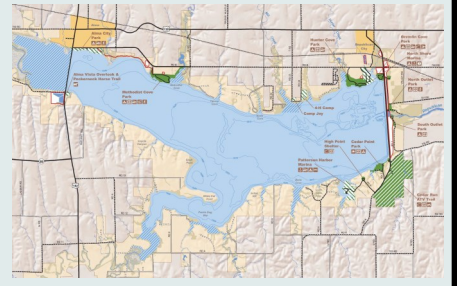


Harlan Reservoir

2020 Fish Population Survey Summary

Brad Newcomb, District Manager
Nebraska Game and Parks Commission



Nebraska Game and Parks Commission uses standard sampling methods to determine the status of fish populations in Nebraska waters. At Harlan Reservoir, gill nets are used to sample open-water fish species such as walleye and white bass, while trap nets are used for shoreline-oriented fish such as crappie. Annual netting surveys are completed at approximately the same dates and locations to reduce variability and allow for trend comparisons of species abundance and size distribution.

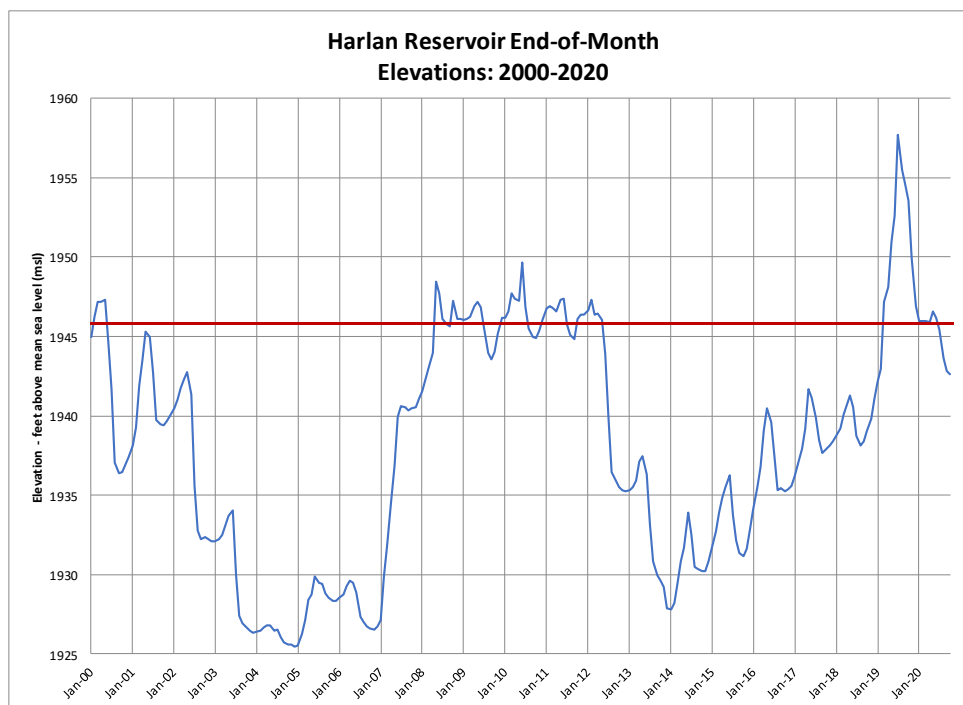
The following pages contain graphs and text that summarize netting surveys completed at Harlan Reservoir. Graphs show the total number of fish caught per net and the relative abundance of fish within several length categories. The text provides brief explanations of the information contained in the graphs. In most cases, results are included from the last 10 years.

Water Levels

The following graph shows water elevations at Harlan Reservoir from 2000 through 2020, and the red line shows the conservation pool elevation of 1946msl.

Harlan Reservoir experienced high water levels from 2007 through 2011, then water levels dropped considerably from 2012 to 2015. Water levels gained steadily starting in 2015, and then rose sharply in 2019 to all-time high levels. Water levels dropped for most of 2020, and now are a few feet below conservation pool. At conservation pool and higher, good aquatic habitat conditions help improve populations of shoreline-oriented fish species like crappie and largemouth bass.

