# Fish Survey Report

## Garner Lake

**Submitted to:**

Garner Lake Fishing Club

9800 Windward Slope CV

Lakeland, TN 38002

**Submitted by:**

Aquatic Control, Inc.

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## Introduction

A survey of the fish community and other physical, biological, and chemical factors directly affecting the fish community was completed at Garner Lake on March 27, 2019.

The major objectives of this survey and report are:

1. To provide a current status report on the fish community of the lake.
2. To compare the current characteristics of the fish community with established indices and averages.
3. To provide recommendations for management strategies to enhance or sustain the sport fish community.

### Water Chemistry

When managing an aquatic ecosystem the quality of water should always be considered first. If a lake or pond is perfectly constructed with abundant food and habitat, but has poor water quality, the fishery will ultimately suffer and never reach it's full potential. Although oxygen is typically not a year-round issue there are certain situations that can cause oxygen to drop to detrimental levels. If parameters such as pH or alkalinity are too low or too high it can put tremendous stress on the organisms living in it or even create a toxic environment all together. Other important parameters to consider are nitrogen and phosphorus lev - els. Nitrogen and phosphorus are two major nutrients that drive the plant growth in an aquatic ecosystem. If the ratio of nitrogen to phosphorus is below 17:1 there is potential for blue-green algae to become abundant. These species of algae can create a stressful environment for fish due to disruption of the food web.

Table 1. Selected water quality parameters.

| | Surface | Bottom |
|---|---|---|
| Temperature (F) | 64.4 | 49.1 |
| Dissolved Oxygen (ppm) | 14.95 | 5.99 |
| pH | 6.6 | 6.7 |
| Alkalinity (ppm) | 22.0 | 20.0 |
| Total Hardness (ppm) | 26.0 | 24.0 |
| Total Phosphorus (ppm) | 0.29 | 0.17 |
| Total Nitrogen (ppm) | 2.74 | 1.14 |

The results of selected physio-chemical parameters from Garner Lake are presented in Table 1. Dissolved oxygen, pH, and hardness levels were all in acceptable ranges. The alkalinity is on the lower end of the acceptable range for fish but is not of major concern at this time. At the time of the survey the lake was slowly beginning to stratify but there was not a defined thermocline set up yet (Figure 1). The nitrogen to phosphorus ratio is 9.4:1 on the surface and 6.7:1 on the bottom. This indicates there is potential for abundant blue-green algae growth and was present during the survey. Overall, water quality parameters indicate Garner Lake appears to be capable of supporting a healthy fish population.

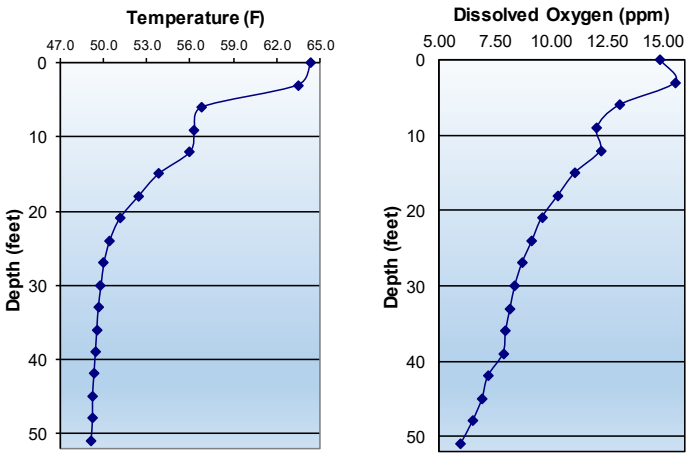


Figure 1. Temperature and Dissolved Oxygen profiles.


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## Fish Collection

Fish sampling was done with the use of an electrofishing boat. Electrofishing is simply the use of electricity to capture fish for the evaluation of population status. Electrofishing equipment used in this survey consisted of a 16-foot aluminum boat equipped with a Midwest Lake Electrofishing Systems Infinity Box powered by a 6500-watt portable generator and two booms mounted with Wisconsin style rings. Electrofishing was done on selected shoreline areas and totaled two hours of shocking.

All fish collected were placed in water filled containers aboard the sampling boat for processing. Each fish collected was measured to the nearest half-inch. Five fish in each half-inch group were weighed to determine average and relative weights. Relative weight is a condition factor used to determine the overall plumpness of an individual fish. Relative weight values from 90-100 indicate good condition while anything under 90 is considered in poor condition. It can be assumed that fish with higher relative weights are finding enough food and are growing at a higher rate than fish with a lower relative weight.

