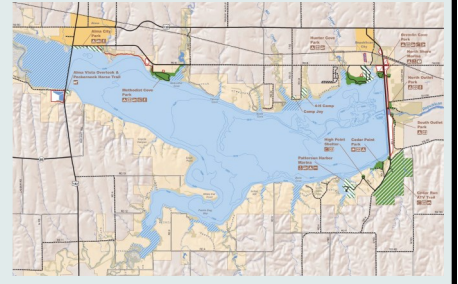


Harlan Reservoir

2018 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.

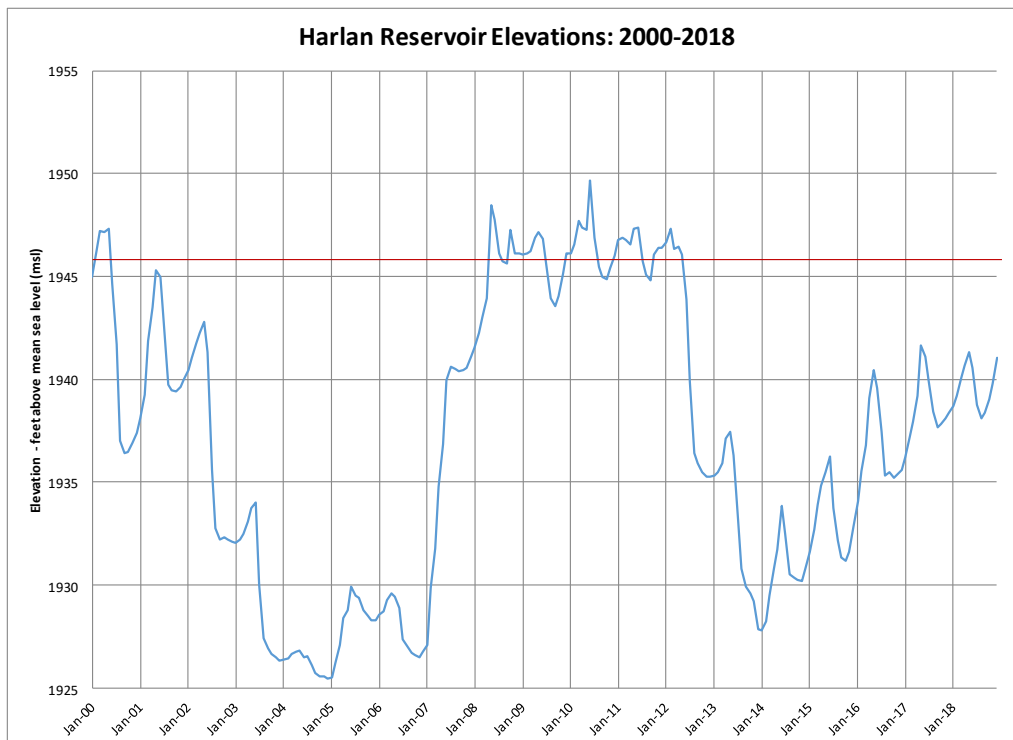
The following pages contain graphs and text that summarize netting surveys completed at Harlan Reservoir. Graphs show the total number of fish caught per net and the relative abundance of fish within several length categories. The text provides brief explanations of the information contained in the graphs. 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 2018, 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 have gained steadily since 2015, and may reach conservation pool level in 2019. At full conservation pool, 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>

