

Fall River District Fisheries Newsletter



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Fall River Channel Catfish Spawning

Fall River Reservoir appears to be ideally suited for channel catfish. It's a shallow, muddy, windswept lake. Mean depth is just 6.4 feet. Water clarity averages less than 18 inches; but when the wind blows from the south across the two mile reach of the reservoir, the water gets so muddy you can track a coon across it. It's on those days that channel cat fishing is at its' best. The wind blows the bait fish, predominately gizzard shad young of the year, onto the shallow mud flats on the north shore. Throw some shad sides on a hook there and it seems like the lake is full of an endless supply of catfish.



Fat cat from Fall River Reservoir.

Despite this awesome fishing pattern, fall test netting results reveal a different population. Catfish in Fall River Reservoir are actually in short supply. Fall River is ranked seventh out of all 22 Kansas reservoirs for preferred size channel catfish (fish over 16 inches) in the 2011 Fishing Forecast. By the way, Toronto

Reservoir, located just 8.5 miles to the north-east as the crow flies, is ranked first. The biggest catfish sampled at Fall River last fall was 9.04 pounds. Eight percent of the catfish were 11-16 inches long, 58 percent were 16-24 inches long, and 33 percent were 24-28 inches long. Although no memorable size catfish were caught in gill nets in the 2010 sample, last year, 20 percent were in the 28-36 inch memorable range and are likely still in the reservoir somewhere, just not where I set my nets.

Channel catfish is the most important species in Fall River Reservoir. According to the last creel census completed in 2003, channel catfish ranked as the most popular fish species sought by anglers at the reservoir. This is surprising because it has one of the best white crappie fisheries in the state. Nevertheless, the estimated 17,772 average number of anglers at Fall River Reservoir preferred to catch channel catfish. Anglers harvested an estimated 2,175 catfish that year weighing 5,851 pounds or 2.69 pounds each.

So what's wrong with the catfish population? Fall River Reservoir has low recruitment. Simply put, there's just not enough small fish entering the population. Channel catfish are cavity spawners. They nest in naturally occurring pockets where the male catfish can guard the eggs and fry. This type of habitat is in short supply in Fall River Reservoir. The picture below was taken when the lake level was nearly five feet low. It shows the type of natural spawning habitat necessary for channel catfish. When the lake is full, channel catfish would likely seek out the overhanging rock with gravel substrate to make a nest when the water temperature reaches 75-80 degrees near the end of May.



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Since there's a lack of suitable natural spawning habitat in the reservoir, artificial spawning containers were installed to increase reproduction. Seth Way pioneered this technique back in 1926 at the Pratt Fish Hatchery. A three- to four- pound average size female catfish will produce about 15,000 eggs. Males guard the nest and fry until they leave the nest. Eggs hatch in about a week, and it takes three or four more days before the fry are ready to leave the nest. The spawning season in Kansas is long enough to allow each spawning container to be nested in twice.



Channel catfish spawning containers ready to be placed.

The recommended stocking rate is 1,000 fry per acre, so Fall River Reservoir would need 2.45 million channel catfish fry per year. To supply that need, 82 artificial spawning containers were constructed and installed in the reservoir. The containers were constructed from 12 inch diameter corrugated plastic culvert pipe cut two feet long with one end capped. To keep them submerged under water, the inside bottom corrugations were filled with concrete to form a floor. Each container cost \$13.60 in materials.

Studies have shown that channel catfish will spawn in these containers at any location and any depth in a lake. They have been observed spawning in containers in less than 12 inches of water, and in containers suspended in 30 feet of water. The containers in Fall River Reservoir were placed in four feet of water on gravel substrate with the opening toward deep water. They were placed no closer than 15 feet apart to help keep males from fighting. The location of the containers should be kept secret to prevent unscrupulous anglers from removing the male catfish while guarding the nest.



20 feet long sections of corrugate plastic culvert.

