August 2013
Volume 4, Issue 1

# Cedar Bluff District Fisheries

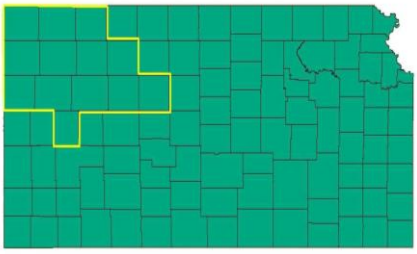
**Kansas Department of Wildlife, Parks, and Tourism**
**Fisheries Section**

***Inside this Issue:***



## Notes from the Author

*This is the fourth newsletter detailing angling related happenings in the Cedar Bluff District. The Cedar Bluff District essentially encompasses the majority of Northwest Kansas.*



Cedar Bluff District

The Cedar Bluff District realized some relief from the on-going drought conditions as spring and late-July to early-August provided cooler temperatures and more rain than what we received last year. Regardless, little change in lake levels through the district was realized as the rains were spotty. Any time we receive any sort of appreciable rainfall many interested constituents call and ask if Cedar Bluff Reservoir received any inflow. And often I have to tell them "No", as it often takes a prolonged wet period of significant rainfall and/or a storm that produces extremely heavy rainfall. In addition, the rainfall has to occur in the right area of the watershed which we just didn't see so far this year. As always, we'll just have to keep our fingers crossed and hope for more rain.

## Cedar Bluff Water Release 2013

There were two water releases that occurred between March 4 -18, 2013 from the Cedar Bluff Reservoir. The first water release occurred March 4-10 in order to recharge the City of Hays' municipal water supply wellfield under the auspices of the Kansas Water Office's water storage right, and totaled 1,186 ac-ft of water released. On March 4, at 10:00am, the dam superintendant opened the dam gate and released 250cfs (cubic feet/second). On March 5, at 09:44am, the flow was reduced to a discharge rate of 150cfs. On March 6, at 10:02am, the flow was again reduced to a discharge rate of 50cfs and remained at this rate until March 10, at 10:00am, when the gate was shut. Water from the first release reached the western edge of the City of Hays' wellfield at 1:00 am on March 9, and flow peaked at 25 cfs on March 12. Due to the low water table within the alluvium surrounding the wellfield, the flow was insufficient to cause the river to flow at the surface completely through the wellfield.

*Releasing 250 cfs from the control house below the dam*

*Water Release Continued…*

The second release occurred March 14-18 under the auspices of the City of Russell's water storage right of up to 2700 ac-ft in order to recharge the City of Russell's wellfield on the Smoky Hill River near Pfeifer, KS. The dam gate was opened on March 14, at 10:00am with a discharge rate of 250cfs. On March 15, at 10:00am, the discharge flow was decreased to 150cfs and continued at this rate until March 17, at 10:00am when the flow was again decreased to 50cfs. The total volume of water released as a result of the second release was of 1,231ac-ft. Water from the second release reached the western edge of the Hays wellfield at 7:30 pm on March 16, peaked at 121 cfs, and successfully flowed past the Hays wellfield. Water from the second release reached the City of Russell's wellfield at 4:00 pm on March 19, and flow peaked at 21 cfs.

*Release water rushing through the gate below the control house*

Total water volume of both releases for the Cities of Hays and Russell was 2,417ac-ft. This created a net water level decrease in Cedar Bluff Reservoir of approximately 10 inches. There are potential impacts across the lake due to the water release. Anglers and recreational boaters should be aware of newly exposed tree stumps, which can create boating hazards. Also, the 2013 walleye spawn may have been impacted as the declining water level exposed fish eggs causing them to dry out, but without in-depth research the degree to which the walleye spawn was negatively impacted cannot be quantified. In early April 2013, about one month after the water release, approximately 1.7 million walleye fry were stocked at Cedar Bluff to mitigate for eggs killed by declining water.

