

Lake Spivey Population Update 2012

By: David Smith (Director of Conservation) and American Sportfish



On October 18, 2011 the results of an electrofishing survey indicated that the condition of Largemouth Bass in Lake Spivey was not in an ideal state. The data gathered indicated that there are too many fish competing over under abundant food sources. In an attempt to improve the overall condition of the bass population in Lake Spivey we implemented several actions over the course of 2012. A subsequent electrofishing survey was taken on October 10, 2012 to indicate the effectiveness of our actions. The survey showed that the population improved; however the overall condition is still not ideal. This report will indicate all of the factors affecting the lake's poor conditions. Secondly this report is a review of the Conservation Committee's efforts in our attempt to curb these poor conditions. Finally I would like to explain the observed results of the actions and provide a suggested management strategy for the upcoming year.

Importance of a Healthy Fish Population

Before explaining the details mentioned above, an explanation of the importance of a healthy bass population would be beneficial. While I understand that not every resident is an angler, the consequences of an unhealthy fish population affect everyone on the lake. The development of a healthy fish population substantially increases the recreational value of the lake. In turn, an increase in the recreational value of the lake will subsequently increase the value of homes along the lake. With Largemouth Bass being the most sought after species by anglers in Georgia, the attempts to improve the fish population was centered on improving the

bass population. There are many factors that go into improving the bass population but before I go into these factors I would like to explain how we evaluate a populations condition.

Data Collection

The best way to collect fishery data, without causing mortality, is through an electrofishing survey. An electrofishing survey is taken on a boat that is specially modified to send electrical current into the water. While the current is flowing, fish within approximately a six foot radius of the instrument sending out the current will be stunned. Once stunned, these fish float to the top and are collected. The collected fish are weighed and measured, then released back into the lake. This data is then recorded and used to formulate an index called relative weight. To read more about electrofishing follow this link to an article written by American Sportfish: http://www.americansportfish.com/?option=com_content&view=article&id=32&Itemid=46.



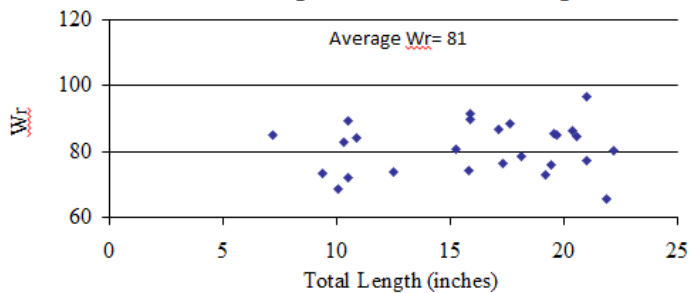
Data Analysis

When it comes to measuring the condition of a bass population, fisheries managers use a size index called relative weight (Wr). Relative weight is calculated using length and weight to formulate a size index (to read more about relative weight see: <http://fishpaa.com/2012/02/take-overall-look-to-determine-bass-health/>). Under this size index, a fish with a relative weight of 100 is of ideal size. Also, any fish with a relative weight under 90 is typically considered unhealthy.

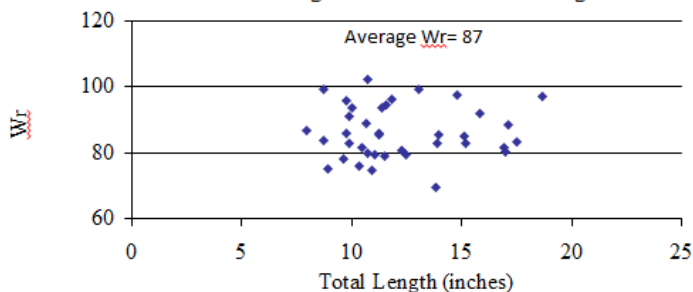
During the electrofishing survey taken in October of 2011 the data showed an average relative weight of 81. This means, at the time

of the survey, the average fish was missing nineteen percent of the body mass that an ideally sized fish would have. This was certainly a disconcerting value to see, especially when compared to the value of 105 that was observed in 1998.

2011 Largemouth Bass Relative Weight



2012 Largemouth Bass Relative Weight



In the survey conducted in October of 2012 we saw the relative weight jump six percent to a value of 87. While this is still out of the range of what is considered to be healthy, seeing a six percent increase in fish size is certainly a step in the right direction. The issue of poor condition is still not solved, but there is no need to panic. These results were to be expected. Even with an unlimited fisheries budget, there are few silver bullets when it comes to fisheries management. It is an adaptive process that has only just begun. With continued investment in the strategy we will see increasing values of relative weight, like the values observed this year. Eventually, the condition of the fish in Lake Spivey should reach values similar to the ones observed in 1998.

Actions Taken in 2012

There were two major actions taken in attempting to increase the average relative weight of the bass population. These actions were focused on increasing the habitat density and increasing the forage fish population. In addition to these two major actions, the supplementation of forage fish food and the removal of smaller sized bass occurred. In this section I hope to provide a clear explanation of what we have done so far and the importance behind each action.

