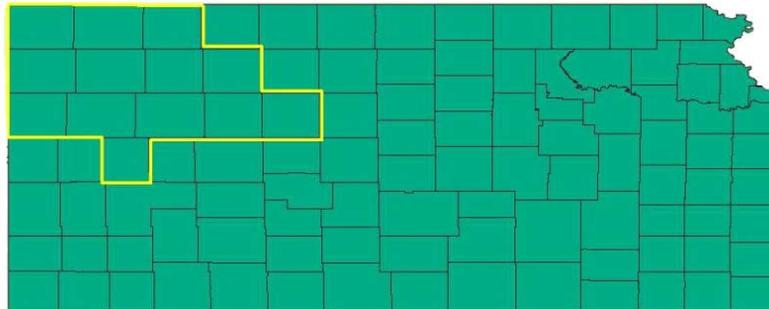


# Cedar Bluff District Fisheries

Kansas Department of Wildlife, Parks, and Tourism Fisheries Division  
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*The above figure shows the 13 counties outlined in yellow that comprise the Cedar Bluff District*

## Cedar Bluff Walleye Progress

Walleye are an important component of the Cedar Bluff Reservoir fishery owing in large part to popularity with anglers. Subsequent to refilling of the reservoir in the 1990's, a quality walleye population developed under the radar as black bass angling was at the forefront. Walleye population dynamics developed to the point that larger female walleyes were relatively prevalent. As such, Cedar Bluff became a location for collecting walleye eggs for hatchery culture purposes beginning in 2006 and has served in that role since. However, once anglers began to realize the improved walleye angling opportunities available, walleye specific angling pressure and harvest increased.



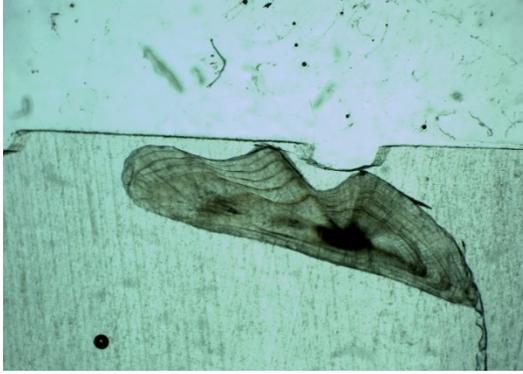
*Quality Cedar Bluff Largemouth bass from the early 2000's*



*Collecting eggs from a large Cedar Bluff walleye*

them to grow to larger size.

Prior to 2018, Cedar Bluff walleye harvest was regulated by an 18" minimum length limit (MLL) and five fish/day creel limit. Under this harvest regime, population dynamics data collected during spring egg collection and standard fall sampling efforts detected a declining trend in abundance of large walleye. Creel survey results from 2014 indicated high walleye angling pressure and harvest. Together, it was apparent that harvest exceeded the capacity of the population to replace larger individuals thus the declining trend. At the same time, a strong 2014-year class was produced. To facilitate recovery of the population, KDWPT implemented a 21" MLL on walleye harvest on January 1, 2018 primarily to protect members of the 2014-year class and allow



*Prepared otolith specimen used to age Cedar Bluff walleye*

Since implementation of the 21" MLL, KDWPT management has collected annual population trend and age structure data during spring egg collection and fall sampling. During the same time, angler walleye harvest pattern information was collected via creel survey. Both data were used to evaluate the effect of the newly implemented harvest regulation. Coincident with implementation and evaluation of the 21" MLL, a wetter than average weather pattern settled over the Cedar Bluff watershed, increased inflow into the reservoir, and resulted in a water level rise of 17.6 feet and approximate doubling of lake volume.

It was expected that increased reservoir volume would generally increase productivity of the reservoir and benefit the whole of the fishery including walleye. However, this expectation was not immediately realized. Flooding and ensuing decomposition of approximately 1000 acres of the common reed and other marginal and terrestrial vegetation in the lake basin resulted in poor water quality conditions. Low dissolved oxygen within much of the primary nursery habitat important for the production of young-of-the-year (YOY) gizzard shad resulted in poor survival. The ensuing lack of forage, negatively impacted body condition and growth of existing white bass, hybrid striped bass, and walleye populations during 2019 and early 2020 such that impacted individuals were easily caught by anglers.

