

April 1, 2011

Mr. Mike Spooner
145 Beaufort Circle
Madison, MS 39110

Dear Mr. Spooner:

Enclosed, please find your copy of the Management Plan we recently completed for Lake Caroline.

Lake Caroline is presently functioning as a dynamic, balanced fishery. As such, our management recommendations center primarily on maintaining the total number of adult predators (largemouth bass) and improving the conditions for the production of forage through enhancing the pond's fertility level and supplemental feeding:

- Maintain the current fertilization regime.
- Maintain the current supplemental feeding regime.
- Largemouth bass (16" and less) should be harvested, up to a total of 5 bass per angler per day.
- Limit bluegill harvest to 30 per angler per day.
- Harvest crappie up to 20 per angler per day.
- Harvest all catfish caught.
- Apply 850 tons of agricultural limestone in Summer 2011.
- Conduct an electrofishing balance assessment (Annual Evaluation) roughly one year from this date.

Our goal over the last year was to increase bass numbers and decrease catfish numbers. As you observed, I firmly believe that we have succeeded in our goal.

The application of lime is recommended again this year. I did not provide a quote for the application of lime in this report. Given the price of fuel, the cost to purchase and deliver agricultural lime changes each week. As we get closer to the summer, I will provide a detailed cost for the application of lime.

Mr. Spooner, we are always available to discuss these recommendations or answer any other questions you might have.

Good fishing,
Scott Kirk
Fisheries Biologist, MS

P.S. Be sure to read about our Lake & Land Mapping Service toward the end of this report.

Management Plan
For
Lake Caroline

March 31, 2011





Introduction

As an integral part of the ongoing management program for Lake Caroline, Southeastern Pond Management conducted a comprehensive evaluation of the 850 acre impoundment on March 31, 2011. A representative sample of the fish community was collected by electrofishing to accurately assess the present state of balance. In addition, a water chemistry test was conducted to determine total alkalinity. The degree of aquatic weed infestation was also recorded. Results of these assessments, plus consultation with Mr. Mike Spooner, provide the basis for this management plan.

The goal of this management plan is to create and maintain a balanced fish community with the potential for trophy largemouth bass in Lake Caroline. The following evaluation report and management plan details and explains our recommendations with the following goals in mind:

- ◆ Create conditions favorable for the consistent production of “quality size” and “trophy size” largemouth bass (Table 1).
- ◆ Create conditions favorable for the consistent production of “quality size” bluegill (Table 1).
- ◆ Generally maintain a high level of water quality as well as an aesthetically pleasing environment for aquatic recreation.

Table 1.

	LMB	Bluegill
“Quality Size”	16-20”	7-10”
“Trophy Size”	20”+	10”+

It is important to note that quality fishing will not be accomplished “overnight”. As you read through this plan, bear in mind that the specific activities we have recommended are not one-time inputs, but rather a collection of ongoing management activities that will establish and maintain long-term quality fishing. Proper pond management, like the management of any natural resource, is an ongoing process. Each management input is recommended individually; however, it should be noted that the *management program* suffers if all activities are not implemented. Feel free to contact us and further discuss management ideas you may have.

Previous evaluations of Lake Caroline have resulted in the thoughtful outline of management options in an effort to approach your stated management goals. Our latest findings, as well as management recommendations, result from our most recent visit and are contained within the following pages.



Electrofishing equipment was used to collect a fish sample from Lake Caroline, March 2011.



Pond Assessment

At the time of our visit, total water alkalinity in Lake Caroline was measured at **14.7** parts per million (ppm). This level of alkalinity is below the minimum recommended threshold of 20 ppm, and represents conditions less suitable for effective fertilization. Lake Caroline has been fertilized adequately in the recent past and responds well to fertilizing efforts.

Bass harvest was reported as moderate. This level of harvest has proven adequate. Harvest, and its importance in structuring fish communities will be discussed in more detail in the Recommended

Management Activities section of this report.

During the evaluation, we observed a light infestation of water primrose growing along the margins. A description of this plant may be found in the Aquatic Weed Identification section of this report.

Lake Caroline appeared to have an excellent plankton bloom at the time of our visit, the result of consistent fertilization.



Lake Caroline, March 2011.



