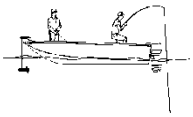
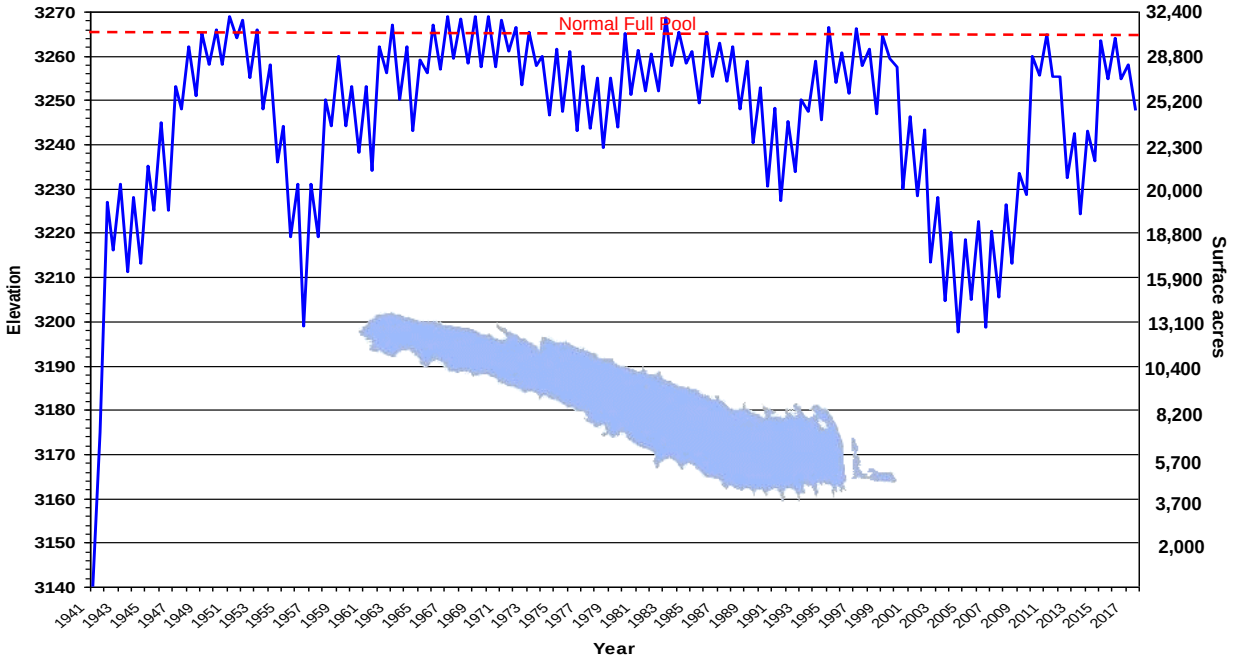
Lake McConaughy
2017 Fall Survey Summary