Current lake elevation information can be found on the U.S. Army Corps of Engineers website:
<http://www.nwd-mr.usace.army.mil/rcc/nwk/7daylak3.pdf>

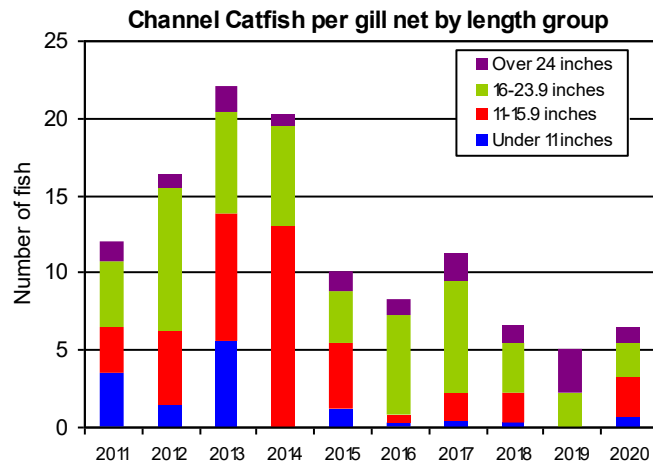


Channel Catfish

Gill net catch of channel catfish has been on a downward trend the last six years, and although the 2020 catch was a slight improvement, it was still much lower than the higher catches of 2012-2014.

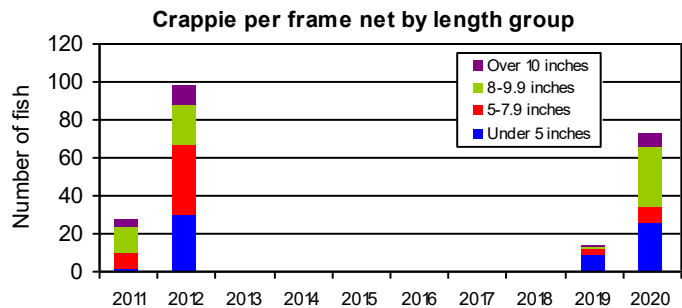
In 2020, catfish were sampled from all size groups, with some recruitment evident from the 2019 stocking. Catfish stocking will continue for the next few years until population numbers recover.

Current fishing regulations for channel catfish include a daily bag limit of five (5) in the reservoir, and a daily bag limit of ten (10) in the river.



Crappie

Trap nets are used to sample crappie populations when water levels are high enough to use standard net locations in coves. Netting completed the last two years documented very good crappie recruitment in 2019 and 2020. Also, good numbers of 8-10 inch crappie were sampled in 2020, which were all from the 2019 year-class. With various sizes available and solid recruitment, there should be excellent crappie fishing the next few years.

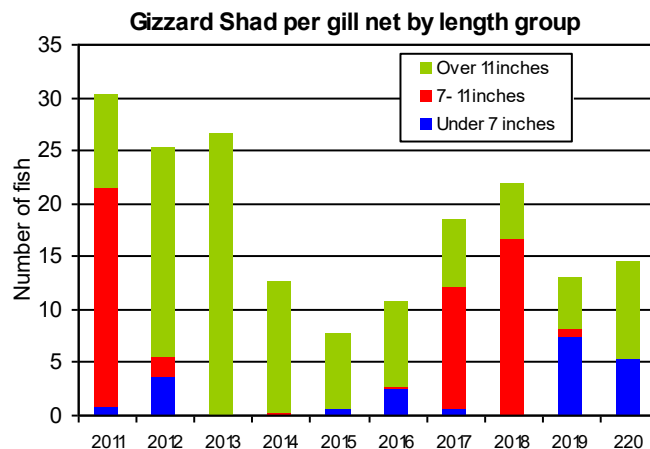


Gizzard Shad

Total numbers of gizzard shad in 2020 were near the 10-year average. Surveys from the last two years showed good numbers of shad under 7 inches long, which provide good forage for most predator sport fish.

Large numbers of intermediate-sized shad (7 to 11 inches) can result in competition for food resources with juvenile gamefish, and may reduce survival of young-of-the-year walleye and white bass.