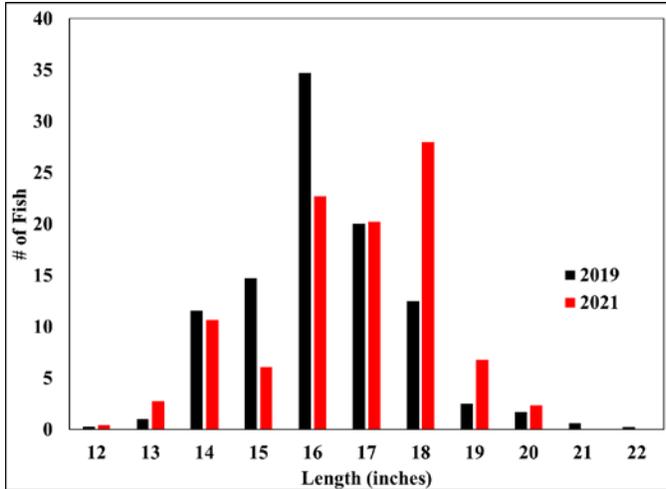


*Emaciated walleye suffering the effects of YOY gizzard shad shortage*



*YOY gizzard shad specimens indicative of improved 2020 production*

Although young gizzard shad survival was poor in 2019, production of YOY bluegill during 2019 and 2020 was excellent. Hungry predators, including walleye, altered their predatory behavior and switched to preying on young bluegill. Although bluegill did not constitute an optimal forage base to support good white bass, hybrid striped bass, and walleye body condition and growth, the presence of the alternate forage base was sufficient to promote survival of existing predators into early 2020.



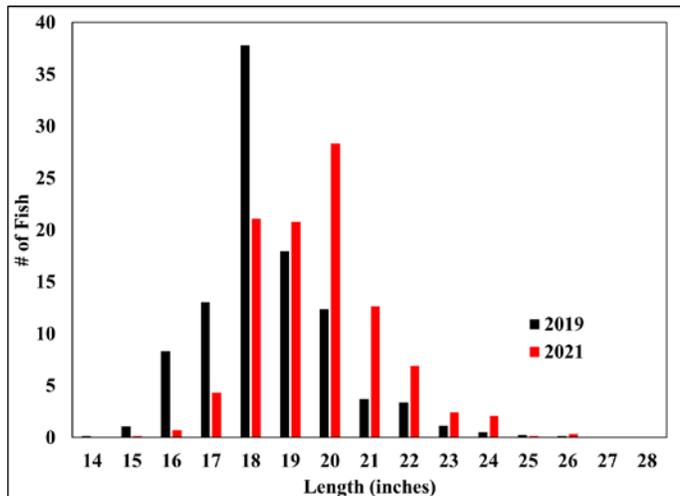
*Length-Frequency of Cedar Bluff male walleye captured in spring 2019 and 2021 shows advancement of size structure*

With greater water level stability and less decomposition of flooded vegetation, YOY gizzard shad production was much improved in 2020 such that walleye welfare was much improved during the latter half of 2020 into early 2021.

The unforeseen lack of YOY gizzard shad in 2019 greatly hindered the intended improvements to walleye population dynamics under the 21” MLL. But with improved YOY gizzard shad production in 2020, the benefits of the regulation have begun to be realized. During spring of 2021, Cedar Bluff again served as a location for walleye egg collection and this afforded the opportunity to

characterize the welfare of the adult segment of the walleye population.

As an aside, 21.9 million fertilized walleye eggs were harvested over the course of 12 days at Cedar Bluff during 2021 to contribute to the total of 72 million harvested statewide with Kirwin and Hillsdale Reservoirs also participating. Results from data collected during 2021 egg collection at Cedar Bluff was a testament to the synergistic effect of good YOY shad production in 2020 promoting recovery and individual growth of walleye, and effectiveness of the 21” MLL protecting fish from harvest to allow advancement in size quality of the population.