*Release water backing up into the stilling basin below the emergency spillway*

Although the water releases negatively impacted the reservoir, both Hays and Russell's municipal water supply wellfields benefited. The United States Geological Survey (USGS) maintains a website were water related data such as reservoir water levels, stream discharge, groundwater levels, etc. can be found, and specific data for Kansas can be accessed at http://waterdata.usgs.gov/ks/nwis/rt. Ground water elevation in several of the wells in Hays' municipal water supply wellfield allowed a degree of assessment of the impacts of the water releases from the reservoir on the wellfield. Unfortunately, no published data for Russell's wellfield was available for analysis.

Recalling the past weather pattern that precipitated the situation that resulted in the call for the water releases. The winter of 2009-2010 was relatively wet and this wet weather pattern continued until the end of May 2010. But from June 2010 to July 2013 the region has been in the grip of exceptional drought which, coupled with municipal water use, caused the water tables surrounding the Hays and Russell wellfields to decline to low levels that caused concern amongst

*Water Release Continued…*
City officials.

Although no data was available for Russell's municipal wells, data was available for five of Hays' water wells. All of the Hays wells withdraw water from the Smoky Hill River alluvium south of Hays at Schoenchen, KS and supply the bulk of the City's water needs. Flow in the river created by rainfall is critical to maintaining sufficient water in the alluvium to supply municipal water, thus the watertable's level in the wellfield mirrors prevailing rainfall amounts and water use by the Hays community.

*Release water flooding the previously dry Smoky Hill River 5 miles east of Cedar Bluff dam*

In general the water table was relatively stable during the timeframe from January 1, 2010 to July 2011 with the water depth in the five wells averaging 34.7 feet deep. But, drought and water withdrawls from the Smoky Hill alluvium began to draw down the water table to the point that by early March 2013 water depth in the five wells averaged 27.7 feet deep, an average departure of -6.6 feet. Both water releases from Cedar Bluff helped to recharge the alluvium in the area of the Hays wellfield as evidenced by an increase in the water depth in the five City wells to the point that the depth rebounded on average to 95.1% of the depth observed from January 2010 to June 2011. Despite the rebound of the watertable in the alluvium, continued drought and water withdraws subsequent to the water releases from the reservoir caused the a watertable to decline to the point that the average water depth in the five Hays wells was 2.2 feet higher than the average low water depth observed prior to the release.

*Release water at the gauging station west of the City of Hays wellfield approximately 10 cfs discharge*

The ongoing drought has negatively impacted conditions upon which fish population rely at Cedar Bluff Reservoir and the water releases to supply municipal water to Hays and Russell only exacerbated the negative impacts of the drought. Although, current fish populations should be expected to "hang in there" it is expected that production of structure oriented fish such as largemouth bass and crappie should be poor given the declining reservoir water level. There is little doubt that drawing the reservoir down by releasing water during the walleye spawn negatively impacted natural walleye reproduction, but it is hoped that stocking efforts this past spring will help to mitigate for eggs left high and dry. It was apparent from ground water depth data from the five previously mentioned Hays wells that the water releases from the reservoir provided a short-term benefit to the City's water supply. However, one obvious factor would solve our current water challenges, we need rain.

**Increasing Your Fishing Success Through Habitat Improvements in Sheridan Lake 2012**

Every time you purchase new tackle, fishing rod, bait, or even a new boat, the excise sales tax goes into a federal fun, which is reapportioned back to state fish and wildlife agencies to conduct projects such as fish habitat improvements. These improvements help diversify the available habitats at area lakes. Why is that important to anglers? Because habitat improvements will increase their fishing success all year long by attracting several species of their favorite fish including bass, crappie, walleye, channel and flathead catfish, white bass, wipers, and bluegill.

*Biologist Technician Brian Serpan standing in front of a tree typical of what we placed in Sheridan*

Sheridan State Fishing Lake (SFL) was chosen for improvements during the summer of 2012. Each year a different lake within the Cedar Bluff district (notable waters including; Cedar Bluff Reservoir, Sheridan SFL, Antelope Lake, Scott SFL, and Atwood Lake) is selected for fish habitat enhancement based on the length of time that has passed since it's last improvements and fish management goals. Sheridan SFL had not received habitat improvements since 2000 when the lake was lowered and the basin was exposed. This made the work much easier to complete since the biologists were able to drive a truck onto the basin.

