

## Fall River Fisheries District Newsletter

### Emporia Jones Park West Pond Renovation

Jones Park West Pond is located in Emporia, Kansas, at the north end of West Pond Drive in Jones Park. The 1.4-acre pond was constructed in 1968. Water quality remained quite good through the years with water clarity averaging 36 inches. Amenities include sheltered picnic tables, grills, playground, baseball diamond, drinking water, and flush toilets. In 1999 a handicapped-accessible concrete walkway and fishing dock was constructed. A solar-powered fish feeder was added in 2001. In 2002 the dam and north shoreline were rip-rapped to reduce erosion.

By 2011, it was evident that the pond was eutrophied. Eutrophication is the process where water bodies receive excess nutrients that stimulate excessive plant growth. The source of the excess nutrients was lawn fertilizer from houses, apartments, and churches in the 12-acre drainage basin that entered the pond during rain run-off. The pond had silted in by 40 percent. The electrofishing boat could no longer be floated in the two inlet coves. Filamentous algae covered 75 percent of the pond surface, which when it respire at night or cloudy days, reduces the dissolved oxygen content and often causes fish kills.



*Pond before renovation.*

In 2011, Emporia had 53 100-degree days, topping the previous record of 50 in 1936. The warmer the water, the less dissolved oxygen it can hold. By fall, the pond had evaporated down to a puddle only four feet deep. Despite these conditions, no fish kill occurred.



*Trees limit angler access prior to renovation.*

In November 2011, the pond was pumped dry. The public was allowed to salvage fish prior to renovation. The public fish salvage order allowed anglers to take fish by any legal means plus seine, snagging, bow and arrow, gig, and hand. Anglers did a thorough job of removing fish during the salvage period. After the pump ran dry, only about six keeper size channel catfish remained. There were also about eight large common carp and some small white crappie and sunfish. All remaining fish were killed to ensure a proper predator/prey balance and species composition when the pond refills.

Had it not rained 2.75-inches the first day of pumping, it would only have taken one day to pump the pond dry. Instead, it took two. One day was spent just pumping out the rain water. Wouldn't you know it, the only runoff we've had in six months! The City of Emporia used their big six-inch pump to remove the water. This was the same pump they successfully used to aerate Emporia Peter Pan Pond last summer to avert

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the fish kill. The most difficult part of removing the water from the pond was getting over the muck and sludge on the pond bottom to place the pump inlet pipe.



*Pumping the pond.*

With the water gone, the track loader, track hoe, and dump truck made fast work of removing the silt. They started at the edges and scraped down to dry dirt under the muck as they worked toward the middle. The heavy equipment reshaped and contoured the bottom, restoring depth to the pond.



A nutrient trap, like the one successfully constructed on Emporia Jones Park East Pond, was constructed on the main inlet to slow the inevitable eutrophication process. Aquatic plants like arrowhead, cattail, water willow, and bulrush will be used to soak-up the nutrients entering the pond, thus reducing algae blooms.



*Nutrient trap on primary inlet cove.*

The principal outlet tube was replaced, and the dam was rip-rapped with limestone to prevent erosion and provide fish habitat. There's no need for brush piles in a 1.4 acre pond. Where are the fish going to go? In a pond this size, they're simply swimming around in circles. They can't get away from anglers like in big lakes.

Thanks to the rain we got at Christmas, the pond is currently three-fourths full. It will be stocked this spring with largemouth bass, bluegill and readear sunfish, and channel catfish. The pond remains open to public fishing. Anglers must release largemouth bass less than 18 inches, and channel catfish less than 15 inches. Although it is illegal to stock any fish into public waters (KAR 115-20-3), it was obvious after draining the pond that some unscrupulous anglers thought they knew better and stocked crappie and common carp. Hopefully no one will ruin it this time.

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Thanks go out to the Sport Fish Restoration Program, City of Emporia, and licensed anglers of Kansas for funding this project and restoring the fishery in Emporia Jones Park West Pond.



