

Calamus Reservoir 2023 Fall Fish Survey Summary

Nebraska Game and Parks Commission

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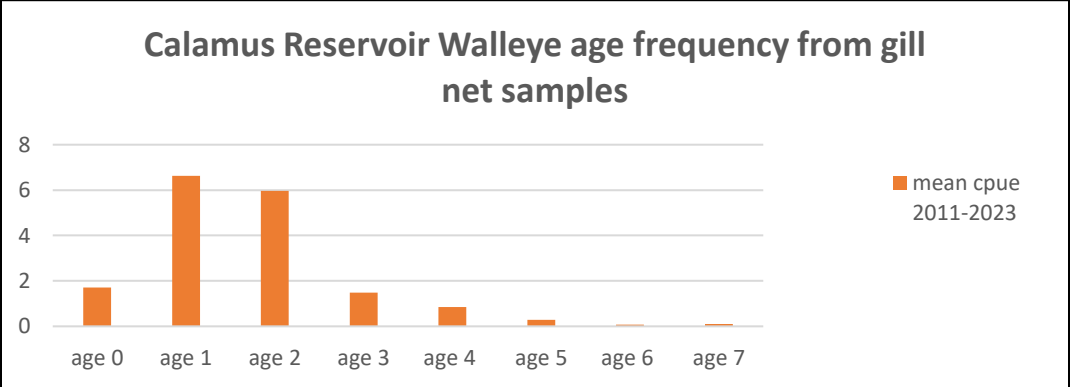
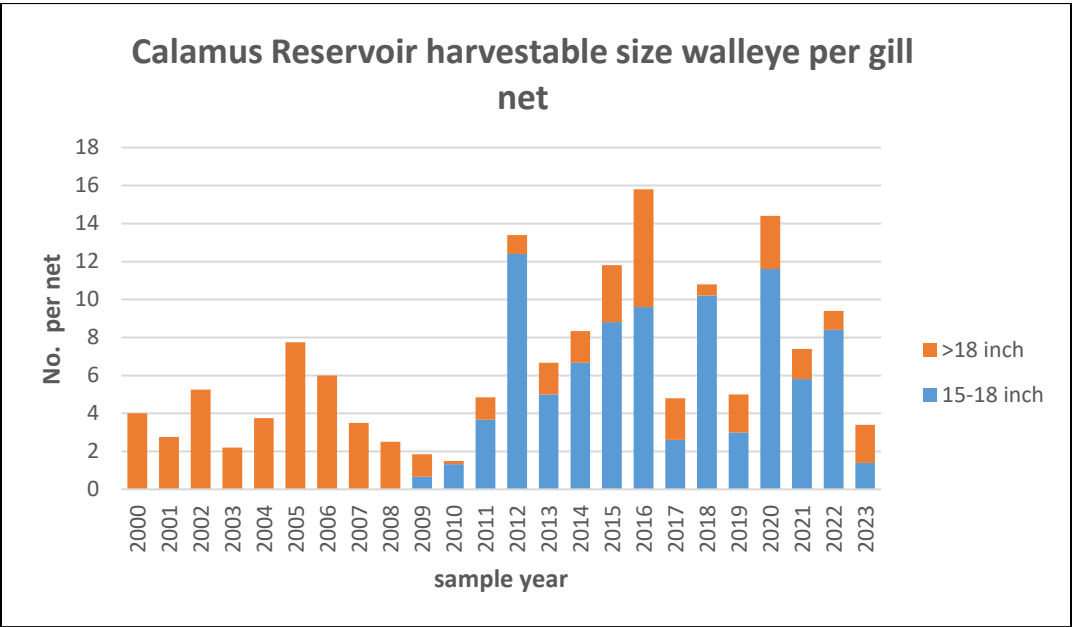
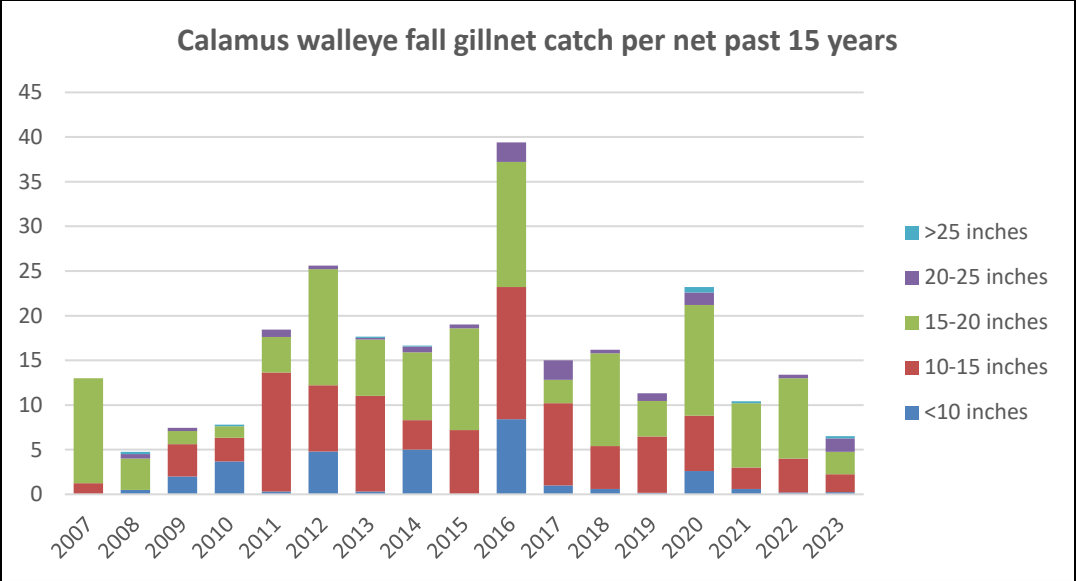
2023 Calamus Fish Management Summary

