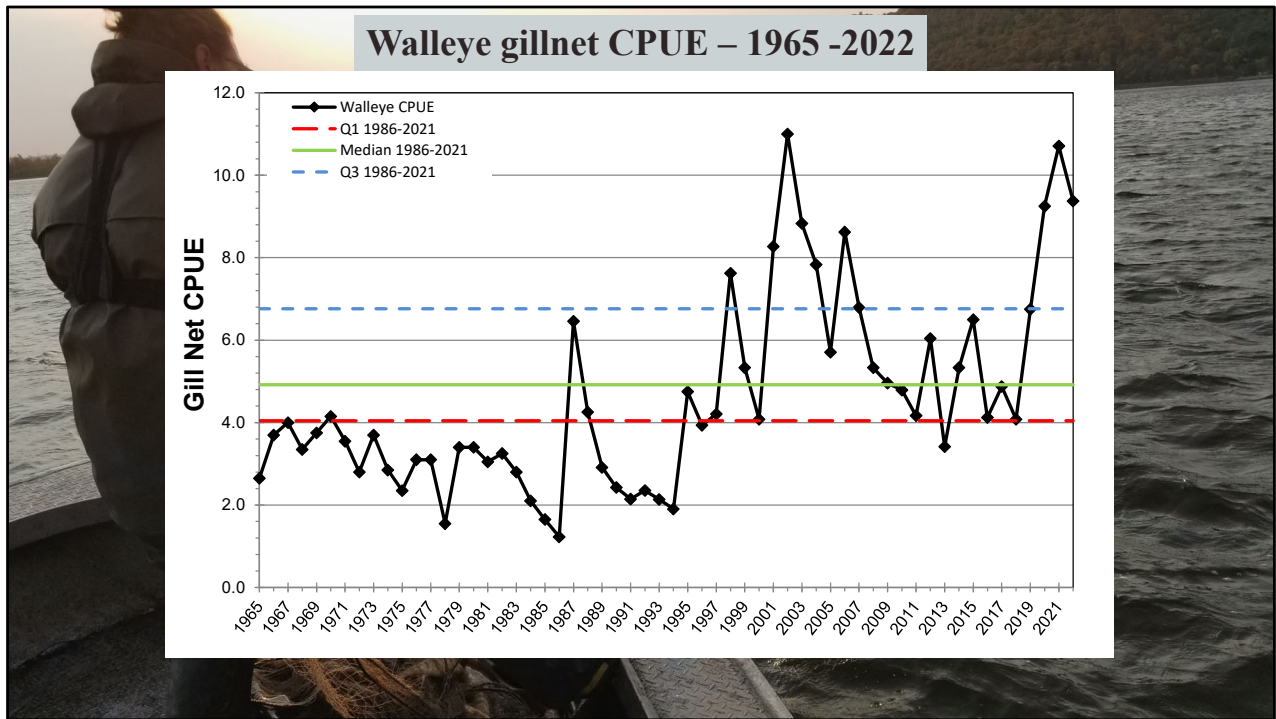




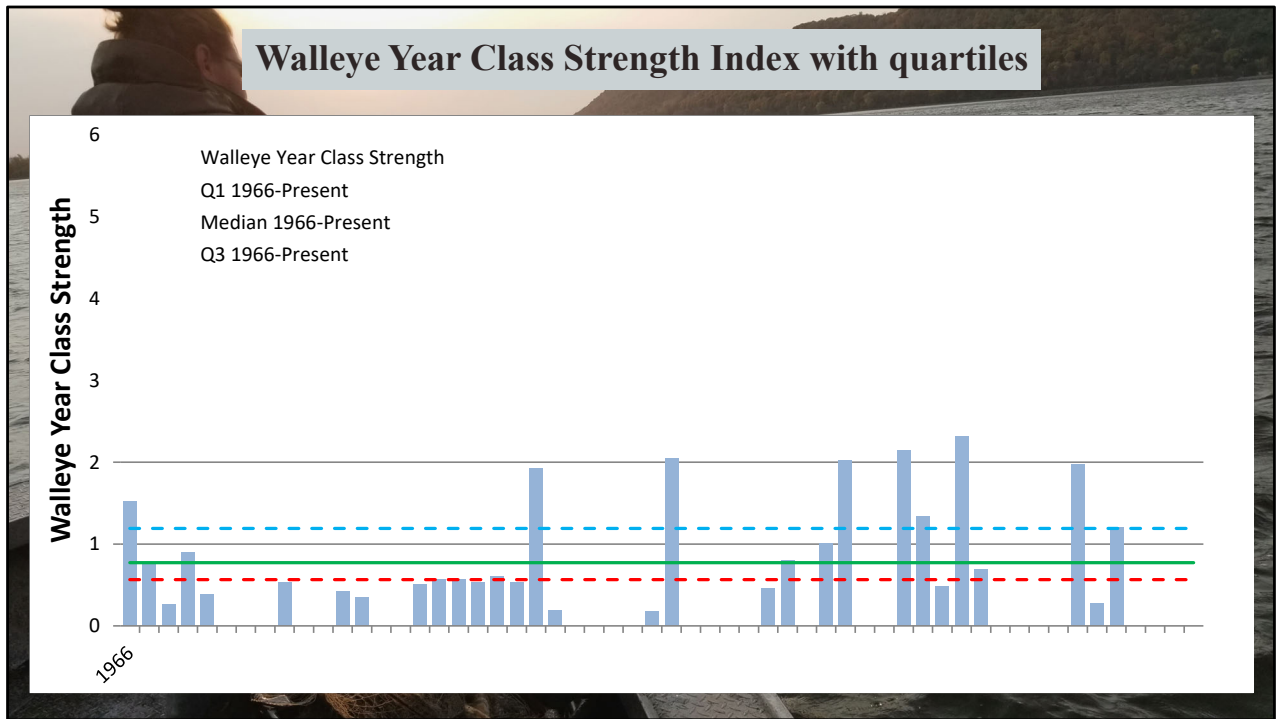
Turtle captured during Trawling near Long Pt on Lake Pepin



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.