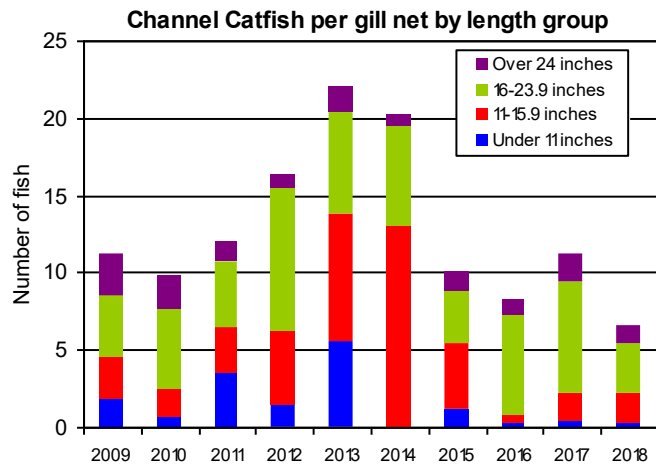


Channel Catfish

Gill net catch of channel catfish has declined the last five years. Although the 2017 catch was near the long-term average, the 2018 catch was the lowest in 10 years.

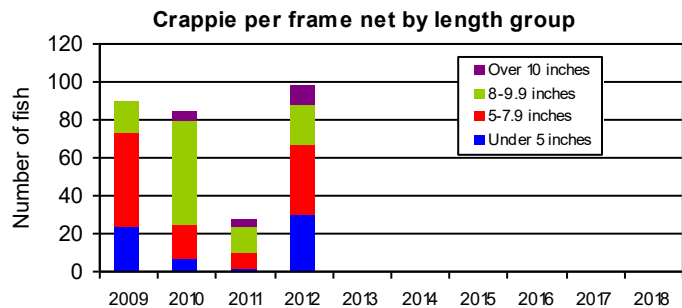
Catfish were present in all size groups, with most in the 16 to 24 inch size range. The average length of catfish sampled was 20 inches.

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. Harlan catfish anglers should expect good fishing in 2018 with a good variety of sizes available.



Crappie

Because of low reservoir water levels, trap nets used to sample crappie were not run from 2013 through 2018. Crappie sampling will resume when water levels allow sampling at standard locations in coves. Good crappie recruitment was documented from 2007 to 2012, but crappie numbers have declined and now are only caught sporadically by anglers.

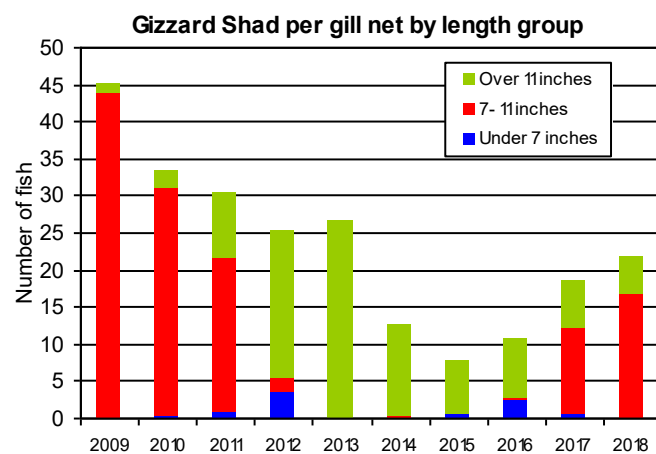


Gizzard Shad

Gizzard shad numbers from 2018 were near the 10-year average, with most in the 7 to 11 inch range.

Large numbers of intermediate-sized shad (like the 2009 sample) can result in more competition for food resources with juvenile gamefish, and may reduce survival of young -of-the-year walleye and white bass.

Very few small shad were sampled in the 2017 and 2018 surveys, and may have been too small to sample with standard gill nets. Gizzard shad are the most important prey species in Harlan Reservoir and serve as food for all the 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.