Prior to the 2012 habitat improvement project, brushy habitat at Sheridan SFL consisted of two areas of flooded cedar trees on the west side of the lake and three old, deep water brush piles that had degraded to the point that they were difficult to locate with a depth finder. Given the limited spatial and depth distribution of brush fish were likely more scattered making it harder to find them. However, it was hoped that when improvements are made to diversify or change up the habitat (i.e. making brush piles) the fish will tend to concentrate in these modified areas of the lake providing more areas to locate fish and thus improving angler success.

*Utilizing the "Superwinch" to pull trees onto the habitat barge*

*The back-saving "Superwinch"*

Sheridan SFL habitat improvements were accomplished exclusively using eastern red cedar trees. Cedar trees make excellent fish attractors because the limbs are so bushy and numerous compared to most deciduous trees. Fish prefer

*Sheridan Habitat Continued…*
this type of bushy cover and tend to associate in areas where there is a change in depth created by piling the trees up underwater. The submerged cedars can last a couple of decades since they possess relatively hard wood and as they are exposed to reduced oxygen underwater which slows the oxidation process that causes decay. Using cedar trees as the raw material for habitat improvement also helps control woody encroachment on the public land thus maintaining terrestrial prairie habitat making this management practice a win/win situation for the fishery and public land overall.


*Brian wiring anchors to a tree*

The 2012 Sheridan SFL habitat improvement project really began in February 2012 when members of the Hays Bass Club helped make concrete anchors, which were used to sink the trees. Their volunteer efforts were greatly appreciated and increased the efficiency of anchor construction. Then in June 2012, habitat installation on the lake began. The project was expected to take about 2 weeks, but because of mechanical difficulties and equipment setbacks it took about 4 weeks. All told about 150 cedar trees were submerged in Sheridan Lake. Trees around the lake were cut at their base, loaded onto a habitat barge, anchors were wired to each tree, and each whole tree was sunk in targeted areas. In the deeper parts of the lake (15-16 ft) about 25 to 30 trees were used to create each of four brush piles. Each deep brushpile is marked with a buoy to assist anglers in locating them once the trees waterlog and disappear under the water's surface. In shallow areas (3-8 ft) single, large cedars were submerged helping to diversify the shoreline. Although the shoreline brush piles are not marked, anglers should be able to visually locate most of the trees sticking out of the water.


*Deep-water fish attractors protruding from the water*

Fisheries biologists have conducted similar fish habitat improvement projects for years and know it is successful in attracting fish based upon anecdotal evidence of sampling fish from, and increased angler success around habitat structures. Based upon the direct benefit conferred to anglers, similar fish habitat enhancement projects will continue within the Cedar Bluff District. On your nest trip to Sheridan SFL be sure to look for the recently enhanced areas and take advantage of them by presenting a jig, minnow, or swimbait in close proximity to the brush. After all, your sporting goods excise tax dollars helped fund these habitat improvements, and it is hoped you will get the most return on your money!

**Cedar Bluff Walleye Egg Harvest 2013**

For many years stocking has played an important role in maintaining walleye populations throughout much of the fish's native and introduced range in North America. Walleye may have been native to the larger rivers in eastern Kansas, but all existing populations inhabiting Kansas lakes and reservoirs have been the result of introduction and often maintenance stockings. To have fish to stock each year it is necessary to have a source of fertilized eggs to hatch out and stock as fry or hatch, stock in rearing ponds, and grow them to fingerling size to stock.


*Trap nets…*

*…and gillnets are used to capture adult walleye broodfish at Cedar Bluff*

It would be possible to maintain captive walleye broodfish, and collect their eggs each year for hatchery culture purposes. But, captive broodfish take up hatchery pond space that could otherwise be used for other fish rearing purposes and require extra time and manpower to maintain them in captivity through the year. Furthermore, spawning captive walleye brooders is very labor intensive as fish have to be captured from hatchery ponds where they are held all year, moved into holding tanks inside the hatchery, warmed up and injected with hormones to stimulate egg and sperm production, and hatchery staff has to keep track of the tempering and injection schedule to know when to expect a particular fish will be ready to spawn. All in all, collecting fertilized walleye eggs from captive broodfish is a time consuming and costly endeavor.

