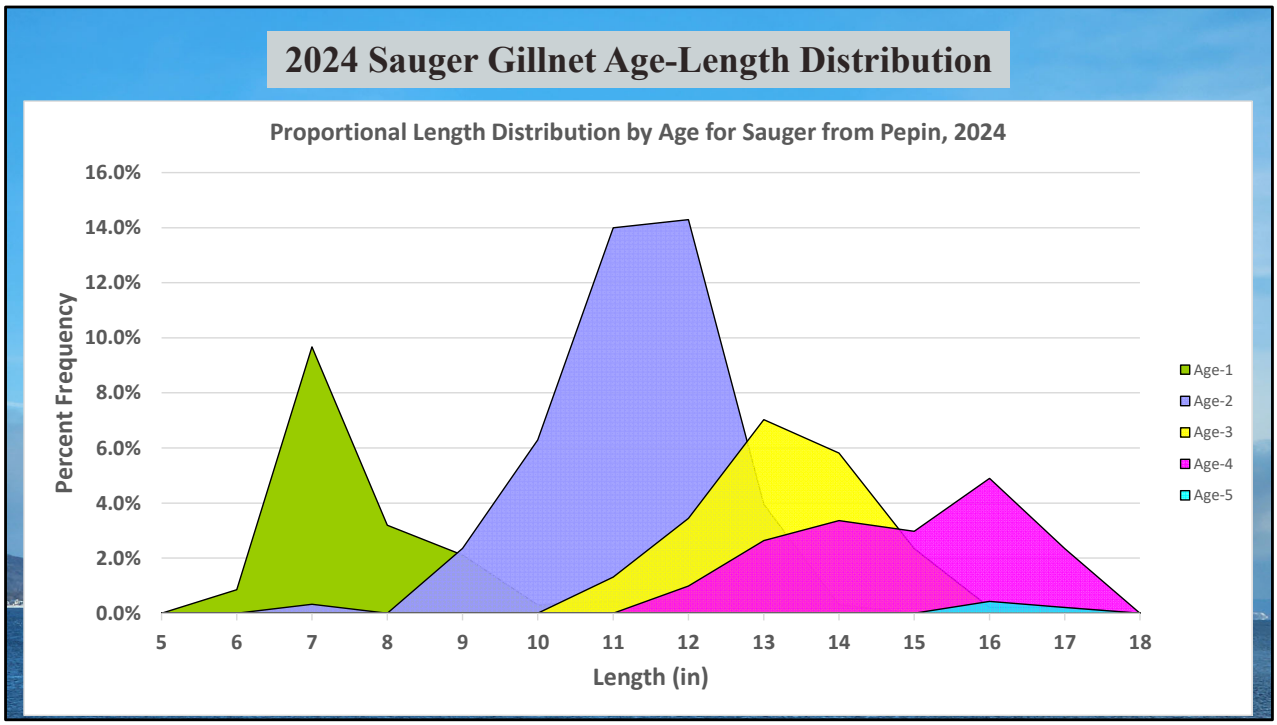
This slide represents the number of Sauger from each 1 inch size group that was captured in the gillnets (blue bars) and the long term mean for the same information from 1965-2024 represented by the black line.

Just like with the Walleye length frequency figures you can see the blue columns shifted to the left of the black line. This is likely to be related to the shad decoupling discussed earlier, but in the case of Sauger it was Age-1 through Age-3 that was affected. This is likely the result of gape limitations preventing those ages from feeding on the previous years shad.



Similar to the length frequency slide (1 slide back) this slide shows the proportion of the Sauger catch in 2023 that fell in each (1") length group. I have color coded these fish by age so that you can see how each of the age groups (0-5) contributes to the catch. Additional ages are not displayed to prevent confusion, but would largely overlap what is seen for Age-4 and Age-5 Sauger, with an ever broader spread as more differential growth between sexes and individuals causes a wider range of lengths with increasing age.

The wide yellow band for Age-3 represents the 2020 year class that is the 3rd highest on record and will provide the bulk of the angler catch/harvest for the next year or so.

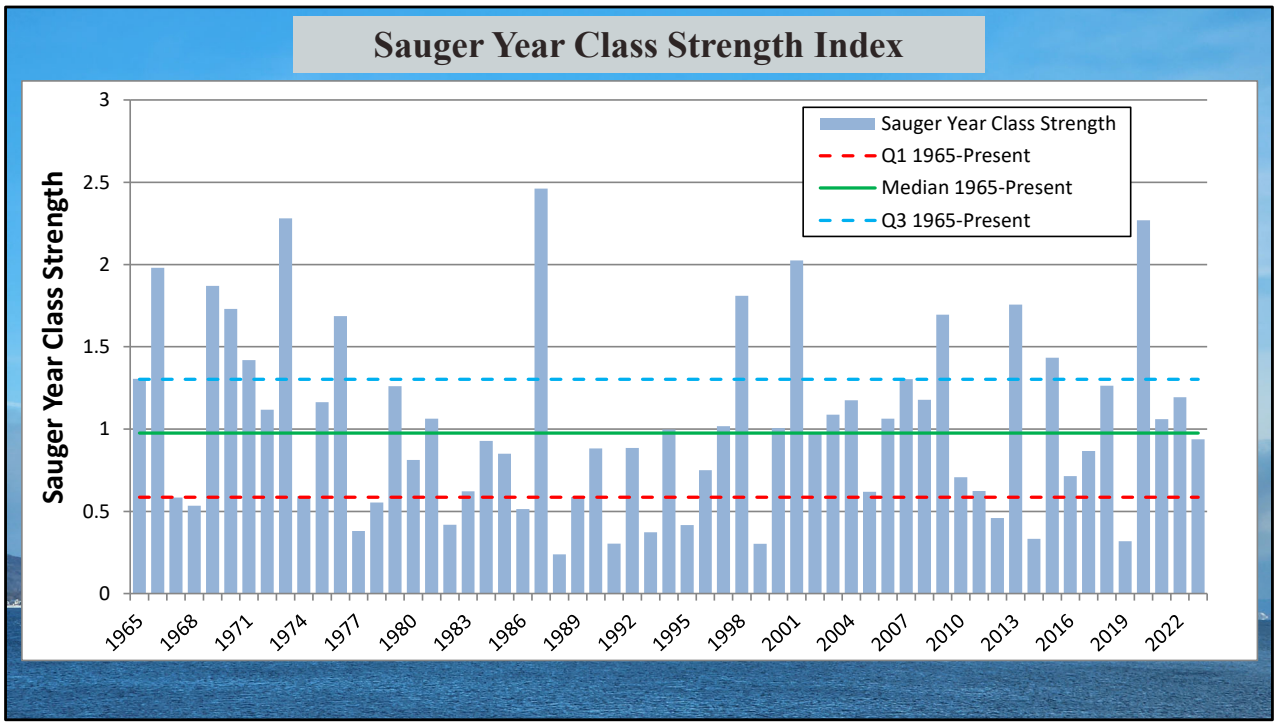


Similar to the length frequency slide (1 slide back) this slide shows the proportion of the Sauger catch in 2024 that fell in each (1") length group. I have color coded these fish by age so that you can see how each of the age groups (0-5) contributes to the catch. Additional ages are not displayed to prevent confusion, but would largely overlap what is seen for Age-4 and Age-5 Sauger, with an ever broader spread as more differential growth between sexes and individuals causes a wider range of lengths with increasing age.

