

LAKE GASTON BLACK BASS SURVEY, 2022



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Study Site: Lake Gaston

Species: Largemouth and Alabama Bass

Gear: Boat-Mounted Electrofishing, High Frequency, 60 PPS, 3-5 amps

Sample Date (s): April 28 and May 4—5, 2021

Sample Size: n = 400 (LMB = 182, ALB = 218)

RESULTS

Largemouth Bass

Catch Per Unit Effort (Average): 45.6 fish/hr

Length (mm): Minimum = 95; Maximum = 571; Average = 358; % \geq 356 mm = 59; % \geq 457 mm = 7

Condition: PSD = 85; PSD-P = 54; Average *Wr* = 87; % \geq 2.3 kg = 2

Max Age (years) = 9

Growth: Average Length at Age 3 (mm) = 369.6

Alabama Bass

Catch Per Unit Effort – (Average): 59.4 fish/hr

Length (mm): Minimum = 84; Maximum = 376; Average = 242; %≥356 mm= 23; %≥457 mm= 2

Condition: PSD = 69; PSD-P = 22; Average *Wr* = 82; %≥2.3 kg = 0

Growth: Average Length at Age 3 (mm) = 334.7

Max Age (years) = 10

BIOLOGIST COMMENTS

The bass population at Lake Gaston is slowly starting to trend toward a system dominated by Alabama Bass. Alabama Bass were first detected in NCWRC sampling 8 years ago in 2014, but were captured by anglers 10 years ago in 2012. This is the first sample where the sample size is predominantly Alabama Bass (55%). Alabama Bass exhibited a lower average size than Largemouth Bass (Figure 1). In this survey Alabama Bass were dominated by younger individuals when compared to Largemouth Bass yet Alabama Bass had greater longevity (max age = 1) than Largemouth Bass (max age = 9; Figure 2). This indicates that Alabama Bass were in Lake Gaston in 2012 and evaded our sample. Growth curves indicate similar growth trajectories between Largemouth Bass and Alabama Bass (Figure 3). However, Alabama Bass are still in their colonizing phase and growth will likely slow as they reach carry capacity. Relative weights below 80 indicate Alabama Bass may be close to carrying capacity and intraspecific competition could be occurring (Figure 4). This is further seen by a steady decrease in Alabama Bass relative weights over time (Table 2). Largemouth Bass and Alabama Bass will continue to compete for habitat and resources which will decrease both populations' fitness.

MANAGEMENT RECOMMENDATIONS

1. Continue to manage Lake Gaston with the current Largemouth Bass regulations in place.
2. Encourage harvest of Alabama Bass which have no creel or length limits.
3. Continue to sample Lake Gaston on a biennial basis to analyze any changes in the dynamics of the Largemouth Bass and Alabama Bass population.

TABLES AND FIGURES

TABLE 1.—Catch per unit effort (CPUE), percent of fish that were 356 mm and longer, 457 mm and longer, proportional size distribution (PSD), proportional size distribution-preferred (PSD-P), percent of fish that were 2.3 kg and greater, length at age 3, maximum age, and average relative weight (*Wr*) of Largemouth Bass collected from Lake Gaston with electrofishing in spring 2016, 2018 and 2022.

Year	CPUE	%≥356 mm	%≥457 mm	PSD	PSD-P	%≥2.3 kg	Mean length at age 3	Max age	<i>Wr</i>
2016	57	44	11	77	45	1	396	11	90
2018	31	44	10	71	34	2	n/a	n/a	91
2022	50	59	7	85	54	2	363	9	87

TABLE 2.—Catch per unit effort (CPUE), percent of fish that were 356 mm and longer, 457 mm and longer, proportional size distribution (PSD), proportional size distribution-preferred (PSD-P), percent of fish that were 2.3 kg and greater, length at age 3, maximum age, and average relative weight (*Wr*; DiCenzo and Maceina 1995) of Alabama Bass collected from Lake Gaston with electrofishing in spring 2016, 2018 and 2022.

Year	CPUE	%≥356 mm	%≥457 mm	PSD	PSD-P	%≥2.3 kg	Mean length at age 3	Max age	<i>Wr</i>
2016	5	16	2	46	23	3	n/a	n/a	92
2018	15	6	1	32	9	0	n/a	n/a	94
2022	59	23	2	69	22	0	335	10	82