A total of 1019 fish weighing 280.40 pounds and representing nine species was collected from Garner Lake. (Multiple Grass Carp were observed during the survey but were not collected) The relative abundance of these species can be found in figure 2 and a full data table can be found at the end of this report. The data collected are adequate for management implications; however, there will be unanswered questions regarding aspects of the fish population and other related factors of the biological community in the lake. All fish numbers used in the report are based on the samples collected and should not be interpreted to be absolute or estimated numbers of fish in the lake.

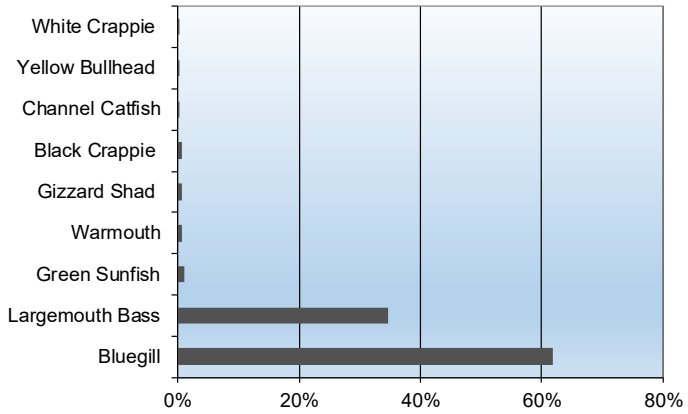


Figure 2. Relative abundance of species collected.

Measuring and weighing fish.

Largest Largemouth Bass caught during survey.

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## Predator-Prey Relationship

Even the most diverse systems can be broken down into predator-prey relationships. Often times the Largemouth Bass-Bluegill relationship is the most important. Bluegill are a great prey item for Largemouth Bass because they spawn multiple times a year and are continually creating food for Largemouth Bass. Managing for one species typically involves influencing both and as one of these populations change the other typically changes with it. In a balanced state both Largemouth Bass and Bluegill can experience proper growth rates.

Bluegill

### Garner Lake —Bluegill

Bluegill ranged in size from less than 3.0 to 9.0 inches (Figure 2). Approximately 23% of Bluegill collected were 3.5 inches or less, indicating moderate reproduction occurred in 2018. There was a good number of quality Bluegill collected. This led to a proportional stock density (PSD) of 39, which is within the desired range of 20-40 for Bluegill (proportion of quality fish within a population). The relative weight values of Bluegill collected at Garner Lake ranged from 64 to 90 (Figure 3). This, along with sharp drop off of Bluegill over 8.0 inches, likely indicates the Bluegill population is slightly overabundant and is experiencing slow growth.

Slight overcrowding in Bluegill is not always a problem when the overall goal of the fishery is to have quality Largemouth Bass. The most abundant size classes in the Bluegill population is from 5.0—6.5 inches. These fish are great forage for adult Largemouth Bass. Currently, the Bluegill population is very robust and is producing an extremely large forage base. Although stunting is likely occurring to some degree, there are still 8.0—9.0 inch individuals available for pan fisherman to target.

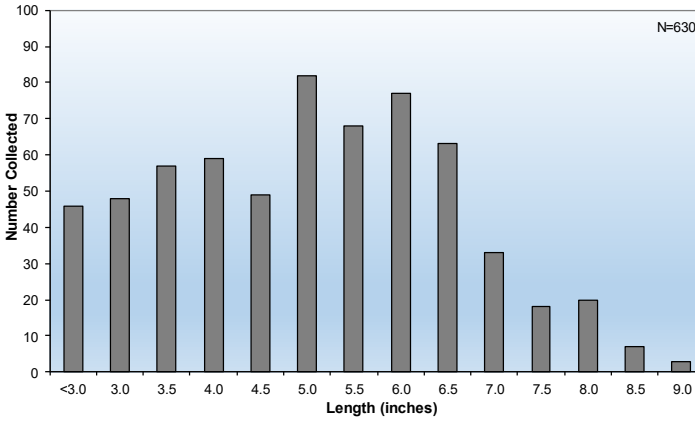


Figure 2. Length frequency distribution of Bluegill

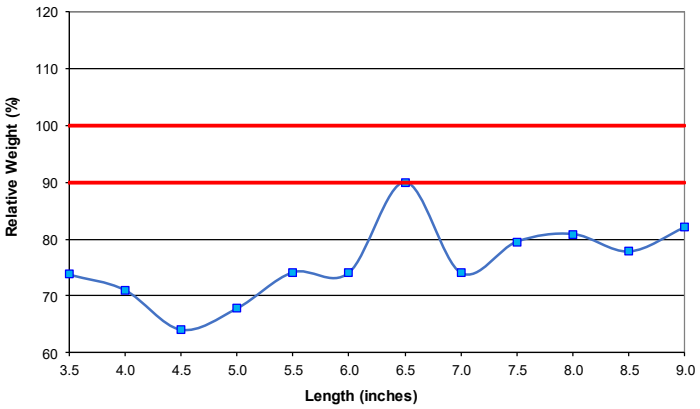


Figure 3. Bluegill relative weights

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## Predator-Prey Relationship

Largemouth Bass are an opportunistic predator that will eat just about any species of fish they can catch. To keep a Largemouth Bass growing properly there needs to be several different sizes of forage available. This allows the bass to continually find the optimal size of prey as it continues to grow. When the optimal size of prey is available the fish can conserve energy, resulting in a higher growth rate. If the prey is too small a Largemouth Bass could potentially spend more energy chasing a meal than it gains by eating it. This results in skinny and slow growing fish. Managing a forage base to create a variety of sizes is key to creating a healthy and balanced Largemouth Bass population.