The wide pink band for Age-4 represents the 2020 year class that is the 3rd highest on record and will continue to provide the bulk of the angler catch/harvest this year.

In this case the green, blue, and yellow peaks representing Age-1, Age-2, and Age-3 Sauger respectively can be seen to have shifted to the left from the previous slide. This is a visual representation (by age) of what was described in the composite length frequency slides earlier.

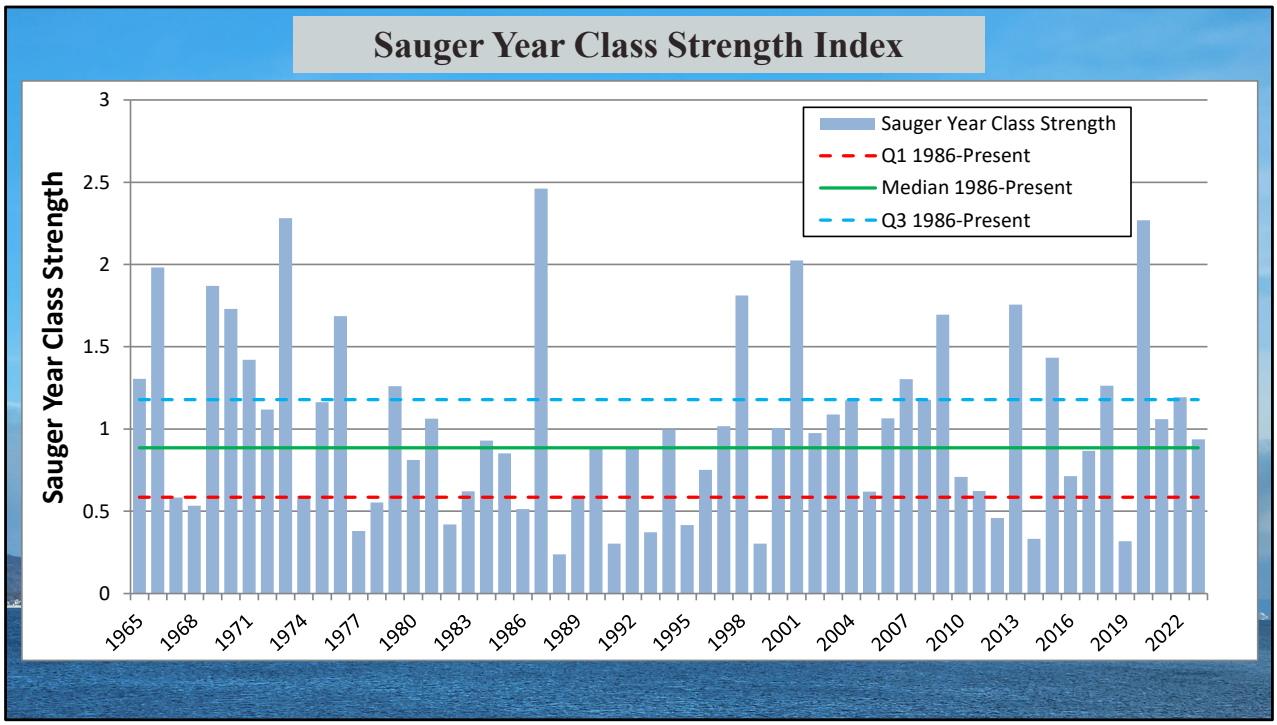
Note: Flipping back and forth between slides will not show this as well as in the Walleye example because the scale used on the x axis changes between slides please refer to the values under the peaks to compare them.



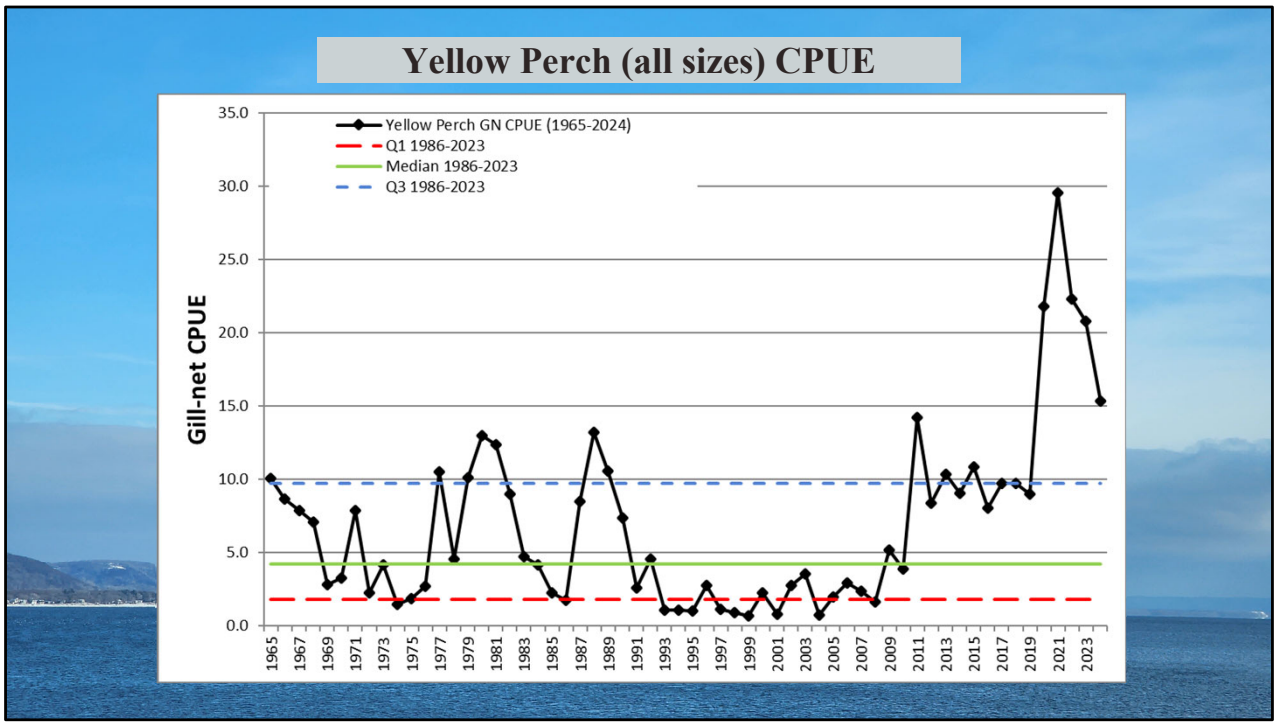
Shows the year class strength estimates for Sauger with the familiar quartiles that have been used to describe year classes as strong (above the dashed blue line), average (between the dashed blue and dashed red lines), or weak (below the dashed red lines) in recent years.

