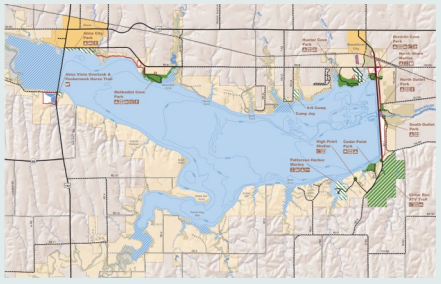
Harlan Reservoir

2019 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.

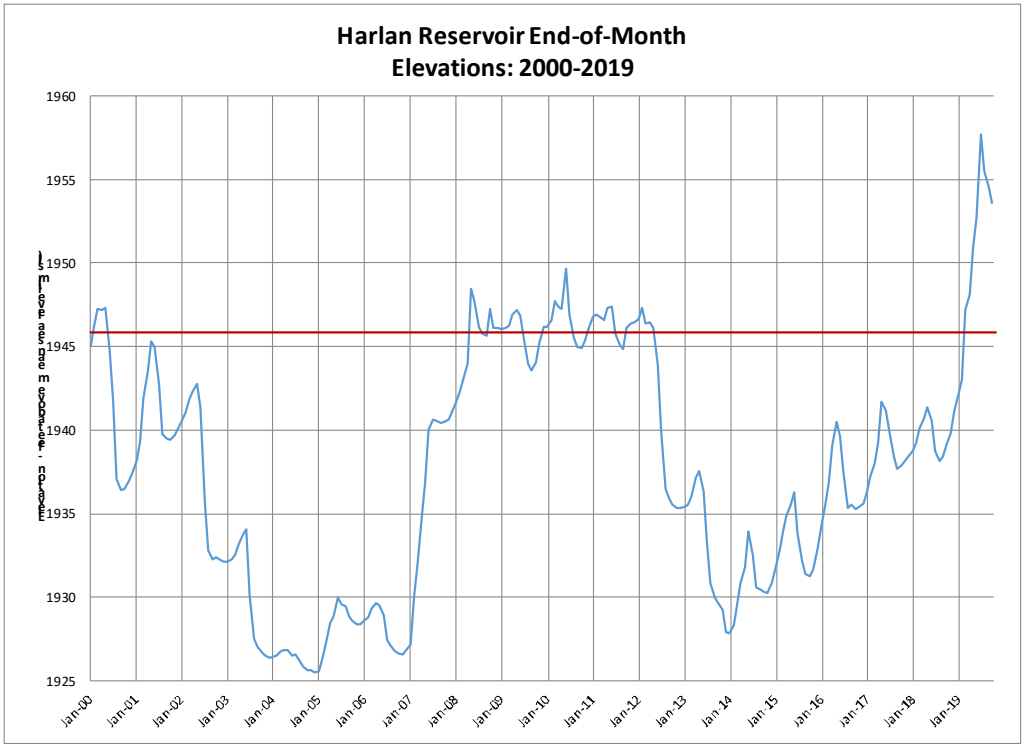
The following pages contain graphs and text that summarize netting surveys completed at Harlan Reservoir. Graphs show the total number of fish caught per net and the relative abundance of fish within several length categories. The text provides brief explanations of the information contained in the graphs. 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 2019, 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 since 2015, and then rose sharply in 2019 to all-time high levels. At conservation pool and higher, good aquatic habitat conditions will help improve populations of shoreline-oriented fish species like crappie.

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

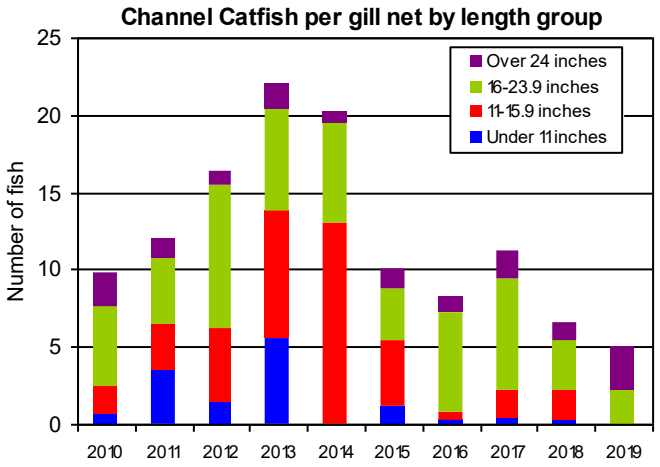


Channel Catfish

Gill net catch of channel catfish has declined the last six years, and the 2019 catch was the lowest in 10 years.

