

Mr. Aquatic Control
418 W State Road 258
Seymour, IN 47274

Mr. Control:

A Basic Fish Survey was conducted at Aquatic Control Pond on October 1, 2017. The results from this survey are given below, along with recommendations for improving the fishery.

Aquatic Control Pond was measured at 6.0 surface acres and had a maximum depth of 22.0 feet at the time of the survey. The water quality parameters tested indicate the pond appears to have water quality which is capable of supporting a healthy fish population (Table 1). The pH, alkalinity, and hardness levels are normal for a pond in your area. Nitrate and phosphate levels are low and in good condition. Excessive amounts of these nutrients can promote excessive algae and weed growth. The dissolved oxygen and temperature profiles indicate the pond was stratified at the time of the survey, and had sufficient oxygen levels to a depth of 21 feet to support a stress-free healthy fish population (Figure 1).

Electrofishing results are given in Tables 2 and 3. Bluegill was the most abundant species making up approximately 58% of the total catch, and ranked second by total weight (9%). Bluegill ranged in size from less than 3.0 to 8.5 inches. Approximately 61% of the total bluegill caught was less than 3.0 inches indicating good reproduction occurred in 2017. There were several missing size classes (Figure 2). The condition factors (measurement of overall plumpness) and relative weights were below average for larger size classes.

Largemouth bass was the second most abundant species making up nearly 34% of the total catch and ranked first by weight with 28.42 pounds or 80% of the total catch weight. Largemouth bass ranged from less than 3.0 to 18.5 inches. Fifteen percent of the largemouth bass were less than 7.0 inches, indicating moderate reproduction occurred in 2017 (Figure 3). The condition factors and relative weights were below average for most size classes. Largemouth appeared to be stacked up in the 12-14-inch range. This is causing slow growth in these individuals and putting too much pressure on the bluegill population.

Three other species were collected during the survey at low numbers including, six green sunfish, two white sucker, and one yellow bullhead. All three of these species are undesirable in a pond of this size and should be removed when caught.

Aquatic Control Pond suffers from an imbalance in the predator/prey assemblage. It appears that overabundant largemouth bass are negatively impacting the bluegill population. Thinning out largemouth bass in certain size classes and protecting bluegill should increase growth rates and shift the population towards a more balanced state. There is an extreme lack of cover throughout the pond. Cover is important for the survival of young fish. Allowing fallen trees to remain in the pond or adding Christmas trees and artificial cover will allow smaller fish to escape predation and improve recruitment.

Listed below, in order of importance, are recommendations which should help you achieve a properly balanced fish population.

1. Remove 30 largemouth bass per year for the next two years in the 11.0 to 14.0 inch length ranges. This should help reduce competition between bass, thus increasing growth rates and release pressure on the bluegill population.
2. Limit bluegill harvest to 50 per year for the next 2 years.
3. Install artificial cover in the pond. This is excellent cover for juvenile fish. This can consist of rock/brush piles, Christmas trees, or man-made reefs.
4. Stock 240 lbs. of fathead minnows (120 lbs. in fall and 120 lbs. in spring) per year for the next 2 years.
5. Have a Basic Fish Survey performed in 2020 in order to monitor the effects of the above recommendations.
6. Remove all green sunfish, white sucker, and yellow bullhead when caught.

If you have any questions regarding the above recommendations please feel free to contact me at the Aquatic Control office. 800.753.5253

Sincerely,

Aquatic Biologist

Table 1: Selected water quality parameters measured on Aquatic Control Pond, October 1, 2017.

| Sample Depth (ft.) | Temp.(°F) | Dissolved Oxygen (ppm) | pH (standard units) | Total Alkalinity (ppm) | Total Hardness (ppm) | Nitrate Nitrogen (ppm) | Ortho Phosphate (ppm) | Total Phosphorus (ppm) |
|--------------------|-----------|------------------------|---------------------|------------------------|----------------------|------------------------|-----------------------|------------------------|
| Surface | 60.2 | 7.44 | 7.55 | 119.7 | 273.6 | 0.30 | 0.01 | 0.08 |
| 3 | 60.2 | 7.27 | - | - | - | - | - | - |
| 6 | 60.2 | 7.23 | - | - | - | - | - | - |
| 9 | 60.1 | 6.85 | - | - | - | - | - | - |
| 12 | 60.0 | 5.92 | - | - | - | - | - | - |
| 15 | 59.9 | 6.01 | - | - | - | - | - | - |
| 18 | 59.8 | 5.32 | - | - | - | - | - | - |
| 21 | 59.5 | 5.53 | - | - | - | - | - | - |
| 22 | 59.2 | 3.20 | - | - | - | - | - | - |

*Dashes indicate no sample was taken at selected depth for given parameter.