The 2020 year class is clearly a driver of the current Sauger population based on this figure, but it is important to not that while the 2021 and 2022 year classes aren't particularly strong they are consistent and similar to those from the early 2000s that drove our last period of consistently strong Sauger catch rates.

Clusters of good-strong year classes (like 2000-2009) seem to be primary drivers in higher Sauger net catches rather than occasional very large year classes that seem to be the dominant drivers in our Walleye population. In the 2010s the situation flipped however with more consistent Walleye recruitment and sporadic Sauger recruitment. The impact of this change on population trends is still unknown at this time but catch rates remain good for both species.

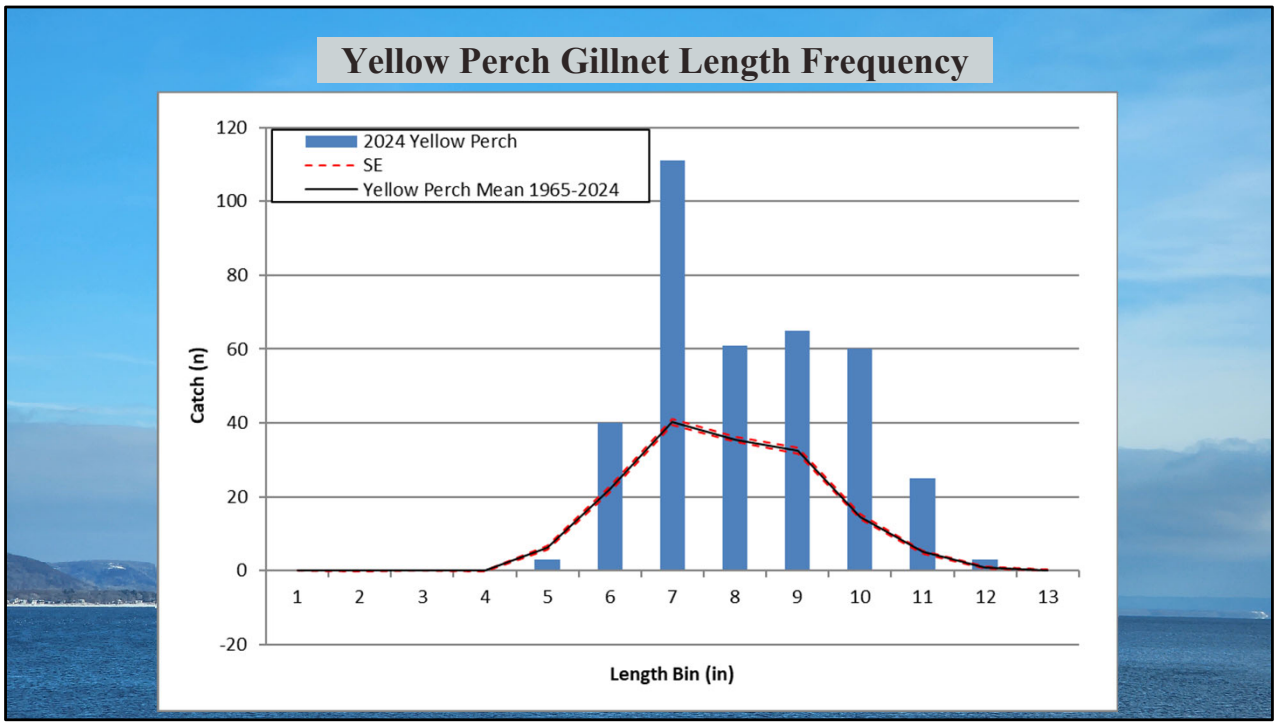


Same as the last slide, but note that a cluster of strong year classes in the late 60s and early 70s means that this set of quartiles based on the Large Lake Sampling period of 1986-present is slightly lower than the long term set in the last slide. This is the opposite of what was noted for Walleye, but a smaller overall change between the two sets for Sauger.



Yellow Perch gill net catch history showing the recent increase in Yellow Perch population likely as a result of increased water clarity and submerged aquatic vegetation needed for perch reproduction (2008-present).

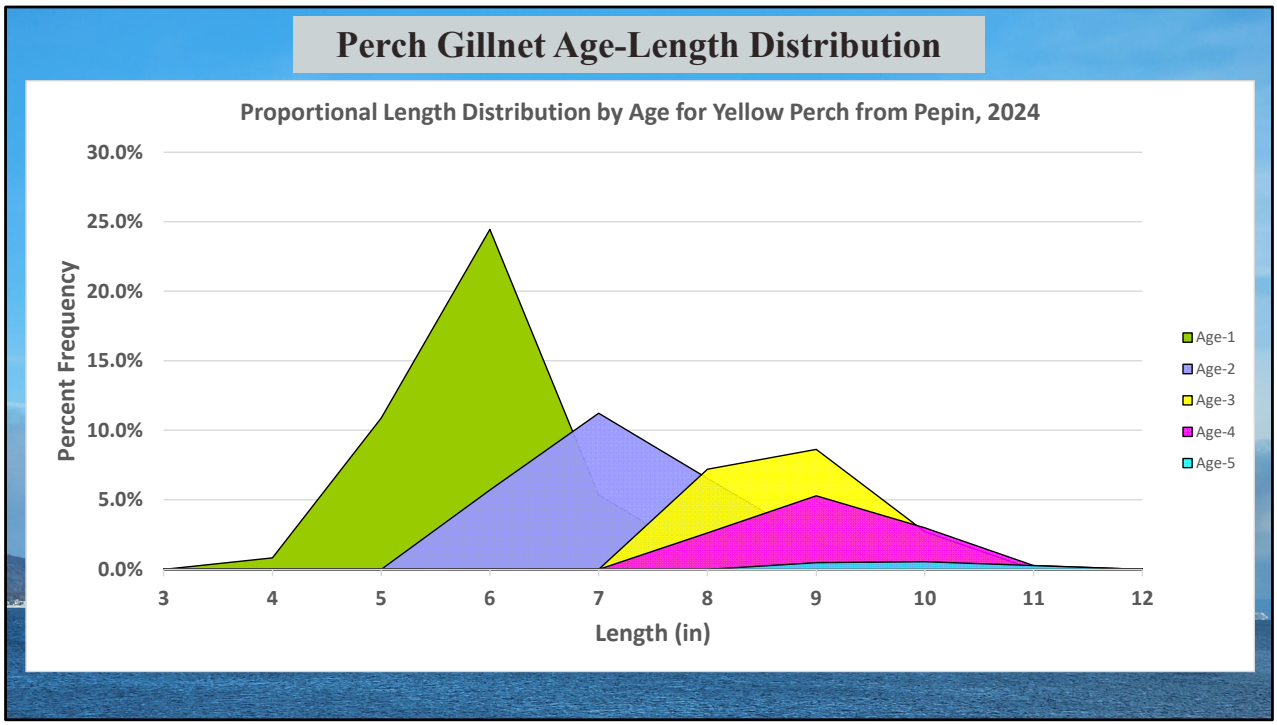
As you can see we set a new record for CPUE of Yellow Perch in 2020 and again in 2021. It will be interesting to see how this new increase alters the perch population dynamics. The initial surge in 2011 seems to have reproduced and shifted Yellow Perch numbers to a new equilibrium area around 9/net. It remains to be seen if the increase in 2020-2021 has settled into a new equilibrium near 21/net and the lower value in 2024 was a result of windy conditions or if we will begin to see less consistent catches of Yellow Perch going into the future.