**Garner Lake —Largemouth Bass**

A total of 354 Largemouth Bass ranging in size from 4.5 to 21.5 inches was collected (Figure 4). Spawning success and recruitment appear to be very high. The majority of Largemouth Bass sampled were between 7.0 to 9.0 inches. This led to a PSD of 28 for Largemouth Bass, which is below the desired range of 40-60. If culling of smaller bass continues the PSD will go up over time. Relative weights ranged from 74 to 110 (Figure 5). The majority of relative weights fell just below the 90 mark, but most individuals over 15.5 inches had relative weights above 90. This is an indicator that smaller Largemouth Bass are having to work harder to find enough food to support proper growth.

Largemouth Bass

Largemouth Bass under 14.0 inches in Garner Lake are very abundant. This is resulting in skinny fish and slower than ideal growth. There appears to be a threshold around the 15.0—16.0 inch range where they begin to put on more weight. This matches up well with the spike in Bluegill in the 5.0—6.0 inch range. If a Largemouth Bass can make it to this threshold there is an abundance of optimal sized forage available.

An additional factor that influences the weight and growth of a Largemouth Bass is the expenditure of energy. It is important to keep structure and habitat available in order for Largemouth Bass to use as ambush points throughout the lake. With nothing available bass are forced to continually swim around spending energy while looking for food.

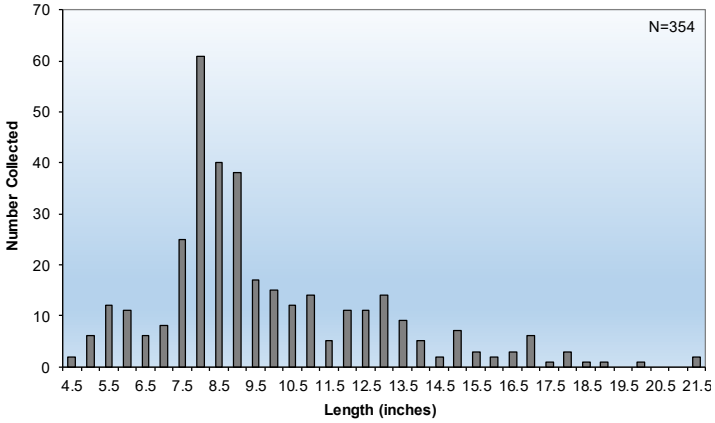


Figure 4. Length frequency distribution of Largemouth Bass

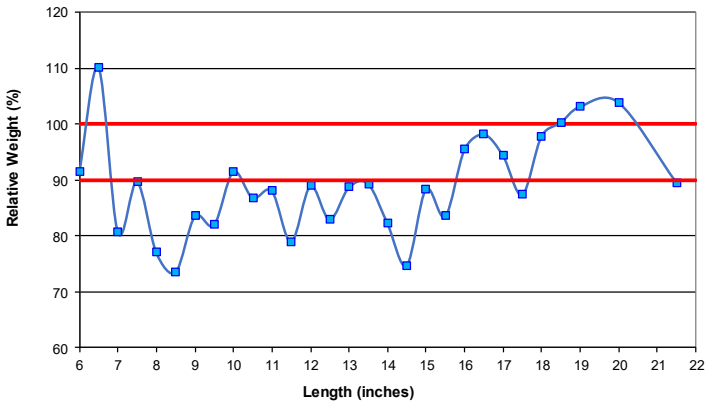


Figure 5. Largemouth Bass relative weights

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## Predator-Prey Relationship (Gizzard Shad)

Gizzard Shad were also found in Garner Lake. This is another commonly known forage species that can make up a large percentage of a predators diet when available at smaller sizes, but can often come with more negatives than positives. The first issue caused by Gizzard Shad is the reduction in recruitment. Gizzard Shad are a filter feeding species that consume large amounts of phytoplankton and zooplankton. Unfortunately, this is exactly what all larval fish eat as soon as they are hatched. When Gizzard Shad are in large abundances they can compete with these larval fish for food and greatly impact recruitment of species such as Largemouth Bass.

