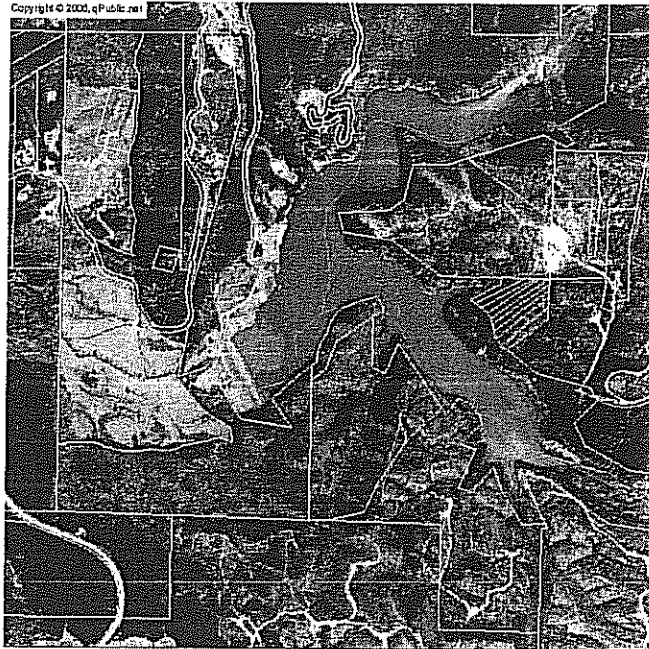


Salacoa Lake

2009 Fisheries Management Report



By

Tracy Feltman
Fisheries Technician III

Fisheries Management Section
Wildlife Resources Division
Georgia Department of Natural Resources

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Study Area

Salacoa Lake covers 126 acres in Gordon County approximately 10 miles east of Calhoun on Georgia Highway 156. Associated with the lake is a county-operated recreation area with facilities for camping, swimming, hiking, and picnicking. Salacoa Lake is formed by the impoundment of Lick and Redbud creeks just downstream of their confluence. Construction of the lake was authorized in 1966 as part of the Soil Conservation Service's Salacoa Creek Area Watershed Plan for watershed protection and flood prevention. Historically, Salacoa Lake has had weed problems, large areas of extremely shallow water, reoccurring fish kills, high exchange rates of water due to the large watershed, undesirable fish species, and low catch rates of bass and hand sized bream.

The GA DNR Fisheries Management Section has sampled the lake numerous times over the years, most recently in 2001, 2003, 2005, and 2009. As part of a renovation of the area in late 2003, the lake was partially drained to an area approximately 15 to 20 acres. Population sampling occurred prior to renovation during the summer of 2003, and after the renovation in 2005 and 2009. Almost seven years have passed since the renovation, giving the fish population ample time to expand and stabilize.

Methods

Sampling at Salacoa Lake was conducted on November 16, 2009. Boat electrofishing was used to evaluate the lake's existing fish population to determine what actions, if any, were needed to improve the fishing. Also at this time, a general reconnaissance was performed to identify any potential problems or opportunities for improvement.

Sampling effort included 15-minute electrofishing transects at two stations. All fish species seen were netted with the exception of common carp. Species of interest were individually measured and weighed, with species of lesser interest measured (shad spp.).

Results

Electrofishing samples collected 50 specimens representing 5 species (Table 1). Common carp were present but not netted. The fish assemblage is typical of Georgia small impoundments, dominated by Centrarchids including black bass, sunfish, and crappie. Gizzard shad are also present in the lake. Species that were not collected in 2009, but are known to occur in the lake include: brown bullhead, redbreast sunfish, and redear sunfish.

Length frequency analyses were performed on species that are of angling interest (Figure 1 and 2). The largemouth bass results revealed a somewhat skewed distribution dominated by large adults with few intermediate size bass. The bluegill results showed a population dominated by intermediate sized fish.

Water quality analyses from prior sampling revealed a stratified impoundment with moderate total hardness and pH typical of northwest Georgia small impoundments (Table 2).

Discussion

When the lake was partially drained in 2003, many of the fish were flushed from the basin, which benefited the fishing. As the 2003 sample showed (Table 1, Figure 1 and 2), the lake was suffering from a severely overpopulated and stunted bluegill population that caused the overall fish population to be severely out of balance.