This slide represents the number of Yellow Perch from each 1 inch size group that was captured in the gillnets (blue bars) and the long term mean for the same information from 1965-2023 represented by the black line.

Unsurprisingly given their recent resurgence in numbers Yellow Perch are over performing their long term mean in nearly all length categories sampled.

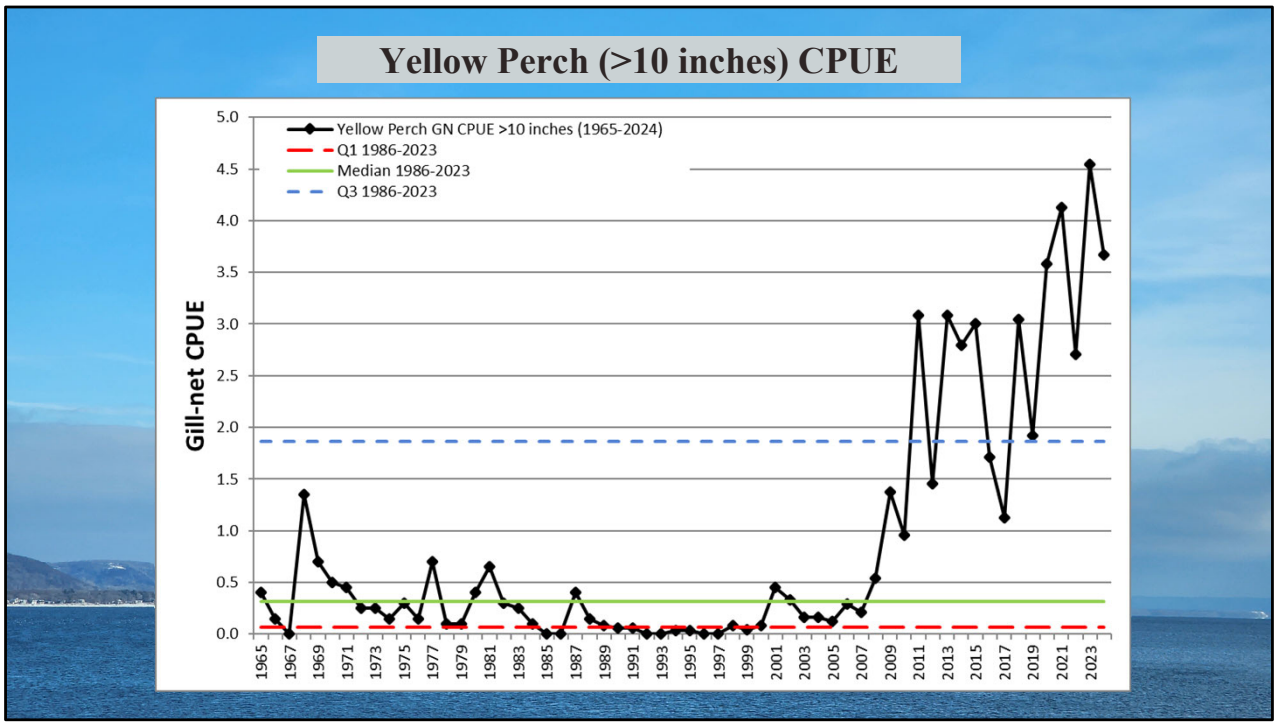
Note: Yellow Perch do no reliably recruit to the mesh size of our gill nets until ~5” in length.



Similar to the length frequency slide (1 slide back) this slide shows the proportion of the Yellow Perch catch in 2024 that fell in each (1") length group. I have color coded these fish by age so that you can see how each of the age groups (1-5) contributes to the catch. Additional ages are not displayed to prevent confusion, but would largely overlap what is seen for Age-4 and Age-5 perch, with an ever broader spread as more differential growth between sexes and individuals causes a wider range of lengths with increasing age