Fishery Assessment

The fishery in Lake Caroline was sampled with standard boat-mounted electrofishing equipment. The sample contained largemouth bass, crappie, threadfin shad, gizzard shad, coppernose bluegill, catfish, and redear sunfish (shellcracker). Currently, largemouth bass, catfish, and crappie are functioning as the primary predators in Lake Caroline. The bluegill, threadfin shad, gizzard shad and shellcracker are the prey.

Threadfin shad have become an important component of the forage base in Lake Caroline. We observed several different size groups, indicating a healthy population. Maintaining a healthy shad population will be important for Lake Caroline to continue producing quality and trophy size bass.

Largemouth bass ranging in size from 5 to 23 inches in total length were collected in high abundance. The length distribution of largemouth bass (Figure 2) reveals the presence of bass over a wide range of size classes. This represents improvement from the previous year.

The average relative weight of adult bass in our most recent sample reflects almost no change over last year. This year's average relative weight was 102, as compared to last year, 103 (Figure 4).

Largemouth bass 16 inches and smaller represent the primary targets for harvest over the coming months.

Bluegill and shellcracker were collected ranging in size from 2 to 10 inches in total length. Figure 3 depicts the length distribution of the bluegill population. Of note, an abundance of (3-5") bluegill and other forage was collected. Further, mature adult bluegill were relatively abundant in the sample.

Overall, we characterize the fish community in Lake Caroline as balanced. A more detailed explanation of balanced ponds in general, and Lake Caroline in particular is located in the Current State of Balance section of this report.

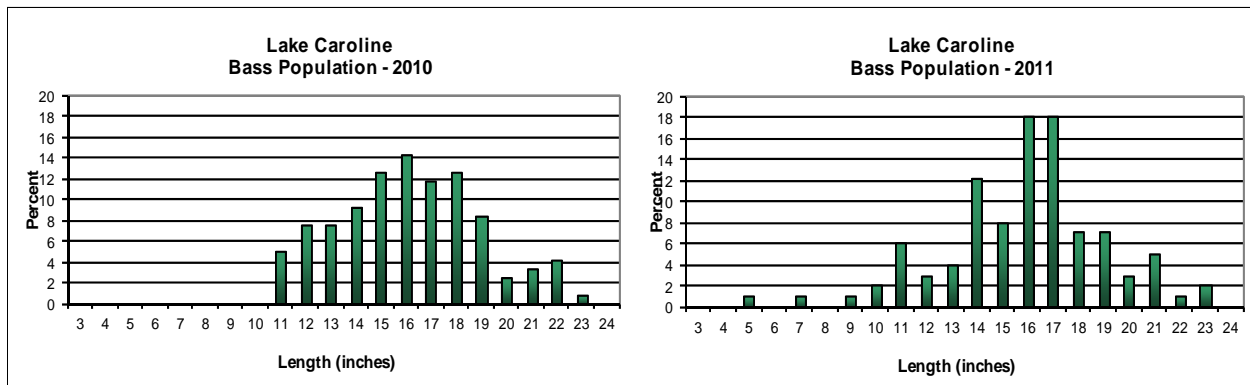


Figure 2. Comparison of the length distribution of bass collected in Lake Caroline in April 2010 and March 2011.

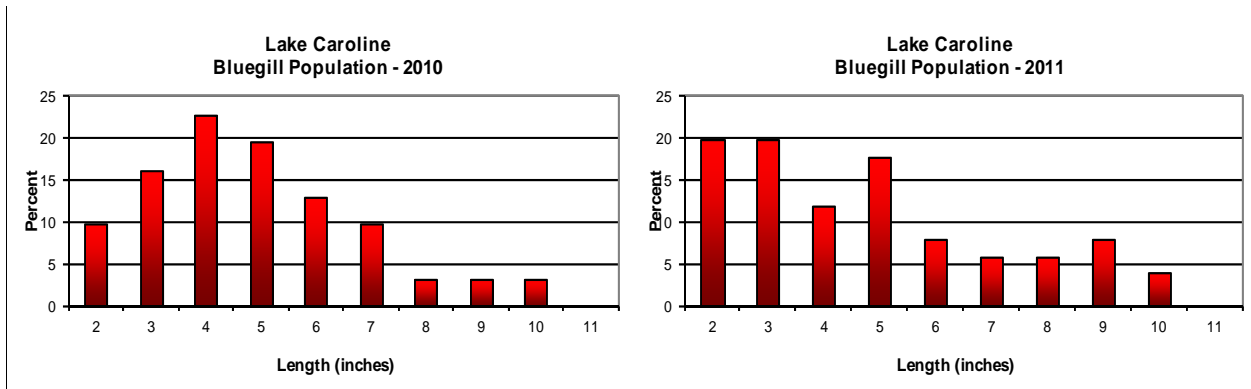


Figure 3. Comparison of the length distribution of bluegill collected from Lake Caroline in April 2010 and March 2011.

