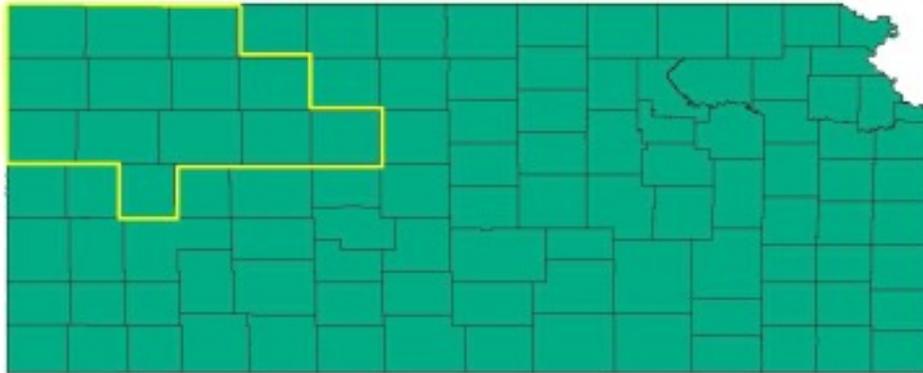


Cedar Bluff District Fisheries

Kansas Department of Wildlife, Parks, and Tourism Fisheries Division
Newsletter Date: May 1, 2018 Volume 8, Issue 1



The above figure shows the 13 counties outlined in yellow that comprise the Cedar Bluff District

Antelope Lake Amenities Project

Antelope Lake, located 16 miles west of Hill City on Highway 24, is a popular fishing destination for anglers from northwest Kansas and beyond. The lake and surrounding property is owned maintained by Graham County, and the fishery is managed through a cooperative agreement between the County and KDWPT under the Community Fisheries Assistance Program (CFAP).



Placing broken concrete to construct a fishing pier, note the old wooden dock in the background

The need to replace the existing fishing/boater courtesy dock provided the impetus for development of a cooperative comprised of Graham County residents, County employees, and KDWPT personnel to accomplish the replacement and associated angling access and fish habitat upgrades. Members of the Morland Community Foundation, headquartered out of nearby

Antelope Lake continued...

Morland, formed the Antelope Restoration Committee to serve multiple roles in the process such as organization, oversight, resource/monetary acquisition, and manual labor. Graham County employees, primarily affiliated with the road and bridge department, contributed primarily heavy equipment operation to transport and place material and removal of existing fishing/courtesy dock. And KDWPPT personnel provide oversight and technical guidance for the project.



Completed fishing pier already receiving use by anglers

To address shoreline angler access improvement, two rock fishing piers have been constructed in new locations, and a third is currently under construction to replace the dilapidated, existing fishing/courtesy pier. The fishing piers not only increase anglers' access to deeper water, but increase availability and diversity of fish habitat by providing rocky structure and a varied shoreline contour. In addition to the rock piers, the Foundation acquired a floating dock that volunteers are preparing for installation near the boat ramp. The floating dock is intended to function as a courtesy dock for boater access.

Siltation has decreased the volume of Antelope Lake and resulted in a generally shallow lake. Shoreline erosion by wind has been a substantial contributor to in-lake siltation. As such, County Road and Bridge employees have spent a significant amount of effort over the past several years placing rip-rap to armor shorelines from wind erosion.

Antelope Lake continued...



A recently armored stretch of shoreline

Longer-term shoreline armoring will continue as needed. As time and resources permit, more fishing piers will be added. To date, the project has served a dual purpose of increasing angler access and increasing fish habitat availability and diversity. Community involvement and cooperation has been a key factor in current improvements and will hopefully continue into the future. The Antelope Lake enhancement project is a good example of how cooperative relationships are critical to fisheries management projects that result in improved angling opportunities for local and visiting anglers alike.