*Length-frequency of Cedar Bluff female walleye captured in spring 2019 and 2021 shows size structure advancement*



*Typical Cedar Bluff female walleye captured in spring 2021 exhibiting good body condition that resulted from improved YOY shad production during 2021*

Comparing spring data from 2019 to 2021, average fish length increased from 16.2 to 19.5 inches and 18.5 to 19.7 for male and female walleye, respectively. The same data indicated that despite advancement of male walleye to larger sizes few remained harvestable under the 21” MLL as 1.5% and 0.0% of all male walleye caught were 21” or larger in 2019 and 2021, respectively. Alternatively, prevalence of harvestable female walleye increased markedly from 11.8% in 2019 to 33.9% in 2021.

Although the unexpected failure of 2019 YOY gizzard shad production was a temporary impediment to

improvement of the walleye population, a return to adequate forage coupled with protection of fish from harvest promoted measurable improvement in the quality of the population in 2021. With increased lake volume, normal to good annual forage production, and continued good walleye abundance, further improvement to walleye size structure quality is expected that will translate into improved stability of this popular sportfish species at Cedar Bluff.

### Common Reed Control Efforts

Management of invasive terrestrial and aquatic plants and animals has, and will continue to be, an ongoing component of natural resource management. In recent years distribution and abundance of common reed, *Phragmites australis*, has increased in Kansas. Common reed is native to North America, but the cause of the recent increase is the establishment of a European strain that tends to be much more invasive than the native strain. This new variant of common reed spreads via seed, fragmentation, and rhizome onto primarily moist soil environments. Once established, the colony is capable of rapid growth and outcompetes most other types of vegetation. The invasive nature of common reed severely limits growth of other vegetation species leading to development of a dense stand of monoculture common reed. The resulting monoculture can limit fish and wildlife habitat diversity and the tendency of common reed to grow in moist soil leads to development of dense stands that limit shoreline angling access.



*A dense stand of common reed*

Since shoreline angling is highly important at smaller community and state fishing lakes throughout the Cedar Bluff district, limiting establishment of common reed is necessary to maintain fishing opportunities. Currently, herbicide application is the most promising means of management. Given the cost of herbicide, early detection of newly established plants is most efficient and thus requires the ability to identify common reed. Missouri Department of Conservation describes common reed as follows; “*Description: A grass with very tall, hollow stems. Long, flat leaves spread out widely from the stem, growing 4 to 20 inches long and 1 to 1½ inches wide, with rough edges and a fine tip. The leaf collar, or ligule, a small outgrowth where the stem and leaf join, is a ring with dense, stiff hairs. Tawny, purplish flowers have long, silky hairs and occur in a large, plumelike panicle 6 to 20 inches long. Blooms in midsummer; seed set by late September. Size: Height: to 15 feet.*” The above description and other information can be found at

<https://nature.mdc.mo.gov/discover-nature/field-guide/common-reed>



*A single, flowering culm of common reed showing identifying characters*



*Applying herbicide to a common reed stand from boat*

Within the Cedar Bluff district common reed suppression efforts have been undertaken at Scott and Sheridan State Fishing Lakes, and other public waters when the plant has been detected. A combined approach using herbicides labeled for use in aquatic settings that contain the active ingredients glyphosate and Imazapyr and mixed according to label instructions for tank spraying application have been applied. In addition to the herbicide, a non-ionic surfactant is included in the tank mix to enhance herbicide effectiveness. It is recommended that herbicide treatment be conducted while the plant is actively growing from June to September. To limit seed production, herbicide treatments on Cedar Bluff district waters were conducted in mid-July 2020 when the common reed was just beginning to flower.

Site review during spring 2021 revealed promising results as very limited regrowth was noted. However, since some regrowth was detected and knowing the rapid growth potential of common reed, follow up monitoring and treatment will be necessary. Given the invasive nature and tendency of the European strain of common reed to outcompete other vegetation types, it is desirable to limit abundance or eliminate the plant completely. Through vigilance, early detection and follow up herbicide treatment has the potential to limit common reed before it expands to the point that control methods become very costly. Land managers on both private and public land are encouraged to familiarize themselves with plant identification and control of common reed to limit the spread of this invasive plant. Minimizing establishment of common reed in Kansas will maintain the quality of terrestrial and aquatic habitats for fish, wildlife, and livestock.



*Herbicide effected common reed stand*