

Oklahoma Department of Wildlife Conservation
Oklahoma Fishery Research Laboratory
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405-325-7288



From: Mr. Gene Gilliland, Senior Fishery Biologist

June 7, 2001

Dear Mr. DeGraffenreid,

I have analyzed the results of our electrofishing survey of Bluestem Lake and offer the following recommendations. Much of this will reiterate what we discussed at the lake but I wanted to get it to you in writing.

Fish Populations:

Our catch of largemouth bass was within the range we feel is adequate and appropriate for most small lakes. We collected 76 bass per hour. A catch rate of 75-100 per hour is considered optimum if you have clear water and a strong forage base. We saw evidence of natural reproduction (bass fry) and a range of sizes in the bass population from less than 7 inches in length to over 22 inches, indicating that reproduction and survival (what we call recruitment) was adequate each year.

The bass were in good condition, especially considering the time of our survey - right after the spawning period. Your bass were from 95 to 104% of the weight they "should" be for their size group. This is an indication of adequate (balanced) forage in sizes appropriate for each size group of bass.

Bluegill were very abundant at 224 per hour, ranging from 1 to nearly 8 inches in length. Other sunfish species were present but do not contribute significantly to the forage base. Gizzard shad were present in modest numbers in sizes from 7 to 12 inches. The bluegill make up the bulk of the lake's forage base while the gizzard shad are available to only the largest bass. In ponds and lakes that do not fluctuate much during the year (uncontrolled spillway), bluegill recruitment is fairly dependable while it is not with shad.

Channel catfish were modestly abundant. We usually do not get good samples of channel catfish from ponds using electrofishing. We did however, see a variety of sizes which indicates some annual recruitment.

We saw only a few crappie, but based on your comments, they are more numerous than our survey would indicate. The individuals we saw were 10-inch adults. We saw no juvenile crappie which may indicate sporadic recruitment (which is not uncommon in small lakes and ponds).

Management Objectives:

Our discussions at the lake indicated that your goal for the lake would be to enhance the bass fishery, perhaps producing more and larger fish. As we discussed, the muddy water (turbidity) will limit the overall productivity of the lake. Nature sets this limit and it is difficult to overcome it.

Producing more bass is the tougher of the two objectives. You will be able to produce only X number of pounds of bass per acre. The continuous flow of water through the system makes it difficult to increase the nutrient levels sufficiently to sustain a higher standing crop of fish. Without sufficient retention time, additional nutrients would not be utilized by plankton, the base of any food chain.

The bigger bass we may be able to work on. What we see in your lake now is a good balance between the predators (bass) and their prey (bluegill). To drive the system towards larger predators, you may have to harvest some bass so that the remaining bass have less competition for food - and/or - supplement the food supply so that the bass have more food than they could possibly want!

Rather than harvesting bass, I would start with removing other competitors and supplementing the forage. During this process it will be important for you to keep records of your catch. Measure and weigh every bass you catch. Track this over time as you implement your management strategies. If something works - keep it up. If it doesn't, try another approach.

1. Harvesting all the crappie and any channel catfish over 5 pounds that you catch. These are direct competitors with your bass. It might even be worth some extra effort to remove as many of these species as you can.
2. Do not harvest any bluegill. This is the forage you must have. The larger individuals are the brood stock, the smaller fish are the forage base for your bass. One way to improve the bluegill size structure would be to install automatic feeders and try to "feed them up" to provide more of the intermediate to large sized bluegill that larger bass need as prey.
3. Another possibility would be to stock 2-3 inch bluegill as supplemental forage for the bass. This would be helpful but for such a large lake, it may be too expensive. Another problem is the availability of pure, native bluegill (most commercial fish producers sell hybrid sunfish which will not sustain your bass population). In a rural setting we would recommend a "nursery" pond on the shoreline to grow bluegill that could be seined and stocked into the big lake.

If you don't already have one, get a copy of the ODWC booklet "*Managing Pond Fisheries in Oklahoma*" available either in person at our OKC office or by mail from 1801 N. Lincoln, OKC, OK 73105. This \$3 booklet has worlds of information about managing and maintaining the fishery in your pond.

Other issues to address...

The erosion and siltation must be addressed. Everything flows downhill and the arm of the lake with that was not dredged is a serious limiting factor in the overall numbers of quality bass the lake can produce. The soft, silted bottom eliminates spawning habitat, it encourages production of carp and other undesirable species. It provides a source of turbidity as water flows out of this arm into the main body of the lake. Muddy water = lower productivity.

The other factor in producing big bass (besides food) - is time. Make sure than larger bass are released alive *and healthy* to grow larger. The Homeowner's Association may need to implement some regulations and make sure all the users understand the reasoning behind them.

Look over these recommendations. If you would like me to come to a meeting of the Homeowner's Association to explain them, I'd be happy to oblige. Call me at 405-325-7288.

Thank you,

Gene Gilliland
Senior Fishery Biologist