*Pond depth restored, shoreline access renewed.*

food is way too expensive (\$0.305/lb. in 2011) to be feeding turtles and Canada geese. Sinking feed can help with geese and blue herons, but of course, turtles feed readily on the surface or on the bottom. Sinking food has the disadvantage of falling below the anoxic thermal cline in summer where fish can't feed.



*Lyon State Fishing Lake fish feeder.*

### Fish Feeders Make Fat Cats and More

You've probably seen them, hunks of rusty steel frames holding up ugly tin boxes, littering the lakes. Put there by well-meaning fisheries biologists. They ruin the esthetics of an otherwise pristine lake. If you've ever been near one when it went off, you likely ducked for cover because they sound like someone's shooting at it with a machine gun to put it out of everyone's misery. What are these things? They're fish feeders.

We've put them at most, but not all, lakes. They're supposed to feed channel catfish, but they also feed bluegill, carp, gizzard shad, turtles, geese, blue herons, and raccoons. It's not uncommon to see a blue heron perched on a fish feeder waiting to ambush a small fish that's come up to eat a floating pellet. Fish

Raccoons are another issue. I couldn't believe that raccoons would swim out to a fish feeder and bend the scatter plate down, dumping all the feed at once. A wire basket around the discharge funnel solved the raccoon vandalism problem. Surprisingly, once anglers figure out that fish feeders result in big fish, people vandalism hasn't been a problem. In fact, as soon as a feeder runs out of food, or wind driven rain turns the fish food pellets into a peanut butter like gooey mess, a concerned angler calls to report the malfunction.

Fish feeders benefit anglers in two ways: They concentrate fish in areas readily accessible to anglers, and they increase fish growth. Not all fish benefit from fish feed equally. There is a pecking order. The biggest fish, be it channel catfish or carp, hogs the feed. The smaller fish get pushed aside to feed on the fringes or after the big fish have had their fill. Fall test netting results reveal this behavior. Channel catfish body condition (as measured by  $Wr$ ) increases with size.  $Wr$

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is a biometric calculation fisheries biologists use to measure how fat a fish is.

Not all channel catfish in a lake learn to feed at a feeder. A baited hoop net study on State Fishing Lakes in Kansas showed that most small channel catfish don't utilize feeders. There's probably too much competition around the feeder and just not enough food to go around, at least at the feeding rates we can afford. As larger fish are harvested from around the feeder, smaller ones move in to take their place.



*Fall River State Park Kid's Pond fish feeder.*

This feeding behavior illustrates "the optimal foraging" theory which states that an animal will use the least amount of energy possible to consume the most amount of food. Apparently, small channel catfish find it easier to feed on natural food in a lake than the energy expended competing with larger fish around the feeder. Anyone who's experienced at fishing around feeders could also tell you that the fish don't travel any further than they have to away from the feeder. That's why fisheries biologists construct brush piles near feeders. The brush piles give fish the secure cover they seek to digest their easy meal of fish pellets. I've also observed many big cats in fish feeder covers just hanging out in shallow water along the water willow vegetation line like a big bass.

How often and when a feeder goes off varies among lake managers. I like to feed the fish an hour after sunrise and an hour before sunset. This takes advantage of the natural crepuscular feeding cycle of fish and is convenient for anglers to fish during daylight hours, but not during the heat of the day. We've had good success feeding 50 pounds of 32 percent protein fish food per acre per year. Feeders are operated 180 days per year, from April 15 through October 15, when water temperature is above 55 degrees.



*Bluegill feeding on floating fish food.*

In 2011, the feed cost for the 135-acre Lyon State Fishing Lake was \$0.305/pound for a total of \$2,058.75 for the season. This feeding rate resulted in channel catfish that were in excellent condition. Mean Wr (16-24 inches) was 100, Wr (24-28 inches) was 103, and Wr (28-36 inches) was 130. A Wr of 100 is considered the optimal length:weight ratio. (My personal Wr would likely exceed 100, indicating I need to go on a diet!) The biggest fish sampled was 16.53 pounds and was the third largest sampled in Kansas during 2011 fall test netting.

