



Report for Magness Creek Subdivision's Lake Sunset and Lake Sunrise

**Prepared for Mr. Tim Schiek
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Introduction

Successful and productive lake management is based on assessing and manipulating four basic components of the lakes ecology: Water quality, fertility, aquatic vegetation, and fish populations. Management of these factors will provide the maximum benefit to the lake owner. It is important to first establish a clear set of objectives for your lake so that these components may be fine tuned to provide the greatest possible reward to the lake owner. Please note here that the specific recommendations contained in this report are not one-time management activities, but rather a compilation of on-going management practices, which aim to establish and maintain quality

angling. We emphasize to our clients that fisheries management is a continuing process, with trial and error sometimes involved, and that many of our recommendations are requisite and dependant on others, and that implementation of only certain proposals and recommendations may cause the management plan as a whole to be ineffective. Activities are recommended and discussed individually, but the management plan as a whole suffers if some parts are ignored or not implemented.

Arkansas Fish and Wildlife Management personnel visited two reservoirs in the Magness Creek Subdivision near Cabot, Arkansas at the request of Mr. Tim Schick on March 17, 2009 in order to conduct an electrofishing survey of the population dynamics of the fisheries. What follows is a brief summary of our findings and recommended courses of action to improve the fisheries short-term. After consultation with Mr. Schick and other members of the property owners association, we will make recommendations here to improve the fishery in general and to provide enjoyable angling for all species including largemouth bass, bluegill, redear bream, crappie, and channel catfish.

Sunset Lake Lake Physiology

The upper lake is approximately twenty-two surface acres in total, with little diversity in depth ranges and bottom contour. Steep, vertical banks are atypical, and most of the lake consists of shallow flats with very little cover for fry protection or ambush points for the predator species. There is a little man-made cover in the form of laydowns, brush tops, and boat docks. There is a significant watershed, with a fairly sizeable, seasonal creek which runs through

the lake and exits by way of a significant concrete spillway structure, and this creek should provide plentiful water even during the driest periods. The reservoir has a maximum depth of about eight feet with an average depth of about four feet. There appears to be a fairly hard bottom with ample spawning substrate in this lake. There is very little aquatic vegetation in the lake, and it should pose no problems in the future. A water sample was taken during our survey, and the pH was 7.1 and the alkalinity was 25 ppm, which are both in the acceptable range for good fertility and water fish growth. The lake was impounded about nine years ago, and stocked with Largemouth bass, bluegill and redear bream, crappie, and channel catfish at that time. All in all, the lake appears to be well designed and constructed.

Fish Population Assessment

The lake was sampled with typical electrofishing gear. Bear in mind that we are observing only a small portion of the complete fish population in the pond, and we are looking to get a representative sample of the population dynamics of the pond.

Over-all, this fishery was in a somewhat predator crowded condition with little forage to sustain its sizeable population of small largemouth bass. Largemouth Bass were noted in the four inch to four pound range, but almost all of the bass in the smaller size ranges and year classes were somewhat poor and gaunt, and there was an obvious lack of small forage that this size bass relies upon for sustenance. The bass also appeared to be very slow growing. We observed several young-of-the-year largemouth that were only four to five inches in length, whereas they should have been eight to ten inches with even nominal growth. I removed a couple of 12 inch

fish, and aged them by observing the annuli on the lateral line scales. These fish appeared to be two to three years old, indicating a very slow growth rate. The property owners indicated that four to five pounds was about the maximum size that the bass ever attained in this lake.

There appeared to be an ample supply of bluegill bream in the five to eight inch range, as there were few bass observed which would be large enough to eat this size forage. A largemouth bass would need to be three pounds plus to forage effectively on bream of this size.