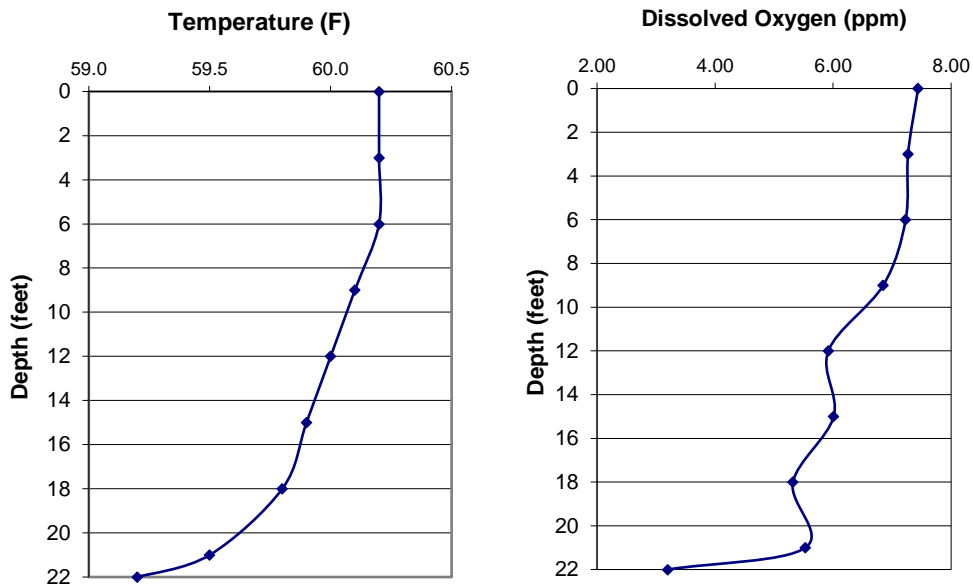


Figure 1: Temperature and oxygen profiles for Aquatic Control Pond, October 1, 2017.

Table 2: Species collected from Aquatic Control Pond, October 1, 2017.

| Species | N | %N | Size Range (in.) | Total weight (lbs.) | %Wt. | N/hr. |
|-----------------|-----|--------|------------------|---------------------|--------|-------|
| Bluegill | 67 | 58.26% | <3.0-8.5 | 3.28 | 9.19% | 134 |
| Largemouth bass | 39 | 33.91% | <3.0-18.5 | 28.42 | 79.59% | 78 |
| Green sunfish | 6 | 5.22% | <3.0-7.5 | 0.76 | 2.13% | 12 |
| White sucker | 2 | 1.74% | 14.0-14.5 | 2.45 | 6.86% | 4 |
| Yellow bullhead | 1 | 0.87% | 11.5 | 0.80 | 2.24% | 2 |
| Total | 115 | | | 35.71 | | |

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)

Table 3: Species, length, number, and weight of fish collected from Aquatic Control Pond, October 1, 2017.

| Size Group (IN) | NUMBER | PERCENTAGE | AVERAGE WEIGHT (lbs.) | TOTAL WEIGHT (lbs.) | CONDITION FACTOR | RELATIVE WEIGHT |
|------------------------|--------|------------|-----------------------|---------------------|------------------|-----------------|
| <u>BLUEGILL</u> | | | | | | |
| <3.0 | 41 | 61.19% | 0.01 | 0.41 | - | - |
| 3.0 | 10 | 14.93% | 0.02 | 0.20 | 7.41 | 123 |
| 3.5 | 4 | 5.97% | 0.03 | 0.12 | 7.00 | 111 |
| 4.0 | 4 | 5.97% | 0.04 | 0.16 | 6.25 | 95 |
| 4.5 | 1 | 1.49% | 0.06 | 0.06 | 6.58 | 96 |
| 7.5 | 1 | 1.49% | 0.28 | 0.28 | 6.64 | 83 |
| 8.0 | 5 | 7.46% | 0.34 | 1.70 | 6.64 | 81 |
| 8.5 | 1 | 1.49% | 0.35 | 0.35 | 5.70 | 68 |
| TOTAL | 67 | | | 3.28 | | |

