

Lake Arrowhead: Blair, NE.
Fish Population and General Water Quality Survey
May 7, 2015

Fish Survey

Fish populations were sampled using pulsed DC electrofishing. Overall we collected 5 species of fish including 90 largemouth bass, 26 bluegills, 33 yellow bass, 9 black crappie, and 1 common carp. Bass ranged from 4 to 17.5 inches in length while bluegills ranged from 2 to 9 inches in length. The majority of yellow bass ranged from 8 to 12 inches and black crappie sampled were all less than 5 inches. Figure 1 and 2 show length frequency distributions for bass and bluegill respectively.

Despite the presence of yellow bass there is currently a quality bluegill fishery with quality sized fish. Often, yellow bass can have a negative impact on growth in bluegill populations since both species rely heavily on zooplankton and ultimately compete for food resources. However, it appears the rooted aquatic plants in the shallow areas of lake have provided a sanctuary for bluegills to hide, breed, and feed. Aquatic insects and other invertebrates within these plant beds are obviously benefiting bluegills since bluegills are shoreline species. The largemouth bass population appears to be high density with relatively small to medium sized fish dominating the population. This may actually benefit the bluegills since bass help control both bluegill and yellow bass populations through predation.

Fishery Recommendations

Gamefish populations sampled appear to be in good condition and the fishery is in good shape. The presence of yellow bass is the only "negative thing" for which there is no cure short of killing off the entire lake. Our suggestion is to stock predators to help control the yellow bass population (more specifically the reproduction of them) and convert as many pounds of yellow bass into pounds of desirable fish as possible. Predators suggested for stocking include wipers and walleye. A shoreline predator such as tiger musky can also provide some control of yellow bass but they also may reduce largemouth bass numbers which could result in a larger average size on bass and a smaller average size on bluegills. If stocked, tiger musky should only be stocked at low densities (one or two fish per acre maximum). They won't reproduce since they are a hybrid, so there is no concern of them overpopulating the lake.

Wipers are open water predators which are a good match for open water prey and are a hybrid that won't reproduce and take over the lake. Walleye are another desirable species that will also feed on yellow bass and provide quality angling but are unlikely to reproduce extensively. You can stock walleye and wipers in any combination from 10 to 20 per acre per year. Crappie can also be stocked to supplement their populations, but keep in mind crappie populations tend to naturally cycle. When determining stocking budgets, remember that it's usually better to stock small quantities each year rather than large quantities once every few years. Since food availability in lakes and survival of stocked fish can vary from year to year, annual stocking can help ensure multiple year classes become established.

If larger bass sizes are desired, harvesting up to 15 or 20 bass per acre per year from the population could be used if no tiger musky are stocked to achieve that goal. However, in either event, you may shift the balance of bluegills toward a higher population with smaller average sizes. On the other hand, if the panfish population increases, this could have a positive effect on predator populations such as largemouth bass, wipers, and walleye with their average sizes going up. This is just something to consider and be aware of before implementing a stocking or harvest plan.

Bluegills and crappie can be harvested as desired since their populations are controlled more by predators than angler harvest. Walleye and wiper harvest should be limited to allow these species to help provide control of the yellow bass population.

Water Quality

Overall water quality was in great shape at the time of the survey with clarity of 7.0 feet and oxygen levels above 4 mg/l up to 21 feet of depth. Given the right conditions, algae blooms can occur at any time during the growing season. Housing and human activities invariably introduce nutrients and pollution into lake systems, especially if phosphorus containing fertilizers are used in the watershed. No testing was done for total phosphorus, but if algae blooms occur they are often a sign of high phosphorus either from external sources or internal cycling.

Algae blooms can be treated with algaecides or in the event of blue-green algae blooms, they can also be tested for toxins. We have the capacity to do both if the need arises.. We can also provide herbicide treatments for rooted aquatic plants if needed. If rooted plants are treated, we suggest spot treating specific areas and not the entire lake due to the many benefits these plants provide. Grass carp can also be used for control of rooted plants, but should not be stocked at more than 3 to 5 per acre. At this rate they will provide some control without removing all the plants. Keep in mind that grass carp will not spot treat specific areas in the lake unless they are caged into those areas.