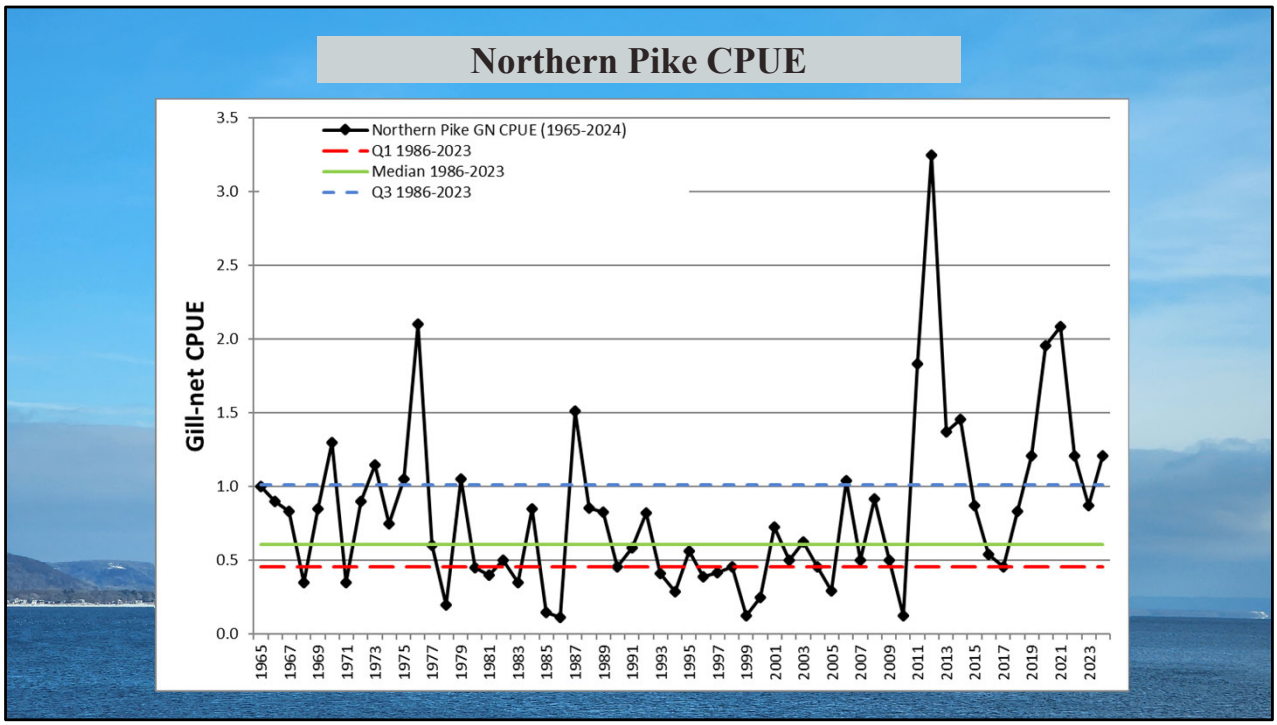
As you can see Yellow Perch in Lake Pepin have the potential to get to 9" in length by Age-2 which is equivalent to three summers of growth (Age-0 when they hatch in the spring, Age-1, Age-2 then captured in October).

Also mentioned to the group is that nearly 100% of young of year male Yellow Perch examined in the system have been sexually mature meaning they are likely to reproduce the spring after they were hatched. Virtually all of the perch in Pool 4 (Male and Female) that we have looked at are mature at Age-1 (2 summers of growth). This is much faster growth than most areas of Minnesota, but inversely seems to come with a shorter lifespan compared to those other populations.

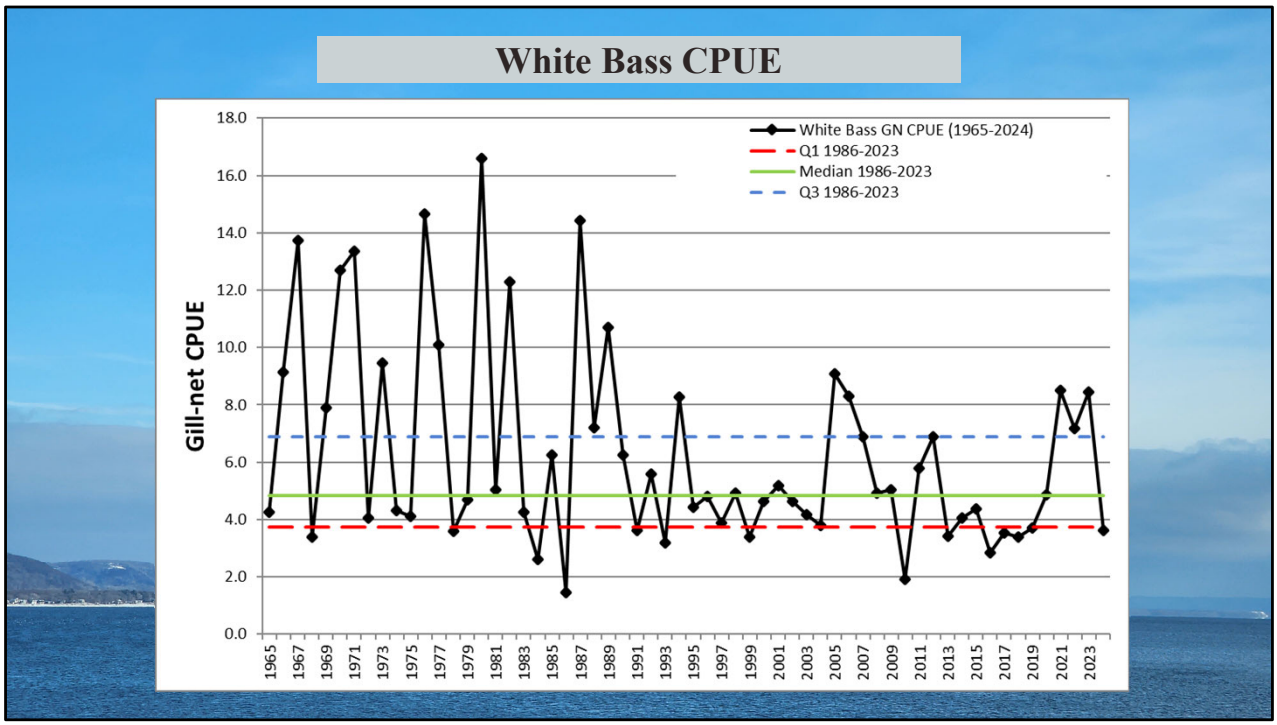


Gill net catch of Yellow Perch >10” showing the recent and unprecedented increase in the population of large Yellow Perch. Similar to overall Yellow Perch catch rates numbers of larger perch have consistently set records over the last decade and represent perhaps the most dramatic change in population we have seen from a gamefish species in our monitoring.

Numbers have occasionally dropped to near the 3rd quartile in recent years and growth seems to have slowed a bit as populations have increased. That being said, there are good numbers of smaller perch in the system that will likely be recruiting to this >10” group soon, and I would expect it to maintain current levels or even increase a bit in the near future years.



Northern Pike gill net catch history showing the recent increase in Northern Pike population likely as a result of increased water clarity and submerged aquatic vegetation (2008-present). Rates returned to above the third quartile in 2019, but size in the gill nets seemed to be a bit down. This is likely due to numbers of young individuals rather than stunting of growth. Catches dropped back into the interquartile range in 2023, but recent strong catches have pulled the third quartile upward and the 2024 catch rate is still stronger than all but 2 of the years sampled in the 20 years prior to the resurgence describe above. Anecdotal reports from anglers indicate good pike fishing occurred in 2024 though it was at times sporadic.



