

May 10, 2011

Mr. Clai Brown  
City of Avondale Estates  
21 North Avondale Plaza  
Avondale Estates, GA 30002-131

RE: Fisheries Study Lake Avondale

Dear Mr. Brown:

Aquascape Environmental performed an electro-fishing survey of Lake Avondale, located in the city of Avondale Estates, on April 22, 2011. The purpose of this study was to analyze the relative abundance of the existing fisheries populations within the impoundment. We have completed our report and are pleased to present it for your review.

The attached technical report we are submitting was prepared by Mr. Alfred Mauldin. Mr. Mauldin is a retired Fisheries Biologist from the Georgia Department of Natural Resources. Aquascape Environmental contracted Mr. Mauldin to review the collection data and write this report. We feel that his breadth of experience adds a "treasure trove" of knowledge to our fisheries management programs, which in turn will help us to provide a higher level of service to our clients.

The results of our the data collected indicate that in general terms the largemouth bass as well the bluegill populations within the lake are in low numbers but in a temporary balanced state. There are several considerations in moving forward to improving the sportfishery of the lake.

- Based on the data, the optimal choice for improving the fishery of the lake would be to drain the lake and restock the lake on a clean slate. This would provide a balanced population of fish within the lake, which would provide the best fishing experience.
- If this is not an option for consideration, the direction of management of the lake will be based on trying to improve the existing conditions with understanding of the limitations of such a program based on the present fish composition. One element of such a program would be implementing size restrictions on the harvest of largemouth bass that are  $\geq 16$  inches. Additionally, it would be our recommendation to add 100 adult size largemouth bass to supplement the existing population to increase their numbers.
- The final alternative would be to introduce several supplemental automated feeding stations along the shoreline. These stations would serve to congregate fish and increase catch rates for anglers. I will say that while such structures would be beneficial, they may not be an effective solution for the cost involved.

If you have any questions or comments, please do not hesitate to contact me. Aquascape Environmental is fully capable of providing all of your fisheries management needs in which ever route you wish to proceed. Thank you for the opportunity to be of service. I will follow up with you after you have had a chance to review the report.

Sincerely,

A handwritten signature in black ink, appearing to read "Jeremy Brown". The signature is fluid and cursive, with a long horizontal stroke extending to the right.

Jeremy Brown  
Environmental Specialist  
Wildlife Biologist

AM-2-PM Lake Management  
488 Branham Circle  
Social Circle, Georgia 30025  
(770) 823-3770

May 5, 2011

Mr. Jeremy Brown  
Aquascape Environmental  
605-B Mauldin Drive  
Woodstock, Georgia 30188

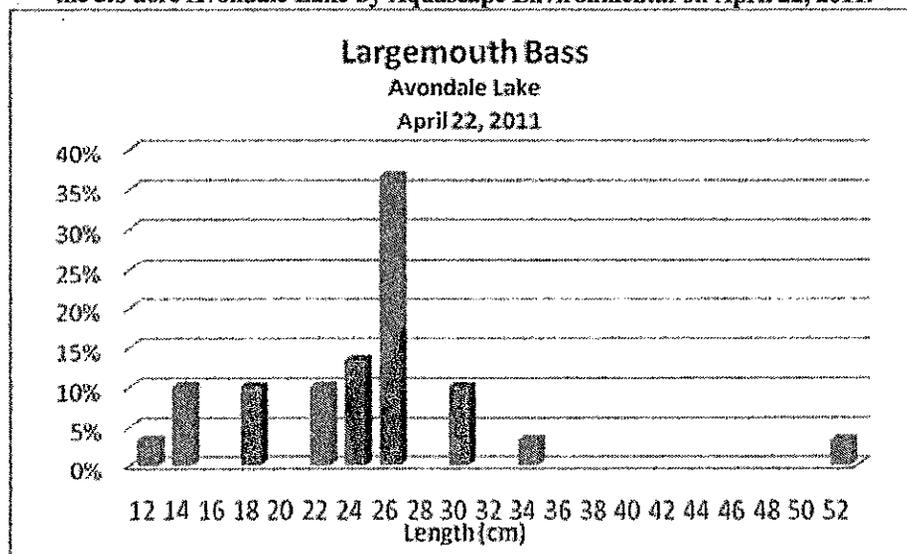
Dear Jeremy:

As requested, the following report provides data analysis and fisheries management direction for the 3.8 acre Avondale Lake impoundment. The recommendations were developed from electrofishing data collected by Aquascape Environmental personnel on April 22, 2011. Catch per unit of effort (CPUE), relative weight (Wr), and length frequency histograms were developed for largemouth bass and bream (*Lepomis spp.*).

**Current Status:** Boat mounted electrofishing gear was used to sample three stations on the impoundment. Each station was sampled for five minutes for a total sample time of fifteen minutes. An effort was made to retrieve all fish in the energized field. Largemouth bass, bluegill, redear sunfish, and green sunfish were collected. Water temperature (70 °F), conductivity (76 micro ohms per second), total hardness (24 mg/L as CaCO<sub>3</sub>), and secchi disk visibility (30 inches) were measured during the sample.