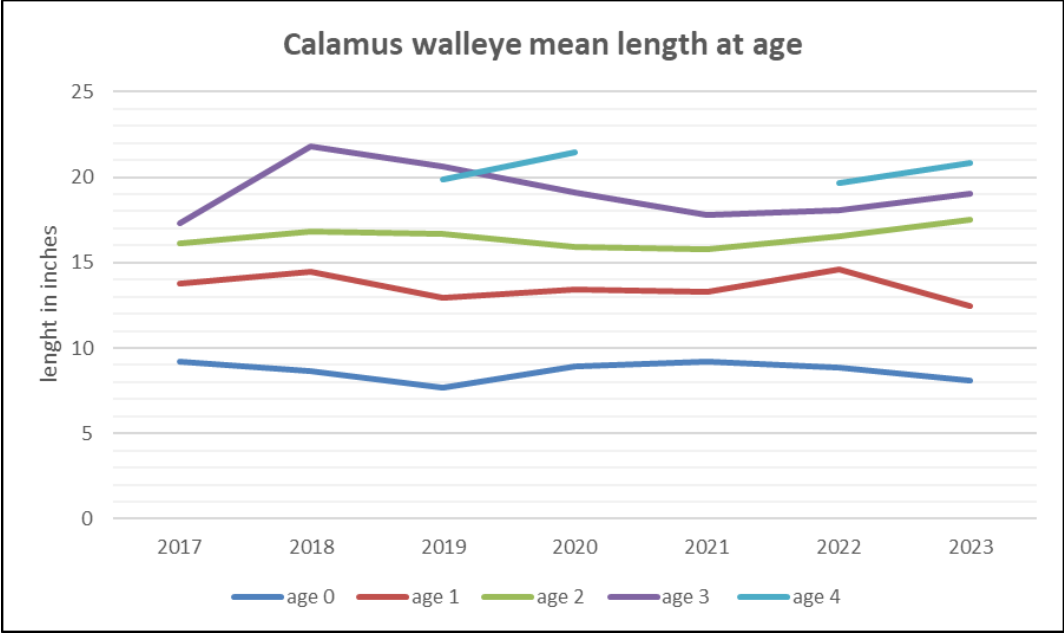
The following text and graphs are summaries from the 2023 fall gill net and nighttime electrofishing sampling conducted during August and October. Gillnets are used to sample fish species which primarily live in open water environments such as large reservoirs. Gill net sampling effort in 2023 was 5 nets located in the mid to lower reaches of the lake on October 10-11. Electrofishing for young-of-the-year fish was conducted on August 29. The same general areas of the lake are utilized for sampling locations each year for standardization. No angler creel survey was conducted in 2023.

Walleye, channel catfish, and wiper populations are maintained through annual fish stocking. Muskellunge are stocked periodically to maintain their population and provide angling opportunity. In 2023, both walleye fry and fingerling were stocked. In all 7.5 million walleye fry and 276,454 fingerling walleye were stocked along with 52,700 fingerling wipers; and 20,411 10-inch channel catfish. Fish stocking in 2024 will include walleye, wipers, muskellunge, and channel catfish. Fishing regulations include **a daily bag limit of 4 walleye, however, anglers may have no more than 2 fish between 15 and 18 inches and no more than 2 fish over 18 inches. Keep in mind only one fish in the daily bag may be longer than 22 inches in length. Also keep in mind that only 1 channel catfish over 30 inches is allowed in the daily bag limit of 5 channel catfish. This regulation is designed to protect large channel catfish from overharvest.**