To verify that channel catfish actually used the containers, 12 were marked with a KDWP float and monitored every three days. The first male channel catfish guarding eggs in one of these containers was observed on June 5th. The water temperature was 75 degrees. The last male still guarding fry occurred on July 8th when the water temperature was 87 degrees. Twenty-six nests of eggs were produced in the 12 containers monitored. Three containers (25 percent) had only one nest during the spawning season. Four containers (33 percent) had two nests, and five containers (42 percent) had three nests. Therefore, the average container produced 2.17 nests per spawning season.



Fisheries biologist Carson Cox checking spawning container at Fall River Reservoir.

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Male channel catfish in spawning container guarding eggs.

The benefits of this project will be monitored through annual fall test netting using monofilament gill nets. Each net is 80 feet long by six feet deep with 10 foot sections of mesh ranging in size from $\frac{3}{4}$ inch to 2 $\frac{1}{2}$ inch to catch all sizes of fish. Twelve nets are placed randomly around the reservoir each October. Further evidence to support reproduction in the artificial spawning containers was documented by a statistically significant increase in the average number of young of the year channel catfish captured by 20 hauls with a 50 foot long bag seine with $\frac{1}{4}$ " mesh. If the project is successful, then it would be more than 31 times more cost efficient to produce fry in a spawning container within the reservoir than to stock fry from a hatchery.



Channel catfish fry from spawning container ready to leave the nest.

Lyon State Fishing Lake: The Making of a Bass Factory

Lyon County State Fishing Lake is situated on the eastern edge of the Flint Hills region in Kansas. The lake is located five miles west and one mile north of the city of Reading. The 135 acre lake is surrounded by 442 acres of state owned public land. Fourteen hundred acres of native tall-grass prairie comprise most of the lake's drainage basin and contribute greatly to its average 39-inches of water clarity.

Kansas acquired the lake property in 1931. The Works Progress Administration and Civilian Conservation Corps were responsible for much of the construction. Their craftsmanship is still visible in the native limestone guard posts and inlaid rip-rap on the face of the dam and spillway. The limestone shelter house was constructed in 1951. Other improvements at the lake include a concrete boat ramp, boat loading dock, seven rip-rapped fishing piers, two outhouses, and numerous picnic tables and camping sites.



Lyon State Fishing Lake silt removal.

The lake was renovated in 1999 to repair the outlet plumbing and restore the lake's fish population balance. On September 7, 1999, the outlet valve was opened to drain the lake. The water level reached the bottom of the outlet tube on November 11, 1999. The lake took 77 days to drain through the 24 inch outlet tube. No significant rains occurred during this period. Approximately 7.5 surface acres of water (measured with a GPS unit) remained in the lake after the level reached the bottom of the outlet tube.

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Mean depth of remaining water in below the outlet pipe was 3 feet. The public was allowed to salvage fish during this period.

On August 30, 2000 the lake was closed to fishing and the remaining water was treated with 25 gallons of 2.5 percent synergized rotenone, a fish toxicant. The large pond adjacent to the south cove was test netted with a 1.5-inch gill net. No undesirable fish were sampled. The three ponds to the west in the drainage basin were all eutrophied to the point of likely winter and/or summer kill.

While we were waiting on the lake to refill, 200 cedar and hedge trees were anchored with t-posts or weighted with five gallon buckets of concrete to serve as fish attractors. Three islands were constructed. One was located west of the boat ramp pier, one east of the shelter house pier, and one south of the middle point west shore pier. The islands were pushed up by bulldozer from bottom sediment on the shoreline side. Each island was completely covered in rip-rap to a depth of two feet to prevent erosion. Each island was constructed parallel to shore line on the eight foot contour, and was 50 feet long by 10 feet high and had 2.5:1 slopes.



Lyon State Fishing Lake island.

Additionally, 75 half-log structures were added in lotus cove to enhance bass spawning. Ten channel catfish spawning structures were installed. This should be sufficient to supply 1,000 fry per acre. Water willow was planted around the shoreline to provide fish habitat and reduce shoreline erosion.



Half-log bass spawning structures at Lyon SFL.