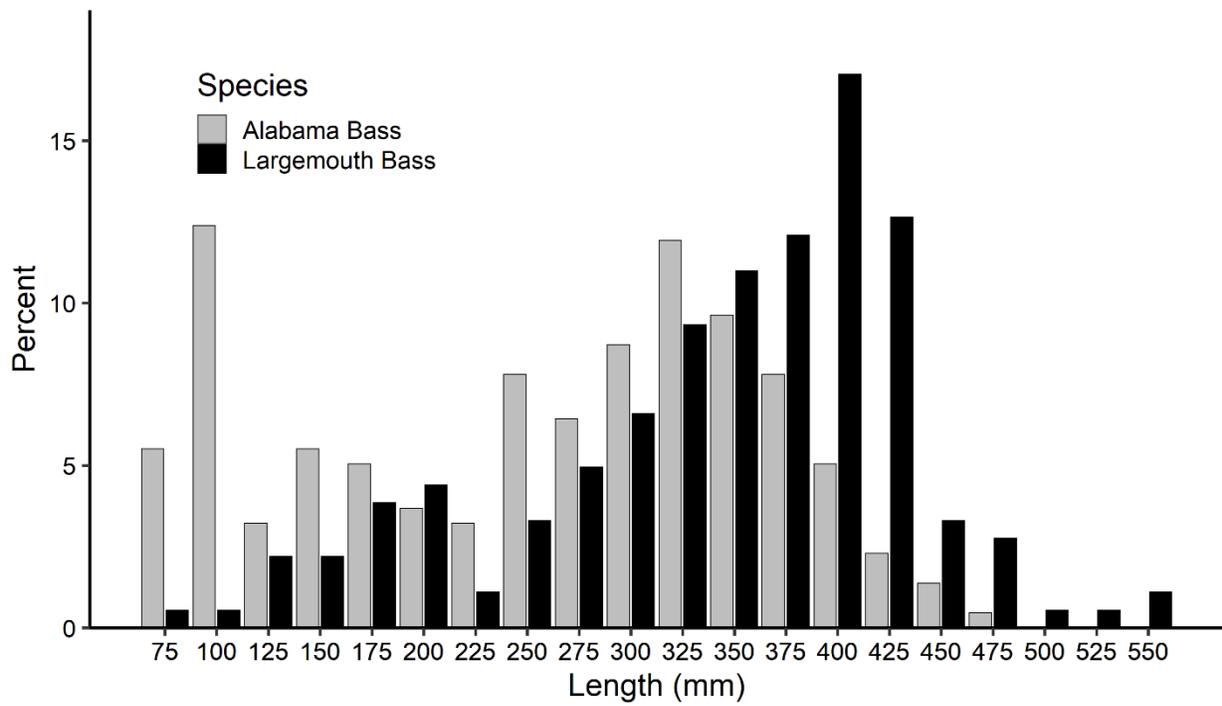


FIGURE 1.—Length frequency distribution of Largemouth Bass and Alabama Bass collected from Lake Gaston with electrofishing, spring 2022.

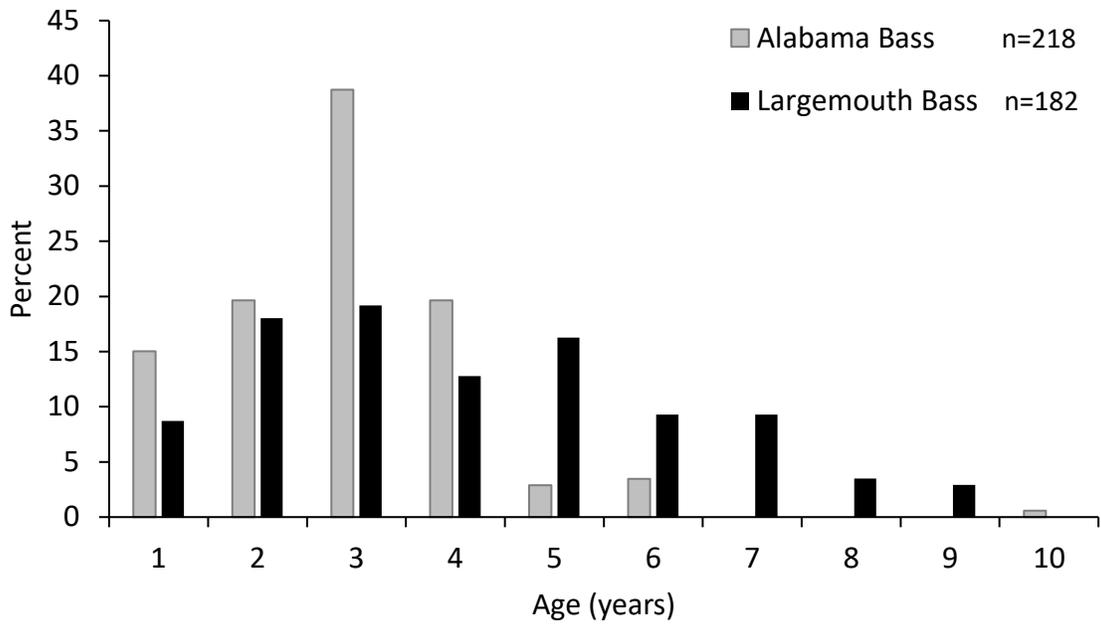


FIGURE 2.—Age frequency distribution of Largemouth Bass and Alabama Bass collected from Lake Gaston with electrofishing, spring 2022.