In some lakes Gizzard Shad can reproduce very quickly and grow extremely fast. These may sound like great attributes for a forage fish, but often times Gizzard Shad grow too large for Largemouth Bass to consume. While the juvenile size classes of Gizzard Shad are beneficial as forage, they provide no benefit at adult size classes and can have negative impacts on water quality. Without a large enough predator to consume them these fish will never transfer their biomass up the food chain into a more desirable fish. Due to these issues the Gizzard Shad population should be closely monitored and the following management options should be considered.

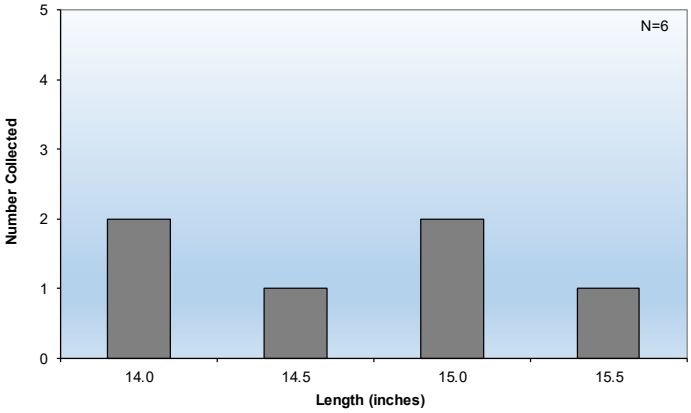


Figure 6. Length frequency distribution of Gizzard Shad

Gizzard Shad

### Management Options

There are only a few options when trying to manage Gizzard Shad populations. One method is chemical eradication. This can be very costly on large lakes and results in dead fish throughout the lake. The other method commonly used to manage Gizzard Shad in impoundments is the supplemental stocking of large predators such as Hybrid Striped Bass or Muskellunge. By introducing a large apex predator some of the adult sized Gizzard Shad can then be consumed. This does not always improve the recruitment issue previously discussed, but it does provide an additional angling opportunity to the lake. If the Gizzard Shad population is large enough these stockings can be done with little to no impact on the existing Largemouth Bass fishery.

### Garner Lake Gizzard Shad

Currently, the Gizzard Shad population appears to be relatively small in Garner Lake (Figure 6) and would not support an additional top predator. Predators are controlling the Gizzard Shad population, but the individuals present are larger individuals. This means there are still adult Gizzard Shad that will spawn each year and create an additional forage option for Largemouth Bass to utilize. This is a population that should be closely monitored, but are not disrupting recruitment of Largemouth Bass at this time.

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## Harvest

Harvesting fish is often one of the most important and under utilized management practices in a pond or lake. Harvesting, or culling, fish is simply the act of intentionally removing fish from a specific population to decrease competition among the remaining individuals. The culture of catch and release bass fishing started in the 1970's and still has a strong hold on fisherman today. There is a misconception that taking a fish out of a system will be detrimental to the population and if released someone could catch that fish again after it has "grown up." The reality is in some situations there is too much competition and the next time that fish is caught it could be the exact same size a year later. By removing that fish, and others, it leaves more food available for the remaining individuals to continue to grow each and every year.

Example of Stunted Largemouth Bass

Ponds and lakes can both become overrun with predators or prey. Each scenario presents a different set of problems. In a predator (Largemouth Bass) dominant system prey populations are decimated and the lack of food results in slow or stunted growth. In a prey (Bluegill) dominated system spawning and recruitment success of other species can be negatively impacted due to egg predation or direct competition with young-of-year fish, along with slow growth within the population.

Fixing these issues requires targeted annual harvest. In an unbalanced system generally only one species requires a heavy amount of the harvest, while in a balanced system fish should be removed from most populations to maintain a continuous level of growth.