While the lake was being renovated, the boat ramp was replaced. All three old outhouses were torn down. The boat ramp outhouse and the shelter house outhouse were replaced with new handicapped accessible ones.

It took four years for the lake to refill with water. It was full on July 26, 2004, and was 135 surface acres. The lake was opened to fishing on January 1, 2005. The January 1 date was selected to eliminate the "Opening Day Syndrome" described in fisheries management literature, whereby anglers caught 80 percent of the estimated fish population after lake renovation.

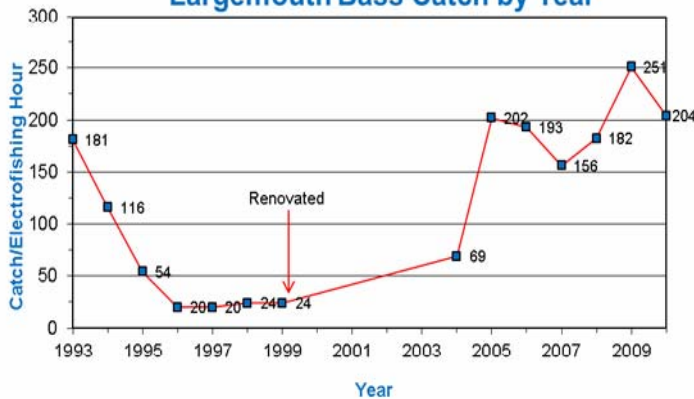
On January 1, 2007, the 15 inch length limit was replaced by a 13 to 18 inch slot length limit. This was done to increase growth rate by decreasing small bass density, assuming that anglers are willing to harvest sufficient bass less than 13 inches. By 2010, Lyon SFL had the fifth highest bass density among Kansas lakes. The biggest bass electrofished was 6.39 pounds. However, anglers reported bass caught up to eight pounds. Stock catch per hour of electrofishing was 204, an 850 percent increase in density since renovation in 1999. This greatly exceeded the management objective density of 100. The bass population size structure was balanced. Eight percent of bass sampled were 15-20 inches and one percent was over 20 inches.

Get your friends, get your family
... and FISH KANSAS!



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**Lyon State Fishing Lake
Largemouth Bass Catch by Year**



A new strategy was implemented at Lyon SFL for the purpose of increasing largemouth bass prey. Instead of stocking gizzard shad, adult golden shiners were successfully stocked into LYSL in 2004. Golden shiners don't outgrow the gape size of largemouth bass and are less likely to over populate than gizzard shad, resulting in less competition for zooplankton. The water clarity at Lyon SFL exceeded three feet and it had abundant aquatic vegetation. This provided good habitat and escape cover for golden shiners and resulted in good recruitment. Fall test netting in 2010 resulted in the capture of 27 trophy-sized golden shiners, ideal size for big bass.

100. In the past five years, the catch rate exceeded the objective density which limited growth. There were too many mouths to feed, but it makes a great place to catch lots of bass. Age analysis from scale samples showed that mean lengths at ages two through ten were 7.6-, 10.6-, 11.7-, 13.1-, 14.2-, 15.3-, 16.1-, 20.0-, and 21.7-inches, respectively. That represented a mean increase in growth of 1.2 inches per year from the 2009 sample. Most bass died by age ten and reached a maximum length of 21.7 inches.



Fisheries biologist Carson Cox holds 8 pound largemouth bass electrofished at Lyon State Fishing Lake.



Lyon SFL water willow, American Pond Weed, Sago Pond Weed.

In conclusion, after renovation, Lyon State Fishing Lake has been described as “a farm pond on steroids” and “a bass factory”. This is one fishing opportunity you don't want to miss out on. If you've ever wanted a place to catch lots of bass, this is the lake. It would provide a great place to learn bass fishing techniques. Take a kid fishing here and bring your camera because you won't remember any pictures of children playing video games.

Bass were in good to excellent condition. Mean Wr's were high in or exceeded the objective range of 80 to

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