LARGEMOUTH BASS

| | | | | | | |
|-------|----|--------|------|-------|------|----|
| <3.0 | 2 | 5.13% | 0.01 | 0.02 | - | - |
| 3.0 | 1 | 2.56% | 0.02 | 0.02 | 7.41 | - |
| 3.5 | 1 | 2.56% | 0.02 | 0.02 | 4.66 | - |
| 5.5 | 1 | 2.56% | 0.07 | 0.07 | 4.21 | - |
| 6.0 | 1 | 2.56% | 0.11 | 0.11 | 5.09 | - |
| 7.0 | 2 | 5.13% | 0.16 | 0.32 | 4.66 | - |
| 8.0 | 3 | 7.69% | 0.21 | 0.63 | 4.10 | - |
| 9.0 | 2 | 5.13% | 0.29 | 0.58 | 3.98 | - |
| 10.5 | 2 | 5.13% | 0.46 | 0.92 | 3.97 | 78 |
| 11.0 | 1 | 2.56% | 0.64 | 0.64 | 4.81 | 94 |
| 12.0 | 3 | 7.69% | 0.80 | 2.40 | 4.63 | 89 |
| 12.5 | 4 | 10.26% | 0.84 | 3.36 | 4.30 | 82 |
| 13.0 | 7 | 17.95% | 0.99 | 6.93 | 4.51 | 85 |
| 13.5 | 4 | 10.26% | 1.13 | 4.52 | 4.59 | 86 |
| 14.0 | 4 | 10.26% | 1.25 | 5.00 | 4.56 | 85 |
| 18.5 | 1 | 2.56% | 2.88 | 2.88 | 4.55 | 81 |
| <hr/> | | | | | | |
| TOTAL | 39 | | | 28.42 | | |

GREEN SUNFISH

| | | | | | | |
|-------|---|--------|------|------|--|--|
| <3.0 | 2 | 33.33% | 0.01 | 0.02 | | |
| 3.0 | 1 | 16.67% | 0.02 | 0.02 | | |
| 6.0 | 1 | 16.67% | 0.15 | 0.15 | | |
| 7.0 | 1 | 16.67% | 0.25 | 0.25 | | |
| 7.5 | 1 | 16.67% | 0.32 | 0.32 | | |
| <hr/> | | | | | | |
| TOTAL | 6 | | | 0.76 | | |

WHITE SUCKER

| | | | | | | |
|-------|---|--------|------|------|--|--|
| 14.0 | 1 | 50.00% | 1.24 | 1.24 | | |
| 14.5 | 1 | 50.00% | 1.21 | 1.21 | | |
| <hr/> | | | | | | |
| TOTAL | 2 | | | 2.45 | | |

YELLOW BULLHEAD

| | | | | | | |
|-------|---|---------|------|------|--|--|
| 11.5 | 1 | 100.00% | 0.80 | 0.80 | | |
| <hr/> | | | | | | |
| TOTAL | 1 | | | 0.80 | | |