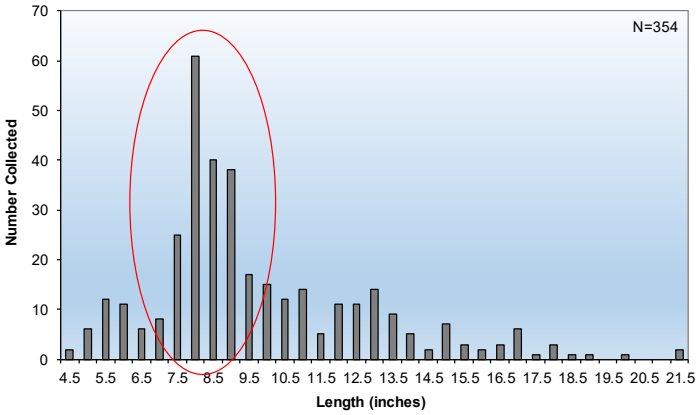


Figure 7. Length frequency distribution of Largemouth Bass

Garner Lake currently has a slightly overabundant Bluegill population, but this is contributing to the quality Largemouth Bass fishery. Anglers can harvest Bluegill as often as they wish and will have little impact of the fishery as a whole. Focus should be kept on the harvest of Largemouth Bass. Lower relative weights and the spike in individuals in the 7.0 –9.0 inch group of Largemouth Bass is evidence of slower growth in the smaller size classes (Figure 7). Anglers should be encouraged to harvest all Largemouth Bass under 13.0 inches. If enough harvest is occurring, over time this should result in seeing relative weights go up. Additionally, thinning the Largemouth Bass population could result in the Gizzard Shad population to grow. As previously mentioned this is something to watch closely as large Gizzard Shad can be great forage for trophy sized Largemouth Bass, but they can also create several unwanted issues that are hard to fix.

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## Structure and Habitat

Structure and habitat are an extremely important factor to consider no matter what body of water is being managed. Just like anything else, the amount of structure in a lake should be kept in moderation. Too much or too little can lead to predictable scenarios. When very little or no structure is available Largemouth Bass spend too much time roaming around looking for food instead of saving energy and waiting near a piece of structure for food to swim by. The other end of the spectrum allows so many places for Bluegill or other prey species to hide that Largemouth Bass can't efficiently catch their prey. In both scenarios Largemouth Bass tend to have low relative weights even with proper harvest rates in place. In most cases roughly 20% of the shoreline containing structure is sufficient. This number can vary depending on the complexity of the cover.

Adding structure to a lake can be beneficial in a variety of ways. It can be a great way to increase the survival of small juvenile fish. This provides a forage base with a wide range of sizes available for your predators. Another benefit of adding structure to a pond is that they attract fish. Strategically placing structure can give you places that you can reliably catch fish.

Fish structure can take many different forms . Aquatic vegetation, brush piles, Christmas trees, and a variety of man-made structures can all be utilized by fish. All of these different structure types have different benefits that make them good management options. Aquatic vegetation

American Pondweed

Largemouth Bass utilizing a Mossback Root Wad Kit

grows on its own but can be hard to manage at times. Brush piles and Christmas trees are often free, but will break down over time and need to be replaced. Manufactured structure can be costly initially, but will last a lifetime. Variety is important when assessing structure in a body of water. Adding structures of varied complexity and in varied depth can help to provide habitat to a variety of fish at different stages of life.

At the time of the survey Garner Lake was lacking in cover. Even with an abundant Bluegill population the Largemouth Bass have low relative weights. This could partly be because they are spending their energy roaming around opposed to sitting tight next to a piece of structure. In a lake of this size the most efficient way to create enough structure is to allow some vegetation to grow in selected areas. This will also mitigate some of the nutrients in the lake and lower the probability of a severe algae bloom. Allowing weeds to grow can be a tough sell for some stakeholders on the lake, so adding brush piles or man-made structures can be an alternative but will require a large amount of individual structures to make a difference.

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Summary/Recommendations

It appears that the fishery at Garner Lake contains a diverse fish assemblage with quality Largemouth Bass, Bluegill, White Crappie, Black Crappie, and Channel Catfish. The Bluegill population appears to be dominated by small, slow growing individuals but is creating a large forage base and is still producing some quality sized individuals. The Largemouth Bass population is structured in a similar way. Smaller fish are experiencing high competition and slower growth while bass that reach the 15.0 inch range begin to put on weight. Harvesting the overabundant smaller Largemouth Bass will hopefully lower this threshold and cause relative weights to increase throughout the population. This will take a significant amount of effort and full participation by all anglers. Additionally, allowing vegetation to grow in selected areas could also prove to increase relative weights by giving Largemouth Bass more ambush points and by reducing the negative effects of dense blue-green algae blooms. Brush piles or artificial structure are an alternative, but would take an incredible amount of individual structures to make a significant difference. This is something individual lot owners can do on their own to improve the fishing around their dock. Sinking structure near a dock paired with a fish feeder can increase angling success tremendously and benefits the fishery as a whole.

Something else to keep in mind down the road is stocking F1 hybrid Largemouth Bass or pure Florida strain Largemouth Bass. F1's are a cross between a Florida strain Largemouth Bass and a norther strain Largemouth Bass. Introducing Florida strain genetics into the lake will increase the maximum growth potential for Largemouth Bass in the lake. This is something that can be considered after a few years of major harvest of the stunted Largemouth Bass. If stocking occurred now it would only compound the current issue by adding more mouths to feed.