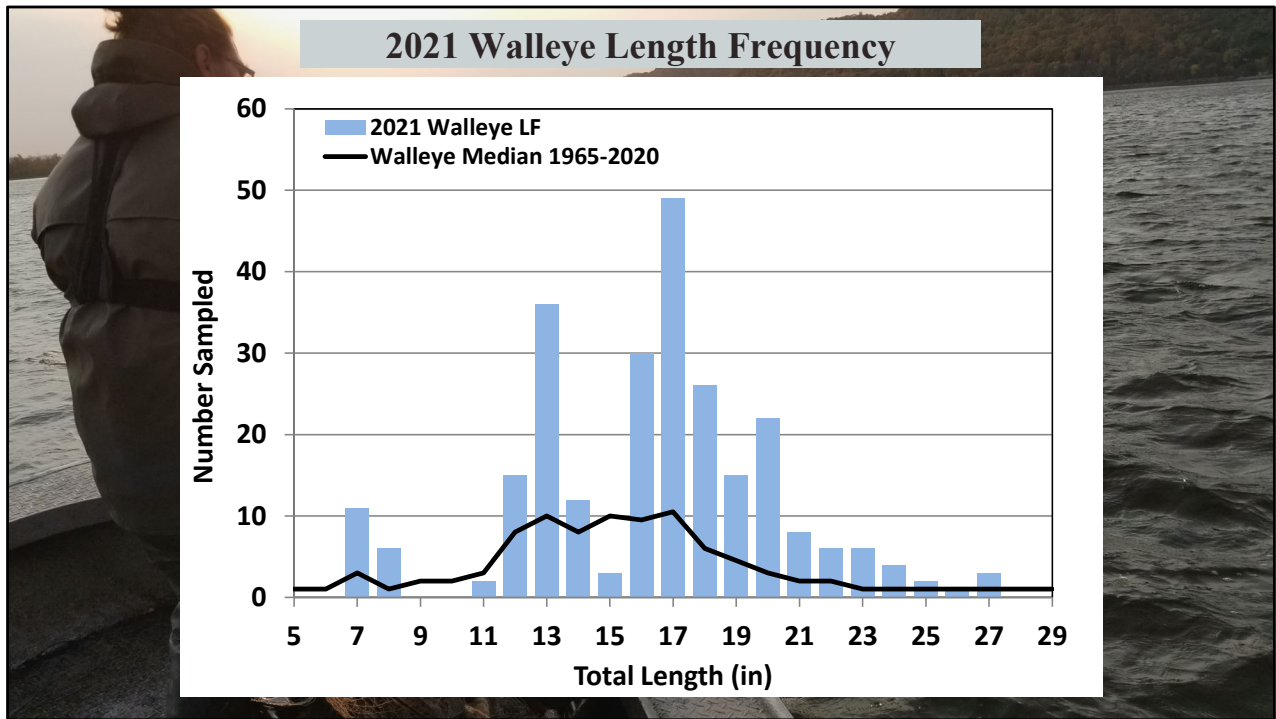
This figure shows that Lake Pepin’s walleye population is on an upswing similar to historic highs driven by the incredibly strong 2001 year class. This is driven by strong year classes (2018, 2019, 2020, and 2021) that have emerged in recent years.

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.



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) in recent years.

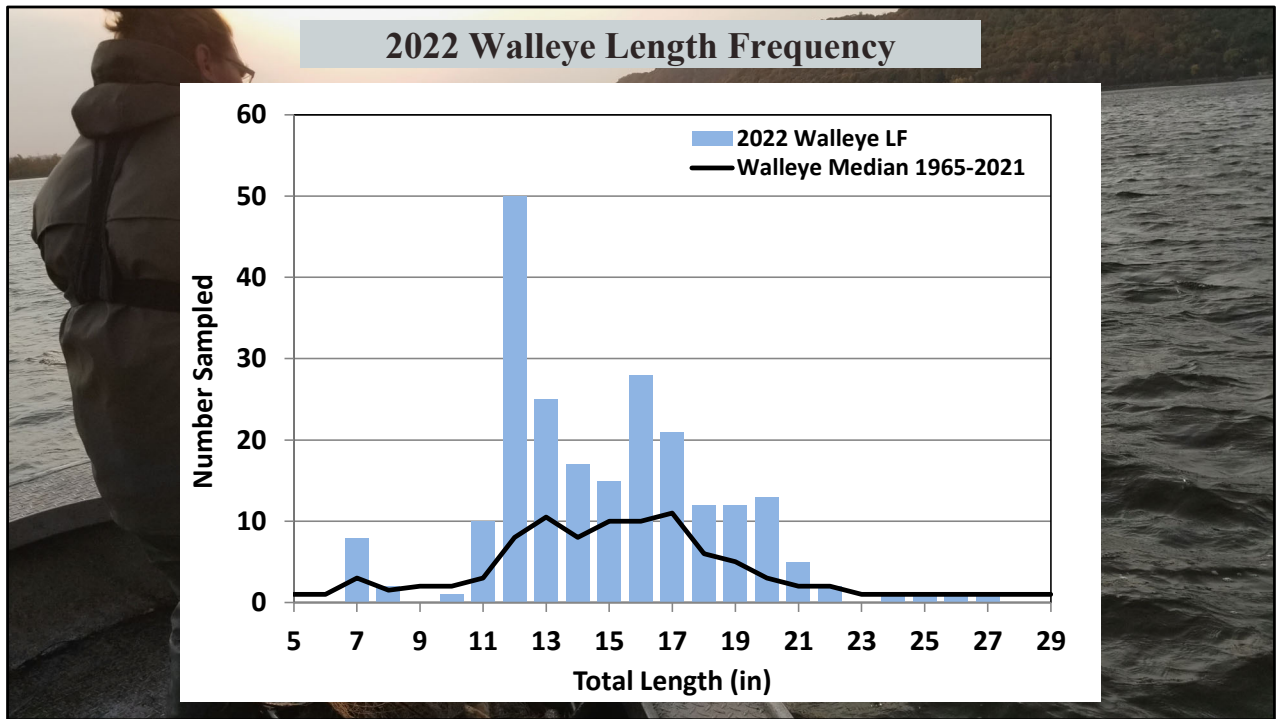
Note: The estimate of year class strength relies on 3 years of catch data, so the last two estimates are estimates with only partial data.



This slide represents the number of Walleyes from each 1 inch size group that was captured in the 2021 gillnets (blue bars) and the long term median for the same information from 1965-2020 represented by the black line.

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

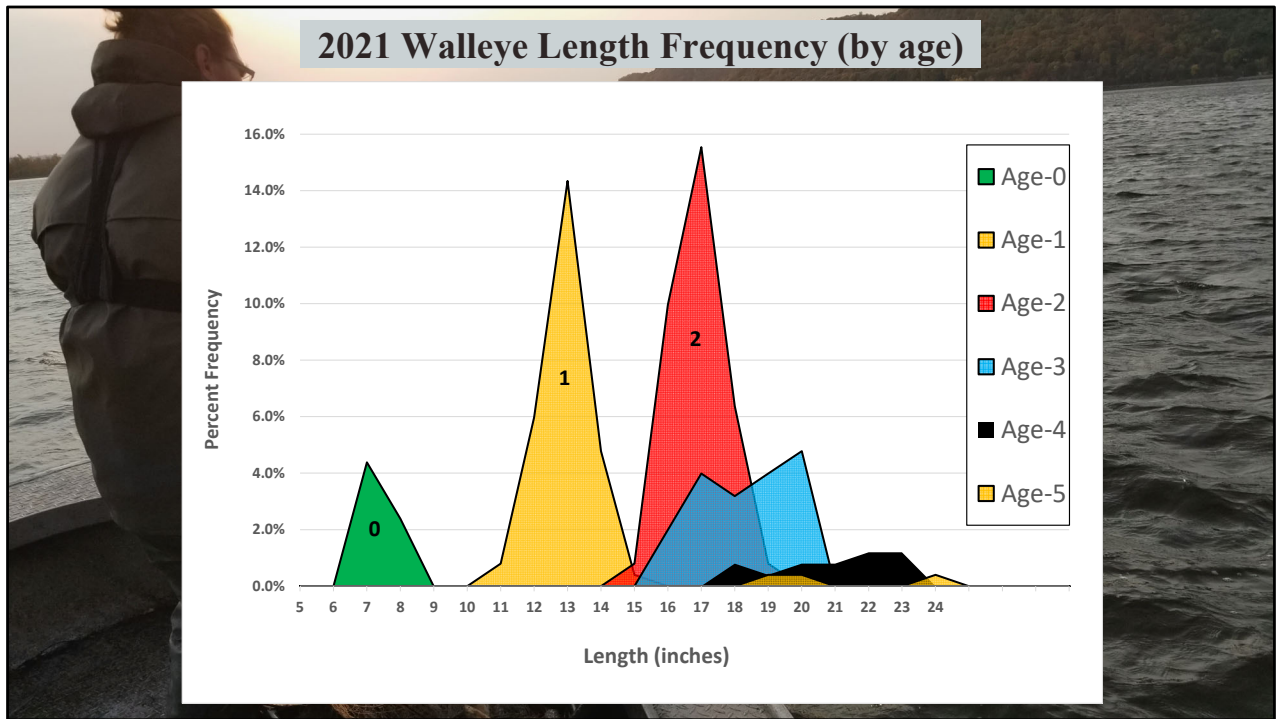
Note: In past years the y-axis for this figure has always gone to 40, but had to be extended for the numbers of 17" Walleye sampled in 2021.



