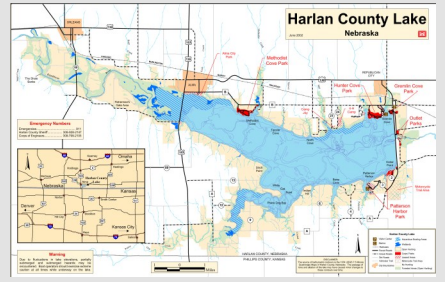


# Harlan Reservoir

## 2011 Fish Population Survey Summary

Nebraska Game and Parks Commission  
Brad Newcomb, District Manager



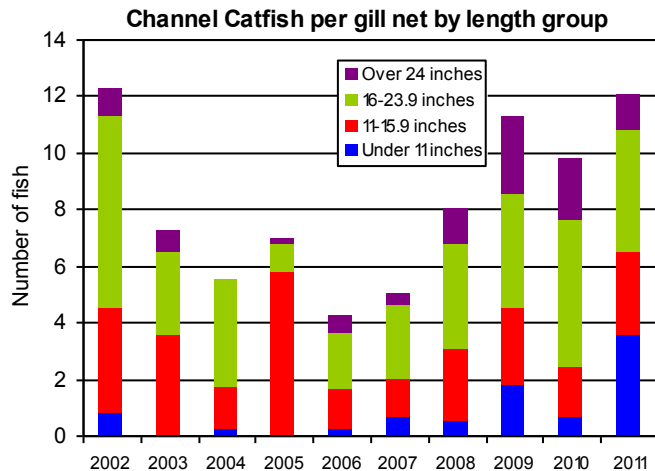
The following text and graphs are summaries of netting surveys completed during October 2011 at Harlan Reservoir. For comparative purposes, results from previous years are also included. Fish populations are sampled each fall at Harlan using gill and frame nets. Gill nets are used to sample fish species found primarily in open water, such as walleye, while frame nets are used to sample shoreline oriented fish, such as crappie. The nets are set each year at approximately the same locations and dates as previous years, which reduces variability and allows for trend comparisons of species abundance and size distribution.

The following graphs show the total number of fish caught per net and the relative abundance of fish within several length categories. The text provides a brief explanation of the information contained in the graphs.

### Channel Catfish

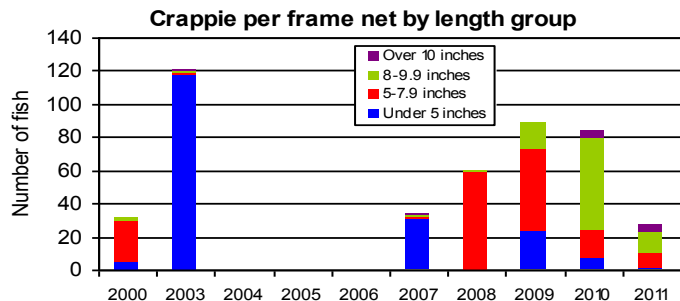
Channel catfish abundance was high again in 2011, and continued an upward swing since the long-term low in 2006. Catfish are present in all size groups, including good representation of catfish over 24 inches.

Recruitment of small catfish has been good from 2007 through 2011. Recruitment has improved with 2007 and 2009 stocking and improved water levels and habitat. A new channel catfish regulation was implemented in 2009 which reduced the daily bag limit to five fish. Harlan anglers should expect good catfishing in 2012 with a good variety of sizes available.



### Crappie

The 2011 survey showed a reduction in overall crappie numbers, but indicated good size distribution. Good crappie recruitment since 2007 resulted from high water levels and abundant shoreline and cove habitats. The 2007, 2008, and 2009 year-classes of crappie are all well represented in the 2011 survey. Recent strong recruitment and continued high water levels should provide very good crappie fishing at Harlan