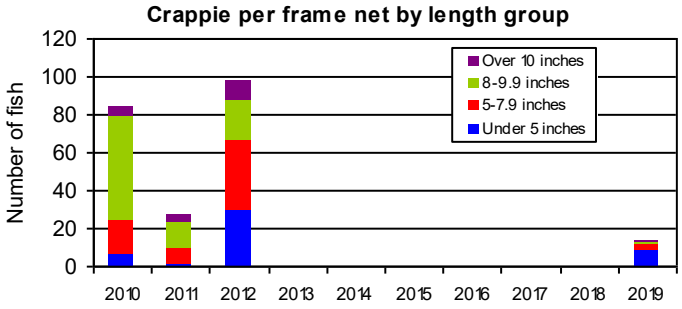
No catfish were sampled under 16 inches long, although Harlan received a stocking of 9,500 10-inch catfish in 2019. Catfish stocking will continue for the next few years until population numbers recover.

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

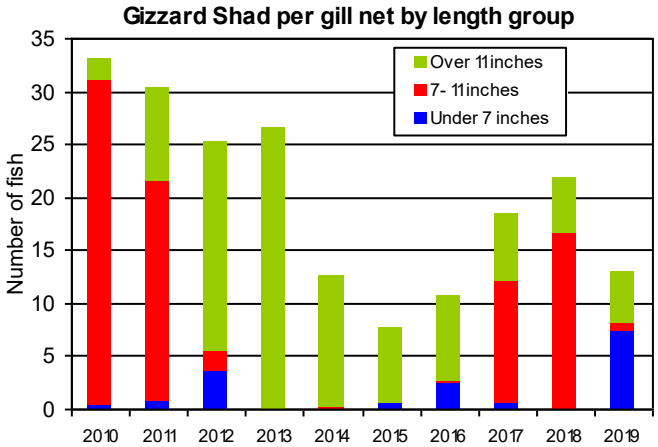
Because of low reservoir water levels, trap nets used to sample crappie were not ran from 2013 through 2018. With high water levels in 2019, crappie sampling resumed at standard locations in coves. There was good crappie recruitment from 2007 to 2012, and more recruitment was documented in 2019. Crappie numbers should continue to rebound with the current high reservoir elevations at Harlan.



Gizzard Shad

Total numbers of gizzard shad in 2019 were below the 10-year average, but there was a good number of shad under 7 inches long. This was the most small shad sampled in the last ten years, and should 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 2019 walleye numbers are well below the average from the past 10 years. The low catch may have been influenced by high reservoir water levels and wide distribution of walleye.

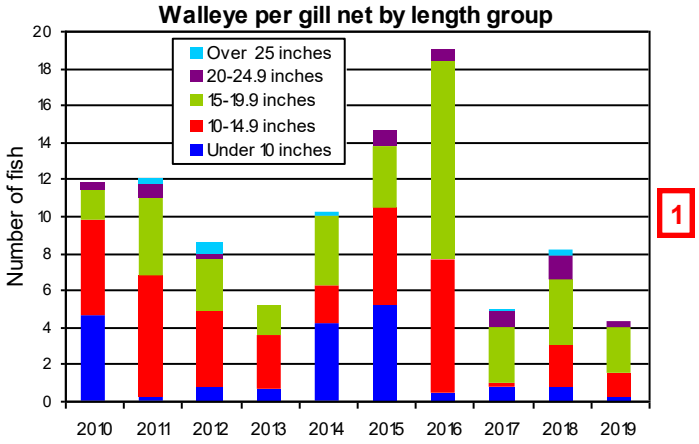
Although the 2015 year-class was very strong, fish from the following three year-classes are now a large part of the population. With a good range of walleye sizes available, walleye fishing should be good the next few years.

