Harlan Reservoir

Fisheries Update - Spring 2022

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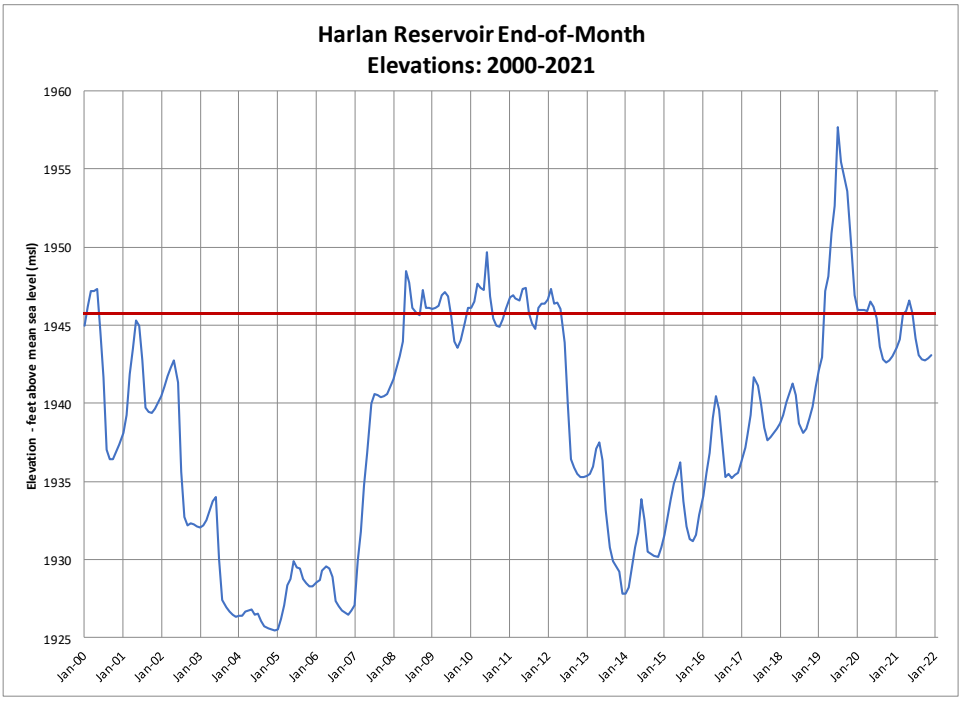
Nebraska Game and Parks Commission uses standard sampling methods to determine the status of fish populations in Nebraska waters. At Harlan Reservoir, gill nets are used to sample open-water fish species such as walleye and white bass, while trap nets are used for shoreline-oriented fish such as crappie. 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 2021 and the red line shows the conservation pool elevation of 1946 msl.

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 reached an all-time high elevation in 2019. Water levels have remained fairly consistent the past two years, with the lake only dropping about four feet during 2021. Higher than average water levels have allowed shoreline-oriented fish species like crappie and largemouth bass to thrive in recent years, as well as making access for boaters and anglers much easier. Current lake elevation information can be found on the U.S. Army Corps of Engineers website: [Current Data for Harlan County Dam, NE (usbr.gov)]

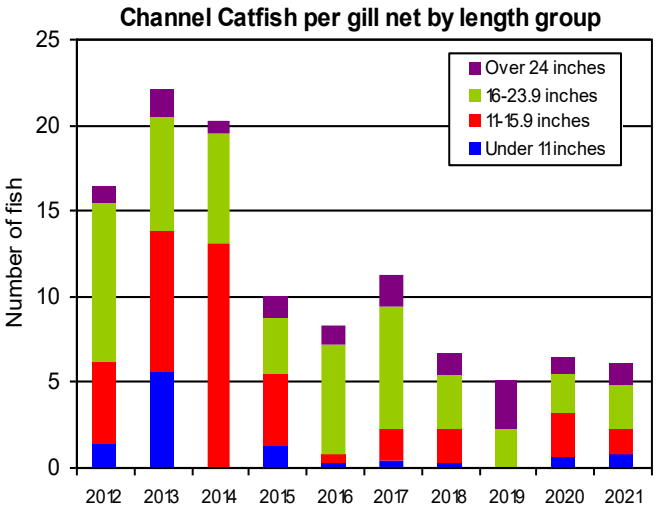


Channel Catfish

Gill net catch of channel catfish has been stable the past four years, but overall the catch remains lower than results seen during the 2012-14 time frame. The ten year average catch is 11.2 catfish/net.