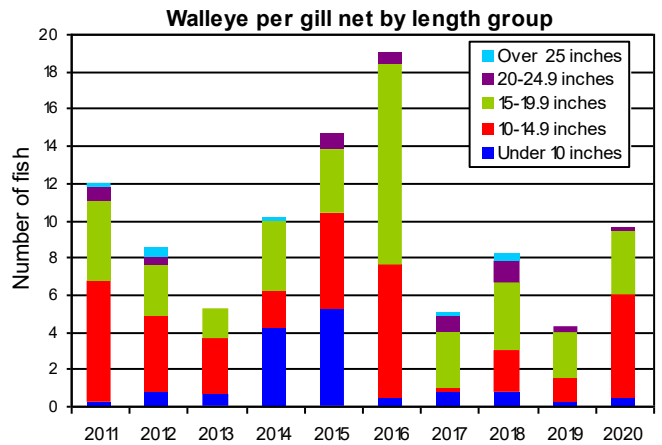
Gizzard shad are the most important prey species in Harlan Reservoir and serve as food for all major game fish populations.



Walleye

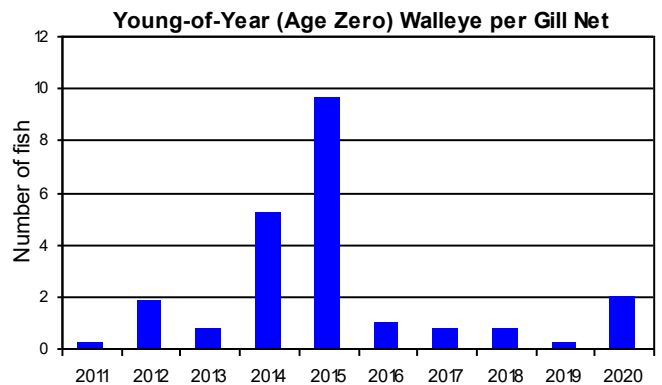
Walleye gill net survey information is displayed on four graphs: (1) all sizes, (2) young-of-year, (3) 15-20 inches, and (4) over 20 inches.

GRAPH 1: The first graph shows the number of walleye collected per gill net, with length groupings by color. The catch in 2020 was higher than the last three years, with two dominate size groups: 10-15 inches and 15-20 inches. This indicates good recruitment to the population and good prospects for future walleye fishing.



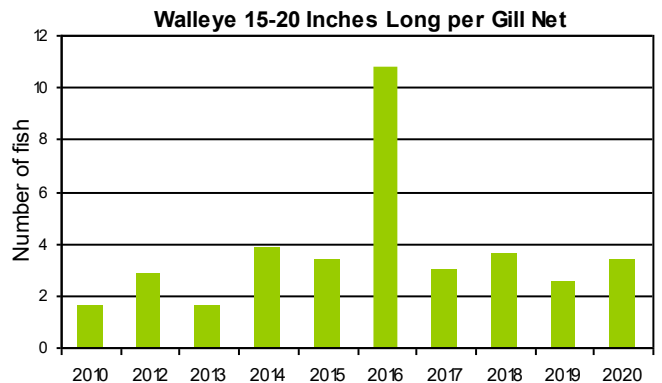
1

GRAPH 2: After a four-year run of low young-of-year (YOY) walleye numbers, the 2020 catch of YOY jumped up to 2 fish per net. This is the highest YOY catch since 2015, and one of the best in the last 10 years. Even with low YOY numbers from 2016-2019, walleye recruitment has been consistent with decent survival to larger sizes. Walleye fry stockings have been completed every year since 2009, with about 10-14 million fish stocked each year.



2

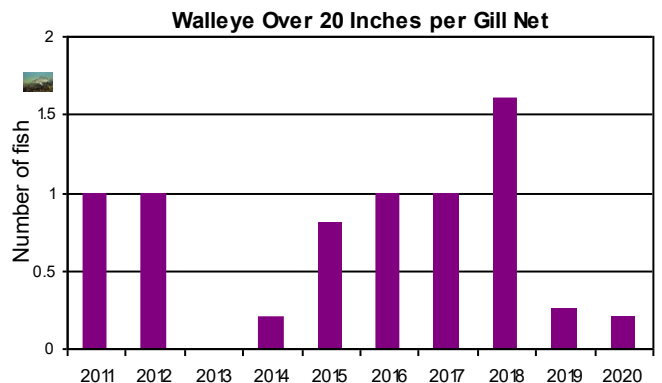
GRAPH 3: Numbers of walleye between 15 and 20 inches long are presented in the third graph, and 2020 results are near the long-term average level. Walleye in this size range are generally 2 to 4 years old.