Walleye

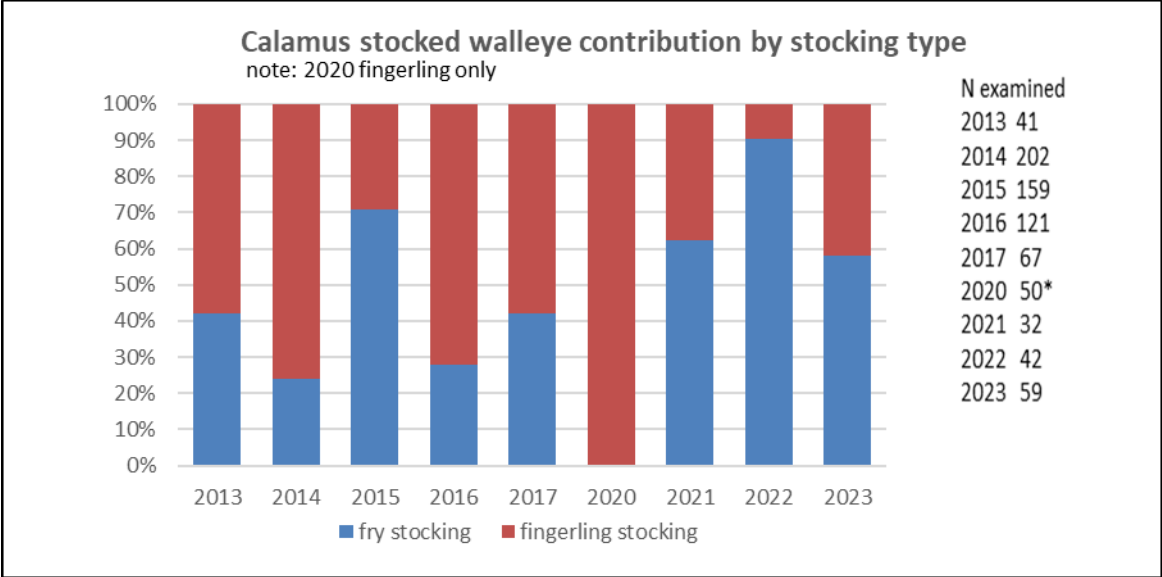
The walleye fall gill net index decreased in 2023 and is one of the poorest net catches recorded over the last 20 years. With excellent walleye fishing experienced by anglers in 2023 the gill net catch was well below expectations. Lake levels were low during the sampling window and nets in the western half of the lake really underperformed. Best catches were on the east end of the lake near deeper water. Anecdotal information obtained from anglers indicated abundant walleye, including sublegal fish, in deeper water in the fall. We believe the 2023 gill net catch to be an anomaly and not representative of the actual walleye population. A possible explanation for the low walleye net catch may be due to the small size of age one fish and their lack of catchability in multiple gill net panels. As seen in the age and growth charts below, age one fish make up the bulk of fish collected in gill nets since 2011. Shad reproduction and young-of-the-year shad distribution was spotty around the lake in 2023. It appeared the shad spawn was delayed by cool spring temperatures and YOY growth was fast. Shad reaching a larger size quickly limits the prey availability and can contribute to poor growth rates as seen in the 2022 year class (age one fish in 2023 sample). Small size of age one fish may have led to a poor catch in the nets and thus overall low mean catch rate. Spring 2024 fishing activity will shed light on this hypothesis. However, it is possible poor walleye body condition may have led to higher natural mortality and that was reflected in the relatively poor net catch. It is hoped walleye angling success will be similar to other years. About the only information to be gleaned from the dismal gill net catch is the percentage of fish over 18 inches in the population. Larger walleye definitely are present in good numbers in Calamus Reservoir. Harvestable sized fish make up a majority of the sample. The dual stocking of walleye fry and fingerling will continue in 2024 to maintain high walleye recruitment levels and prevent a missing year class.