The goal for the partial draining of the lake in late 2003 was to reduce the majority of the fish from the lake and allow the fish population to reestablish itself in a more balanced state (fish present in all sizes). Six years after draining, the population structure is relatively unchanged from pre draining conditions. We collected and observed high numbers of intermediate bluegill, gizzard shad, and low numbers of bass. The low bass numbers provide ineffective predation of the prey species (bluegill, gizzard shad, etc.). This lack of predation results in overpopulation and stunting of size in bluegill (high numbers of 3 to 5 inch). Once a fishery reaches this state, changing the structure becomes very difficult and slow. Intensive manipulation of water levels and habitat, supplemental stockings, and restrictive harvest should be implemented to make any positive changes to the fishery.

Manipulating the water level is an effective tool for fisheries managers when bream populations are overpopulated. This is done with a winter drawdown. Lowering the water levels between 35% and 50% exposes the pond bottom and reduces the volume of water by a third to a half. The smaller volume of water concentrates the forage species and allows the bass to feed upon them more effectively. Start lowering water levels in mid October and begin raising water levels in early February. Annual winter drawdowns should allow the bass to reduce the prey numbers and shift the fishery towards a more balanced state.

Results of the general lake reconnaissance suggest there are a few issues that could be addressed to improve fishing success. Due to the clearing of the lake basin during construction and excessive siltation over the years, fish habitat (stumps, brush piles, etc.) is limited. Habitat of this type is important to provide refuge areas for young fish, and also serves to concentrate the adult fish, which improves angling success. Felling select shoreline trees into the lake will improve shoreline habitat. Utilizing surplus Christmas trees donated by area vendors or provided by local government authorities (i.e. discarded trees picked up after Christmas as part of trash service) and placing them in select areas will improve offshore habitat. For assistance with demonstrating construction and placement of attractors, GA DNR staff could provide technical support with any efforts to improve the lake's habitat.

The continued presence of aquatic weeds in the shallows of the lake are hindering effective predation by bass of prey species. However, some weed beds along shorelines away from high use areas (beach, campground, boat ramp, etc.) could be used as natural attractors for fish. The presence of areas with natural fish attractors (i.e. aquatic vegetation) would reduce the amount of amount of foreign material needed to make attractors. The aquatic plant that we collected during our recent survey was identified as Waterwillow (*Justicia americana*). Apply the herbicide Rodeo at a rate of 1 to 3 ounces per gallon of water and apply to surface of plant. Use a non-ionic surfactant such as Cide Kick to increase the effectiveness of the chemical. Spray only the emergent portion of the plant. Read the label and follow the recommended rates and restrictions before applying.

Fingerling bass may be available during the spring for supplemental stocking. These fish would be surplus fish remaining from our Private Pond Distribution Program. Recently hatched bluegill should be available for the young bass to feed on. Stocking fingerling bass may increase the number of new bass surviving each year. With increased numbers in each year class, more bass should be able to recruit into the missing size classes as forage becomes available.

Discussion (continued)

Currently the bass population in Salacoa Lake has low numbers of small <14 inch fish but has a relatively strong population of larger fish (>14 inches). With proper restrictions, the bass population should increase in numbers with little harm to the quality of the size of the fish already present. The length restrictions for bass should be a minimum of 14 inches with a creel of 5 bass total and only one allowed over 21 inches. Placing a 14 inch minimum size limit on the bass will protect the younger bass from harvest and allow anglers to harvest adults over 14 inches. The limit of one bass over 21 inches should provide adequate protection of the larger adults, reducing the chance of over harvest, while allowing the bass angler to harvest a trophy. For the bream species place a creel limit of 50 per person to encourage harvest. Place a limit of 5 channel catfish per person to allow moderate harvest on the current population. A limit of 15 crappie per person is recommended. These length and creel restrictions are based on our successful management of the Departments public fishing area lakes.

Recommendations

1. Annual winter drawdowns from mid October to early February.
2. Implement and enforce new length and creel limits of:
 Bass:.....14 inch minimum
 5 fish per person with only one bass over 21 inches
 Bream:.....50 per person
 Catfish:.....5 per person
 Crappie:.....15 per person
3. Implement a fish attractor program by selectively cutting shoreline trees and establishing offshore brush piles.
4. Spray waterwillow weed beds around high use areas with Rodeo starting next spring through summer.
5. Supplemental stocking of bass from surplus GA DNR Private Pond Distribution fish will be stocked annually when available.