When bass are over-crowded, they typically consume most of the small bluegill in a lake before the bream can reach two or three inches in length. When this happens, there is not enough forage for the medium-sized bass, and they are unable to grow to larger sizes. That's the reason that there are few larger bass in this lake. The only bream that you'll see in this situation are those that are newly hatched, and those that have somehow escaped predation and become too large for the bass to eat. Ponds in this typical bass-crowded situation normally have large numbers of small bass, a very few large bass that have gotten large enough to eat bigger bream, and a small, remnant population of large bluegill, and little else. This problem is quite easily rectified, though, with a reduction in the bass numbers, and a supplemental stocking of forage. This reduces the competition for food among the remaining bass, resulting in increased growth in following years.

A few specimens of small white crappie were observed. Crappie of all sizes compete with your bass for the available smaller forage. They are very prolific, and often become overcrowded and stunted in small lakes such as this one. However this does not appear to be the

case in this lake, as the abundant bass population most likely keeps their numbers in check, and presently, the crappie spawn is probably an important source of forage for the small bass.

There were very few other predators noted, with the exception of a couple of small spotted gar, and they should pose no obstacle to the fishery.

Forage species were fairly scarce, especially in the small sizes necessary for the small bass to eat. Only a few specimens of small (1-4") bluegill were noted, and the bass that depend on this size forage were especially emaciated. As noted earlier, there were a few large specimens of bluegill, which have grown too large to be consumed by the bass. Also, a few redear bream were noted, and there has evidently been a nominal stocking of redear at some point in the past. Redear are not as prolific as bluegill and are a poor source of a permanent forage base, but they occupy a bit of a different niche in the ecosystem, and grow large and are fun to catch.

A very few specimens of channel catfish were noted, and in low numbers they should not have any great effect on the predator/forage relationship of the lake. Some of these catfish have grown quite large. Channel catfish are cavity spawners, and there will be little natural reproduction in this lake. If the property owners wish to continue having a sizable population of channel catfish, they will have to be periodically re-stocked. It is my understanding that there are occasional fishing derbies for neighborhood kids, and channel catfish are stocked for these events. The leftover specimens should provide plenty of residual angling opportunities for these fish.

The only other species noted were several suckers, which are native to the creek drainage. They appeared to be either one of the redhorse sucker species or northern hog suckers, and they should have little or no effect on the population dynamics of the sportfish in the lake.

Summary and Recommendations

If your goal is a well-balanced, fun fishery where anglers can fish with reasonable expectancy of catching bass, bream, catfish and crappie of edible size to trophy size, I would make the following short-term recommendations.

Vegetation control – There was very little to no vegetation noted in the lake, and should not pose a problem at this time.

Fish Harvest – Bass in the 9-13” range were quite abundant, and most were in poor to moderate shape condition-wise. I would harvest some of the bass of this size to reduce their numbers, and allow the remaining bass room for growth. I would not hesitate to recommend the removal of half of the bass population of this size. That would probably be several hundred head at the minimum. Your larger fish, those in the one pound plus range, which were fairly scarce, should be released, and hopefully those will grow into the next size class.

I would curtail harvest of the large, eating-size bluegill from the lake allowing as much bluegill spawn as possible. I realize that this lake probably gets fairly heavy fishing pressure on the bluegill from neighborhood kids and you certainly don't want to preclude them from harvesting a few bluegill, but I would encourage your adult anglers to release bluegill in this lake.

Over-population of crappie did not seem to pose a problem, but we may not have observed the true proportions of the crappie population. Crappie are very prolific, and harvest is normally necessary to keep their numbers in check. Also, crappie are another predator that utilizes your forage base, so I would recommend the harvest of any crappie caught in this lake.

Channel catfish are going to be a put-and-take fishery, and they can be harvested at will, and replacement fish can be stocked if desired and if necessary. Channel catfish are also a predator, and will compete rather efficiently with your small bass for the available forage in the lake.

Supplemental stocking- If cost is not too much of a prohibiting factor, a stocking of fathead minnows in the lake would provide an immediate, short term forage to ease the void of the small forage in the lake. Fatheads are native, bass and crappie both love them, and they are readily available at a cost of about \$4.00/pound. There's no such thing as overstocking them. They can be stocked up to twenty-five or thirty pounds per acre, to try and get those smaller bass growing again. It takes five to ten pounds of forage to put a pound of growth on a bass. While these fatheads are a good source of temporary forage, they are just a band-aid remedy, and bluegill are your permanent forage base, so if you choose one over the other, I would definitely recommend the bluegill stockings.