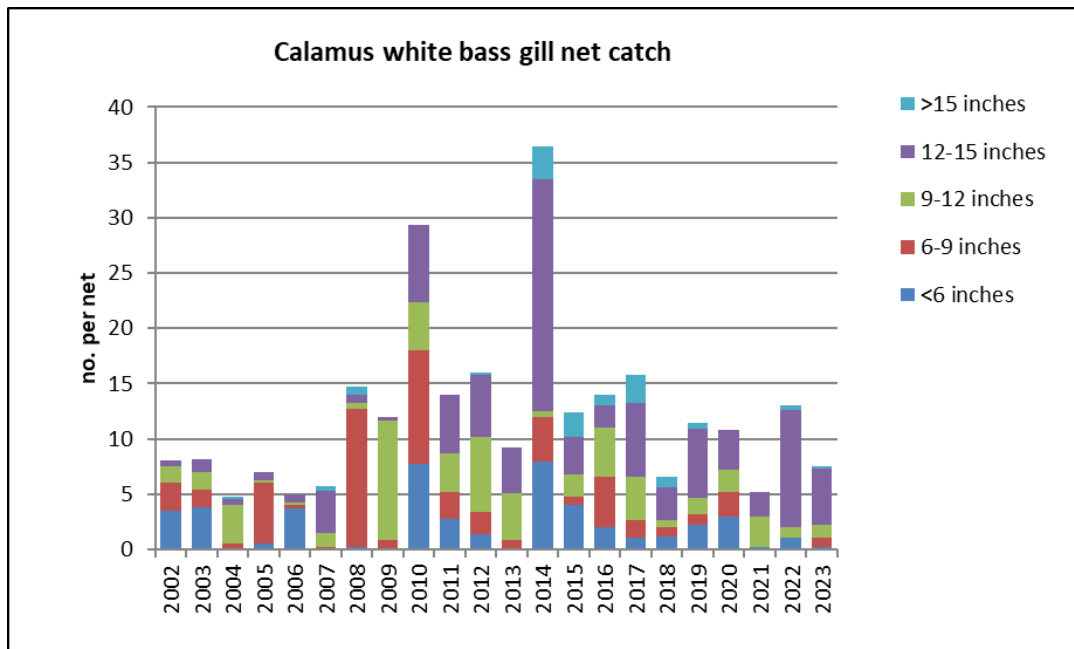
2023 Young-of-the-year Walleye Sampling

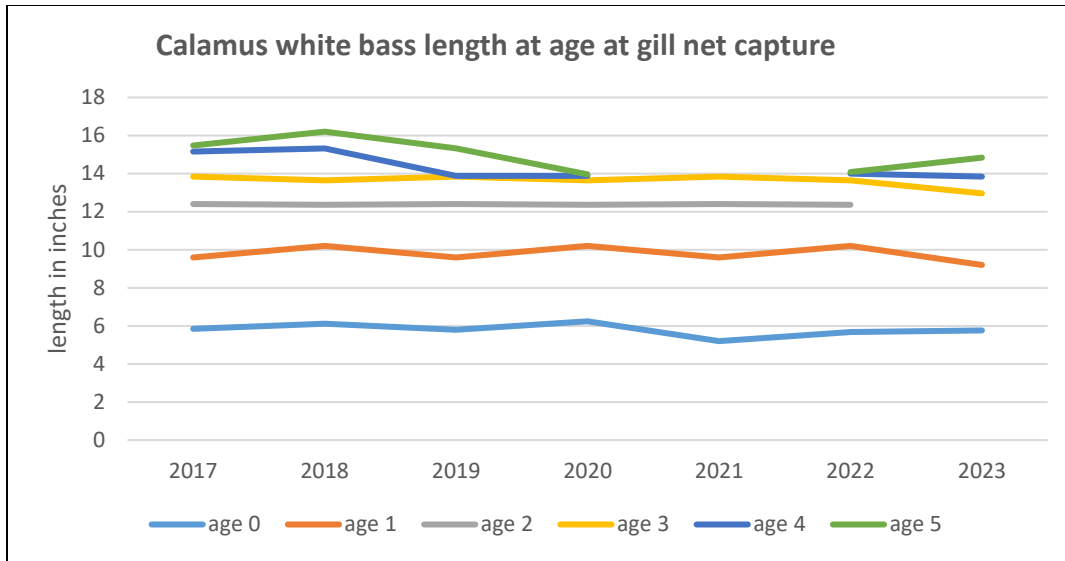
Age-0 walleye were collected by nighttime electrofishing on August 29. Evaluation of the fry/fingerling concurrent annual stocking is ongoing using chemical marking. Past research has shown that natural recruitment of walleye at Calamus is very low to non-existent so current efforts are concentrated toward fine tuning the stocking of fry and fingerling. In past years, the fingerling walleye received a chemical mark to help us evaluate which stocking strategy is contributing more fish—fry or fingerling. At this point in the stocking evaluation, both stocking strategies are contributing to year class strength. However, one strategy can contribute a little better than the other in some years. It appears both stockings should be continued to ensure adequate walleye recruitment.



White Bass

A healthy, abundant white bass population is present in Calamus Reservoir. Gill net catch for white bass of 7.5 per net in 2023 was down from the 2022 catch and slightly below the past previous five year average of 9.4. Fishing pressure and harvest of white bass was high in 2023 at times but fishing was somewhat spotty in July and early August. The size structure of white bass is skewed toward larger fish but reproduction appeared to be decent in 2023 as adequate numbers of young-of-the-year were seen during fall electrofishing. Fish are present up to 15 inches offering anglers good opportunity at quality sized fish. White bass body condition was okay for fish under 13 inches but sub-standard for the larger fish, particularly those white bass over 14 inches. Shad production was somewhat poor in 2023 and that parameter is the driving force behind body condition across all species at Calamus. Growth rates remain consistent with fish reaching 12 inches in three growing seasons. There was a slight dip in mean length for age one fish similar to that seen for walleye. Again, an indication of sub-standard shad production. Annual growth slows considerably after age 3 but most fish are harvested by that age. White bass fishing success in 2024 should be good and similar to what anglers have seen the past few years. **Remember only 1 white bass/wiper greater than 16 inches is allowed in the daily bag limit.**