Foundation members upgrading floating courtesy dock

Cedar Bluff Walleye Egg Collection Results

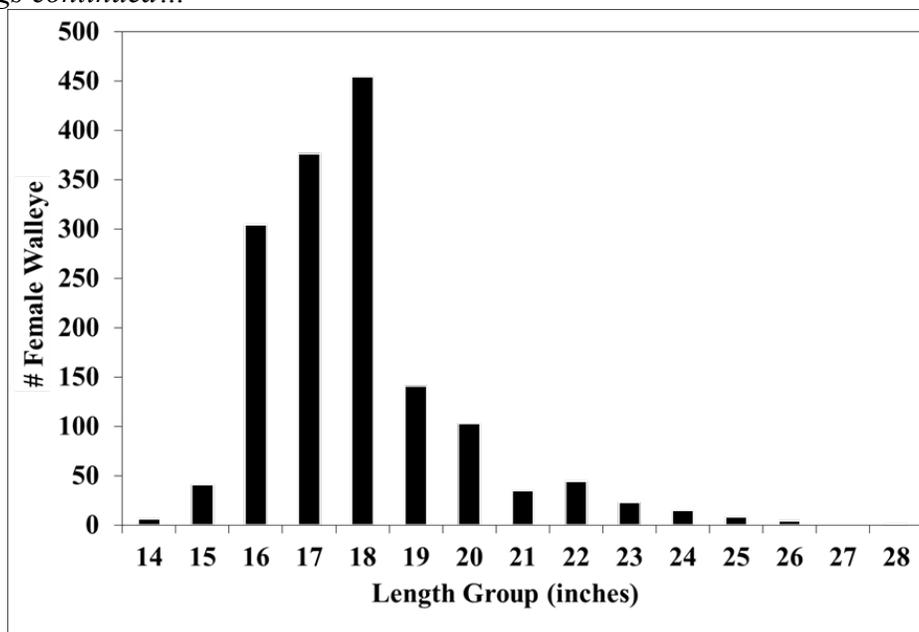
Since the late 1990s, the Cedar Bluff walleye population has matured to a level capable of supporting egg collection efforts. As such, this population has been utilized since 2006 as a donor lake for collection of walleye eggs for state-wide hatchery culture purposes. During 2018, adult walleye females were collected, eggs stripped and fertilized, and then hatched at various culture facilities across the State of Kansas.



Eggs flowing freely from the vent of a nice walleye

The spawntoon barge was again employed as a center of operation for the duration of the project. A combination of seven 1-inch mesh trap nets and four multifilament gill nets (300 feet x 6 feet) were utilized to capture adult walleye for the duration of the project. The 2018 project began on March 14 and was completed after 20 days of egg collection on April 2. Daily reservoir water temperature ranged from 42 to 48 degrees (F), with a mean daily temperature of 44.7 degrees.

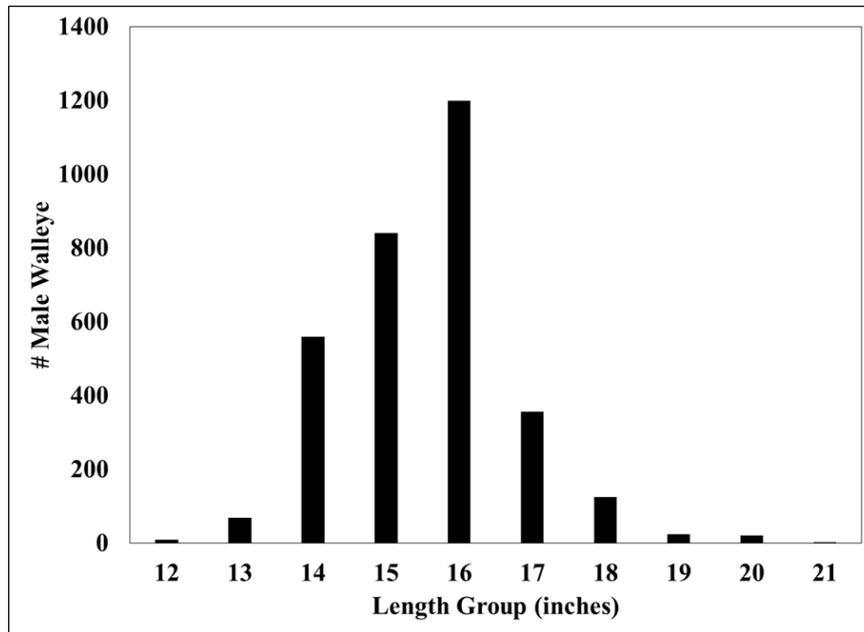
Walleye Eggs continued...