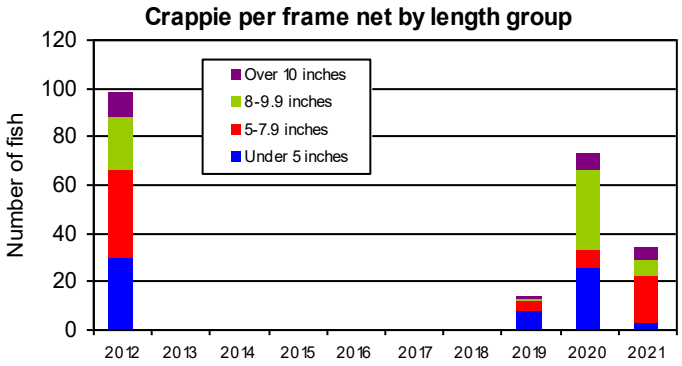
In 2021, catfish were sampled in all size categories and the average catfish length was 17.8 inches. Catfish fingerlings were stocked in 2019 and 2021 to improve abundance. The catfish population will continue to be monitored to determine if future stocking is warranted.

Current fishing regulations for channel catfish include a daily bag limit of five in the reservoir and a daily bag limit of ten in the river upstream of the Highway 183 Bridge.



Crappie

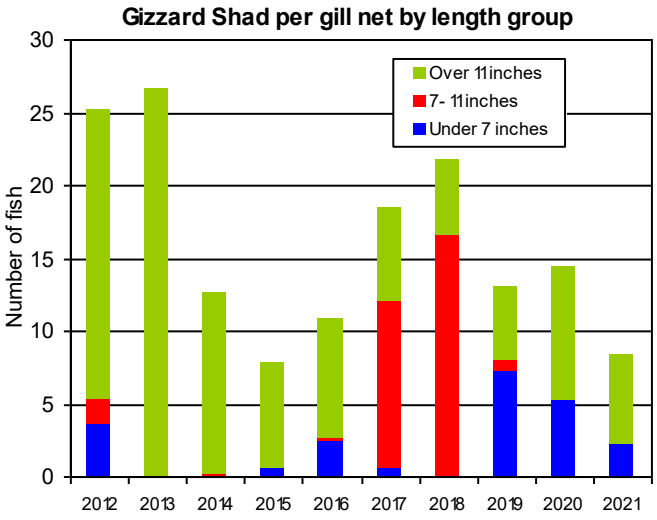
Trap nets are used to sample crappie populations when water levels are high enough to use standard net locations in coves. Netting completed the last three years has documented very good crappie recruitment. During 2021 sampling efforts, crappie of all size classes were sampled and there was fair abundance of fish larger than ten inches. With various sizes available and solid recruitment, crappie anglers should find good opportunity the next few years.



Gizzard Shad

Gizzard shad are the primary prey species found in Harlan Reservoir and serve as food for all major game fish populations. Ideal shad populations consist of a few breeding adults and an abundant population of small young-of-the-year shad. High abundance of intermediate-sized shad (7 to 11 inches) can result in competition for food resources with juvenile gamefish and tends to reduce survival of young-of-the-year walleye and white bass.

Although current shad abundance is slightly below average, the population appears to be in balance and contains the proper number of small individuals to maintain healthy predator populations.



Walleye

The following four graphs depict the walleye catch from the fall of 2021.