The following recommendations, **listed in order of importance**, will help protect and enhance the fishery in Garner Lake:

1. Harvest all Largemouth Bass caught under 13.0 inches. If angler harvest is not anticipated to be enough Aquatic Control can preform a targeted Largemouth Bass harvest.
2. Allow aquatic vegetation to grow in acceptable areas on up to 20% of the shoreline. Brush piles or man-made structure can be used to supplement this.
3. No harvest restrictions are necessary on Bluegill harvest at this time.
4. Conduct a Standard Fish Survey in 2021 in order to monitor the effects of the above recommendations and assess needs for further management activities.
5. Remove all Green Sunfish and Warmouth when caught. Currently, these species pose no serious threat to the fishery, but harvest will help aide in maintaining populations.
6. No restrictions are needed for harvest of crappie. Crappie are prolific spawners and can maintain their own population without harvest restrictions.

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## Other Species Present

Green Sunfish

**Green Sunfish** *Lepomis Cyanellus*

Green Sunfish are a member of the Centrarchidae (Sunfish) family and were found to have a relative abundance of 1.08% and made up 0.33% of the catch weight. Green Sunfish can be aggressive and competitive with Bluegill and other species for food and resources therefore they are generally considered an undesirable species. Green Sunfish look superficially like Bluegill. They can easily be distinguished by their larger mouths and more rounded pectoral fins.

**Warmouth** (*Lepomis gulosus*)

Warmouth is in the Centrarchidae (Sunfish) Family and had a relative abundance of 0.69% and made up 0.47% of the catch weight. Warmouth have large mouths and feed on small fish and insects. Warmouth are considered an undesirable species because they compete with other more desirable predator species such as Largemouth Bass and White and Black Crappie.

Warmouth

**Black Crappie** (*Pomoxis nigromaculatus)*

Black Crappie are members of the Centrarchidae(Sunfish) family. Black Crappie had a relative abundance of 0.59% and made up 0.64% of the catch weight. Black Crappie can be difficult to manage in a pond ecosystem and in many cases are advised against in systems less than 10 acres. This is due to the tendency of Crappie ssp. becoming overabundant and stunted in smaller systems. In situations where Crappie are stocked, Black Crappie are usually the more advisable species due to lower reproduction in comparison to White Crappie. Black Crappie eat a variety of organisms while developing into adulthood, and then as adults tend to only eat small fish. Crappie ssp. tend to sit deeper in the water column and often do not show up well in electrofishing surveys.

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## Other Species Present

**Channel Catfish** (*Ictalurus punctatus)*

Channel Catfish are members of the Ictaluridae family and were found to have a relative abundance of 0.20% and made up 2.13% of the catch weight. Channel Catfish can be problematic to a fishery if overabundant, but in small or moderate abundances, rarely cause problems. They are often desirable sportfish and can be good table fare. Channel Catfish are typically not represented very well in electrofishing surveys, and can often be more abundant than the data shows. Channel Catfish often do not have a high level of natural reproduction in ponds and lakes, and therefore need to be stocked if desired in many cases.

Channel Catfish

Yellow Bullhead

**Yellow Bullhead** (*Ameiurus natalis*)

Yellow Bullhead is in the Ictaluridae (Catfish) Family and had a relative abundance of 0.20% and made up 0.33% of the catch weight. Yellow Bullhead will eat a variety of food items such as macroinvertebrates, small fish, detritus, etc. Yellow Bullhead are not generally considered a desirable fish species. They can become very abundant and compete with more desirable species. They do not grow very large and are not often used as table fare.

**White Crappie** (Pomoxis annularis)

White Crappie are members of the Centrarchidae(Sunfish) family and were found to have a relative abundance of 0.10% and made up 0.14% of the catch weight. White Crappie are difficult to manage in a pond setting and are often advised against in systems that are less than 10 acres. This is due to Crappie ssp. tendency to become overabundant and stunted in smaller systems. In situations where Crappie are to be stocked into a smaller body of water, Black Crappie would be the preferred species because they tend to have a lower rate of reproduction. White Crappie eat a variety of organisms while developing into adulthood, and then as adults tend to only eat small fish. Crappie ssp. tend to sit deeper in the water column and often do not show up well in electrofishing surveys.