The most important thing that can be done to increase the health of the bass population is to provide forage that is readily available. As indicated by the relative weight, there is not enough forage fish available for the bass to exhibit quality growth. Threadfin Shad are the ideal prey for Largemouth Bass. In most cases a healthy number of shad equals a healthy population of Largemouth Bass. Maintaining the forage fish (this includes Bluegill and Threadfin Shad on Lake Spivey) population is pertinent in keeping the bass population at an ideal level.

Threadfins make the ideal prey because of their prolific spawning habits. Their life span is only two to three years; however these fish make up for short lives by spawning young and often. Threadfins are sexually mature when they are only slightly longer than two inches. This means that some threadfins as young as 90 days old can reproduce. The only issue with these fish is their low tolerance to colder weather. Because of this low tolerance, continual supplementation of this fish population needs to occur to keep Threadfins in abundance. Through annual stocking, Threadfins will thrive in ideal numbers. This will subsequently aid the bass population.



Because of these details, most of our investment to improving the lake's population was done through stocking Threadfins. In two different stockings in late March and early April approximately 80,000 Threadfin Shad were stocked by American Sportfish. As a result, schools

of these fish formed in abundance for the first time in years. In addition to this, several shad were seen during our electroshock in 2012. No shad were found in our 2011 survey. The six percent growth in average relative weight was certainly directly affected by the stocking that took place.

The second major action utilized was the creation of artificial habitats in order to increase the habitat density. The reason for increasing the habitat density is twofold. First, increased habitat density provides important sanctuaries to forage fish like Threadfin Shad. In order for the lake's population of Threadfin Shad to remain sustainable, the habitat density of the lake needs to remain at a decent level. Not only does habitat supply this much needed sanctuary, it also sets up beneficial ambush points for predators. A bass will save energy if it is not actively pursuing its prey. A predator that conserves energy by utilizing ambush points will remain plumper and healthier. The amplified energy conservation of the bass population will allow the fish to reach a trophy size with greater ease. Additional habitat increases the recruitment of ideal sized bass and also aids in maintaining an ideal number of forage fish.

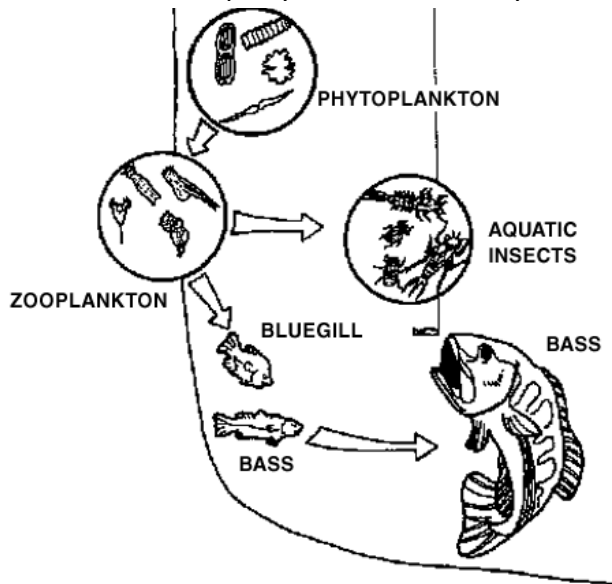
These habitats will also create excellent areas to fish. If you are interested in fishing these structures, you can refer to a map that indicates the areas of the lake where habitats have been placed. The habitats indicated on this map were placed over the past two summers. This map not only indicates location but also indicates the type of structures placed. The map can be accessed at this link:

<https://maps.google.com/maps/ms?msid=216749996546885216218.0004ab0681e8aa95e09ff&msa=0&ll=33.51451,-84.285972&spn=0.002281,0.005284>.

The two types of habitat added to the lake this summer are pictured above. The first habitat was constructed from wooden pallets and weighted with cinderblocks. Wooden structures provide ideal habitat because they are excellent at promoting algae growth that attracts baitfish. The only issue with these habitats is that they do not last as long as the PVC habitats pictured on the right. The longevity of the PVC habitat is second to none, even though it may not provide the ideal cover. The PVC habitat is also fisherman friendly. It is difficult to lose lures on these structures, especially in comparison to the wooden habitats. The differing benefits of each habitat led to the utilization of both types. Also I would like to point out that there is no need to worry about these habitats presenting hazardous conditions to those that use the lake recreationally. All the habitats were placed at depths greater than 15 feet. At this depth they will not present any issue to swimmers and skiers.

The emphasis on the next actions I will describe was executed at a much smaller scale when compared to the previous actions mentioned. In the following year I intend to focus more heavily on these actions. There are two main actions that should be more heavily utilized in the future. These are the introduction of fish feeders and the removal of fish under fourteen inches. Both of these are impossible to implement without angler and lakeside resident cooperation. These two actions will directly attack some of the main problems with the ecosystem that Lake Spivey provides.