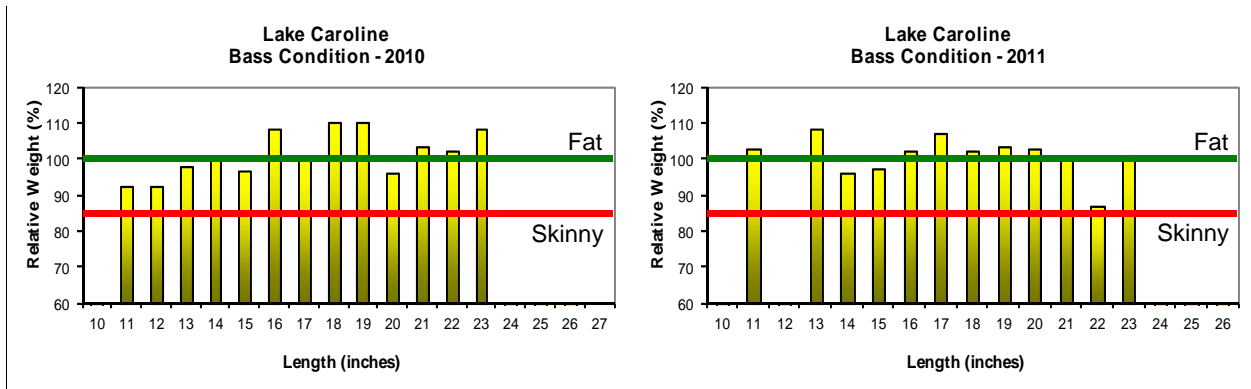


Figure 4. Relative weight distribution of adult largemouth bass collected from Lake Caroline in April 2010 and March 2011.



Balance

Most pond management activities are centered on creating or maintaining a balanced fish community. A balanced sport fish pond is preferred by most anglers because it provides quality bass and bluegill, both in terms of number and size. A balanced fish community is characterized by a wide size distribution of bass, bluegill and other forage species; adequate reproduction of all species is present.

As mentioned previously, our recent electrofishing sample from Lake Caroline contained a healthy distribution of bass across many different size groups. Additionally, the majority of the bass were in good condition with relative weights ranging from 84 to 120. Bass in all length groups were in good to excellent condition, indicating an abundant forage base for all length groups of bass.

The presence of intermediate size (3-5") prey is critically important in sport fish ponds. These individuals are the size preferred by the more abundant, younger bass in a typical population. A high relative abundance of intermediate size prey is often an indication of a balanced pond.

When a state of balance exists, intermediate size prey are among the most abundant segment of the

overall fish community. Under these conditions, bass typically grow quickly, and are capable of reaching their full growth potential.

During our electrofishing sample, we observed a healthy forage base, particularly the distribution of intermediate sized prey. In order to maintain the predatory:prey balance and the continued growth of bass in Lake Caroline, it will be necessary to ensure that conditions for the production of forage such as fertilization, supplemental feeding and selective bass harvest are sustained or even enhanced.

In a typical fertilized sport fish pond, bass harvest is required in order to prevent overcrowding. The old idea of "throw him back and catch him when he gets bigger" is not a sound approach in small impoundments. If sufficient harvest does not occur, a bass-crowded condition is the likely result. This usually leads to a low quality bass fishery.

Strategies to improve the quality of the bass and bluegill fishing are discussed in the Recommended Management Activities section of the report.



A balanced pond supports an abundance of bass, bluegill and other forage species of all sizes.



Summary of Management Recommendations

Lake Caroline is functioning as a balanced system that has a moderate level of fertility. Several management inputs are necessary to maintain a state of balance as well as increase the total density of sport fish. The management activities we are recommending for Lake Caroline will center on reducing the total number of adult predators and enhancing the conditions for the production of forage.