White Crappie

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## Fish Collection Tables

| Size Group (IN) | NUMBER | PERCENTAGE | AVERAGE WEIGHT (lbs.) | TOTAL WEIGHT (lbs.) | CONDITION FACTOR | WS | RELATIVE WEIGHT |
|---|---|---|---|---|---|---|---|
| **BLUEGILL** | | | | | | | |
| <3.0 | 46 | 7.30% | 0.01 | 0.46 | - | - | - |
| 3.0 | 48 | 7.62% | 0.01 | 0.48 | 3.70 | 0.02 | - |
| 3.5 | 57 | 9.05% | 0.02 | 1.14 | 4.66 | 0.03 | 74 |
| 4.0 | 59 | 9.37% | 0.03 | 1.77 | 4.69 | 0.04 | 71 |
| 4.5 | 49 | 7.78% | 0.04 | 1.96 | 4.39 | 0.06 | 64 |
| 5.0 | 82 | 13.02% | 0.06 | 4.92 | 4.80 | 0.09 | 68 |
| 5.5 | 68 | 10.79% | 0.09 | 6.12 | 5.41 | 0.12 | 74 |
| 6.0 | 77 | 12.22% | 0.12 | 9.24 | 5.56 | 0.16 | 74 |
| 6.5 | 63 | 10.00% | 0.19 | 11.97 | 6.92 | 0.21 | 90 |
| 7.0 | 33 | 5.24% | 0.20 | 6.60 | 5.83 | 0.27 | 74 |
| 7.5 | 18 | 2.86% | 0.27 | 4.86 | 6.40 | 0.34 | 80 |
| 8.0 | 20 | 3.17% | 0.34 | 6.80 | 6.64 | 0.42 | 81 |
| 8.5 | 7 | 1.11% | 0.40 | 2.80 | 6.51 | 0.51 | 78 |
| 9.0 | 3 | 0.48% | 0.51 | 1.53 | 7.00 | 0.62 | 82 |
| TOTAL | 630 | | | 60.65 | | | |
| **LARGEMOUTH BASS** | | | | | | | |
| 4.5 | 2 | 0.56% | 0.03 | 0.06 | 3.29 | 0.04 | - |
| 5.0 | 6 | 1.69% | 0.05 | 0.30 | 4.00 | 0.06 | - |
| 5.5 | 12 | 3.39% | 0.07 | 0.84 | 4.21 | 0.07 | - |
| 6.0 | 11 | 3.11% | 0.09 | 0.99 | 4.17 | 0.10 | 91 |
| 6.5 | 6 | 1.69% | 0.14 | 0.84 | 5.10 | 0.13 | 110 |
| 7.0 | 8 | 2.26% | 0.13 | 1.04 | 3.79 | 0.16 | 81 |
| 7.5 | 25 | 7.06% | 0.18 | 4.50 | 4.27 | 0.20 | 90 |
| 8.0 | 61 | 17.23% | 0.19 | 11.59 | 3.71 | 0.25 | 77 |
| 8.5 | 40 | 11.30% | 0.22 | 8.80 | 3.58 | 0.30 | 74 |
| 9.0 | 38 | 10.73% | 0.30 | 11.40 | 4.12 | 0.36 | 84 |
| 9.5 | 17 | 4.80% | 0.35 | 5.95 | 4.08 | 0.43 | 82 |
| 10.0 | 15 | 4.24% | 0.46 | 6.90 | 4.60 | 0.50 | 92 |
| 10.5 | 12 | 3.39% | 0.51 | 6.12 | 4.41 | 0.59 | 87 |
| 11.0 | 14 | 3.95% | 0.60 | 8.40 | 4.51 | 0.68 | 88 |
| 11.5 | 5 | 1.41% | 0.62 | 3.10 | 4.08 | 0.78 | 79 |
| 12.0 | 11 | 3.11% | 0.80 | 8.80 | 4.63 | 0.90 | 89 |
| 12.5 | 11 | 3.11% | 0.85 | 9.35 | 4.35 | 1.02 | 83 |
| 13.0 | 14 | 3.95% | 1.03 | 14.42 | 4.69 | 1.16 | 89 |
| 13.5 | 9 | 2.54% | 1.17 | 10.53 | 4.76 | 1.31 | 89 |
| 14.0 | 5 | 1.41% | 1.21 | 6.05 | 4.41 | 1.47 | 82 |
| 14.5 | 2 | 0.56% | 1.23 | 2.46 | 4.03 | 1.64 | 75 |
| 15.0 | 7 | 1.98% | 1.62 | 11.34 | 4.80 | 1.83 | 88 |
| 15.5 | 3 | 0.85% | 1.70 | 5.10 | 4.57 | 2.03 | 84 |
| 16.0 | 2 | 0.56% | 2.15 | 4.30 | 5.25 | 2.25 | 96 |
| 16.5 | 3 | 0.85% | 2.44 | 7.32 | 5.43 | 2.48 | 98 |
| 17.0 | 6 | 1.69% | 2.58 | 15.48 | 5.25 | 2.73 | 94 |
| 17.5 | 1 | 0.28% | 2.62 | 2.62 | 4.89 | 3.00 | 87 |
| 18.0 | 3 | 0.85% | 3.21 | 9.63 | 5.50 | 3.28 | 98 |
| 18.5 | 1 | 0.28% | 3.59 | 3.59 | 5.67 | 3.58 | 100 |
| 19.0 | 1 | 0.28% | 4.02 | 4.02 | 5.86 | 3.89 | 103 |
| 20.0 | 1 | 0.28% | 4.77 | 4.77 | 5.96 | 4.59 | 104 |
| 21.5 | 2 | 0.56% | 5.18 | 10.36 | 5.21 | 5.78 | 90 |
| TOTAL | 354 | | | 200.97 | | | |