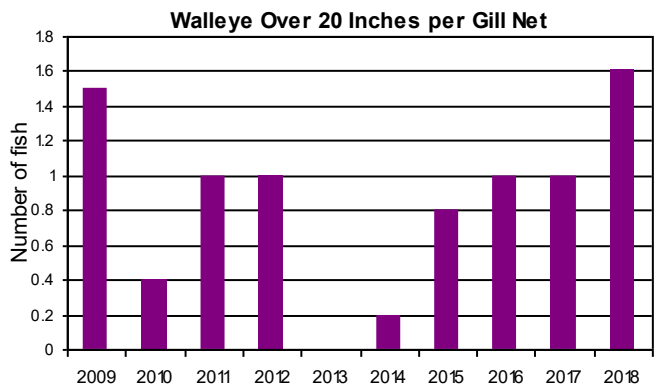
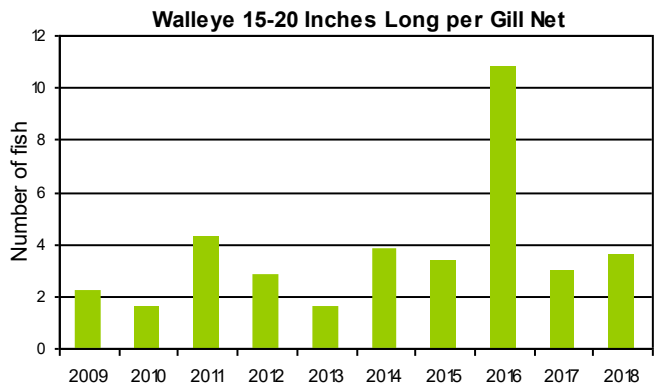
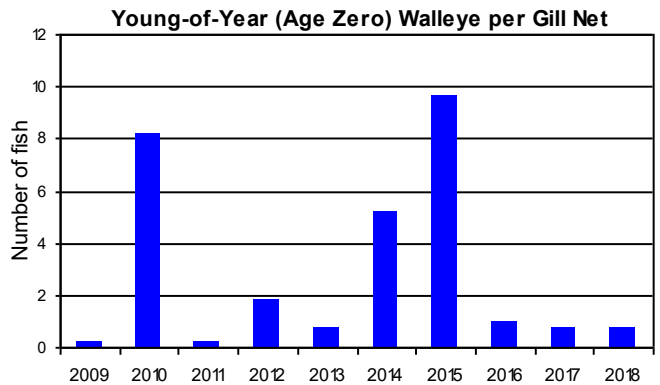
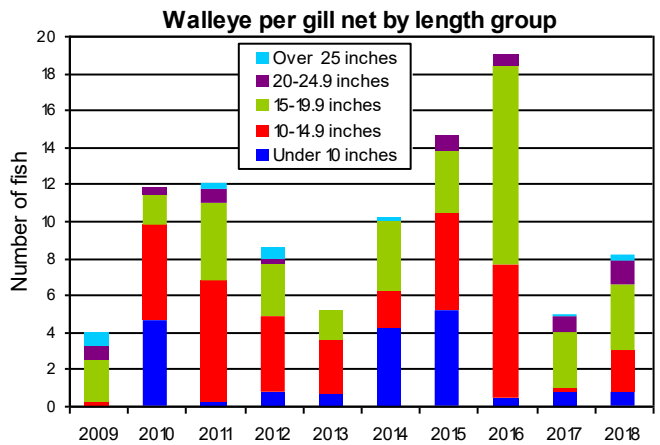
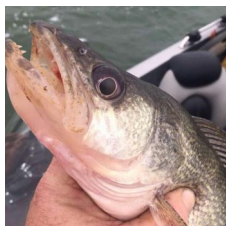
GRAPH 1: The first graph shows 2018 walleye numbers are up from the previous year, and near average from the past 10 years. Fish were represented in all size groups, including the best representation of walleye over 20 inches since 2009.

Although the 2015 year-class was very strong, fish from the last 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 fairly low the last three 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, overall walleye numbers at Harlan remain good.

GRAPH 3: 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 37% of walleye are under 15 inches, 34% from 15-18 inches, and 29% over 18 inches.

GRAPH 4: Walleye over 20 inches long are displayed in the fourth graph. The 2018 sample for these large walleye was the highest in the last 12 years. Most walleye in this size range are age five or older.