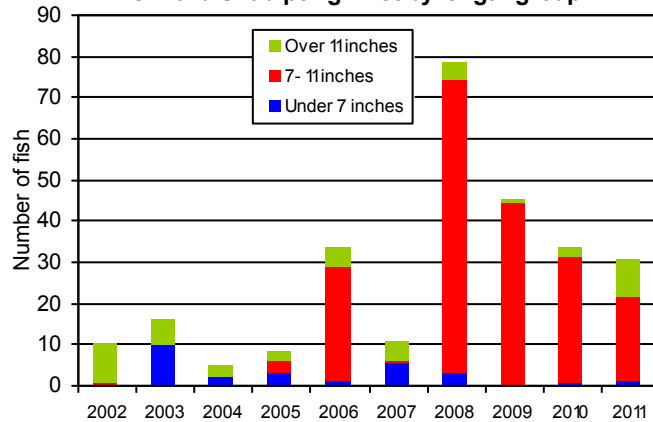


## Gizzard Shad

Gizzard shad numbers continued a downward trend from the peak in 2008. Most shad sampled ranged from 10 to 11 inches long. Large numbers of intermediate-sized shad 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 have been collected the last three years during the fall survey. Gizzard shad are the most important prey species in Harlan Reservoir and serve as food for all the major game fish populations. Poor production of young shad may lead to lower annual recruitment and growth of predator fish species such as walleye and white bass.

Gizzard Shad per gill net by length group



## Walleye

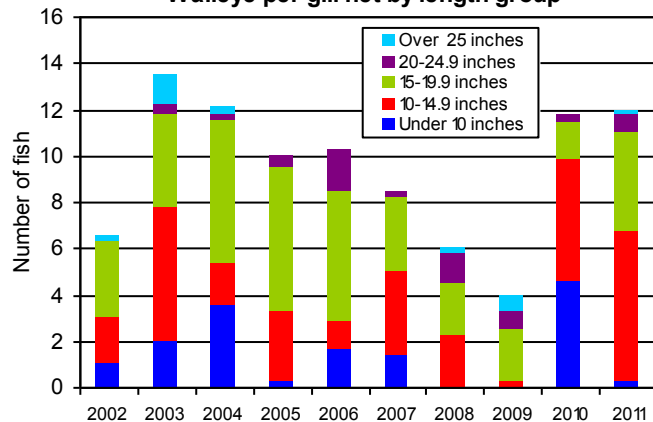
Similar to 2010, walleye abundance was higher again in 2011. Largely due to an excellent 2010 year-class of walleye, walleye numbers have improved from a long period of declining walleye numbers from 2004-2009. The total of 8.2 young-of-year walleye per net in 2010 was the highest at Harlan since survey records started in the 1970's (refer to second graph).

The 2010 year-class of walleye were represented by fish from 13 to 16 inches in the 2011 survey. These fish should provide excellent walleye fishing in the next few years.

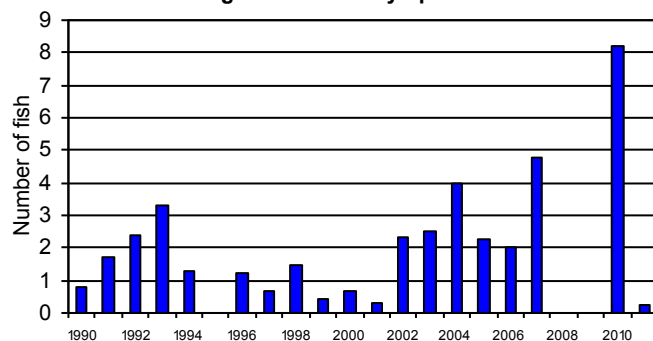
Good walleye numbers were collected in the 10-15 inch range and the 15-20 inch range. There was also some walleye sampled over 25 inches.

Walleye ages ranged from one through nine. The most abundant walleye were age one (69% of all walleye sampled) and age two (10% of the sample). Both year-classes correspond to walleye fry stockings of about 14 million fish each year. Walleye age 4 or older made up 17% of the sample.