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**GREEN SUNFISH**

| | | | | |
|---|---|---|---|---|
| <3.0 | 1 | 9.09% | 0.01 | 0.01 |
| 3.0 | 1 | 9.09% | 0.01 | 0.01 |
| 3.5 | 2 | 18.18% | 0.01 | 0.02 |
| 4.0 | 2 | 18.18% | 0.05 | 0.10 |
| 5.0 | 2 | 18.18% | 0.08 | 0.16 |
| 6.0 | 1 | 9.09% | 0.18 | 0.18 |
| 7.0 | 2 | 18.18% | 0.22 | 0.44 |
| TOTAL | 11 | | | 0.92 |

**WARMOUTH**

| | | | | |
|---|---|---|---|---|
| <3.0 | 2 | 28.57% | 0.01 | 0.02 |
| 5.0 | 1 | 14.29% | 0.09 | 0.09 |
| 5.5 | 1 | 14.29% | 0.16 | 0.16 |
| 7.0 | 1 | 14.29% | 0.33 | 0.33 |
| 7.5 | 1 | 14.29% | 0.34 | 0.34 |
| 8.0 | 1 | 14.29% | 0.39 | 0.39 |
| TOTAL | 7 | | | 1.33 |

**GIZZARD SHAD**

| | | | | |
|---|---|---|---|---|
| 14.0 | 2 | 33.33% | 0.97 | 1.94 |
| 14.5 | 1 | 16.67% | 1.27 | 1.27 |
| 15.0 | 2 | 33.33% | 1.42 | 2.84 |
| 15.5 | 1 | 16.67% | 1.41 | 1.41 |
| TOTAL | 6 | | | 7.46 |

**BLACK CRAPPIE**

| | | | | |
|---|---|---|---|---|
| 7.0 | 1 | 16.67% | 0.20 | 0.20 |
| 8.0 | 1 | 16.67% | 0.26 | 0.26 |
| 8.5 | 3 | 50.00% | 0.31 | 0.93 |
| 9.0 | 1 | 16.67% | 0.40 | 0.40 |
| TOTAL | 6 | | | 1.79 |

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**CHANNEL CATFISH**

| | | | | |
|---|---|---|---|---|
| 18.0 | 1 | 50.00% | 2.16 | 2.16 |
| 21.0 | 1 | 50.00% | 3.81 | 3.81 |
| TOTAL | 2 | | | 5.97 |

**YELLOW BULLHEAD**

| | | | | |
|---|---|---|---|---|
| 8.5 | 1 | 50.00% | 0.31 | 0.31 |
| 10.0 | 1 | 50.00% | 0.61 | 0.61 |
| TOTAL | 2 | | | 0.92 |

**WHITE CRAPPIE**

| | | | | |
|---|---|---|---|---|
| 10.0 | 1 | 100.00% | 0.39 | 0.39 |
| TOTAL | 1 | | | 0.39 |

| Species | Scientific Name | N | %N | Size Range (in.) | Total weight (lbs.) | %Wt. | N/hr. |
|---|---|---|---|---|---|---|---|
| Bluegill | *Lepomis macrochirus* | 630 | 61.83% | <3.0-9.0 | 60.65 | 21.63% | 630 |
| Largemouth Bass | *Micropterus salmoides* | 354 | 34.74% | 4.5-21.5 | 200.97 | 71.67% | 354 |
| Green Sunfish | *Lepomis cyanellus* | 11 | 1.08% | <3.0-7.0 | 0.92 | 0.33% | 11 |
| Warmouth | *Lepomis gulosus* | 7 | 0.69% | <3.0-8.0 | 1.33 | 0.47% | 7 |
| Gizzard Shad | *Dorosoma cepedianum* | 6 | 0.59% | 14.0-15.5 | 7.46 | 2.66% | 6 |
| Black Crappie | *Pomoxis nigromaculatus* | 6 | 0.59% | 7.0-9.0 | 1.79 | 0.64% | 6 |
| Channel Catfish | *Ictalurus punctatus* | 2 | 0.20% | 18.0-21.0 | 5.97 | 2.13% | 2 |
| Yellow Bullhead | *Ameiurus natalis* | 2 | 0.20% | 8.5-10.0 | 0.92 | 0.33% | 2 |
| White Crappie | *Pomoxis annularis* | 1 | 0.10% | 10.0 | 0.39 | 0.14% | 1 |
| Total | | 1019 | | | 280.40 | | |

N = number of individuals
%N = percent number of a species as compared to the total number of fish collected
%Wt = percent weight of a species as compared to the total weight of all fish collected
N/hr. = catch rate of species (number of fish of a species collected per hour of electrofishing effort)