Fisheries Division

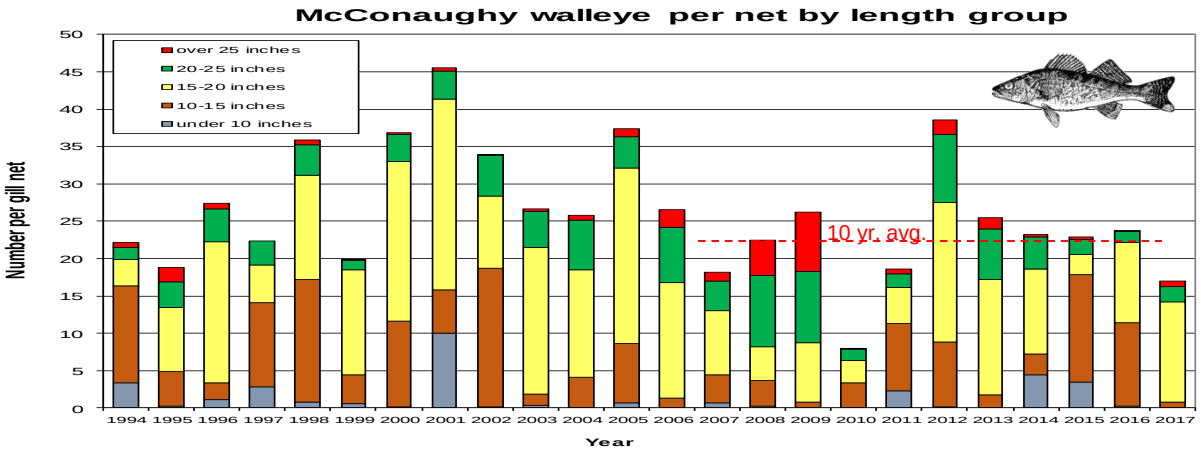


Nebraska Game and Parks Commission Darrol Eichner, Fisheries Biologist

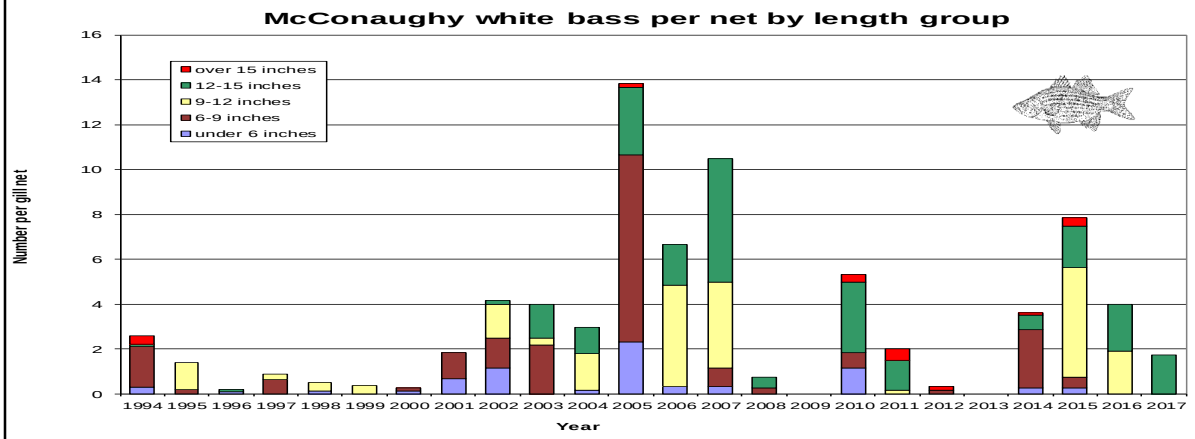
The following text and graphics is an effort to provide anglers with recent background on lake water levels and historical fall fish sampling efforts conducted by the Nebraska Game and Parks Commission. Lake McConaughy is Nebraska's largest reservoir and has a long history of being a very high quality sport fishery. Since completed construction in 1941 it also has a history of dramatic water level fluctuation as a result of drought related poor inflows and significant releases of stored water for downstream surface water irrigation. An additional negative factor is the reduced river and stream inflow related to increased upstream groundwater pumping.



At normal full pool elevation 3265.0 Lake McConaughy has a surface area of 30,000 surface acres and storage volume of 1,743,000 acre feet (ac/ft) of water. The average annual summer irrigation drawdown since construction is 13.9 feet. As recently as 2004 McConaughy reached a new record low elevation of 3197.6, a loss of 67.4 feet of vertical water column over a four year period. The respective surface area was reduced to 12,400 acres with 340,000 ac/ft of storage. This put the reservoir at 41% of it's normal full pool surface area and 20% of normal full pool storage volume which can have a dramatic negative impact on both sport and prey fish populations. Increased natural mortality and fish escapement undoubtedly were factors but are not accurately measurable. After 2004 the reservoir never recovered above elevation 3233.5 until June of 2010 when it reached elevation 3260.0 which put it at 90% of normal full pool surface area. This was a one year gain of approximately 8,000 surface acres which covered vast areas of terrestrial vegetation that had established on the exposed lake bed over a period of nearly nine years. An additional 2,000 surface acres of water was added in 2011 when the lake elevation reached normal full pool 3265.0. From a fish management perspective it was hoped that the reservoir would maintain some resemblance of a full reservoir that would keep most of the established brush inundated for a period of years. However in 2012 the lake level declined 23.0 feet to elevation 3232.3 with an additional loss in 2013 of 8.2 feet to elevation 3224.1 and resulting surface area of less than 19,000 surface acres.