Walleye per gill net by length group



Young-of-Year Walleye per Gill Net



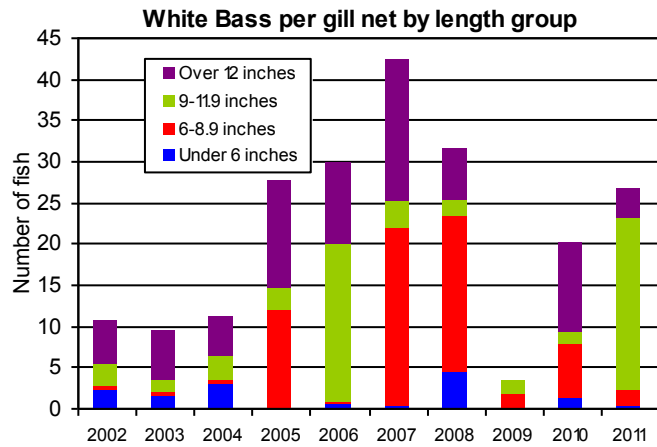
Overall, there is increased and record-level recruitment of young walleye and higher total numbers. Together with high water levels, improved aquatic habitat conditions, and stocking programs, future walleye fishing should be very good.

## White Bass

White bass numbers increased again in 2011, improving from the unexpected drop observed in 2009. The low numbers in 2009 may have been explained by poor sampling efficiency caused by flooded vegetation and uneven fish distribution with high reservoir water levels.

The most abundant white bass were 9-11 inches long, and mostly age 1 fish. Similar to walleye, the 2010 year-class is especially strong. White bass ranged from age zero to five, with all ages well represented indicating even recruitment over the last few years.

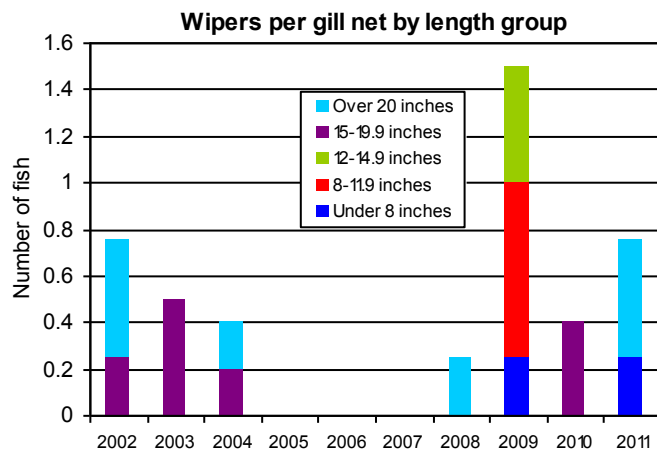
The 2010 and 2011 white bass surveys were more indicative of the excellent white bass population observed from 2005-2008. As with previous survey results, there should be very good white bass fishing in the next few years.



## Wipers

Wiper numbers are relatively low at Harlan Reservoir, but there is an increasing trend the last few years. One wiper was sampled from each of the last two stockings in 2005 and 2008, and one larger wiper (25 inches) was sampled.

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, with stockings planned every three years. The current stocking program should



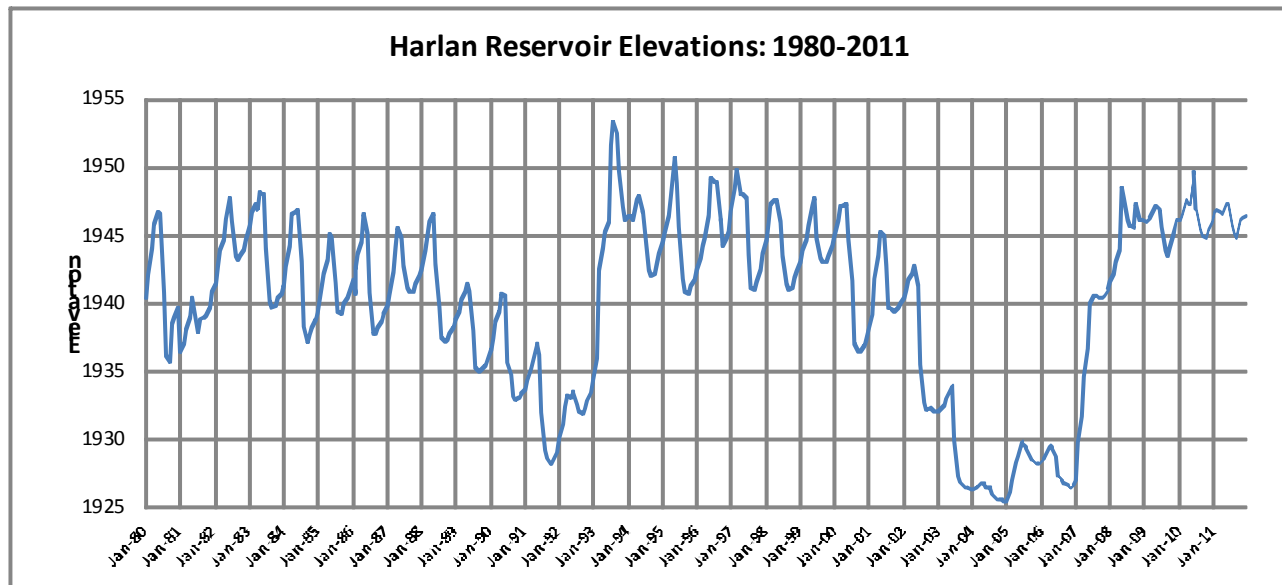
improve the population to provide a sustainable sport fishery.