Adding fish feeders is an excellent way to combat the infertile water quality that is exhibited in Lake Spivey. An infertile body of water means that the water conditions do not



ideally promote the reproduction of phytoplankton (the main food source of invertebrates that are eaten by forage fish like Threadfin Shad). The infertility of Lake Spivey's water was confirmed through a water quality and clarity test performed during the electrofishing surveys. Normally when a body of water is as infertile as Spivey, liming or fertilization is recommended; however there is no practical way to accomplish this on an approximately six hundred acre lake. The lack of fertility of Lake Spivey does not allow for the size of the populations of Bluegill, Threadfin Shad, and other species targeted by Largemouth Bass to reach their full

potential. The forage fish reaching a larger size is important to the bass population because the larger a food item the bass eats, the better food conversion or weight gain it will experience. A bass will typically expend as much energy capturing a 2-inch Bluegill as a 4-inch one, but gains much more protein from the larger fish. A 4-inch Bluegill will typically weigh six to ten times as much as a 2-inch Bluegill. The addition of fish feeders around the lake will supplement the food supply for the forage fish which will consequentially help create an environment that will allow the forage fish to exhibit proper growth. The supplementation of forage fish food will help to curb the effects of the infertility by adding depth to the trophic level that is lacking due to Lake Spivey's water quality.

Five fish feeders have been purchased so far and set up around the lake. My hope is that many residents, after reading this, will begin to purchase their own fish feeders and set them up on their docks. If you are interested in setting one up, but do not know where to start, please contact me at dzs0017@auburn.edu and I will do all that I can in aiding you during the process.

Overcrowding is one of the major issues impeding proper growth in Lake Spivey. The lake's abundance of Largemouth Bass is certainly an issue that needs to be addressed. To put it simply, there are too many fish competing over a resource that is not abundant enough to support the population. This has led to the proliferation of fish that are in extremely poor condition. These are the fish that would be below the 90 mark on the relative weight scale. This crowding was first evidenced by the electrofishing survey in 2011. As seen by the survey in 2012, the lake is still overpopulated. While increasing the forage fish is certainly a strong focus of management, the effects of this action are greatly diminished by a large population size.

If ever angler is on board with a selective harvesting plan we can cut the lakes numbers down to the ideal amount. If a bass is caught under fourteen inches long I **STRONGLY** suggest removing that fish from the lake. In most situations, I preach catch and release. However, in this

situation releasing a fish below the fourteen inch range will do more harm to the overall population. I know that the average bass angler has no interest in keeping or eating their catch; however if the time is taken to ask around, I am sure that a neighbor or friend would be more than happy to take these fish off your hands. If you catch a fish under fourteen inches, please do not throw it back! Throwing a fish back into the lake will increase the intense competition that leads to the poor condition of the fish in the first place. You will do more harm to the overall population by releasing a fish this size. The selective harvest of these fish will ultimately allow the competition for forage fish (Bluegills and Threadfin Shad) to be reduced. This removal of smaller sized bass will help maintain a predator-prey balance that is conducive to growing an overall larger sized bass.

Future Insight

I hope that anyone reading this may now have at least a subtle understanding of the process that was started under the past year's management strategy. When I took the position of Director of Conservation, it was my hope that we could get Lake Spivey's fish population back to the great conditions that it experienced in the previous decades. While the overall condition of the fish in Lake Spivey may not be ideal yet, with continued investment in the plan, I expect to see the average relative weight above 90 by October of 2013. In the upcoming year I will continue to work hard and implement many of the same actions that were executed over the course of 2012. With that being stated, here is a synopsis of my suggested actions for 2013.

First, I believe it is pertinent to continue stocking Threadfin Shad. The population would strongly benefit from another stocking and I suggest that, if the budget allows, we stock the same amount as we did last spring. Secondly, I hope I have encouraged many to purchase a fish feeder to place on their dock. I hope that we can continue to purchase feeders and spread them around the lake. It would certainly benefit the population if this is possible. In addition to this, I plan on continuing to increase the habitat density with future habitat projects. Since habitat deteriorates, it is important to continue to build upon the existing habitat. Finally, the most important thing that each resident angler can do to help the population is to selectively harvest Largemouth Bass less than fourteen inches long. Each individual angler has a part that can be done to help this management strategy reach its peak efficiency. Effective fishery management of the lake will not occur, unless the cooperation of those utilizing the resource is present. If every resident, angler and non-angler alike, gets on board and does what they can, according to this management strategy, we will see results as soon as possible. I hope that all who are concerned with the condition of the population will undertake this task. Next time you are on the water, please take the time to think before you release. With time, I expect the condition of Lake Spivey's bass population to reach and hopefully exceed the levels that were demonstrated in the past.

If you have any questions, comments, or concerns do not hesitate to contact me at dzs0017@auburn.edu.