3

Related to the walleye fishing regulation at Harlan, the survey showed 62% of the walleye population is under 15 inches, 19% from 15-18 inches, and 19% over 18 inches.

GRAPH 4: Walleye over 20 inches long are displayed in the fourth graph. The 2020 sample for these large walleye was near the lowest in the last 10 years. Most walleye in this size range are age five or older.



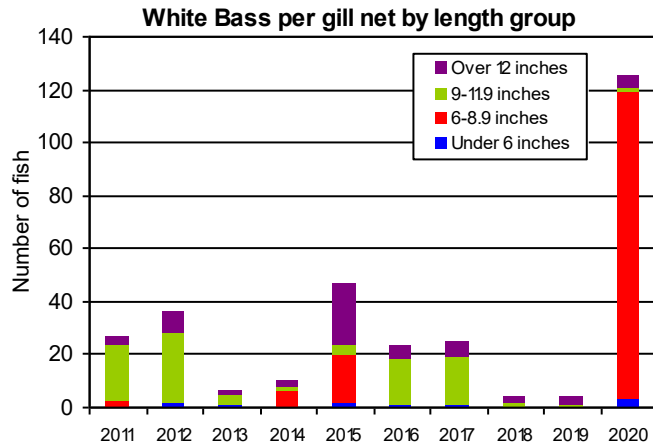
4



White Bass

White bass gill net catch spiked extremely high in 2020. The increase was a result of a large number of fish from 6-9 inches long. This is the highest catch of white bass ever recorded at Harlan Reservoir, and the highest in recent history in Nebraska.

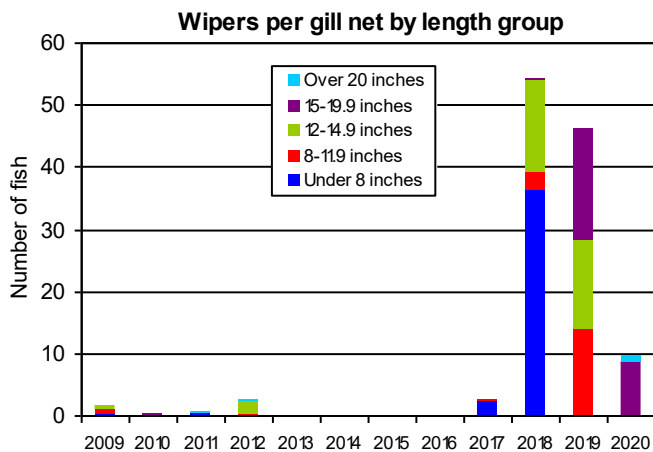
Age data shows these 6-9 inch fish were the 2020 year-class. White bass were also sampled in the larger length groups of 9-12 inches, and over 12 inches long. With a range of sizes available, and an extremely large 2020 year-class, there should be excellent white bass fishing the next few years.



Wipers

Recent stockings of wiper fry resulted in excellent wiper recruitment, which has been documented in the last four netting surveys. Most wiper stockings prior to 2017 were fingerling fish (1-2 inches), and survival was low. Wiper fry were stocked in 2017 and 2020, and survived very well.

After abnormally high net catches in 2018 and 2019, the wiper net catch in 2020 dropped to a more normal level of about 10 per net. Most of the wipers sampled in 2020 were 15-20 inches long, and from the 2018 stocking.



Based on recent success with fry stockings, Harlan wiper populations will be maintained in the future with fry stockings rather than fingerlings. Stocking frequency and rates will be adjusted according to survival success.

Results from a 2002-2003 food habit study at Harlan involving major predator fish species indicated very little competition between wipers and walleye. Based on those results, wiper stocking was reinstated in 2005. The current stocking program should improve the population to provide a sustainable sport fishery with potential for trophy fish.