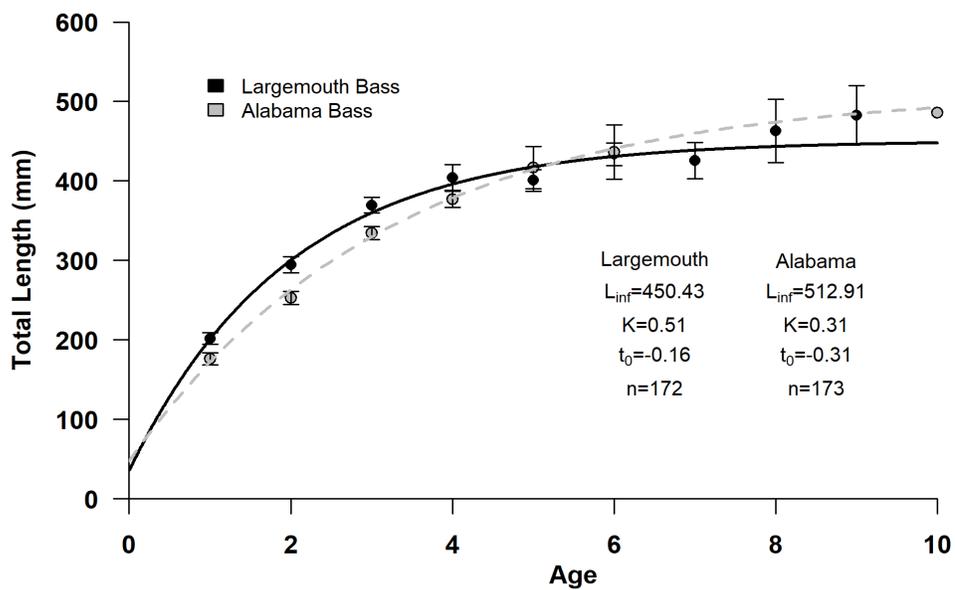


FIGURE 3.—von Bertalanffy growth curve for of Largemouth Bass and Alabama Bass collected from Lake Gaston with electrofishing, spring 2022. Error bars indicate ± 2 SE.

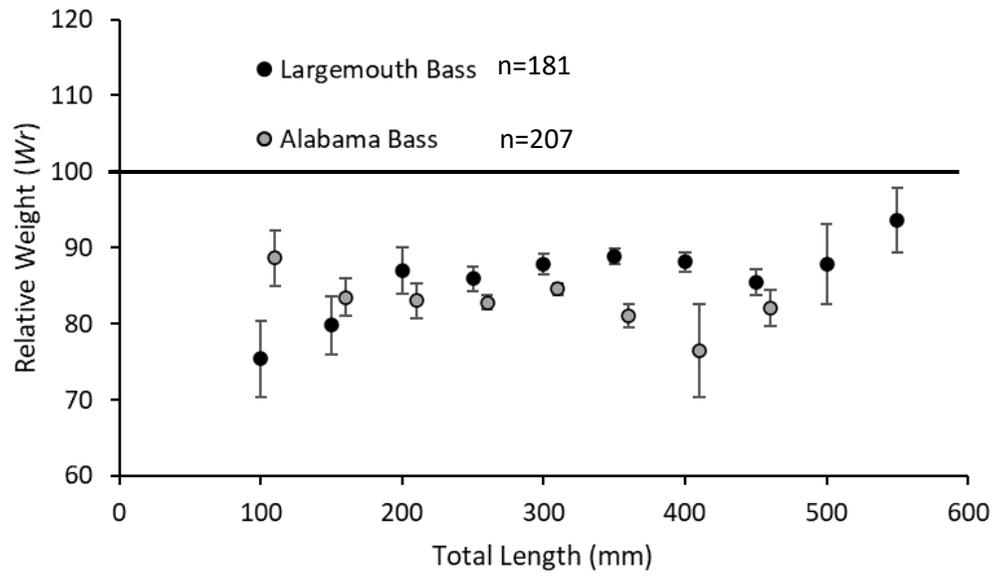


FIGURE 4.—Relationship between length and relative weight of Largemouth Bass and Alabama Bass collected from Lake Gaston with electrofishing, spring 2022. Error bars indicate ± 1 SE. The bold line indicates the target relative weight (100) of healthy fish.