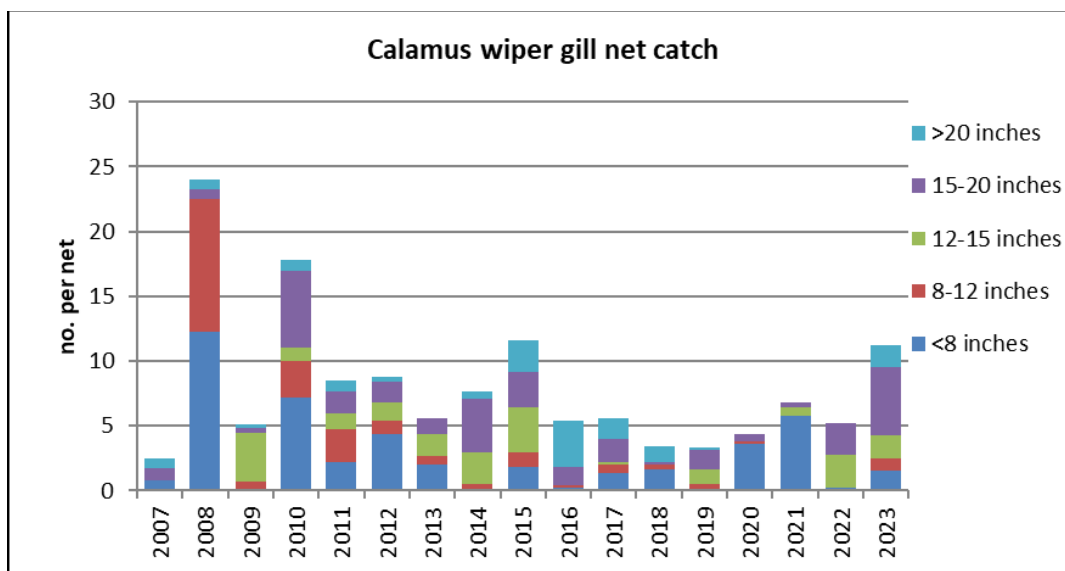


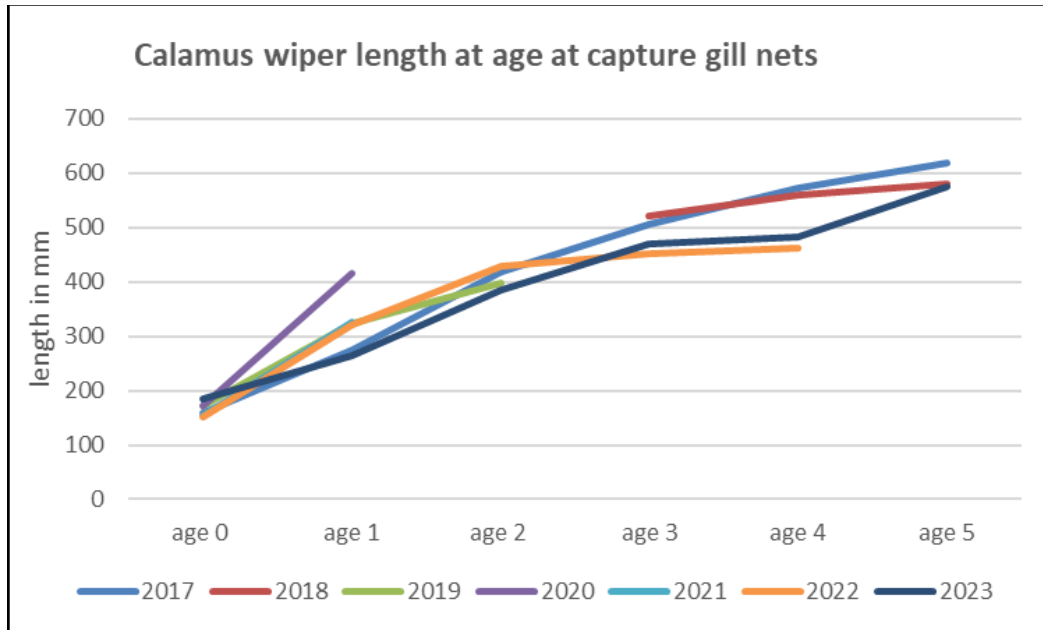


Wipers

The wiper catch per gill net in the 2023 sample is over twice that seen over the past few years with good numbers of larger fish present. As always, wipers are a schooling fish and they can be a “hit or miss” sample, however, there has been an increasing trend in sample numbers since 2018. Angler success on wipers in 2024 should be better for somewhat larger fish than was seen in 2023. Wipers exhibit much faster growth than white bass and current data indicates wipers reaching 17—18 inches in three to four growing seasons and over 20 inches in four to five growing seasons. Like white bass, prey availability in the form of young gizzard shad influences year class survival and growth rates. Anglers should see some wipers growing into the 20 inch and larger group barring any significant natural mortality. There have been some instances of bacterial infections leading to a die-off of larger fish after ice out at Calamus Reservoir. We will monitor the situation.