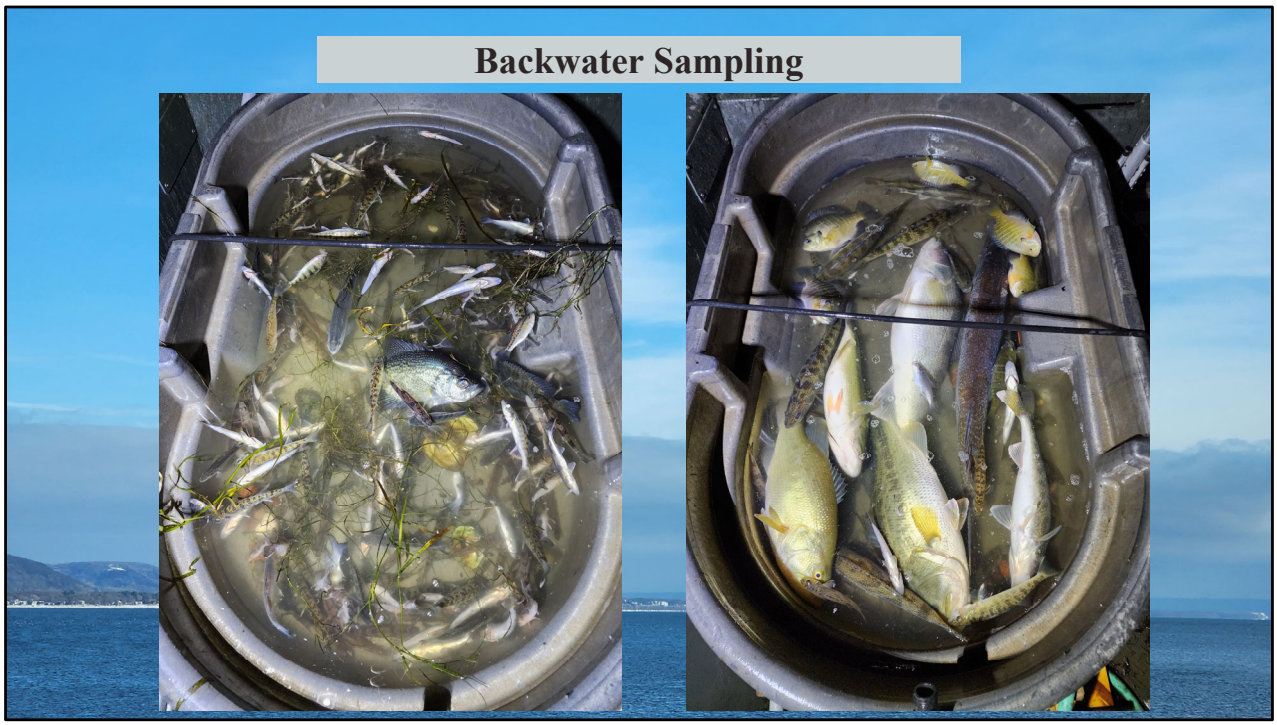
White Bass gill net catch history. The period from 1965-1990 was very variable or stochastic with many of the peaks driven by good year classes due to the spikey nature of YOY White Bass and their tendency to get stuck in our nets. White Bass is one species that has had a consistent downward trend in numbers since the beginning of our monitoring. This may be due to a preference for more turbid waters or other changing dynamics of the system, but it was among the factors that lead to modification of our bag limits in 2020. Recent years have produced several year classes that have performed better than most in recent decades and are leading to increasing gill net catches. While we have not seen a resurgence to historic numbers yet the increase in recent years is welcome news for those that enjoy chasing this feisty fish.

As mentioned with earlier species the decrease in CPUE noted in 2024 may be partially due to conditions during netting, but White Bass also have been shown by our tagging studies to be highly mobile and the population being monitored in Lake Pepin was regularly reported via tag returns in Pool 3 and the St. Croix system to the north and less often downstream of Pool 4 as far away as Lansing, Iowa.

A tub of redhorse sampled from a wing dam in Pool 5A.

Fisheries Researcher Devon Oliver (based out of the Lake City Area Office) is currently working on an effort to develop a means to effectively ID a number of our redhorse species. Of particular interest is the ability to differentiate Shorthead Redhorse (one of our seemingly most common redhorse species) from River Redhorse (a species that is considered in much of its range to be vulnerable or imperiled).

Use of commonly available dichotomous keys has proven to be difficult with various metrics indicated by the key providing opposing species IDs. Devon is working with genetics and a large group of physical measurements and count to determine if a more reliable method for identifying these fish can be found.