Length-frequency of female walleye captured during egg collection

A total of 1,554 female and 3,206 male walleye were captured. From the ripe, female fish, 457.4 quarts of walleye eggs were taken resulting in a total of 54,882,300¹ walleye eggs collected. Fertilized walleye eggs were shipped to Pratt and Milford fish hatcheries during the operation. A total of 25,223,000¹ walleye eggs were received at Pratt, hatching out at a mean rate of 55.5%, and yielding 13,998,765 fry. A total of 29,659,300¹ walleye eggs were received at Milford, hatching out at a mean rate of 51.1%, and yielding 15,155,902 fry.

Walleye Eggs continued...



Length-frequency of male walleye captured during egg collection

Egg collection efforts in 2018 yielded more eggs (54.9 million) than the annual average (52.0 million) over the 13 years that eggs have been collected at Cedar Bluff. Overall efficiency of the operation was reduced during 2018 as the mean number of eggs collected per day (2.7 million/day) was lower than the 13-year average (4.2 million/day). Lower efficiency of the operation was not the result of less female walleye captured as the total number of ripe fish captured in 2018 (584) was greater than the 12-year average (389.2). In general, efficiency of the project was down some in 2018 due to the high number of small females that comprised a large part of the catch.

Scott State Fishing Lake Crappie Growth

In small waters across Kansas, white crappie are notorious for establishing in high abundance. Given high abundance, most individuals suffer poor growth, resulting in populations dominated by small fish that provide little benefit to anglers' creel. The primary mechanism for reduced crappie growth hinges on high abundance, leading to too much competition amongst individuals for prevailing forage. The Scott State Fishing Lake (SFL) population exhibited this pattern over the long-term, and standard sampling data and age/growth information collected since 2010 corroborated this phenomena.

With reducing abundance being the key to improving growth, two strategies were employed to un-crowd the Scott SFL population. First, increasing predation on young crappie coming into the population was accomplished by increasing predator abundance by building a healthy saugeye population. Second, improving anglers' ability to harvest adult crappies was enhanced by construction of cedar tree fish attractors.

Scott Crappie continued...



An 11.5-inch crappie from the fall sample. Note the good body condition.

Saugeye were initially stocked in 2010, and stockings, which have occurred nearly every year, established one of the top saugeye fisheries in the state in terms of both abundance and size range availability. Particularly exceptional saugeye stocking survival and recruitment occurred in 2014 and the resulting year class apparently imparted heavy predation on young-of-the-year (YOY) crappie as the 2014 crappie year class was one of the weakest cohorts produced at Scott SFL in recent memory.



A 24-inch predator, likely the product of early saugeye stocking efforts.

Scott Crappie continued...

In conjunction with increased saugeye abundance, several rounds of fish habitat enhancement were conducted by sinking cedar trees in discreet locations around the lake to concentrate crappies for angler harvest. Visual observation of anglers fishing the brush in combination with verbal reports from anglers indicated that the placed fish attractors were popular fishing spots that yielded good numbers of crappie.

The combined approach of increasing predation on young crappie and angler harvest on adult crappies successfully reduced crappie abundance as evidenced by reduced catch in fall sampling nets since 2015 at about half the historical catch rate. Further, body condition of crappie observed during sampling improved, indicating greater forage availability and ultimately better growth. Finally, catch of fish 10 inches and larger (254 mm+) increased in fall sampling nets as well. To provide even more direct evidence that growth improved, it was necessary to age sampled fish such that length-at-age information for individuals collected recently could be compared with past age-and-growth information.