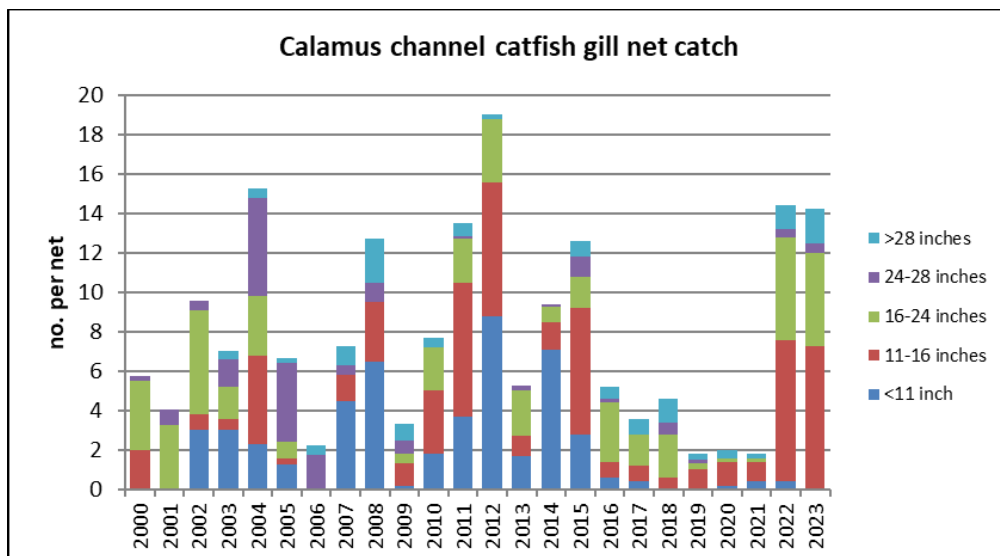
Only 1 wiper/white bass greater than 16 inches is allowed in the daily bag.





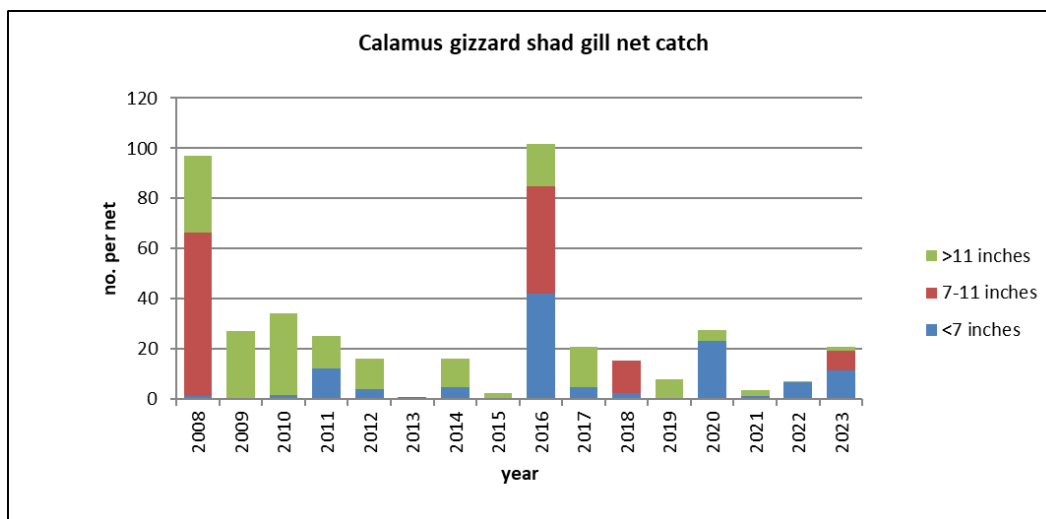
Channel Catfish

Channel catfish catch per net in the 2023 survey is similar to the 2022 survey and both are considerably higher than seen the past few years. The high catch is somewhat hard to explain since the fish collected were large enough to have been in the lake the past several years. Once again the reservoir elevation was pretty low during the 2023 sample and this may have led to an increase catch of channel catfish. To improve catfish recruitment, we have returned to stocking 10 inch size catfish and that scenario is likely contributing to the higher catch rate. As you can see from the graph, catfish sample catch numbers tend to vary widely at times. Data analysis indicates a negative relationship between reservoir water level elevation and catfish catch-per-net (correlation coefficient -0.65). In other words, the lower the lake level the higher the catfish catch rate in the nets. This relationship describes some of the variation in annual gill net catch but not all, so other factors are at work. Trophy fish are present in Calamus Reservoir and catfishing can be quite good certain times of the year. Calamus has become known as a catfish angling destination and the site of catfish tournaments. We look for catfish angling opportunity in 2024 to be similar as that seen in the past few years. A regulation change occurred for Calamus Reservoir beginning in 2020. **A “1 fish over 30 inches in the daily bag limit” regulation is now in place for channel catfish.**