Table 1. Catch per unit effort (#/hour) for electrofishing sampling conducted in August 2001, June 2003, June 2005, and November 2009 at Salacoa Lake, Gordon County, Georgia.

	Electrofishing							
	2001		2003		2005		2009	
	#	#/Hr	#	#/Hr	#	#/Hr	#	#/Hr
Black crappie			4	8.0	1	2.0	2	4
Bluegill	47	62.7	310	620.0	11	22.0	28	56
Brown bullhead			7	14.0				
Common carp	6	8.0	30	60.0	Present, not collected		Present, not collected	
Gizzard shad	22	29.3	97	194.0	5	10.0	3	6
Green sunfish			15	30.0			1	2
Largemouth bass	5	6.7	67	134.0	15	30.0	16	32
Redbreast sunfish			3	6.0	2	4.0		
Redear sunfish	1	1.3	5	10.0	2	4.0		
TOTAL	81	108.0	538	1,076.0	36	72.0	50	100.0

Table 2. Water quality parameters measured at 1130 hours on June 29, 2005, at Salacoa Lake, Gordon County, Georgia.

Depth (ft)	Dissolved Oxygen (ppm)	Temperature (°C)
Surface	10.31	29.8
1	10.33	29.9
2	10.38	29.0
3	10.25	28.5
4	10.28	28.2
5	7.03	27.2
6	5.36	26.5
7	4.68	26.0
8	3.93	25.2
9	3.81	24.5
10	3.71	24.0
11	3.47	23.2
12	3.20	21.4
13	3.17	20.2

PH = 7.7

Total Hardness (ppm) = 85.5

Total Alkalinity (ppm) = 85.5

Figure 1. Gabelhouse Body Length Classification (inches) of bluegill collected by electrofishing on Salacoa Lake, Gordon County, Georgia, in August 2001, June 2003, June 2005, and November 2009.

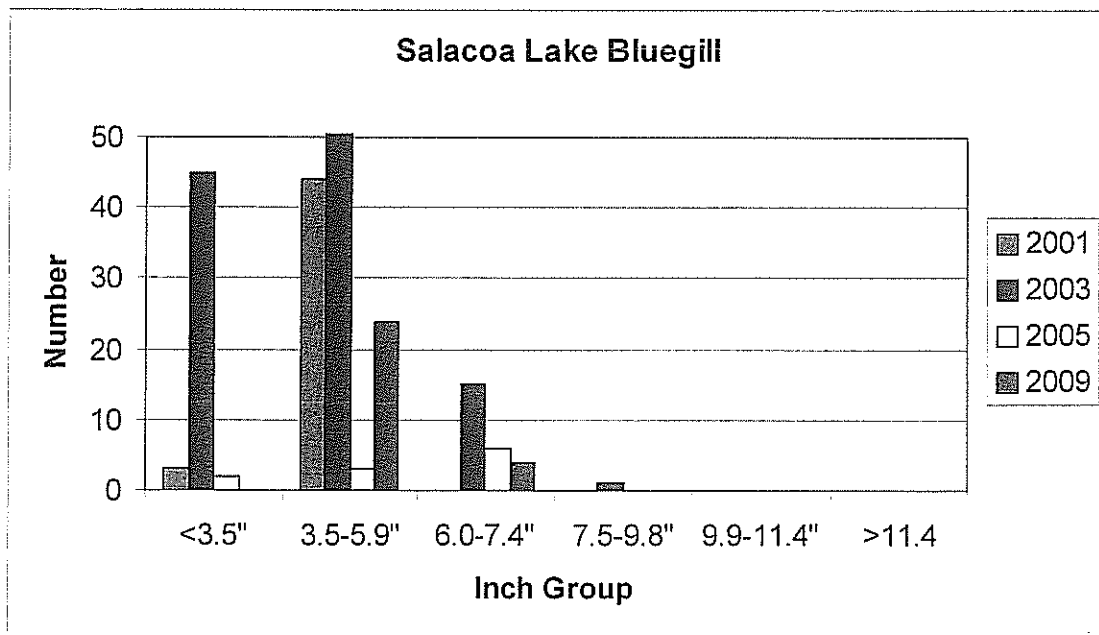


Figure 2. Gabelhouse Body Length Classification (inches) of largemouth bass collected by electrofishing on Salacoa Lake, Gordon County, Georgia, in August 2001, June 2003, June 2005, and November 2009.