This slide represents the number of Walleyes from each 1 inch size group that was captured in the 2022 gillnets (blue bars) and the long term median for the same information from 1965-2020 represented by the black line.

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

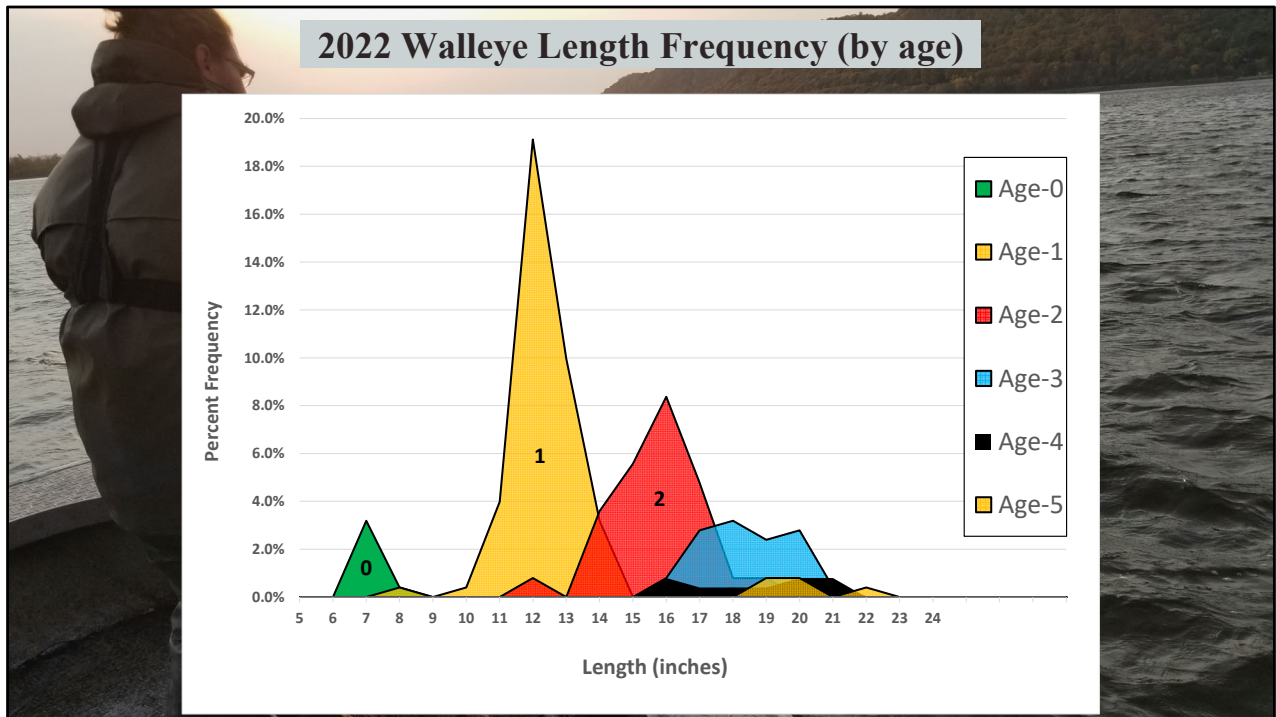
Note: In past years the y-axis for this figure has always gone to 40, but had to be extended for the numbers of 17" Walleye sampled in 2021 and 2022.



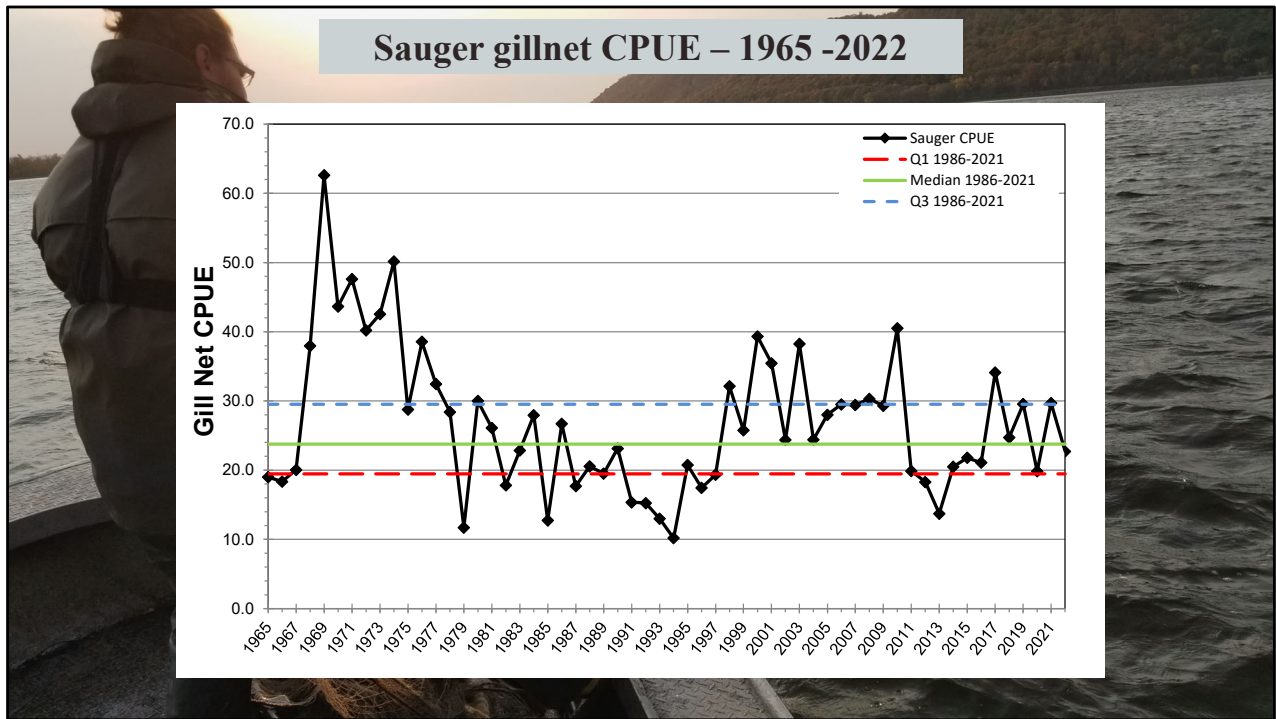
Similar to the length frequency slide from 2021 (2 slides back) this slide shows the proportion of the Walleye catch in 2021 that fell in each (1") length group. I have color coded these fish by age so that you can see how each of the age groups (0-5) contributes to the catch. Additional ages are not 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-3 fish are likely due to differing growth rates between the sexes with the peak at 17" primarily from males and at 20" primarily from females.