Gizzard Shad

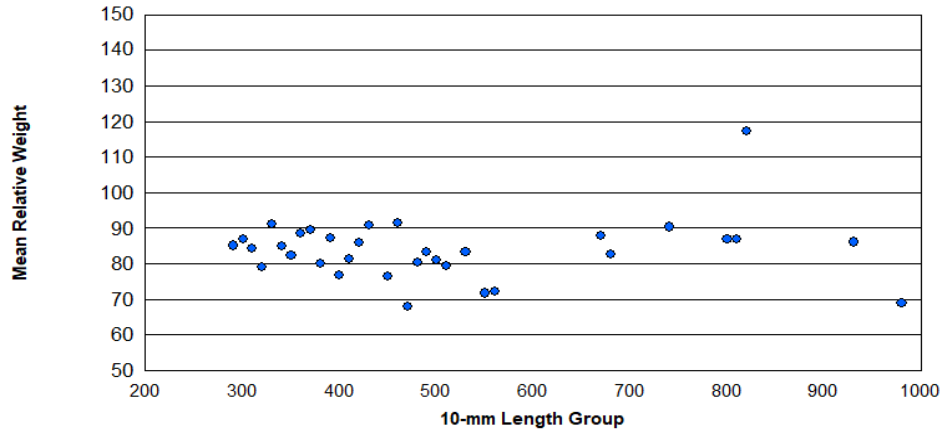
Gizzard shad are the primary prey for managed sport fish in Calamus Reservoir and their size distribution is critical for proper growth, recruitment and maintenance of desirable sport fish species. It is desirable to have high numbers of young-of-the-year shad to provide food for the sport fish such as walleye and white bass, but lower adult numbers so as not to compete with sport fish for space and food. Shad production in 2024 was spotty, seemingly delayed, and less than adequate as forage for all the predatory sport fish found in the lake. While the gill net catch indicated pretty good number of shad, distribution around the lake was poor. With the perceived low numbers of Young-of-The-Year shad came the undesirable effect of increased size of those young fish. Young shad quickly outgrew the size range for utilization by smaller predatory sport fish. This can lead to reduced body condition, reduced growth rates, and increased mortality for sport fish. Shad are continuing to over-winter in the warmer water of Gracie Creek at the upper end of the lake. It becomes critical to insure shad have access to this over-winter area. We will continue to monitor shad numbers at Calamus Reservoir. The Calamus shad population continues to be a source of adult spawners that we can easily collect and relocate to other reservoirs as needed.



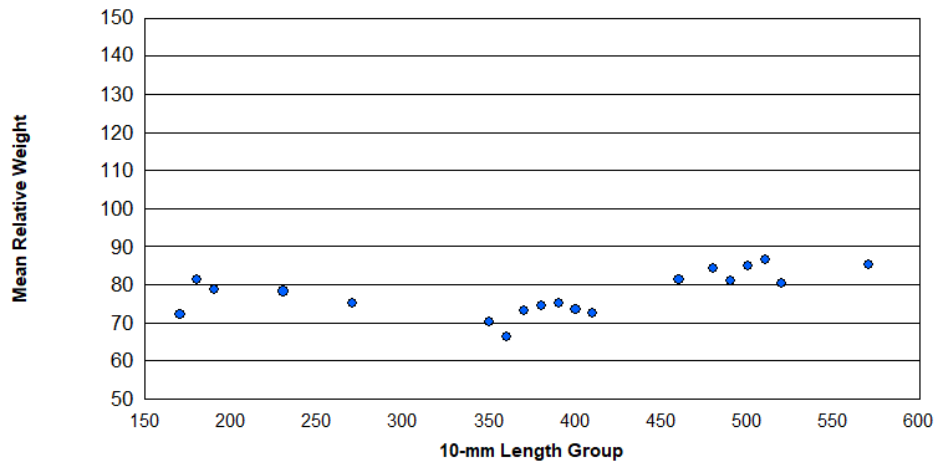
Body Condition Index (relative weights)

Discussion in the above paragraphs dealt with prey availability (shad production) and how the poor shad production in 2023 may have affected fish growth and recruitment. The following graphs illustrate the index we use to evaluate fish body condition. This index is called relative weight and gives the percentage of a sampled fish weight vs the “standard” weight for a given length. Any index over 80, which is 80% of the standard, is considered adequate and prey supply is not a problem. Obviously any fish with an index over 100 would be considered “plump” with more than enough to eat. As you can see, some of the younger, smaller walleye were not getting enough to eat in 2023. Some of the channel catfish, wipers and larger white bass apparently were not getting enough to eat. This all goes back to the 2023 shad production, or lack thereof. Everything with fish body condition, growth, recruitment, and mortality is related to shad production and that critical food supply. Hopefully 2024 will see higher production of small shad for these predatory fish to consume.