Small bluegill, to feed the medium size bass, would be a wise investment at this point. Two to four inch bluegill would be the ideal size for those 9 to 14 inch bass to eat, and those that escaped long enough to spawn, should help contribute to the long term forage base.

These fish usually sell for about 10-12 cents each, and stocking a few hundred of them per acre would not be too cost prohibitive.

This spring, prior to the bluegill spawn I would try and find some adult bluegill to better establish the long-term forage base. The larger, the better, but 4-6" fish are probably the most economical and will still spawn very well all summer, while escaping predation from your bass. Many fish farms sell these fish by the head, but if you can find them sold by the pound, you'll come out miles ahead.

Water Quality and Fertilization- The water color of both lakes looked very good when we did our electrofishing survey. It's not quite warm enough for a good phytoplankton bloom to occur on area lakes. Conversation with some of the residents has indicated that the lake is fairly fertile and produces a good plankton bloom at times, but normally the lake is fairly clear, but may be a bit turbid after heavy rainfall.

A regular fertilization program on this lake will be essential to getting those small bass to grow. In order to maintain the fertility of the reservoir, and to promote continued rapid growth of your fish populations, a regular fertilization program is essential. On our visit to the reservoir, the water was fairly clear, and very little phytoplankton production was observed. The water did have some stained appearance to it, but this was more due to suspended solids than to a beneficial bloom of phytoplankton.

Fertilization stimulates the growth of microscopic plants that feed the fish as well as shade out undesirable aquatic vegetation.

These plants are called phytoplankton, and will cause the reservoir to get a brownish-green color. Fertilized ponds can support three or four times as many pounds per acre of fish biomass than can the same unfertilized pond, resulting in more and larger average fish. In a situation such as yours, where fishing pressure may be fairly heavy, fertilization should be an absolute necessity. I believe that lack of fertility is one of the underlying reasons for the apparent lack of small forage in the reservoir.

Proper fertilization should help you maintain a desired level of aquatic vegetation. While it allows emergent aquatic vegetation around the banks, it prohibits growth of rooted vegetation in the deeper water, which often precludes fishing activities. Your reservoir already has acceptable pH levels and low to acceptable alkalinity, so liming would not be necessary, but could be helpful in the near future. Your fertilizer should prove to be quite a bit more effective with proper alkalinity and hardness.

When the water temperature in the spring starts staying in the sixties during most of the day and night, it is time to begin fertilization. In your area, this will most likely be sometime during the month of April most years. I would recommend using 11-37-0 super-phosphate liquid fertilizer, as it will produce a much more uniform, as well as a quicker bloom than granular fertilizer. Phosphates are the most important nutrients for establishing a phytoplankton bloom on your pond. On the initial application, we recommend three gallons per acre, and subsequent applications, can probably be halved.

After the initial application, you should monitor the bloom to see how it responds to the added nutrients. The water should establish that brownish-green color within a few days. If not, another application may be called for. Ideally, you should not be able to see a white object deeper than about 18 inches into the water. If the bloom is thick enough that you can't see a white object 18 inches deep, you're in good shape. If you can see a white object 22 to 24 inches deep, it's probably time to fertilize again. Fertilization can continue all through the growing season for optimal benefit, but is most important during the spring and early summer months, when fry and fingerlings are produced and growing. As stated before, subsequent applications should not require as much fertilizer as did the initial application.

The other important recommendation we can make here would be the addition of cover in the lake. Vast areas of this lake are shallow, void of vegetation or other cover, and very few fish occupy these areas. Brush piles, pallet beds, hard cover such as rocks, etc, would all be very beneficial to this lake.