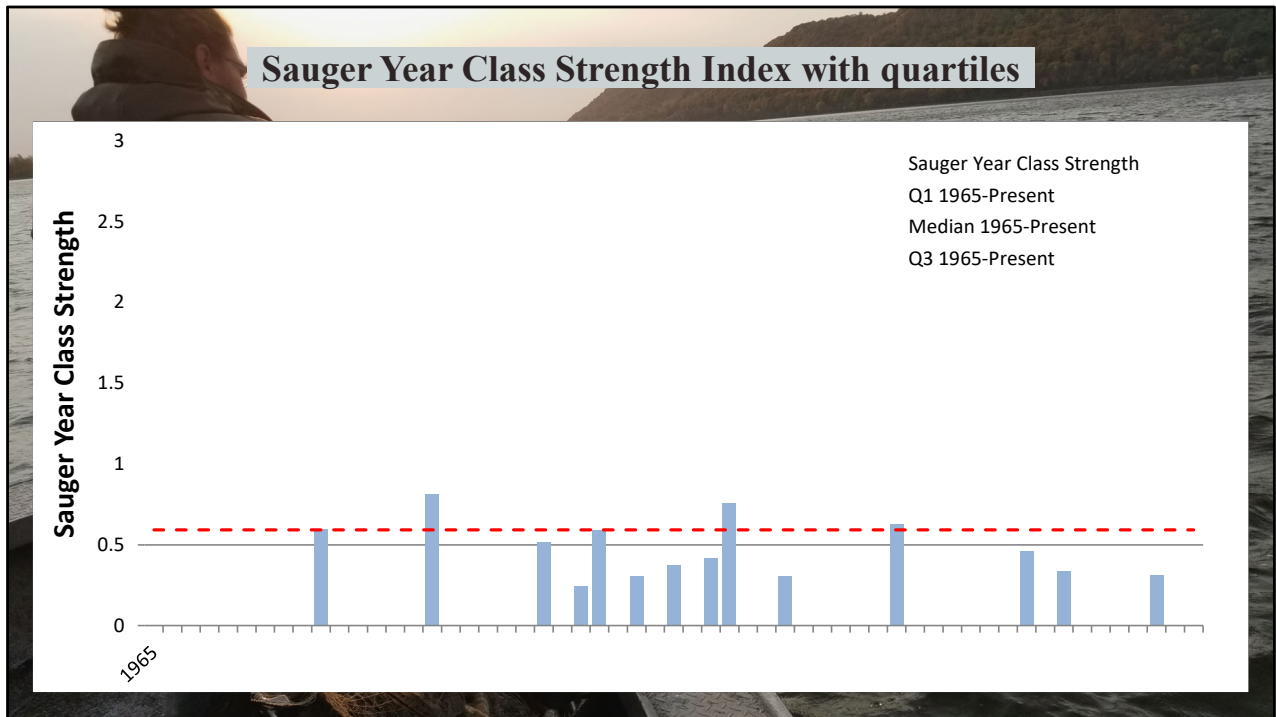
Similar to the length frequency slide from 2022 (2 slides back) this slide shows the proportion of the Walleye catch in 2021 that fell in each (1") length group. I have color coded these fish by age so that you can see how each of the age groups (0-5) contributes to the catch. Additional ages are not 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.



See Slide 2 for more complete description of this type of figure.

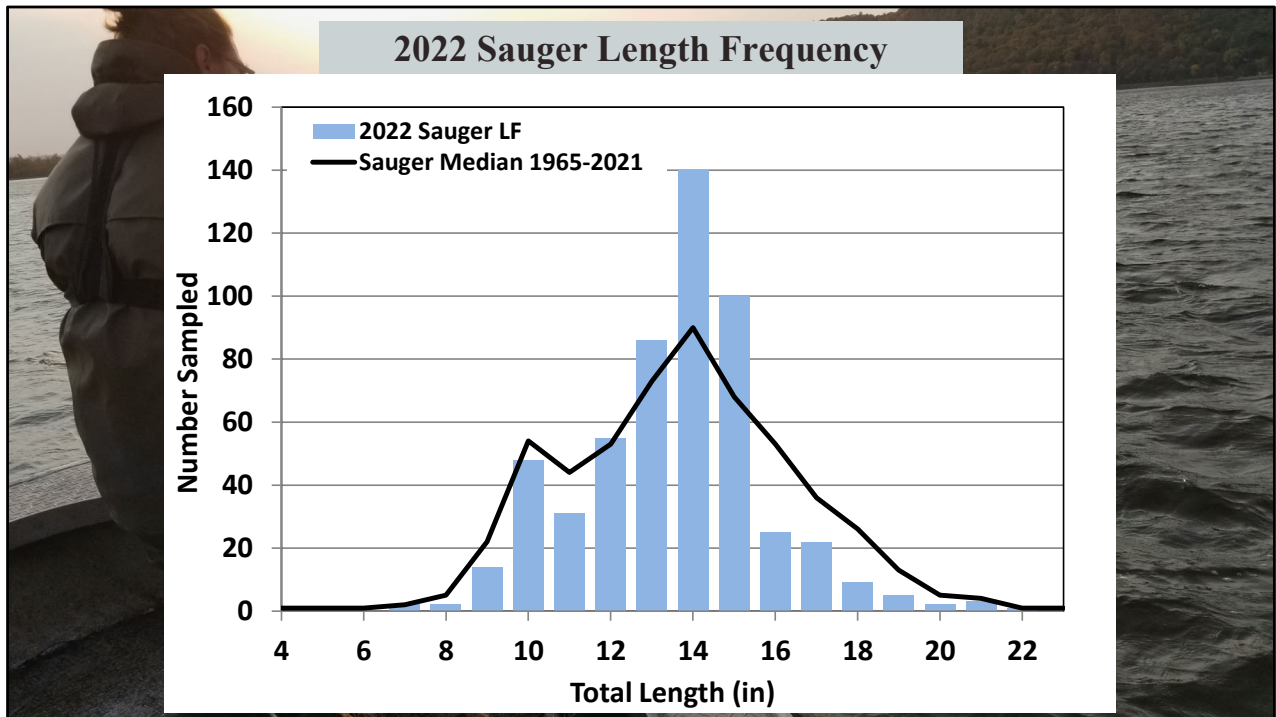
This figure shows that Lake Pepin’s Sauger catch rate has bounced within the quartiles for the last five years or so. The strong year classes in 2015 and 2018 were joined by what appears to be a very strong (3<sup>rd</sup> highest recorded) year class from 2020 to provide peaks, but less consistent recruitment than in the early 2000s which drove consistently high numbers.