Some lakes are not good candidates for fish feeders. Lakes with common carp, for example. Carp are opportunistic and readily learn to feed on both floating and sinking fish food pellets. Big carp crowd out

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(bully) smaller channel catfish around the feeder. Since anglers typically don't like harvesting carp, feeding them is a waste of food. On lakes that don't have fish feeders, channel catfish Wt's are typically in the 80's, depending on natural fertility. I have yet to hear an angler compare the taste of catfish feeding on artificial pellets compared to natural food. So as long as the budget lasts, fish feeders will continue to enhance fish populations.

## Flushing Fish Down the Drain

Have you heard the myth that fish get into new waters by their eggs sticking to the feet of birds and then the birds fly to another lake? The truth is that fish swim everywhere they go. Anywhere there is a water to water connection, fish can go. When it rains and a pond or lake overflows to the creek below, fish swim in and out of the lake. If there are undesirable species like bullhead or carp in the creek below, and they swim over the spillway during a flood event and establish a population in the lake or pond.

The problems with bullheads and carp are their high reproductive rate and destructive feeding behavior. Unlike channel catfish, bullheads can reproduce on a mud bottom. Channel catfish are cavity spawners and don't reproduce in smooth bottom ponds and lakes. The number of eggs produced by a black bullhead ranges from 2,000-14,000 and average 7,000 depending on the size of the female. The recommended stocking rate of channel catfish is 100 per acre, which is a density that can be supported on natural food supply. So you can see that just one bullhead can potentially populate a 70-acre lake. Chances are that more than one pair of bullhead will get over the spillway during a flood. The same scenario applies to carp. When this invasion happens and is accompanied by over-reproduction, the result is a lack of food and in short order, the fish don't grow. The typical bullhead pond has thousands of three- to six-inch fish, and is so muddy; you can track a raccoon across it.

The feeding behavior of bullheads and carp will destroy water quality. They forage for food in the bottom sediments, stirring up the mud. They are looking for aquatic insects and other invertebrates. What they end up doing is turning clear water into muddy water. When water transparency falls below 18 inches, sight feeders can't see to eat. In clear water, bass will eat small bullheads and carp, keeping their numbers in check. Once water transparency is limiting, bullhead and carp reproduction explode, and the growth rates of all fish decline and become stunted.

In addition to undesirable fish invading a pond or lake from a creek below the dam, desirable sport fish within the lake can be flushed out over the spillway during a flood. I've seen this benefit a crowded, slow growing crappie population by reducing the number of fish so that remaining fish have more food available. This happened at Eureka City Lake where there is a waterfall that prevents fish from the creek below from entering the lake, but allowed hoards of small crappie to be flushed out.



*Fish Screen Across Olpe Jones Park Pond Spillway*

Not all species are prone to flushing out of a lake. Bass seem to stay put. Large numbers don't flush out of a lake, changing the population density. Other predators, especially walleye and wipers, are very

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susceptible to flushing. There's not enough space in our four fish hatcheries to grow enough walleye and wipers to stock every lake every year. Therefore, we've developed a stocking scoring system so fish are stocked in waters with the most favorable habitat. Lakes with high flush rates receive low stocking scores for wipers and walleye, unless they have a fish screen across the spillway.

Fish screens are great devices for keeping valuable fish in a lake and larger undesirable fish out. The problem is the design criteria required by civil engineers are difficult to achieve to protect the integrity of the dam. The fish screens have to break away when clogged to prevent dam failure. Fish screens with one inch bar spacing are typical. However, even that spacing will allow small undesirable fish to enter the lake. If the lake has good water quality and a balanced predator population, the predators should eat the small undesirable fish before they grow to reproductive size. If you're considering constructing a fish screen on your lake or pond, you will need a permit from the Kansas Division of Water Resources.

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