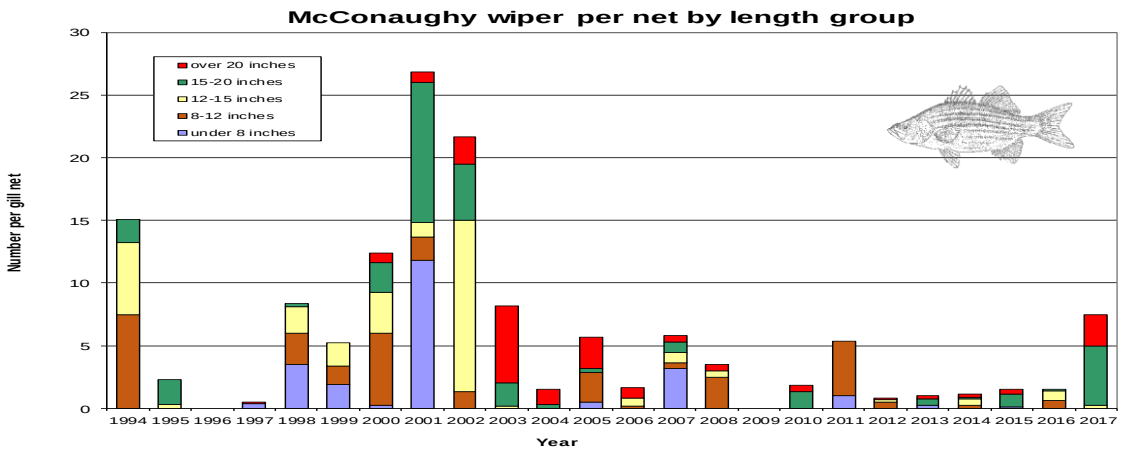


Standardized fall fish sampling methods involve the use of experimental mesh gill nets placed at historical stations utilizing GPS coordinates. It needs to be noted that dramatic changes in lake elevation, as have been experienced, can add variability when comparing yearly catch numbers. With that consideration the 2017 walleye total catch was lower at 17.0 per net. The previous 10 year average catch is 22.7 per net. Walleye in the 15-20 inch length group, primarily 2-3 year old fish from the 2015 and 2016 year-classes, were the most strongly represented length category. A calculated relative weight (Wr) index based on a length-to-weight ratio is used to measure the degree of 'plumpness,' or lack of, for an individual or group of fish. Applying that calculation to the 2017 walleye catch indicates older fish in the 21 inch and larger length ranges had elevated Wr values up to 120, higher than the theoretical optimum standard value of 100. Walleye in the other length groups were just slightly under the 100 Wr value.