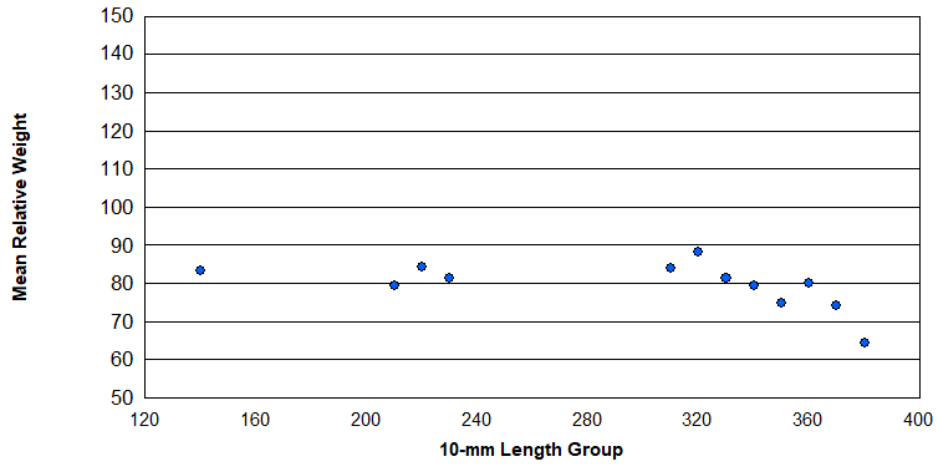
Channel catfish



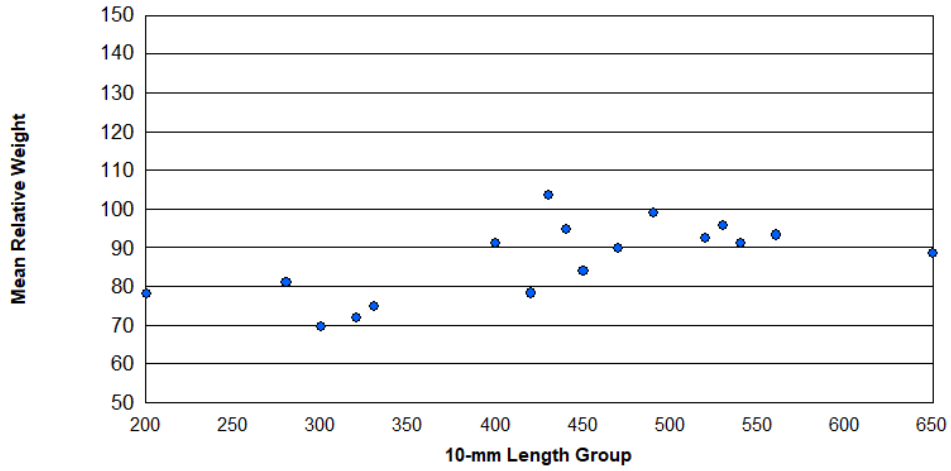
Wipers



White Bass



Walleye



Invasive Species

Anglers and recreational boaters should continue awareness for zebra and quagga mussels while using Nebraska lakes. Monitoring was completed at many Nebraska reservoirs during 2023, including the Calamus. To date, no zebra mussel adults or veligers have been found at Calamus. Zebra mussels are found in Lewis and Clark Lake, the Missouri River, Lake Yankton, and Offutt Air Force Base Lake. Invasive species technicians will be inspecting boats periodically at Calamus again in 2024 as well as collecting samples for potential early detection of zebra mussels. Thank you for your assistance and patience while these surveys are conducted. Please clean, drain, and dry your water craft prior to leaving any water body and never arrive at a lake with water in your boat or live well from anything other than a bottled domestic source. Invasive mussels have also been documented in several neighboring states including Iowa, Kansas, Missouri, and South Dakota. **Special Note: Zebra mussels have been found in Lake Francis Case, Lake Sharpe, and Lake Oahe in South Dakota in addition to a number of Northeast South Dakota lakes. If you fish those lakes please take extra precautions to drain and dry your watercraft and tackle before returning to our Nebraska lakes and reservoirs.**

Invasive mussels will attach to almost any surface and have detrimental impacts on industry (power plants, water intakes, irrigation, etc), and recreational users (fouling boat motors, impacting beaches, etc.). Invasive mussels cause an estimated \$5 billion per year in economic impacts in the United States for monitoring and control efforts. Inadvertent transfer by humans is the major source of new infestation for zebra and quagga mussels; primarily by boats, boat trailers, and fishing gear. Boaters and anglers are reminded that it is important to **clean, drain and dry** their equipment and boats before moving to different bodies of water. Anglers and boaters are encouraged to educate themselves on these and other aquatic invasive species. An excellent source of information regarding invasive species can be found on the University of Nebraska's Invasive Species Project website: <http://www.neinvasives.com>.



Regulations that took effect in 2013 mandate that all vessels and conveyance be drained of water prior to entering or leaving a lake to prevent the spread of invasive species. This means all livewells, baitwells, and boat hulls shall be drained and free of water except for water from a domestic source for bait fish. Additionally, all aquatic vegetation must be removed from boats and trailers prior to leaving a lake. Boats are subject to inspection by authorized personnel. Regulations will be strictly

enforced. Remember to bring ice on your fishing trip to transport your fish home. All boats not registered in Nebraska must have a non-resident AIS sticker purchased and properly affixed to their watercraft.

For more information on fishing rules and regulations visit the Nebraska Game and Parks website at OutdoorNebraska.org.

For more information on the fisheries at Calamus Reservoir contact:

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