**Largemouth bass:** A total of thirty largemouth bass was collected from the three stations for a catch per unit of effort (CPUE) of 120 bass/hour. The fish ranged in size from five inches (12 cm) to twenty-one inches (52 cm) total length (Figure 1). Considering all stock-size (>20 cm) bass (22), approximately 18% (Proportionate Stock Density, PSD) were greater than 30 cm. This length frequency suggests poor growth and survival of adult largemouth bass.

Figure 1. A length frequency histogram of thirty largemouth bass collected with electrofishing from the 3.8 acre Avondale Lake by Aquascape Environmental on April 22, 2011.

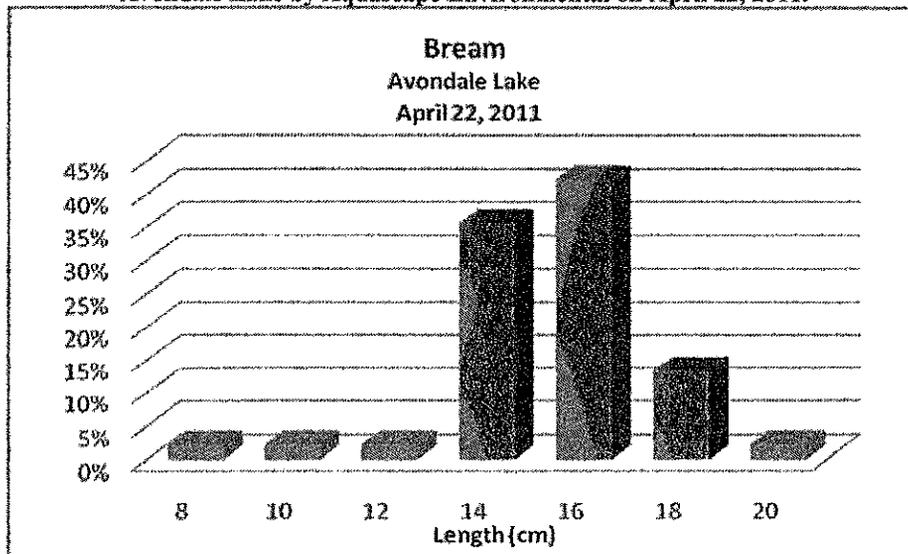


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Relative weight ( $W_r$ ), an index of fish plumpness was calculated for each bass.  $W_r$  values ranged from 70% to 101% and averaged 89%. A value of 100% represents a fish of appropriate weight for its given length.

**Bream:** An aggregate total of 45 bream (i.e. bluegill, redear sunfish, and green sunfish) were collected from the three stations for a CPUE of 180 bream/hour. The fish ranged in length from three inches (8 cm) to eight inches (20 cm). Approximately 58% (PDS) were greater than six inches (16 cm) in total length (Figure 2). This length frequency suggests relatively low reproduction, moderate recruitment of young fish, and average growth of adults.

Figure 2. A length frequency histogram of 45 bream collected with electrofishing from the 3.8 acre Avondale Lake by Aquascape Environmental on April 22, 2011.



**Analysis:** This population is in a “temporary state” of prey-predator balance, possibly due to competitive species. This analysis is supported by the low abundance of young bream and absence of large adult bream. The very low PSD value (18%) for largemouth bass suggest that adults are present in very limited numbers. It appears that largemouth bass recruitment may be at an acceptable level, but very few fish are moving to adult sizes. This is a classical population structure associated with the presence of non-predacious competitive species such as brown bullhead, golden shiner, and goldfish. I have personal knowledge that this impoundment contained both goldfish and brown bullhead in large quantities during past years. Additional sampling with entrapment gear (e.g. gillnet, baskets) may reveal the presence of such species.

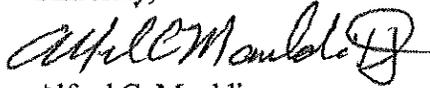
**Management Direction:** The bream population is dominated by small adults (16 cm) and stock-size ( $\leq 14$  cm) fish. Largemouth bass that are  $\geq 16$  inches can utilize the stock-size bream as food and reduce their abundance, which will improve population balance. Therefore, largemouth bass that are less than 16 inches should be protected from harvest.

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Feed stations are a good technique for concentrating bream and other species in areas known to anglers, which can improve catch rates, especially for the casual angler. Automated feeders can be positioned at two or three locations along the shoreline and set to dispense small amounts of feed each day. One to two pounds of feed/day/feeder could be dispensed over two to three daily feedings during the growing season.

I thank you for the opportunity to provide you with this service. If you have comments or questions please feel free to contact me.

Sincerely,

A handwritten signature in cursive script, appearing to read "Alfred C. Mauldin".

Alfred C. Mauldin  
Fisheries Biologist