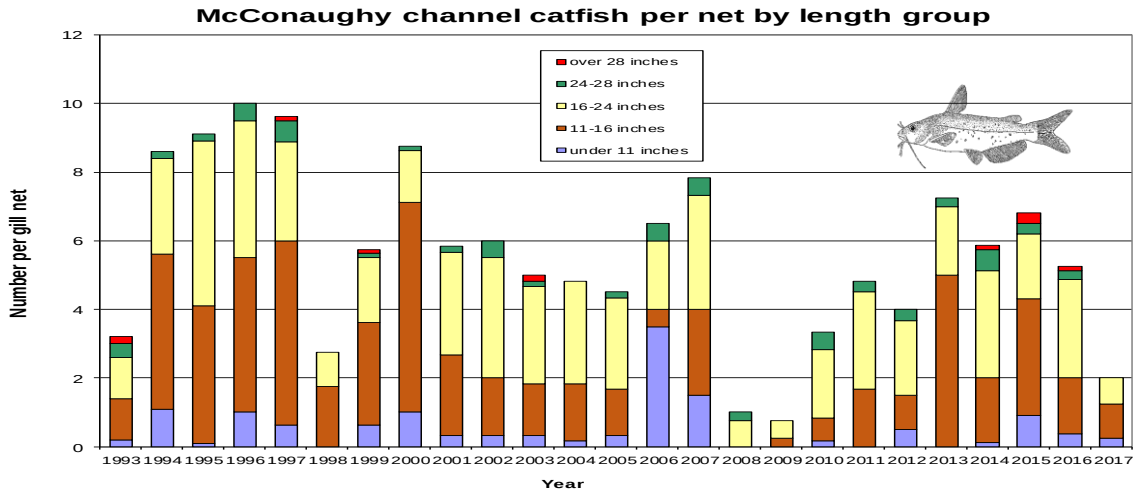


White bass fall survey catch rates at Lake McConaughy can be quite variable for a schooling fish in a large fluctuating reservoir and have remained generally low since the introduction of alewife in the early 90's. A number of factors can affect natural recruitment and establishment of strong annual year-classes of white bass. These include weather related cold fronts during the spawning run and egg incubation, declining change in reservoir elevation, lack of high river inflow, predation and food availability for larval/juvenile fish. Some of the zero catch in 2009 and 2013 can be attributed to a much later survey sampling date than normal. Size structure in 2017 for larger 12-15 inch fish desired by anglers has dramatically improved. That size range of McConaughy fish are generally in the 3-6 year old age brackets. With consideration for the small number in the sample all white bass length categories sampled in 2017 had Wr values in the 108 range.

Anglers are reminded of a statewide regulation: no more than one wiper/white bass/striped bass 16 inches or longer in the daily bag limit.



The historical wiper survey data also shows variable survey catch rates over time, similar to that of white bass. The zero catch in 2009 can also be attributed to a later than normal survey sampling date. The low catch rates of larger wiper from 2010 - 2016 are not indicative of what is available in the reservoir based on recent angler catch success. McConaughy wiper generally reach a length of 20 inches at age 4 or 5. The Wr values for the length categories over 12 inches have remained well above the theoretical optimum 100 value over a period of years. **Anglers are reminded of a statewide regulation new in 2013: no more than one wiper/white bass/striped bass 16 inches or longer in the daily bag limit.**

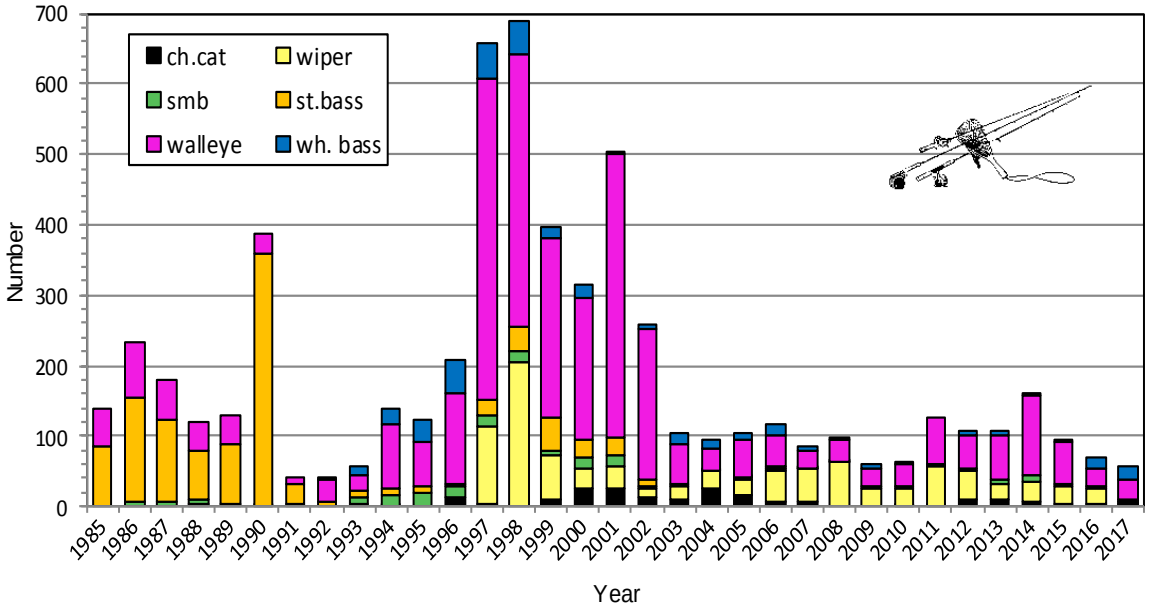


With the exception of 2008 and 2009 channel catfish survey catch rates have been consistent most years with two length groups, representing fish from 11-24 inches, making up a majority of the catch. McConaughy channel catfish historically have been a slow growing population with fewer fish found in the two larger length categories. Long term fall survey age and growth analysis indicates that a length of 16 inches is generally not reached until age 6-7 with fish 20 inches or larger at age 9 and older. The population is maintained by natural recruitment from both the reservoir and North Platte River.