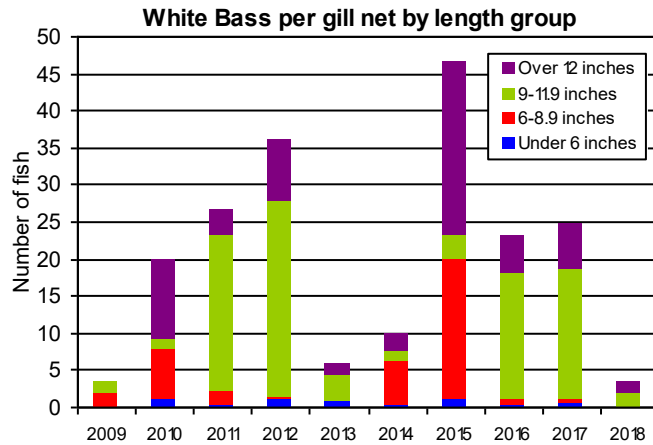


White Bass

White bass gill net catch was very low in 2018. Fish were sampled from 9 to 15 inches long, and the average length was 12 inches.

White bass are a schooling species, and gill net sampling can be variable. Hopefully, the 2018 netting results are not an indication of a population decline, and future netting efforts should be closer to long-term trends at Harlan.

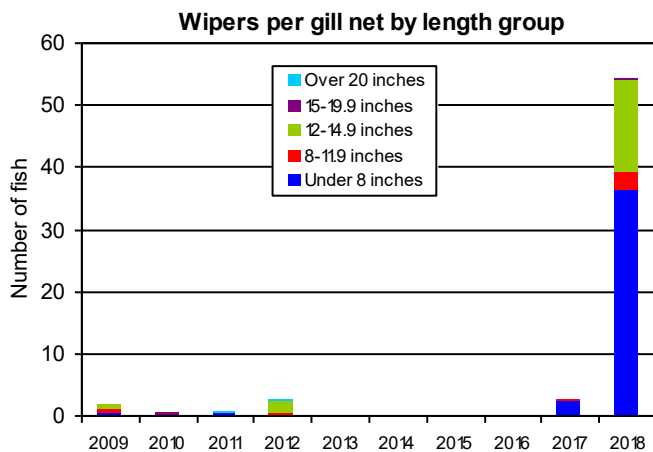
Similar to walleye, there was an excellent 2015 year-class of white bass which has resulted in good fishing at Harlan Reservoir the past few years. Long-term survey results suggest good fishing should continue into the next few years.



Wipers

Wiper fry stockings resulted in excellent wiper recruitment documented in the 2017 and 2018 netting surveys. Most wiper stockings prior to 2017 were fingerling fish (1-2 inches), and survival was low.

The 2018 netting survey documented a large number of wipers from 5-7 inches long, which were from the 2018 stocking. Good numbers were also sampled from 12-15 inches long, and are a result of the 2017 stocking.



Because of recent results with fry stockings, Harlan wiper populations will be maintained in the future with fry stocking rather than fingerlings.

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 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 nine years. 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 recent recruitment success, walleye fry stockings are planned annually at a rate of 1,000 per surface acre of water.



Channel Catfish Stocking

Harlan Reservoir received stockings of channel catfish in 2007 and 2009 due to declining population trends and low recruitment. Each catfish stocking consisted of 10 fish per acre that were 5 to 7 inches long. Catfish numbers increased after 2010, and stocking was discontinued. Catfish stocking will be considered in the future when population numbers show downward trends.

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 and Northern pike stocking

These shoreline-oriented fish species have been stocked in the past when the reservoir water levels were near conservation pool. Since Harlan Reservoir water levels in 2019 are approaching full pool, stocking requests for these species will be initiated.

Angler Survey

There will not be 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, Cunningham Lake, 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 six 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 likely 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