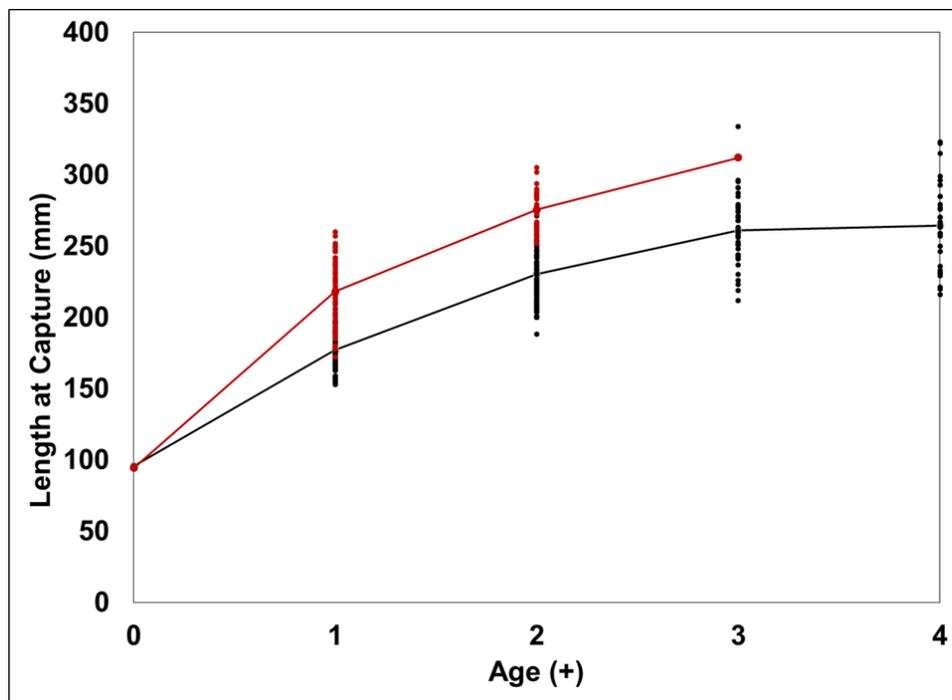


Figure 1. Crappie age-and-growth results depicting individual (dots) and mean (lines) length-at-age before (black) and after (red) 2014

Through years of research in fisheries science, aging fish with otoliths (ear stones) has proven to be the best anatomical structure to collect from specimens to provide precise age estimates. Otoliths are bony structures that function as part of the balance/hearing organ that grow in size as the fishes body grows by adding layers of bone almost like an onion. During the warmer months, the layers are thicker and cooler months thinner yielding a banded pattern,

Scott Crappie continued...

similar to rings on a cross-section of a tree stump, enabling a researcher to age fish. Combining corresponding ages of fish across a representative range of lengths yields individual length-at-age values for a sample of fish. As previously mentioned, 2014 was a pivotal year relative to increased predation, decreased crappie abundance, and presumably improved crappie growth so length-at-age information for individual crappie that exhibited growth prior to 2014 was compared with the same data for fish exhibiting growth since. The analysis revealed average length-at-age was much improved for Age-1, -2, and possibly Age-3 fish after 2014 than before. See Figure 1.

All sampling data since 2015 indicated much improved crappie population dynamics including increased numbers of fish primarily in the 11- to 13-inch range (280-330mm). The combination of increased predation, which limited recruitment of young crappie to the population, and increased angler harvest by providing habitat that concentrates fish effectively reduced crappie abundance by approximately half of historic levels. Reduced abundance meant less competition amongst remaining crappie for forage and thus improved growing conditions. The current management strategy has culminated in a scenario under which anglers have, and should continue to have, better quality crappie angling opportunities at Scott SFL.