Lk. McConaughy Smallmouth/Largemouth Bass

Although fall survey catch results have historically shown low numbers smallmouth bass are important to an increasing number of catch and release anglers at Lake McConaughy. The rock face dam and natural rocky shorelines provide a large area of their preferred habitat. Most smallmouth range in size from 8-16 inches in length with several fish each year recorded as qualified Master Angler Awards. Age and growth analysis shows most McConaughy smallmouth bass reach the statewide 15 inch minimum size limit at age 5 which is comparable to growth rates in several other states. Largemouth bass numbers at Lake McConaughy improved as a result of increased flooded timber areas which developed in the low water years in the mid-2000's. As with the smallmouth, each year several qualified largemouth bass Master Angler Awards are recorded.

Lk. McConaughy Master Angler Awards, 1985-2017



A total of 28 Master Angler walleye were recorded from Lake McConaughy in 2017 representing 44% of the entire statewide listing. Fifteen of the 17 largest walleye recorded by weight in the state came from McConaughy with a 13 pound fish being the largest. McConaughy has averaged 49 master angler walleye per year in the previous 10 years. McConaughy also has had a significant increase the past two years in the number of Master Angler white bass. A total of 21 were recorded in 2017 with 11 of the largest 15 by weight statewide. A total of 4 wiper were recorded with a 28 inch, 12 pound 3 ounce fish the third largest statewide. The largest McConaughy Master Angler smallmouth bass by length was an 20 inch fish along with a 22 inch largemouth bass. A 14 pound 13 ounce channel catfish was recorded as the largest by weight for that species and a 11 pound 9 ounce northern pike.

Angler Survey

An April-October daytime angler survey (creel) is conducted on Lake McConaughy annually. Data Is recorded from angler interviews to provide estimates on angler demographics, angling effort measured in hours and days, species sought and catch to include size, the numbers of fish caught, harvested or released. The results for 2017 are:

Total hours fished – 261,234

Total angler trips - 48,467

78% of boat anglers sought walleye

Walleye total catch 50,710 - Harvested 27,374 – Released 23,336

White bass total catch 28,534 – Harvested 8,403 - Released 20,131

Wiper total catch 2,808 – Harvested 877- Released 1,931

Channel catfish total catch 17,402 – Harvested 5,393 – Released 12,009

Fisheries Research

Ongoing fisheries research projects at Lake McConaughy conducted by graduate students from the University of Nebraska at Kearney continue with the gathering of information on the adult sportfish populations to include protecting the high quality walleye fishery along with emphasis on improved white bass recruitment into the reservoir fishery. This involved series of studies looks at zooplankton densities and water quality parameters related to lake level fluctuations. Fish distribution patterns for both predator and prey species are monitored along with identifying preferred spawning locations. Adult sex ratios related to calculated age and growth data will be determined and mortality estimates applied to the assumed short-lived nature of white bass.

Fish stockings

As is the case with environmental and biological factors having an influence on natural reproduction and recruitment of larval/juvenile game fish, supplemental fish stockings can have similar degrees of success or failure. Walleye fingerlings are stocked annually at McConaughy with a 2017 request of 1,500,000 fish based on a per acre stocking rate at an expected 30,000 surface acres. A total of 1,730,985 fingerlings were actually stocked. The walleye stocking request for 2018 is again 1,500,000 based on the expectation of a full pool reservoir at the time of stocking. Stocking requests for white bass are on an annual basis and wiper on an alternating year schedule. The white bass stocking request for 2017 was 400,000 fingerlings however limited hatchery production provided 278,506. The 2018 request will also be for 400,000 white bass fingerlings. All wiper recruitment into the reservoir population is supported by stockings and the 2017 request for wiper was 90,000 fish. A total of 86,634 fingerlings were stocked.

Aquatic Invasive Species

Because of Lake McConaughy's status as a popular destination for anglers and recreational boaters it draws visitors from a large geographic area making it very vulnerable to introduction of a number of threatening aquatic invasive species. To protect this very valuable resource it is important to adhere to recommended **'Clean-Drain-Dry'** protocol for all boats and watercraft. With emphasis on cleaning and drying livewells, bilge water areas and motor cooling systems. **A new regulation placed in effect starting in 2013 states that any conveyance (vessel) that has been on a waterbody must drain all water from their compartments, equipment or containers before leaving the launch area. Felt sole boots or waders are not allowed to be used on Nebraska waters.**

For further information contact Darrol Eichner, Fisheries Biologist, Nebraska Game & Parks Commission
308-284-8803