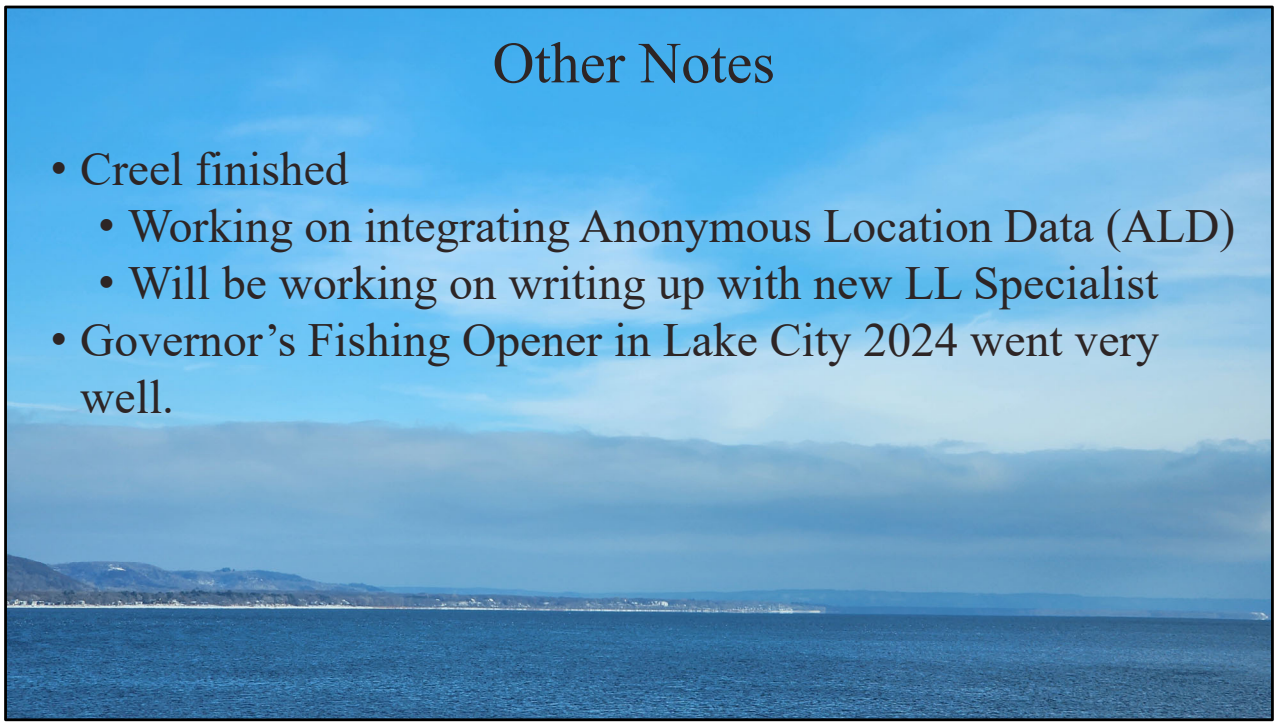


The tub on the left contains primarily young of year Walleye and Sauger sampled during nighttime efforts in October and November to determine numbers and size of the fish making up the Age-0 year class. We have noted that some of the locations historically sampled during this period have started to contain high numbers of centrarchids like Bluegill and both of the crappie species. We did some initial work this year to try and quantify panfish populations using methods similar to what we use in the backwater habitats on the river, but easy access to deeper open water seems to have allowed these fish to move out of reach of our electrofishing gear during daylight hours.

The tub on the right represents some of the large gamefish we encounter during a typical nighttime electrofishing run. In this case the site had so few YOY Walleye and Sauger that I let my enthusiastic young netter dip some of the larger gamefish we were encountering.

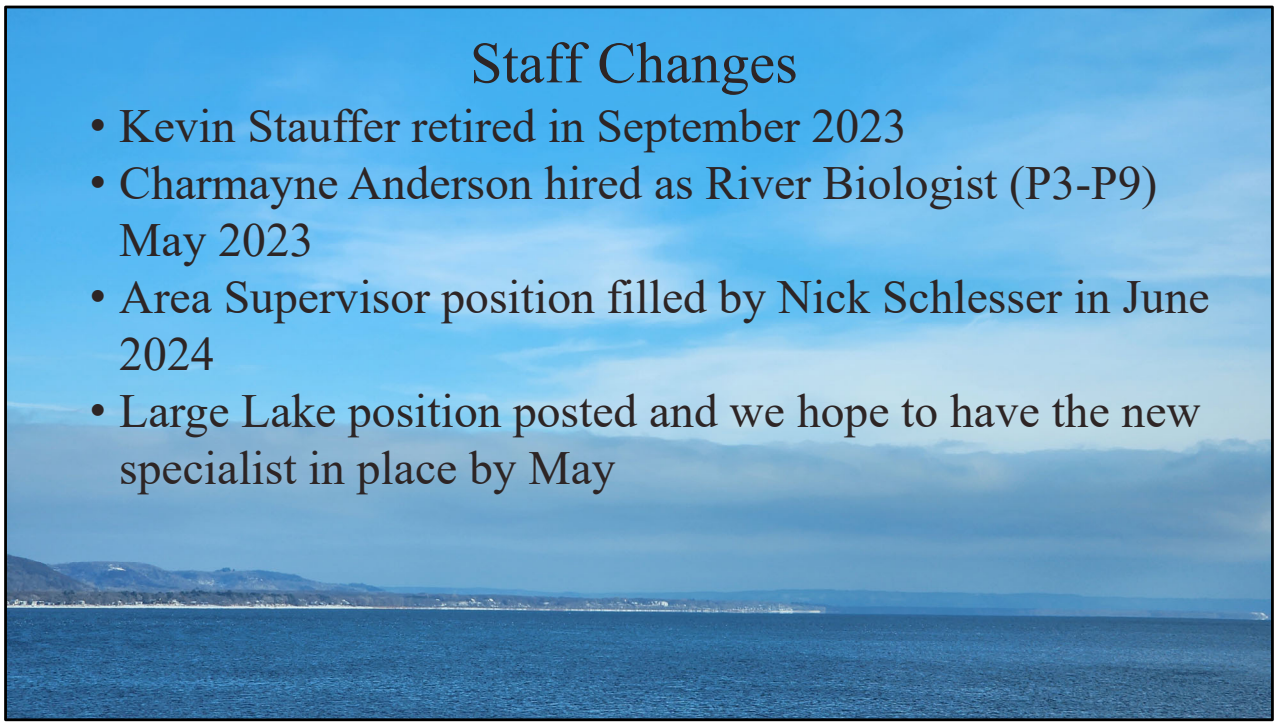
Some of the larger fish captured during the run mentioned in the previous slide.

The Walleye in the left measured ~29.5” in length and the three bass on the right were some of the larger individuals we encountered.



Other notable bits and pieces from the Lake city office include the completion of data collection for our 24 month creel at the end of October 2024. As we get back to full staffing levels in spring of 2025 the data collected during the creel will be processed with a report expected out in spring of 2026. We are also working with staff from the Iowa DNR to test options for using Anonymous Location Data collected by cell phone weather and mapping applications to improve pressure estimates for creels and allow for more efficient usage of state resources when collecting creel data. The first of this data is in hand and we will be working to compare it to the creel data as we have time through the summer.

The Governors Fishing Opener for 2024 was held in Lake City and was largely a success. High water and wind impacted som eof the activities, but fishing was good for those who participated.