Final Comments

Arrowhead Lake's fishery and water quality were in good condition when the lake was surveyed on May 7, 2015. Various types of habitat were documented including aquatic vegetation, rocks, trees, and docks. Habitat structures such as cedar trees weighted with blocks or other artificial habitat structures placed in 6 to 12 feet of water in a few areas throughout the lake would be beneficial for providing additional habitat and quality fishing. Stocking predators (wipers and walleye) up to 20 per acre per year and protecting those predators is probably the best way to help control reproduction of yellow bass. For additional consultation please contact Nebraska Lake Management; 402-784-6005 or email us at nelakes@rocketmail.com.

Figure 1: Bluegill Length Frequency
Lake Arrowhead; May 7, 2015

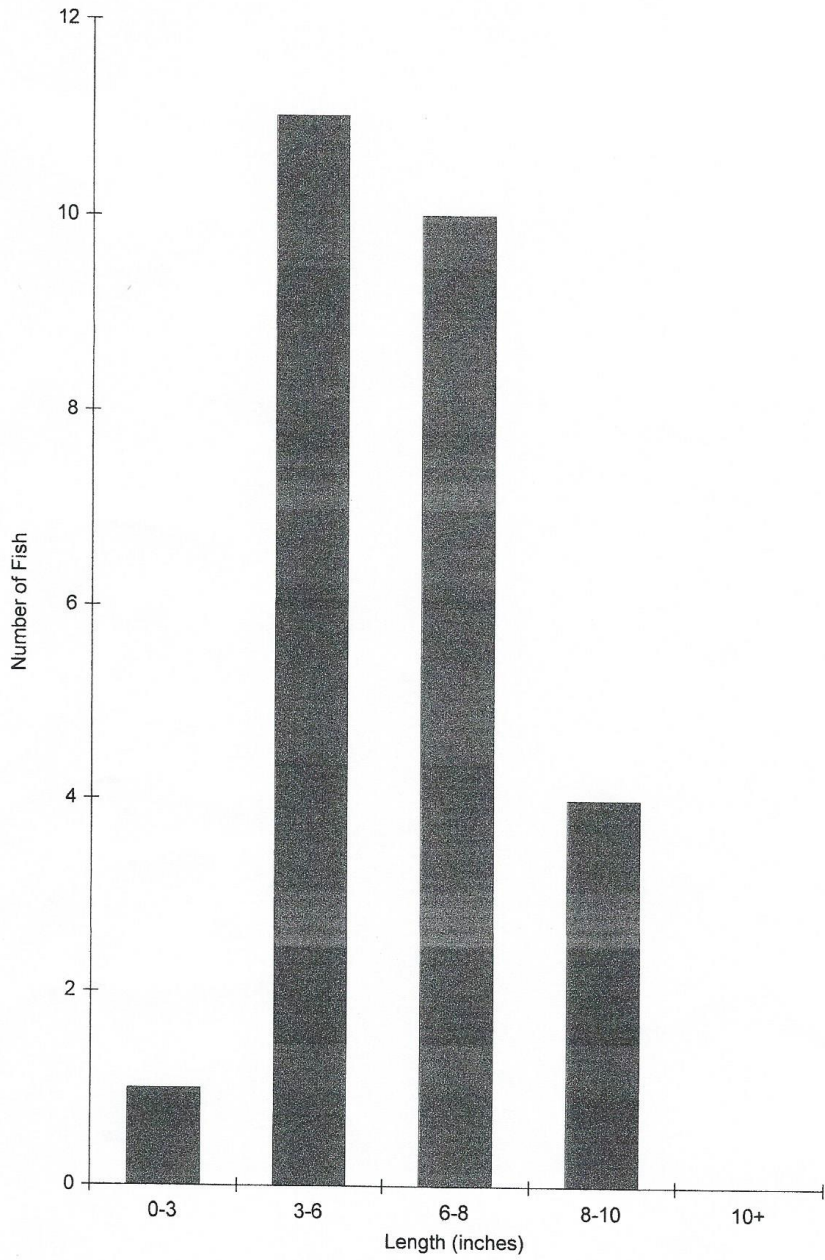


Figure 2. L.M. Bass Length Frequency
Lake Arrowhead; May 7, 2015