To create conditions suitable for effective fertilization, we recommend **applying at least 850 tons of agricultural limestone** this winter. To maintain a high density of sport fish as well as help control aquatic vegetation, we recommend **maintaining an intensive fertilization program** in Lake Caroline. **SportMax® Water Soluble Pond Fertilizer (10-52-4)** should be applied according to the *Standard Pond Fertilization Schedule*.

For Lake Caroline, **harvest bass 16 inches and smaller** at a rate of **5 per day per angler**. The recommended bass harvest rate and size will likely change over the next few years as the fish community responds to management inputs.

We recommend **limiting bluegill harvest** in Lake Caroline to a “consumptive” level, meaning **ONLY** bluegill and shellcracker which are intended for table fare should be removed; the over-harvest of adult bluegill, particularly during the spawning season, may lead to a decrease in the total number of mature, adult bluegill and a corresponding decline in angling catch per unit of effort. **Annual electrofishing evaluations** will help determine if fish harvest recommendations should be adjusted.

We recommend **maintaining an intensive supplemental feeding program** in Lake Caroline. Fish food should be applied from feeding stations at a rate of at least 5 lbs/feeder/day from March through October.

Aquatic weed control will also be an integral part of the management program for Lake Caroline. Water primrose has the potential to multiply quickly and should be monitored closely, particularly during the growing season. We feel that the quickest and most efficient way to control aquatic weeds in Lake Caroline, if they should become a problem in the future, is by herbicide application.

The management activities we recommend over the course of the next twelve months are listed in the following pages. In an effort to assist in the prioritization of these management inputs, we have developed a simple color-coding system. You will note this system in the bottom right-hand corner of the respective Management Recommendations to follow:

LEVEL 1

Highest priority. Generally, require immediate attention.

LEVEL 2

Secondary in importance to Level 1. Directed toward achieving your stated management objectives.

LEVEL 3

Increase enjoyment and/or functionality of your pond but have less impact on the overall management program.



LIME APPLICATION

SUMMER 2011



COST: Variable

Current Status: Awaiting Owner Approval

- Approved Declined Done

Date Approved: _____

Date Done: _____

MANAGEMENT ACTIVITY:
Apply 850 tons of agricultural limestone

LEVEL 1

FERTILIZATION ROUTE

ANNUALLY



COST: \$ 4,590.00 per application*

Current Status: Approved

- Approved Declined Done

Date Approved: _____

Date Done: _____

MANAGEMENT ACTIVITY:
Maintain fertilization program

* Price subject to change. Cost includes 4 pounds of fertilizer per acre applied by our technicians according to the Standard Pond Fertilization Schedule.

LEVEL 1

SUPPLEMENTAL FEEDING

ANNUALLY



COST: Cost of Food

Current Status: Owner Responsibility

- Approved Declined Done

Date Approved: _____

Date Done: _____

MANAGEMENT ACTIVITY:
Continue feeding program

LEVEL 1

ANNUAL HARVEST

ANNUALLY



COST:
Hook and line: N/A

Current Status: Owner Responsibility

- Approved Declined Done

Date Approved: _____

Date Done: _____

MANAGEMENT ACTIVITY:
Limit LMB harvest to 5/angler/day (16" inches and less)

LEVEL 1



ANNUAL HARVEST

ANNUALLY

Current Status: Owner Responsibility

- Approved Declined Done

Date Approved: _____

Date Done: _____



COST: N/A

MANAGEMENT ACTIVITY:
Limit bluegill harvest to 30/angler/day

LEVEL 1

ANNUAL HARVEST

ANNUALLY

Current Status: Owner Responsibility

- Approved Declined Done

Date Approved: _____

Date Done: _____



COST:
Hook and line: N/A

MANAGEMENT ACTIVITY:
Limit crappie harvest to 30/angler/day

LEVEL 1

ANNUAL HARVEST

ANNUALLY

Current Status: Owner Responsibility

- Approved Declined Done

Date Approved: _____

Date Done: _____



COST:
Hook and line: N/A

MANAGEMENT ACTIVITY:
Harvest all catfish caught

LEVEL 1

ANNUAL EVALUATION

SPRING 2012

Current Status: Awaiting Owner Approval

- Approved Declined Done

Date Approved: _____

Date Done: _____



COST: \$ 850.00*

* This price includes comprehensive written Management Report. An additional mileage charge will be added.

MANAGEMENT ACTIVITY:
Annual electrofishing evaluation

LEVEL 1