**Chronological Order and Estimated Costs of Recommendations
For Sunset Lake:**

RECOMMENDATIONS	CHRONOLOGY	RATE	EST. COST
Stock fathead minnows	ASAP	Up to 30lb Per acre	Up to \$120/acre
Stock small bluegill	ASAP	200-300 Per acre	\$20-30/acre
Stock large bluegill	Prior to spawn	25-50/ac	\$15-30/acre
Fertilize w/ 11-37-0	Late April- May	3gal/acre	\$</>\$500
Provide Additional Structure for Cover	anytime	N/A	N/A
Remove LMB by angling	Year round	25-30 lbs Per acre	N/A

Lake Sunrise Lake Physiology

Lake Sunrise is the lower lake in the Magness Creek Subdivision. It is approximately 27 surface acres with a maximum depth of nine feet and an average depth of five feet or so. It has a bit more diversity than its sister lake upstream. There are some steeper, vertical banks on the upper end and the north side, and bit more average water depth. Like Lake Sunset, docks and a few introduced brushpiles provide most of the cover, although there is a bit more emergent vegetation on the upper end of this lake. The pH and alkalinity levels in Lake Sunrise were expectedly identical to its upstream neighbor. pH was 7.1 and alkalinity was about 25 ppm. Again, these are in the acceptable range for good fish production.

Fish Population Dynamics and Assessment

Lake Sunrise had a vastly different fish population than its sister lake. Bass, bluegill, and redear were found in good numbers and most size ranges, indicating a fertile, vibrant, well balanced fish population. We noted several largemouth in the trophy class, as well as some very large redear and bluegill bream. Few crappie were noted in the lower lake, but a couple of large channel catfish were observed. This lake looked as though it could provide an enjoyable fishing experience.

The largemouth bass were in much better condition than the bass in the upper lake, but there appeared to be a fairly sizable population, perhaps on the verge of becoming overcrowded. The most prevalent size of bass in this lake was in the one pound range, quite a bit larger than those in Lake Sunset. Once a lake is in a well-balanced

condition such as this one, harvest is necessary to maintain that state. I would recommend that you harvest about ten to fifteen pounds per acre of predator species per year from this lake. That includes both your bass and crappie. I realize that it will be difficult to monitor harvest in these lakes with quite a few anglers having access to the lakes. Harvest of a few more of these size fish will allow more fish to advance into the larger size classes and eventually into trophy class fish.

The bluegill in Lake Sunrise were found in better size ranges and year classes than those in Lake Sunset, but there still were not the numbers of small forage fish that I'd like to see in the lake. A nominal stocking of small bluegill would be helpful to this reservoir, along with the slightly increased harvest of the one pound bass. I think there are sufficient larger bluegill in this lake to provide a long-term forage base. Bluegill spawn all summer long, and provide small forage for the bass for much of the year.

There were some very large redear bream noted in this lake. They can be considered more of a supplemental species, but they will provide some additional forage for your bass as well as providing some excellent recreational fishing opportunities and table fare. Redear sunfish will reach a larger size than bluegill, but they don't reproduce enough to feed the bass population with effectiveness. As we mentioned before, redear occupy a slightly different niche in your lake than the bluegill do, so they do not compete with your bluegill. They feed primarily on zooplankton, microcrustaceans, snails and bottom-dwelling insects. Like bluegill, they will spawn all summer long.

All in all, this lake is in reasonably good condition, and the most important recommendation that we could make would be 1) a regular fertilization program as we discussed in earlier paragraphs, and 2) addition of some structure for fry cover, and ambush cover.

**Chronological Order and Estimated Costs of Recommendations
For Sunrise Lake:**

RECOMMENDATIONS	CHRONOLOGY	RATE	EST. COST
Stock small bluegill	ASAP	100-200 Per acre	\$10-20/acre
Fertilize w/ 11-37-0	Late April- May	3gal/acre	\$</>\$500
Additional Structure	anytime	N/A	N/A
Remove LMB by angling	Year round	10-15 lbs Per acre	N/A