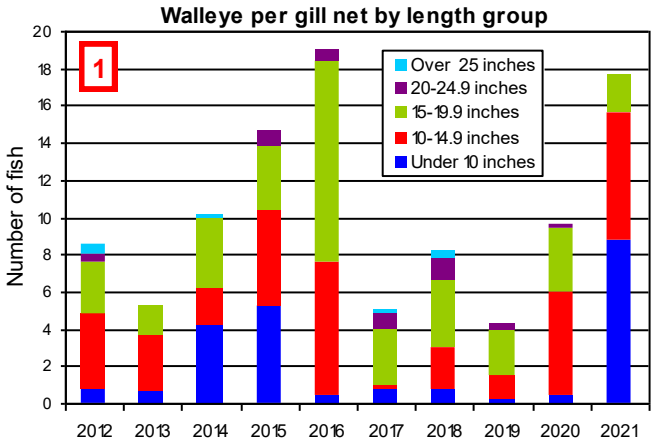
GRAPH 1: The 2021 catch of walleye was the highest we have sampled at Harlan since 2016. The majority of the catch was comprised of walleye less than 15 inches. This indicates good recruitment to the population and great prospects for future walleye fishing. Due to the high catch of young fish, the average length of a walleye collected during the survey was only 10.4 inches. Fish of legal harvest size (>15 inches) comprised about 11% of the total number of walleye sampled last fall.

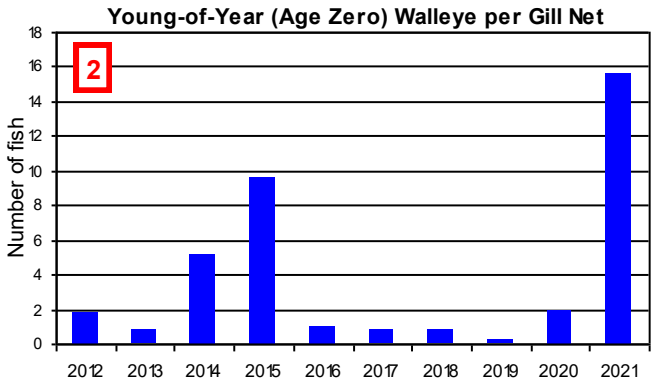
GRAPH 2: The 2021 catch of young-of-the-year walleye was the highest seen in recent history at Harlan Reservoir. Walleye fry stockings have been completed every year since 2009 (except 2020) with about 10-14 million fish stocked each year. Although we do see some limited natural reproduction of walleye at Harlan, studies have indicated that stocking typically contributes up to 90% of the walleye in the reservoir. The large 2021 year-class should contribute to excellent fishing opportunities during the next several years.

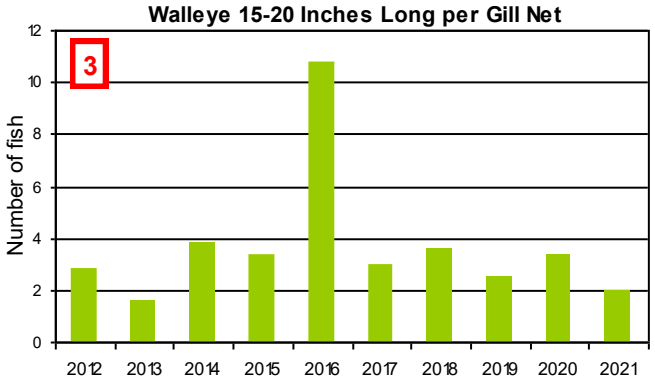
GRAPH 3: Numbers of walleye between 15 and 20 inches long are presented in graph 3. 2021 results indicate abundance of these fish are slightly below the ten year average of 3.7 fish per net. Walleye in this size range are 2 to 4 years old and generally provide the bulk of the walleye harvest at Harlan each year. Due to the lower than average abundance of these fish, anglers may notice a slight decline in angling success during 2022.