Shows the same information as the previous slide 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.

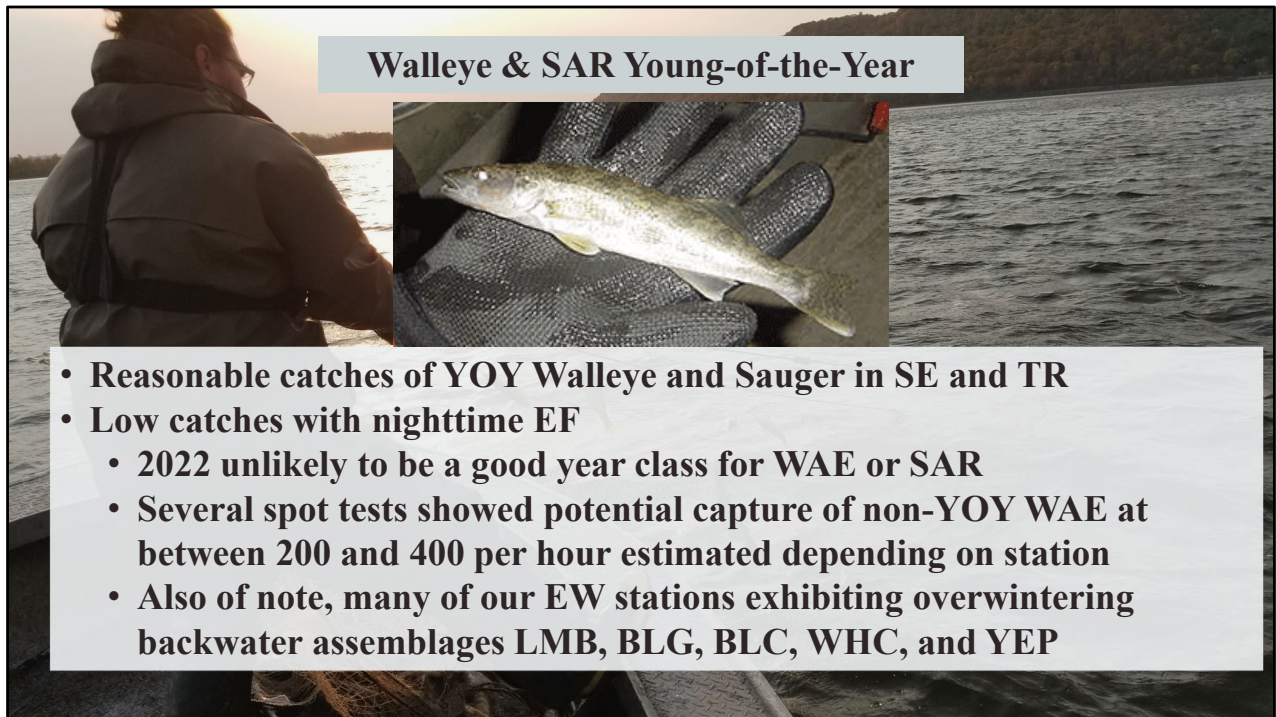
Note that after 3 relatively poor Sauger year classes (2010-2012) three of the last 6 years have produced above average year classes including 3 strong year classes (2015 (the strength of the 2020 year class pulled up the 3<sup>rd</sup> quartile so 2015 slipped to strong average), 2018, and 2020). Clusters 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 last 4-5 years the situation has 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.



**Note: Change in y axis from the previous slides like this one**

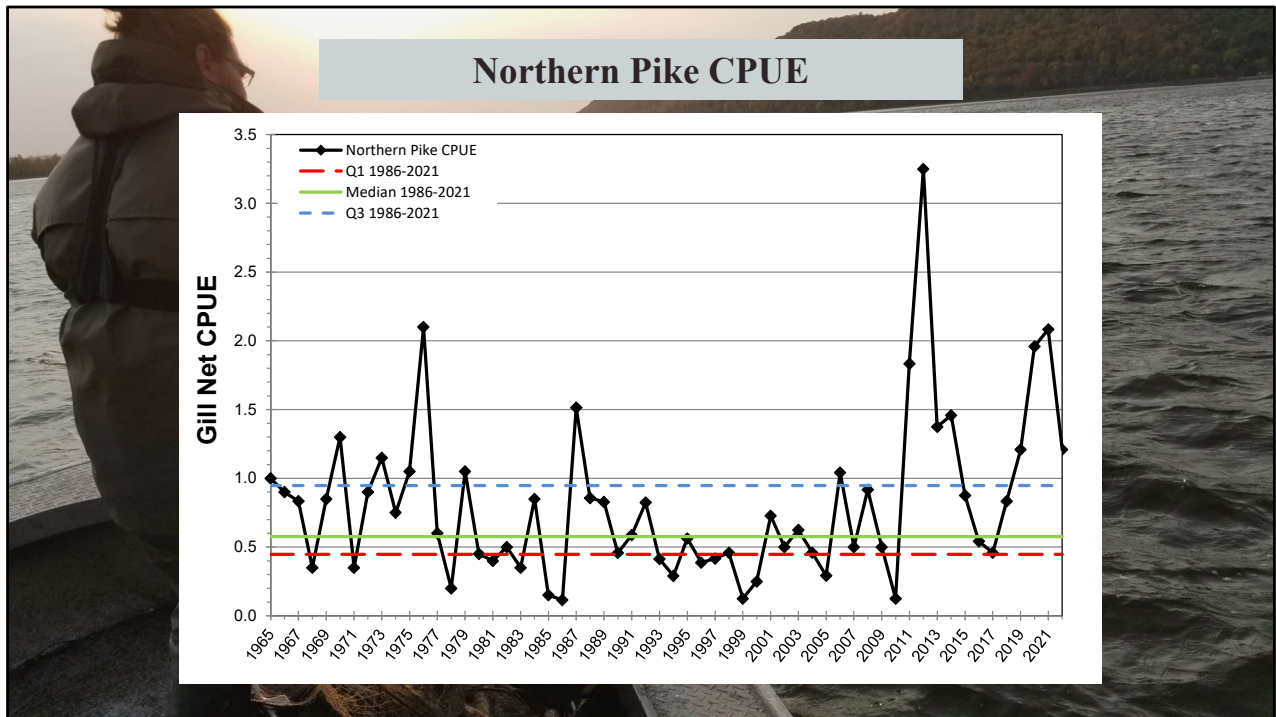
This slide represents the number of Sauger from each 1 inch size group that was captured in the 2022 gillnets (blue bars) and the long term median for the same information from 1965-2020 represented by the black line.