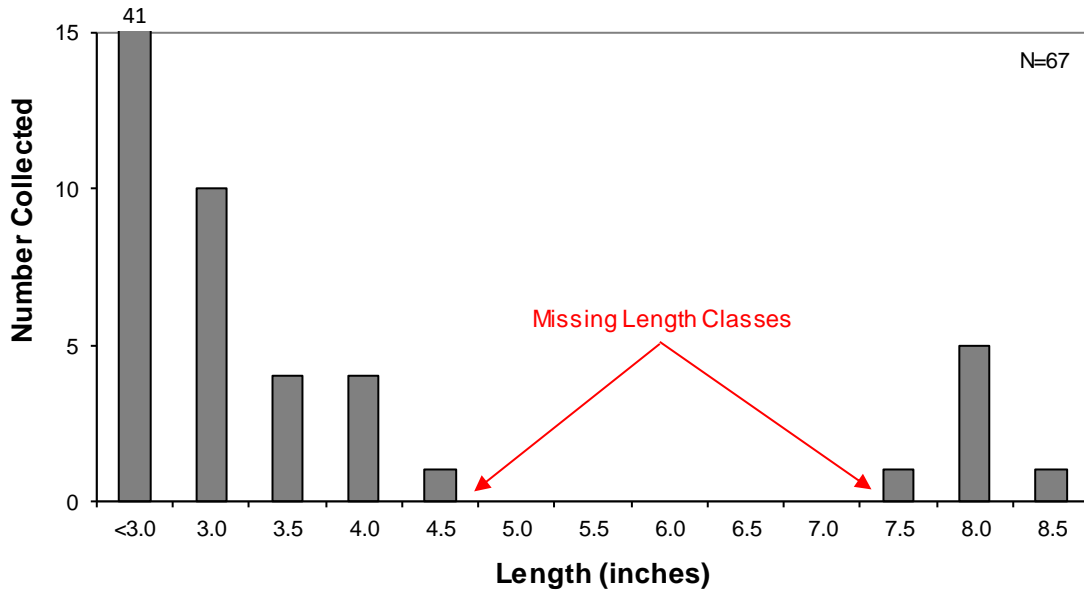


Figure 2: Length frequency distribution of bluegill collected from Aquatic Control Pond, October 1, 2017.

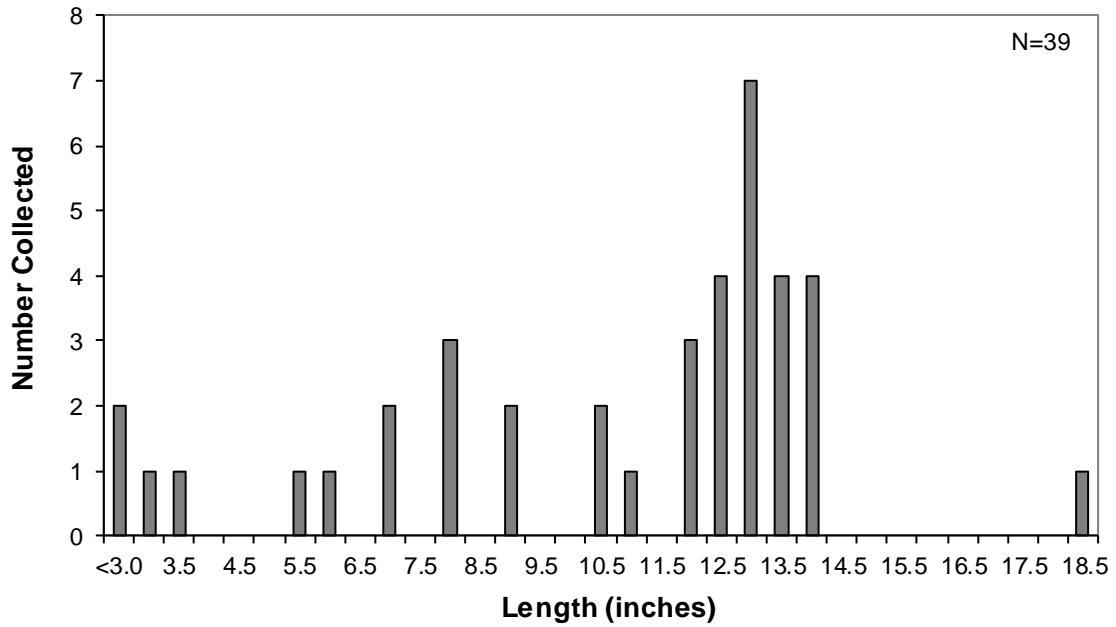


Figure 3: Length frequency distribution of largemouth bass collected from Aquatic Control Pond, October 1, 2017.