## Additional Information about Harlan Reservoir

### Water Levels

Harlan Reservoir water levels remained high through 2011. The reservoir was at or above conservation pool for much of the year, and only dropped a few feet for irrigation releases. Excellent aquatic habitat conditions continued through 2011 with many acres of flooded terrestrial vegetation such as willows and cottonwoods.

High water levels and increased aquatic habitat have resulted in good recruitment of several fish species. Although 2009 recruitment was not well-documented, several species had good recruitment from 2007 through 2011.



### Fish Stocking

Walleye fry stockings have been about 14 million annually from 2009. Stocking survival in 2010 likely contributed to record levels of young-of-year walleye in the fall. Based on recent recruitment success, walleye fry are requested for future stockings at a rate of 1,000 per surface acre of water.

Due to declining population trends and low recruitment, Harlan Reservoir received a stocking of **channel catfish** in 2007 and 2009. Each catfish stocking consist of 10 fish per acre that were 5 to 7 inches long. Based on survey results, the catfish population has recovered well enough to discontinue future stockings.

Based on results of several years of research into wiper interactions in Harlan Reservoir, **wiper** stockings started again in 2005 and are scheduled for every three years. The most recent stocking was about 70,000 wiper fingerlings in 2011, and these fish were represented in the 2010 survey.

To take advantage of shoreline habitat associated with higher lake levels, stocking of largemouth bass and northern pike were completed from 2008 to 2011. Future stocking of these species will be dependent on the availability of shoreline habitat.

### Walleye Egg Collections

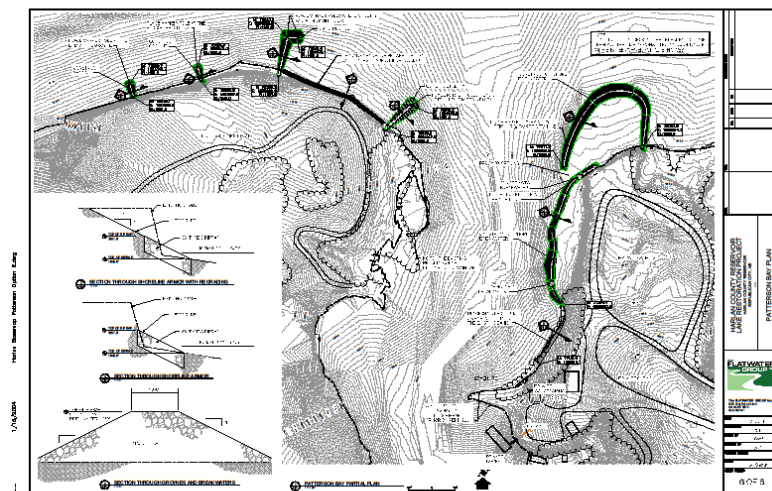
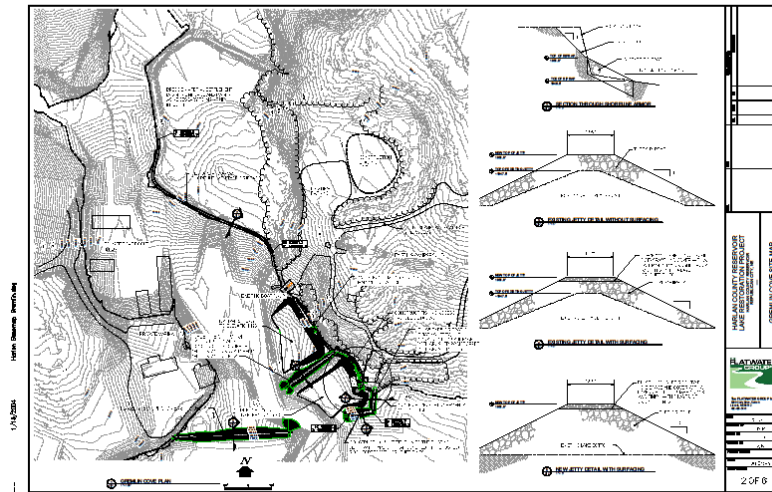
Walleye eggs were collected at Harlan Reservoir from 2003 through 2006, with most used for walleye fry stockings in Nebraska. No walleye eggs have been collected from Harlan since 2006, and none are planned for 2012.