*The "Spawntoon" provides a controlled environment in which eggs are harvested, fertilized, and packaged for shipment to the hatchery*

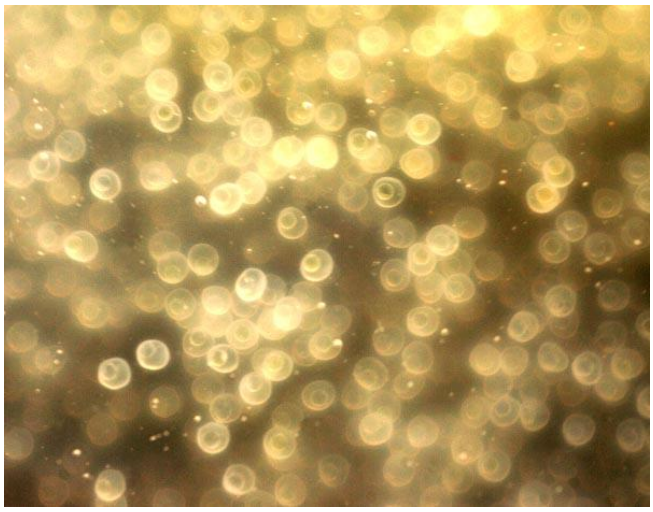
On the other hand, collecting fertilized walleye eggs from wild broodfish during the natural spawn is a much more efficient alternative. The walleye's proclivity for restricting spawning activities to rocky areas such as dam rip-rap makes it easy to know where the bulk of the spawning fish will be every night, so it becomes obvious where to

*Walleye Eggs Continued…*
set nets to give the highest probability for catching good numbers of spawning individuals each day to harvest eggs from. To further increase the efficiency of collecting eggs for hatchery culture, targeting donor populations that consist of a good number of larger adults makes it relatively easy to collect large numbers of eggs in a short amount of time since the larger the female walleye is the more eggs each of her ovaries will contain.

*Gentle pressure is applied to the abdomen of each fish to cause eggs and sperm to flow into collection pans*

Historically walleye eggs have been collected at various waters in Kansas, but development of the Cedar Bluff walleye population in the early 2000's culminated in a population that exhibited adequate numbers of larger females to support walleye egg collection efforts. Thus, Cedar Bluff became a walleye egg collection site for the first time in recent history starting in 2006 and annual egg collection has been conducted every year since up to this past 2013 spring.

Results of the 2013 walleye egg collection effort at Cedar Bluff were good this past spring as 59.4 million (123.8 gallons) of fertilized walleye eggs were collected within a 10 day timeframe. Not all of the eggs harvested successfully hatch due to a wide variety of factors, but hatch rate of eggs collected at Cedar Bluff was good and averaged 63.9% with a 50.0% or better hatch rate being the annual goal. A wide size range of females were captured and ranged in length from 17 to 29 inches with the majority falling within the 23 to 26 inch length range. A total of 482 female and 788 male walleyes were utilized to achieve the resulting harvest and overall mortality was minimal at 1.1% with the vast majority of fish returned to the Cedar Bluff alive.


*A close-up of the finished product*

Oftentimes anglers express concern that collecting so many walleye eggs from the reservoir may be limiting Cedar Bluff's walleye population potential. However, most of the time environmental conditions such as waterlevel changes, water temperature regime, etc. have a greater bearing on the survival and welfare of young walleyes such that reducing the number of eggs available for hatching and the reservoir has minimal impact as evidenced by the continued quality and abundance of walleye at Cedar Bluff. Given the continued walleye egg harvest success at Cedar Bluff, walleye egg harvest efforts will likely continue into the near future, and should play a pivotal role in supplying walleyes for statewide fish culture activities again during 2013.