GRAPH 2: Numbers of young-of-year walleye have been low the last four years, but fish are still surviving to larger sizes. Walleye fry stockings have been completed every year since 2009, with about 10-14 million fish stocked each year. With three excellent recruitment years since 2010, there is a variety of walleye sizes available to anglers.

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

Related to the walleye fishing regulation at Harlan, the survey showed 35% of walleye are under 15 inches, 53% from 15-18 inches, and 12% over 18 inches.

GRAPH 4: Walleye over 20 inches long are displayed in the fourth graph. The 2019 sample for these large walleye was near the lowest in the last 10 years. High water levels may have impacted this catch. Most walleye in this size range are age five or older.



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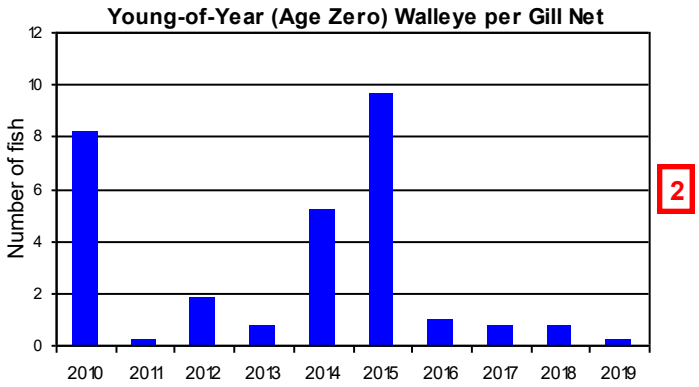

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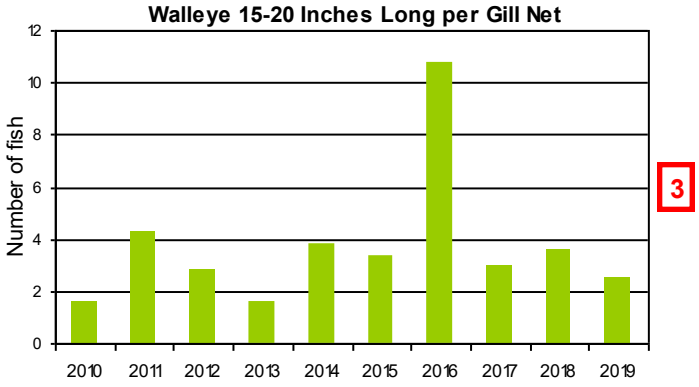

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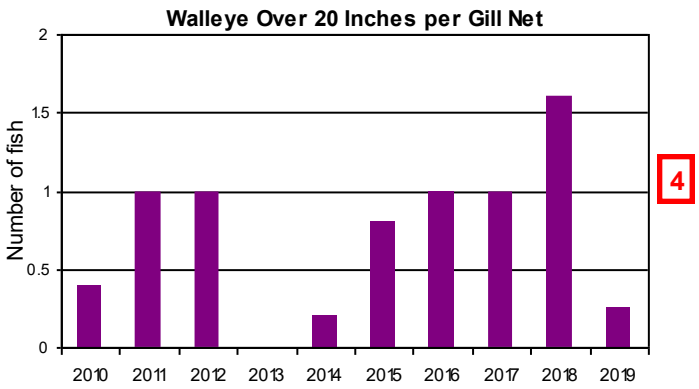

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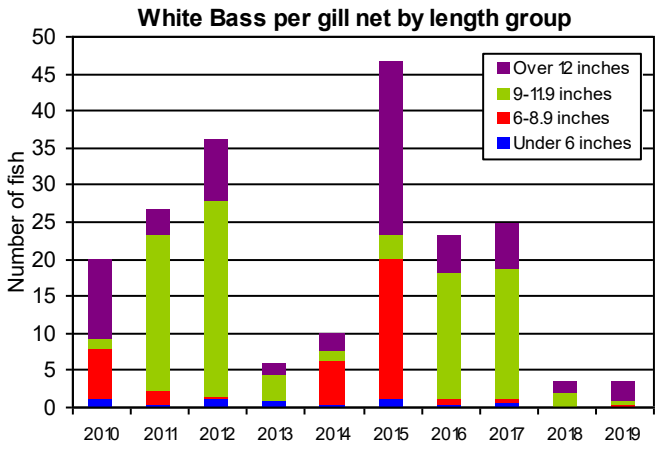
White Bass

White bass gill net catch was very low in 2019, and similar to the 2018 catch. Fish were sampled from 6 to 14 inches long, and the average length was 12 inches.