# Aquatic Habitat Project at Harlan Reservoir

Harlan Reservoir was included on the initial list of sites as part of Nebraska's Aquatic Habitat Program. This program is designed to rehabilitate aquatic habitat in aging reservoirs to provide enhanced fishing opportunities. The Aquatic Habitat Program utilizes funding generated from Nebraska's Aquatic Habitat Stamp and various matching sources.

The project proposal, completed previously, identifies possible locations and techniques for habitat improvements. The overall goal will be to restore and protect selected shoreline, point, and cove habitats at Harlan Reservoir in order to improve or sustain recreational fisheries.

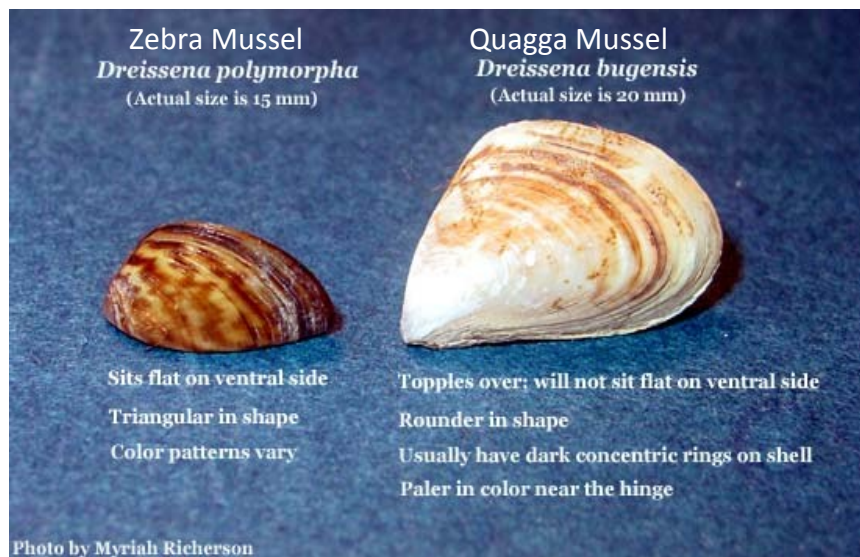
Based on priority rankings from the project proposal, two sites were selected. Engineering services were obtained in 2011 for design and construction specifications. Final design and project bid opening are scheduled for early 2012. Project construction should begin around July 2012. The following two plans are for work scheduled at Gremlin Cove and Patterson Harbor.



## Zebra & Quagga Mussels

Anglers and recreational boaters should continue awareness for zebra and quagga mussels while using Nebraska Lakes. Monitoring was completed at many Nebraska reservoirs during 2011 and no evidence of mussels was found. Currently in Nebraska, zebra mussels have only been documented near Omaha at Offutt Air Force Base, Zorinsky Lake, and the Missouri River. Invasive mussels have been documented in several neighboring states, including Colorado, Iowa, Kansas, and Missouri.

Invasive mussels will attach to almost any surface and have detrimental impacts on industry (power plants, water intakes, irrigation, etc), native fish and mussels, 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://snr.unl.edu/invasives/>.



**STOP AQUATIC  
HITCHHIKERS!**

Please remember:

**CLEAN • DRAIN • DRY**

Boats and Equipment

[www.kdwp.state.ks.us](http://www.kdwp.state.ks.us)



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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