Additional Information about Harlan Reservoir

Walleye Stocking

Walleye fry have been stocked at Harlan annually since 2009, with about 10 to 14 million stocked each year. Walleye recruitment has been documented in each of these years, including a record number of young-of-year walleye in 2015. Special research sampling of young-of-year walleye from 2011 through 2018 has shown that over 90% of sampled young walleye were stocked fish. Based on overall recruitment success with walleye fry stockings, this stocking strategy will continue at a rate of 1,000 fry per surface acre of water each year. Due to COVID-19 travel restrictions in 2020, no walleye fry stockings were completed in Nebraska.



Channel Catfish Stocking

Due to declining catfish numbers since 2014, catfish stocking was completed in 2019, with a stocking of 9,500 10-inch fish. Due to fish hatchery shortages, the 2020 catfish stocking was delayed until spring of 2021, otherwise normal fall catfish stocking will continue until population numbers recover to higher levels.

Wiper Stocking

Based on results of several years of research into predator fish interactions in Harlan Reservoir, wiper stockings resumed in 2005. Fingerling stockings during the 2005-2016 time frame were not very successful. Wiper fry were stocked in 2017 and 2018 with excellent success. Because of recent success with wiper fry stockings, future stocking requests will be for fry on a limited basis.

Crappie, Largemouth bass, and Northern pike stocking

These shoreline-oriented fish species are typically stocked when reservoir water levels are near conservation pool. With high water levels, crappie, largemouth bass, and tiger muskie were stocked in 2019 and 2020. Tiger muskie replaced northern pike stockings due to hatchery availability. These species will be stocked the next few years pending high water levels and good shoreline habitat conditions.

Angler Survey

There was not an angler survey completed in 2020 at Harlan Reservoir. Future angler survey work is in the planning phase, and updates will be provided when available. These surveys provide valuable information on angling pressure, catch rates, harvest rates, and numbers and types of fish caught.

Aquatic Invasive Species – Zebra Mussels

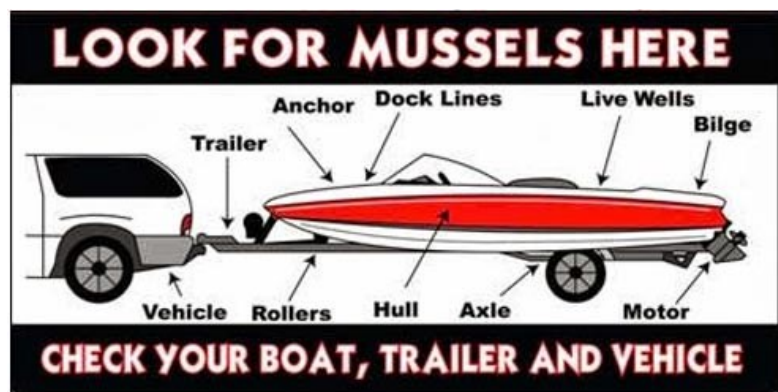
Anglers and recreational boaters should be aware of the threat of zebra and quagga mussels while using Nebraska waters. Boaters using Nebraska waters need to be aware of **current regulations** dealing with aquatic invasive species. The following regulations are in effect to help prevent the spread or introduction of unwanted species in Nebraska waters.

- It is unlawful to **arrive at or leave** any waterbody in Nebraska with water other than from a domestic source (such as a water supply system, well, or bottled), except for fire-fighting purposes. This applies especially to boats, their compartments, equipment or containers that may hold water.
- Any watercraft that has been on a Nebraska waterbody must drain the lake water from their compartments, equipment or containers before leaving the launch area. It is illegal to dump baitfish into a Nebraska waterbody.
- Livewells need to be drained prior to leaving a launch area: plan ahead and bring a cooler for harvested fish.
- All aquatic vegetation from that waterbody attached to the watercraft and/or trailer must be removed before leaving the launch area.

A good source of information about invasive species can be found on the University of Nebraska's Invasive Species Project website:

<http://neinvasives.com/species/aquatics>

Technicians have been hired the past few years to conduct interviews of boaters and help provide more information about aquatic invasive species. Harlan Reservoir is a priority location for this effort.



For additional information about fisheries management at Harlan Reservoir, please contact the Nebraska Game and Parks Commission office in Kearney at 308-865-5310, or by email at the addresses listed below.

District Manager: Brad Newcomb, brad.newcomb@nebraska.gov
Biologist: Brad Eifert, brad.eifert@nebraska.gov