The gap in the 16-20 inch section is likely due to the poor Sauger year class of 2019 (16-17" fish) and the sporadic recruitment seen recently for the larger sizes.

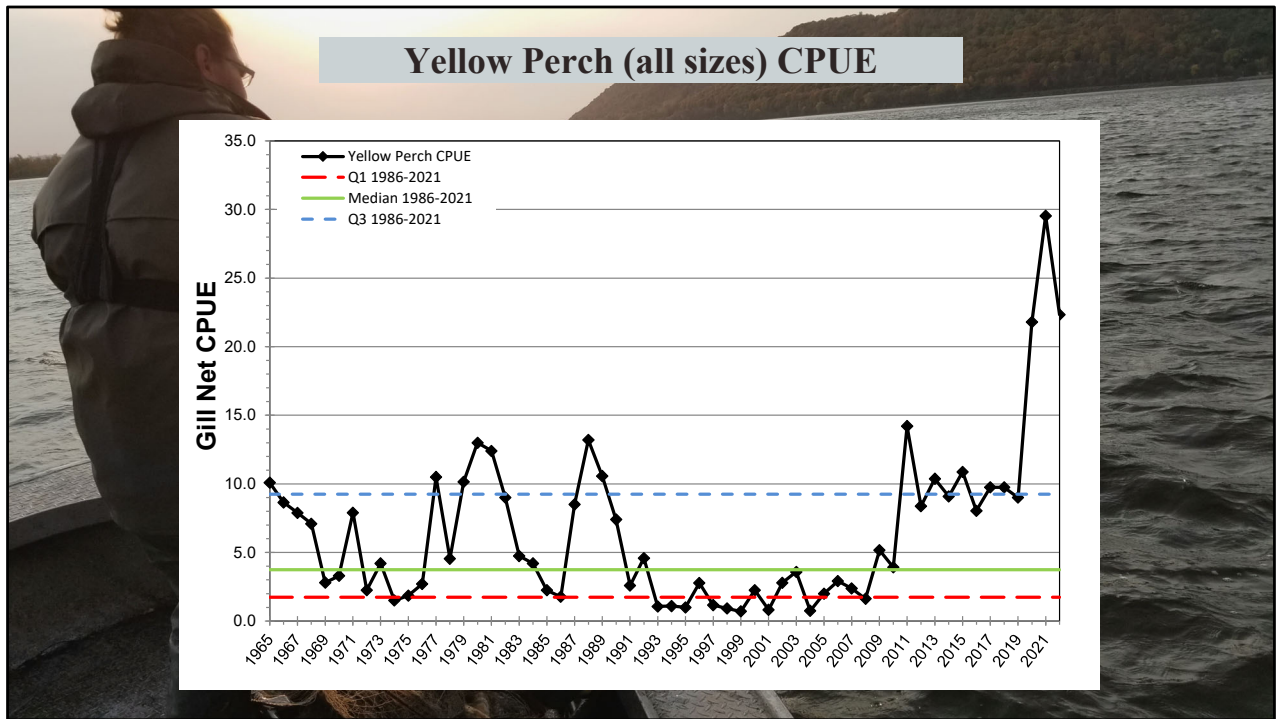


Our efforts to identify strong year classes of Walleye and Sauger in particular start in their first year of life when we monitor their numbers and growth from July (seining = SE), through August (trawling = TR), October (gill netting = GN), and into November (nighttime electrofishing = EW). Our most accurate estimates of the years reproduction typically come during November when many hours of electrofishing are done on cold nights to capture and count young of year (YOY) Walleye and Sauger.

The 2022 data highlight is presented above. Species codes include LMB = Largemouth Bass, BLG = Bluegill, BLC = Black Crappie, WHC = White Crappie, YEP = Yellow Perch, WAE = Walleye, SAR = Sauger, and YOY = Young of Year meaning the fish hatched in the spring of the sampling year.

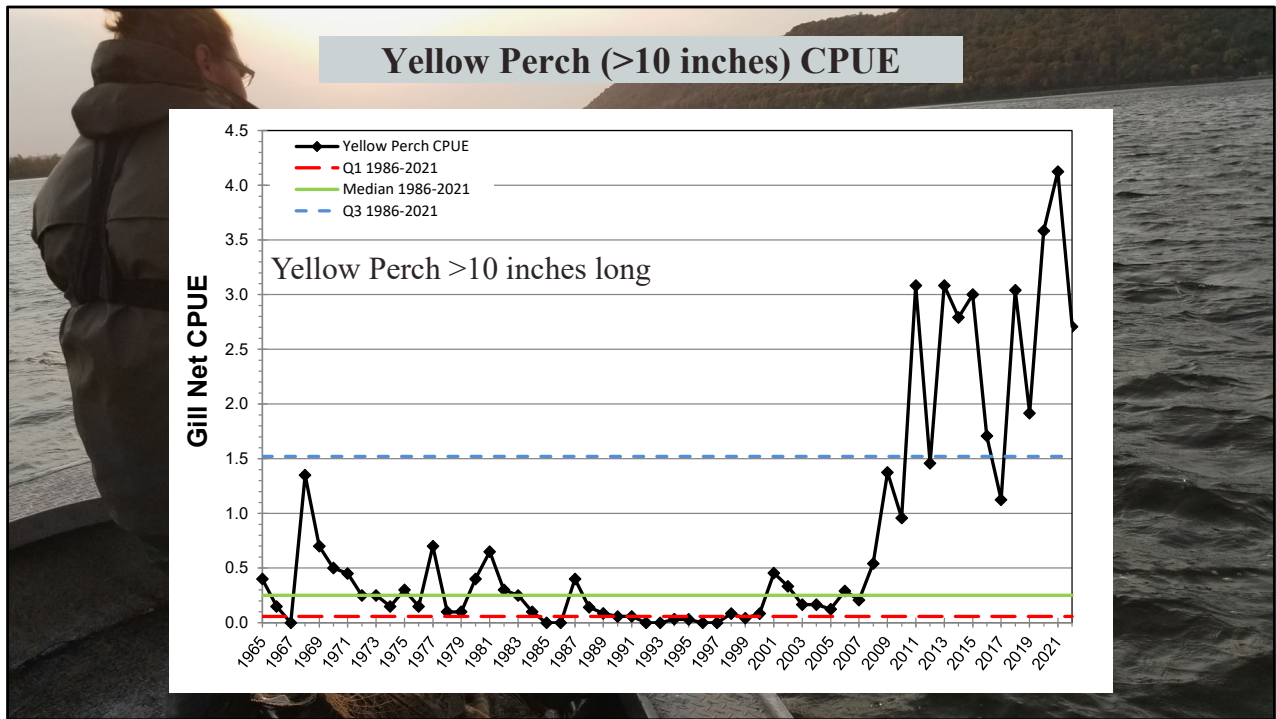


Northern Pike gill net catch history showing the recent increase in Northern Pike population likely as a result of increased water clarity and submerged aquatic vegetation. Rates returned to above the third quartile in 2019, but size in the gill nets seemed to be a bit down. This is likely due to numbers of young individuals rather than stunting of growth. Catches since 2019 have stayed above the third quartile with no concerns about population size distribution at this time. Anecdotal reports from anglers indicate excellent pike fishing occurred in 2022 though it was at times sporadic.