White bass are a schooling species, and gill net sampling can be variable. Very high reservoir water levels likely impacted gill net catch in 2019. Future netting efforts should be closer to long-term trends at Harlan.

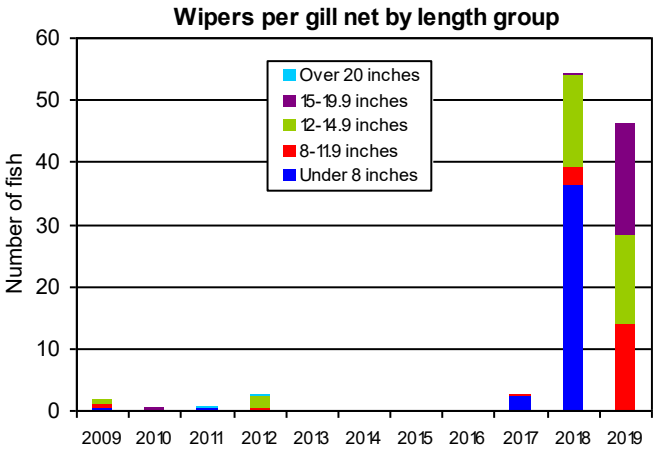
Similar to walleye, there was an excellent 2015 year-class of white bass which has resulted in good fishing at Harlan Reservoir the past few years. Long-term survey results suggest good fishing should continue into the next few years.



Wipers

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

The 2019 netting survey documented a large number of wipers from both the 2017 and 2018 fry stockings. Wipers from the 2017 year-class now range from 16 to 18 inches long, while the 2018 year-class are 11 to 14 inches long.



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 11 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. Walleye recruitment has been excellent three of the last ten years. Special research sampling of young-of-year walleye from 2011 though 2018 has shown that over 90% of sampled young walleye were stocked fish. Based on overall recruitment success with walleye fry stockings, they are planned annually at a rate of 1,000 fry per surface acre of water.

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. 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 from 2005 through 2016 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.

Largemouth bass, Northern pike, and Crappie stocking

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

Angler Survey

There was not an angler survey completed in 2019 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. Currently in Nebraska, zebra mussels have been documented at Offutt Air Force Base, the Missouri River, and Lewis and Clark Lake. Invasive mussels have been documented in most of Nebraska's neighboring states, including over 25 locations in Kansas. Monthly monitoring completed at many Nebraska reservoirs during the last several years have not shown any new evidence of zebra mussels.

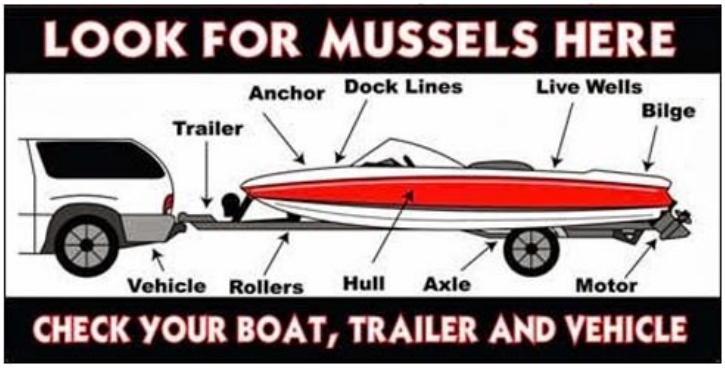
Anglers and boaters using Nebraska waters need to be aware of **current regulations** dealing with aquatic invasive species. The following regulations are in effect to help prevent the spread or introduction of unwanted species in Nebraska waters.

- **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**.
- **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.**

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 has been a priority location for this effort in the past, and will continue in future years.



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