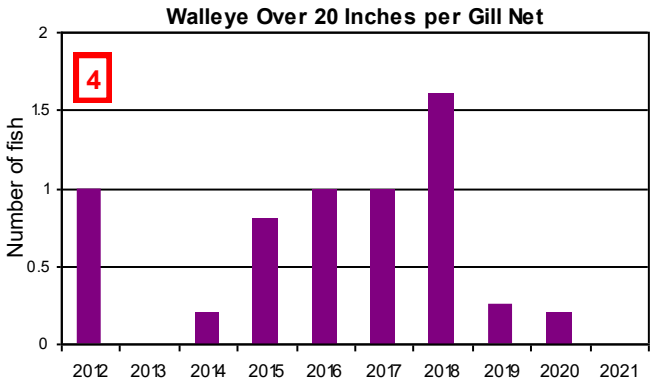
GRAPH 4: Walleye over 20 inches long are displayed in the fourth graph. There were no fish of this size class collected during the 2021 survey. We have seen declining abundance of these fish the past several years, presumably due to low recruitment and angler mortality. Most walleye in this size range are age five or older. These large fish can be more difficult to sample in standard survey gear as they are less abundant and sometimes occupy different habitats within the reservoir.

The walleye regulation for Harlan allows the harvest of one fish from 15-18 inches and three longer than 18 inches; or four longer than 18 inches. Only one fish larger than 22 inches is allowed.







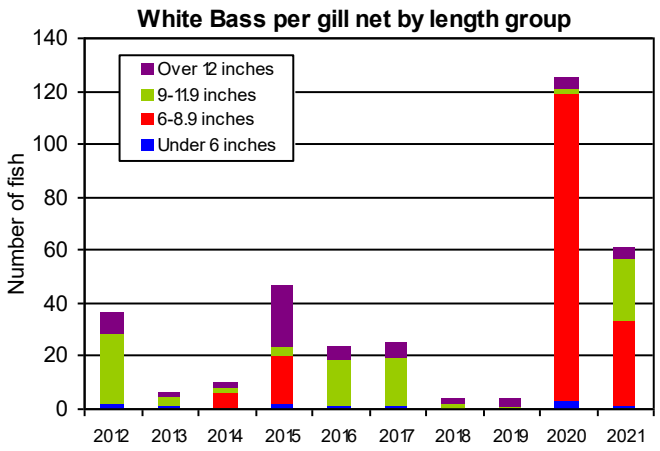


White Bass

Although the 2021 catch of white bass was only half that of the record breaking 2020 catch, it remained well above the ten year average of 34 bass/net.

Most of the fish sampled were from the 2021 year-class and were less than nine inches. There was a substantial increase in the abundance of 9 to 12 inch white bass, while numbers of fish larger than 12 inches stayed about the same. The average length of a white bass collected was 9.1 inches.

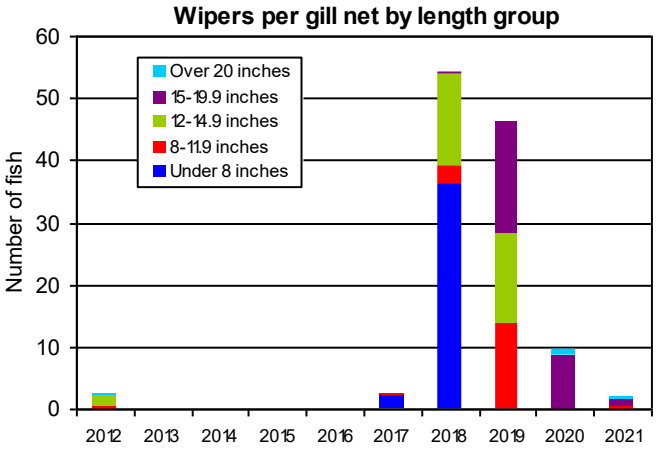
With two very strong year-classes of white bass present in the reservoir, anglers should see excellent angling opportunities in the next two years.