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.

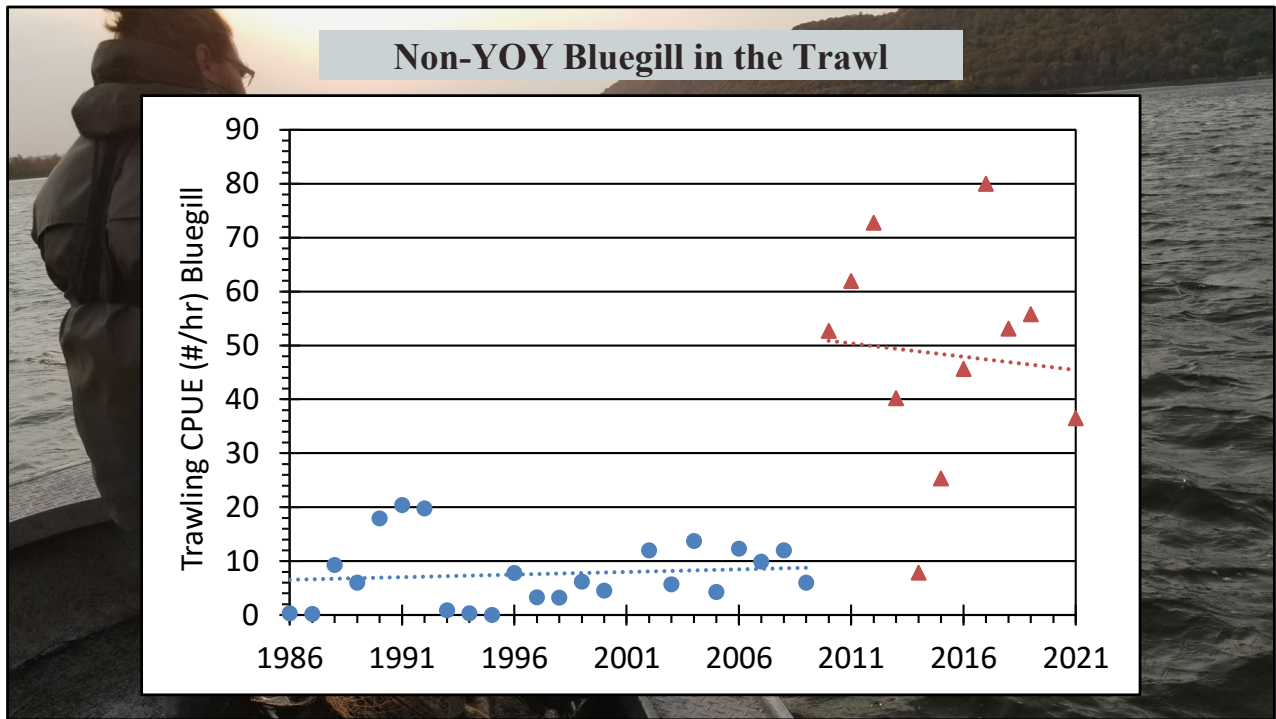
As you can see we set a new record for CPUE of Yellow Perch in 2020 and again in 2021. During 2022 we remained at nearly twice the catch rate we have been stable at for the last 8 years (~9/net). It will be interesting to see how this new increase alters the perch population dynamics. The initial surge 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 the last three years will be a transient spike or yet another shift in overall numbers.



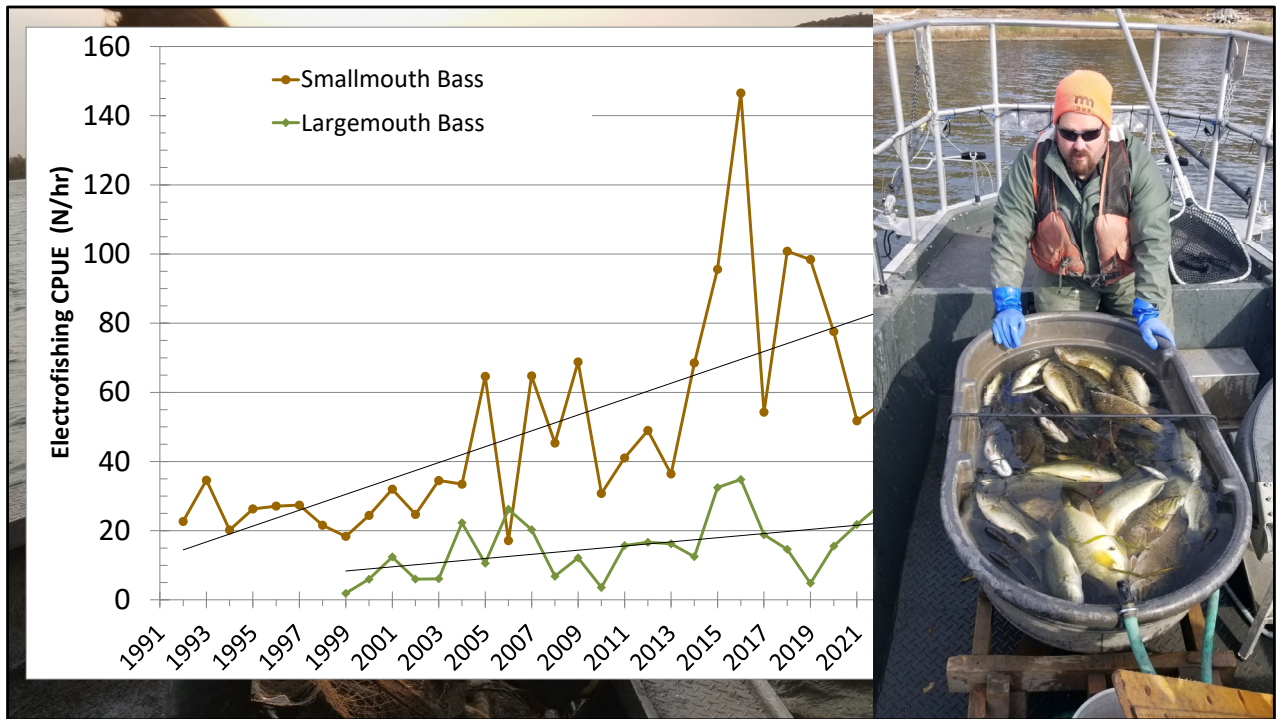
Gill net catch of Yellow Perch >10" showing the recent and unprecedented increase in the population of large Yellow Perch. Similar to overall Yellow Perch catch rates numbers of larger perch have set records the last two years and it remains to be seen if this is a new plateau or a temporary spike.

Numbers have occasionally dropped to near the 3<sup>rd</sup> 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.