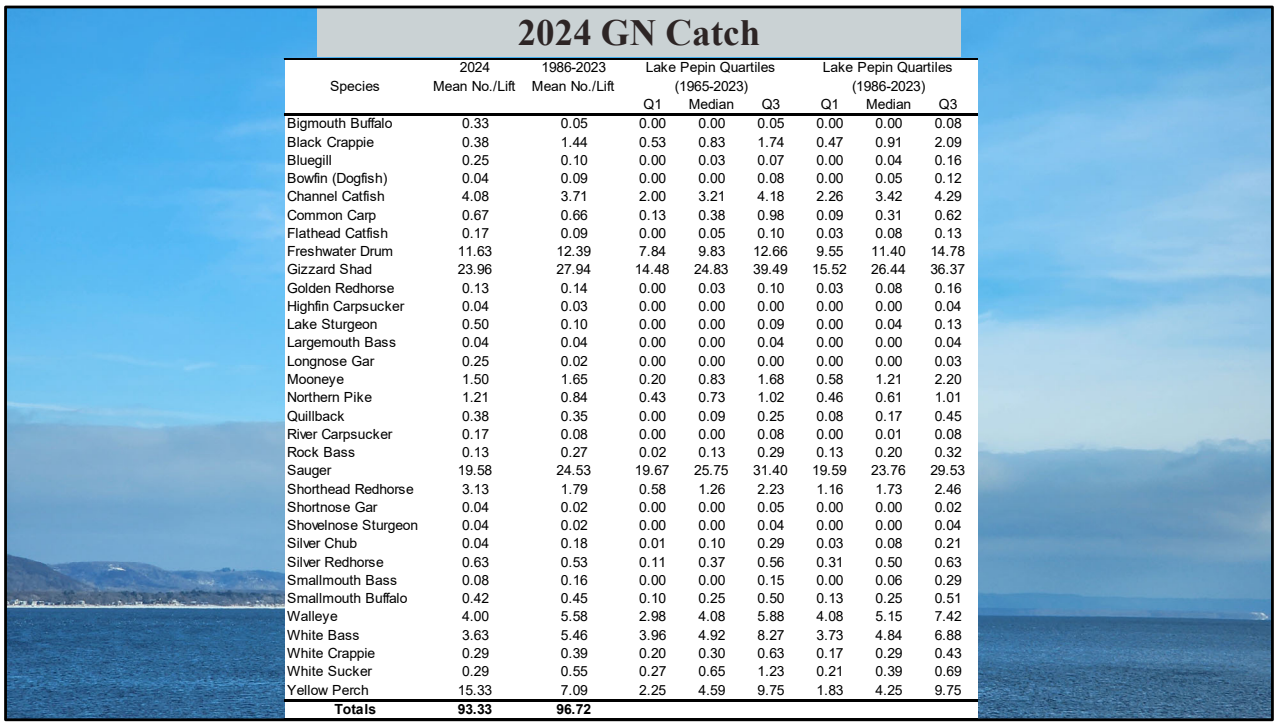


Several notable staff changes have occurred in 2024 for the Lake City Area Office.

In May of 2023 we welcomed Charmayne Anderson as out new Assistant Area Supervisor filling a vacancy we have had for several years. Charmayne's primary responsibility will be management of the Mississippi River Pools 3, 5, 5A, 6, 7, and 9. She was introduced to the Walleye Searchers group at the spring 2025 meeting.

In September 2023 Kevin Stauffer the long time Area Supervisor at the Lake City office retired. Neil Rude the Mississippi River Habitat Specialist based in Lake City was the Acting Area Supervisor until June 19, 2024 when the long time Large Lake Specialist Nick Schlesser began as Area Supervisor. Nick has been with the DNR since 2006 working initially on the border with Canada in Baudette as a specialist on Lake of the Woods and International Falls where he was the large lake specialist for Rainy Lake and Lake Kabetogama. He has been the Large Lake Specialist for Lake Pepin/Pool 4 since 2011.

The Large Lake Specialist position for Lake Pepin/Pool 4 has been filled and we look forward to announcing the new staff member after they start at the end of April 2025.



2024 GN Catch

Species	2024 Mean No./Lift	1986-2023 Mean No./Lift	Lake Pepin Quartiles (1965-2023) Q1	Median	Q3	Lake Pepin Quartiles (1986-2023) Q1	Median	Q3
Bigmouth Buffalo	0.33	0.05	0.00	0.00	0.05	0.00	0.00	0.08
Black Crappie	0.38	1.44	0.53	0.83	1.74	0.47	0.91	2.09
Bluegill	0.25	0.10	0.00	0.03	0.07	0.00	0.04	0.16
Bowfin (Dogfish)	0.04	0.09	0.00	0.00	0.08	0.00	0.05	0.12
Channel Catfish	4.08	3.71	2.00	3.21	4.18	2.26	3.42	4.29
Common Carp	0.67	0.66	0.13	0.38	0.98	0.09	0.31	0.62
Flathead Catfish	0.17	0.09	0.00	0.05	0.10	0.03	0.08	0.13
Freshwater Drum	11.63	12.39	7.84	9.83	12.66	9.55	11.40	14.78
Gizzard Shad	23.96	27.94	14.48	24.83	39.49	15.52	26.44	36.37
Golden Redhorse	0.13	0.14	0.00	0.03	0.10	0.03	0.08	0.16
Highfin Carpsucker	0.04	0.03	0.00	0.00	0.00	0.00	0.00	0.04
Lake Sturgeon	0.50	0.10	0.00	0.00	0.09	0.00	0.04	0.13
Largemouth Bass	0.04	0.04	0.00	0.00	0.04	0.00	0.00	0.04
Longnose Gar	0.25	0.02	0.00	0.00	0.00	0.00	0.00	0.03
Mooneye	1.50	1.65	0.20	0.83	1.68	0.58	1.21	2.20
Northern Pike	1.21	0.84	0.43	0.73	1.02	0.46	0.61	1.01
Quillback	0.38	0.35	0.00	0.09	0.25	0.08	0.17	0.45
River Carpsucker	0.17	0.08	0.00	0.00	0.08	0.00	0.01	0.08
Rock Bass	0.13	0.27	0.02	0.13	0.29	0.13	0.20	0.32
Sauger	19.58	24.53	19.67	25.75	31.40	19.59	23.76	29.53
Shorthead Redhorse	3.13	1.79	0.58	1.26	2.23	1.16	1.73	2.46
Shortnose Gar	0.04	0.02	0.00	0.00	0.05	0.00	0.00	0.02
Shovelnose Sturgeon	0.04	0.02	0.00	0.00	0.04	0.00	0.00	0.04
Silver Chub	0.04	0.18	0.01	0.10	0.29	0.03	0.08	0.21
Silver Redhorse	0.63	0.53	0.11	0.37	0.56	0.31	0.50	0.63
Smallmouth Bass	0.08	0.16	0.00	0.00	0.15	0.00	0.06	0.29
Smallmouth Buffalo	0.42	0.45	0.10	0.25	0.50	0.13	0.25	0.51
Walleye	4.00	5.58	2.98	4.08	5.88	4.08	5.15	7.42
White Bass	3.63	5.46	3.96	4.92	8.27	3.73	4.84	6.88
White Crappie	0.29	0.39	0.20	0.30	0.63	0.17	0.29	0.43
White Sucker	0.29	0.55	0.27	0.65	1.23	0.21	0.39	0.69
Yellow Perch	15.33	7.09	2.25	4.59	9.75	1.83	4.25	9.75
Totals	**93.33**	**96.72**						

Gillnet Catch by Species for 2024 with comparisons to historic quartiles and Large Lake Program period quartiles and mean.

Daytime and nighttime photos of suspected Walleye spawning habitat (flooded terrestrial vegetation) in upper Pool 4. Prespawn Walleye like the one in the lower left were captured in these habitats while monitoring the area prior to the flood in the spring of 2024.

All tables and figures presented in this document represent preliminary analysis. The annual Large Lake Report for Lake Pepin/Pool 4 is typically available by mid-May the year following the data collection. It contains additional analysis and figures and is available upon request.

Feel free to contact me using the info below if you have any questions about the information presented here or Lake Pepin/Pool 4 in general and I will do my best to get them answered for you.

Thanks again,

Nick

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