The statewide daily bag limit for white bass is 15 fish per day, with only one fish greater than 16 inches.

Wipers

Following a couple years of abnormally high catch of wipers, we have seen the catch drop to more average numbers the past two years. The 2021 catch consisted of 2.0 wipers per net, most of which were fish from the 2017 and 2018 stockings. The majority of the wipers in the population currently range from 18 to 22 inches.



Prior to 2017, most wiper stockings at Harlan consisted of fingerling fish (1-2 inches). While these stockings created some decent year-classes, in many years survival was low. In an effort to increase survival and overall abundance, stockings were switched to fry in 2017 (3.4 million) and 2018 (2.6 million). These two stockings were extremely successful and have contributed to an abundant wiper population at Harlan. Wiper stocking was temporarily suspended during 2019 and 2020 to help bring wiper numbers to more normal population levels. Fry stockings resumed in 2021, although at a much lower rate (850,000) than what was stocked in 2017 and 2018.

The current management strategy for wiper stocking at Harlan will consist of stocking fry every three years. Future stocking rates will be determined based on the survival success of the 2021 stocking. Considering that wipers tend to either be loved or loathed by many anglers, it is our goal to balance a sustainable wiper population to angler tolerances and still maintain a viable sport fishery with opportunity for trophy fish. Previous food habit studies at Harlan Reservoir have shown that there is minimal competition between wipers and walleyes for available food resources.

Anglers should find excellent angling opportunities for wipers at Harlan in the upcoming years.

The daily bag limit for wipers at Harlan is 15 fish per day, with only one fish greater than 16 inches.

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 2021. 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, 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. Although no stockings were completed, we did document natural reproduction of walleye at Harlan during 2020, but sampling in 2021 did not reveal any fish from this year-class.

Channel Catfish Stocking

Due to declining catfish numbers since 2014, catfish stocking was completed in 2019 and 2021. In 2019 the stocking consisted of 9,500 10-inch fish and the 2021 stocking consisted of 82,618 3.5 inch fish. Channel catfish populations will be annually monitored to determine if future stocking is necessary.

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. Wiper fry were again stocked in 2021 at a reduced rate. Wipers will be stocked every three years with the next stocking scheduled for 2024.

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 musky were stocked in 2019 and 2020. Tiger musky replaced northern pike stockings due to hatchery availability. The stocking of these species will be suspended the next several years as high water levels and good shoreline habitat conditions are allowing these fish to naturally reproduce.

Angler Survey

There was not an angler survey completed in 2021 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.

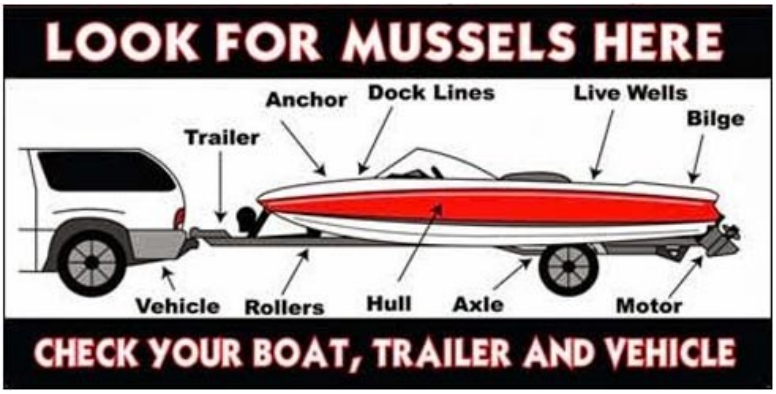
Aquatic Invasive Species – Zebra Mussels

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 Nebraska Game and Parks Commission website: **http://outdoornebraska.gov/aquaticinvasivespecies/**

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 type of work and efforts will continue during 2022 as technicians will be on site to inspect boats, educate boaters, and to conduct sampling for veliger's, adult mussels, and other types of aquatic invasive species.



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.

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