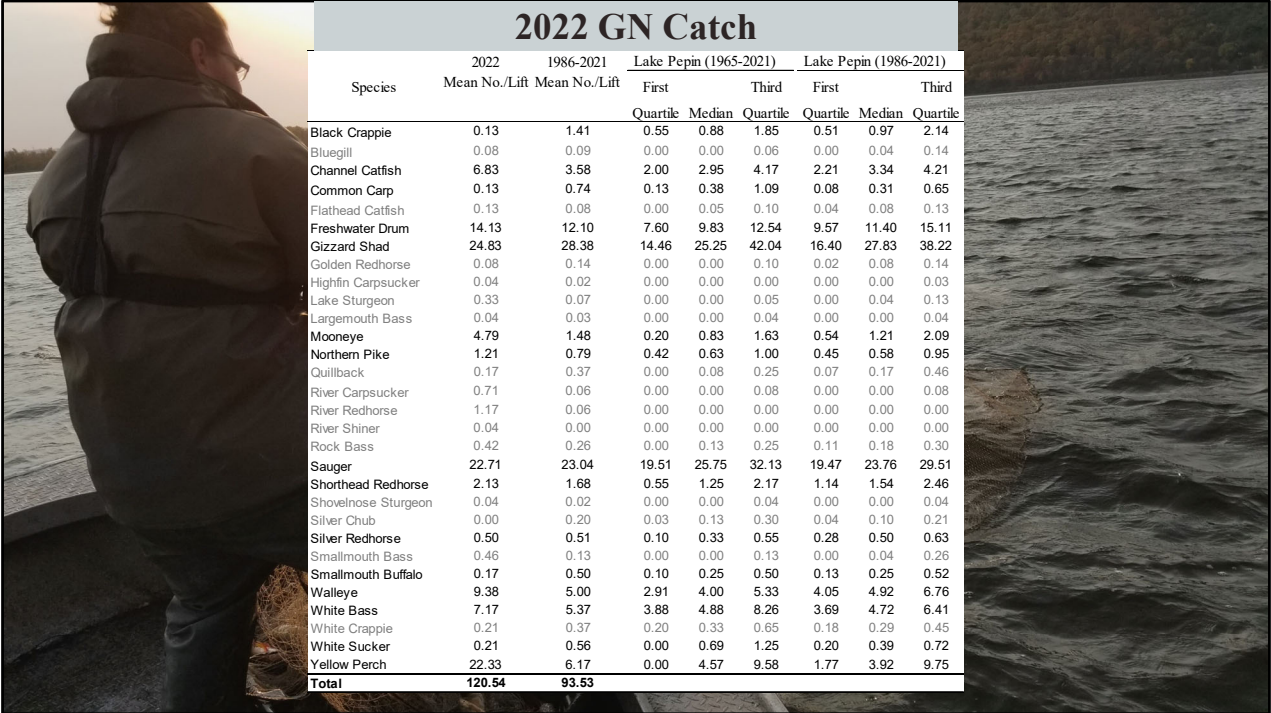




This is a figure showing our catch rates for non-YOY (Age-1 or older) Bluegill in our trawl. The sudden shift in the late 2000s led us to wonder if we were seeing a shift in species composition in Lake Pepin. While numbers have stayed much higher (again probably a result of increase water clarity/quality and associated increases in vegetation) we have not identified changes in other gamefish species as a result of this increase. Trawling is not the ideal method for monitoring panfish species, however, so we are considering a more targeted approach to collect more meaningful data on this population going forward.



Like some of the other trends we have discussed, bass numbers, both smallmouth and largemouth have been increasing over time in the system. Our electrofishing runs are somewhat biased to smallmouth because they originally were set up to monitor Walleye and Smallmouth Bass so rarely encompass vegetated area. Low water in the last several years has led to reduced numbers of young of year bass because the boat cannot get as close to shore where they are more numerous.



### 2022 GN Catch

Species	2022	1986-2021	Lake Pepin (1965-2021)			Lake Pepin (1986-2021)		
	Mean No./Lift	Mean No./Lift	First		Third	First		Third
			Quartile	Median	Quartile	Quartile	Median	Quartile
Black Crappie	0.13	1.41	0.55	0.88	1.85	0.51	0.97	2.14
Bluegill	0.08	0.09	0.00	0.00	0.06	0.00	0.04	0.14
Channel Catfish	6.83	3.58	2.00	2.95	4.17	2.21	3.34	4.21
Common Carp	0.13	0.74	0.13	0.38	1.09	0.08	0.31	0.65
Flathead Catfish	0.13	0.08	0.00	0.05	0.10	0.04	0.08	0.13
Freshwater Drum	14.13	12.10	7.60	9.83	12.54	9.57	11.40	15.11
Gizzard Shad	24.83	28.38	14.46	25.25	42.04	16.40	27.83	38.22
Golden Redhorse	0.08	0.14	0.00	0.00	0.10	0.02	0.08	0.14
Highfin Carpsucker	0.04	0.02	0.00	0.00	0.00	0.00	0.00	0.03
Lake Sturgeon	0.33	0.07	0.00	0.00	0.05	0.00	0.04	0.13
Largemouth Bass	0.04	0.03	0.00	0.00	0.04	0.00	0.00	0.04
Mooneye	4.79	1.48	0.20	0.83	1.63	0.54	1.21	2.09
Northern Pike	1.21	0.79	0.42	0.63	1.00	0.45	0.58	0.95
Quillback	0.17	0.37	0.00	0.08	0.25	0.07	0.17	0.46
River Carpsucker	0.71	0.06	0.00	0.00	0.08	0.00	0.00	0.08
River Redhorse	1.17	0.06	0.00	0.00	0.00	0.00	0.00	0.00
River Shiner	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rock Bass	0.42	0.26	0.00	0.13	0.25	0.11	0.18	0.30
Sauger	22.71	23.04	19.51	25.75	32.13	19.47	23.76	29.51
Shorthead Redhorse	2.13	1.68	0.55	1.25	2.17	1.14	1.54	2.46
Shovelnose Sturgeon	0.04	0.02	0.00	0.00	0.04	0.00	0.00	0.04
Silver Chub	0.00	0.20	0.03	0.13	0.30	0.04	0.10	0.21
Silver Redhorse	0.50	0.51	0.10	0.33	0.55	0.28	0.50	0.63
Smallmouth Bass	0.46	0.13	0.00	0.00	0.13	0.00	0.04	0.26
Smallmouth Buffalo	0.17	0.50	0.10	0.25	0.50	0.13	0.25	0.52
Walleye	9.38	5.00	2.91	4.00	5.33	4.05	4.92	6.76
White Bass	7.17	5.37	3.88	4.88	8.26	3.69	4.72	6.41
White Crappie	0.21	0.37	0.20	0.33	0.65	0.18	0.29	0.45
White Sucker	0.21	0.56	0.00	0.69	1.25	0.20	0.39	0.72
Yellow Perch	22.33	6.17	0.00	4.57	9.58	1.77	3.92	9.75
<b>Total</b>	<b>120.54</b>	<b>93.53</b>						

Gillnet Catch by Species for 2022 with comparisons to historic quartiles and Large Lake Program period quartiles and mean.



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

Nick Schlessler  
MN DNR Large Lake Specialist (Lake Pepin/Pool 4)  
1801 S Oak St  
Lake City, MN 55041  
(651) 299-4030  
[nicholas.schlessler@state.mn.us](mailto:nicholas.schlessler@state.mn.us)