Green Valley Lake

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INTRODUCTION

Green Valley Lake is located in the Green Valley State Fishing Area northwest of Terre Haute in Vigo County. It was originally constructed as a water supply reservoir for a coal mining operation. At the time the lake was constructed, it had a surface area of 40 acres. The property was purchased by the Department of Natural Resources, Division of Fish and Wildlife in the mid 1960s. There is a concrete boat ramp that provides access to the lake and good shoreline fishing opportunities also exist. A 14-inch minimum size limit on largemouth bass has been in effect since 1973.

In the past, Green Valley Lake had periodic problems with acid runoff from an abandoned coal mine on the southwest side of the lake. In 1994, a project was completed to seal off this area. Part of this project involved removing fill from the Green Valley property, which created a new 13-acre lake basin. This new basin has a maximum depth of approximately 20 feet with an average depth of nine feet.

Since the new basin has a very limited watershed, it was connected to Green Valley Lake by a boatable channel. This makes the two lakes a single unit as far as fish management activities are concerned. Prior to the construction project, Green Valley Lake had a relatively stable fish population with a history of good fishing. In the fall of 1994, 2,600 largemouth bass fingerlings were stocked in the new lake basin to strengthen the predator population. Other species were expected to populate the lake by moving into it from Green Valley Lake.

The present survey was conducted May 24 - 25, 1999. The objective was to evaluate the status of the fishery and any changes since the last survey in 1995. Fish sampling effort consisted of 1.04 hours of electrofishing, four gill nets, and two trap nets set overnight. Both basins of the lake were sampled. This report presents the results of the survey along with recommendations for future work.

RESULTS AND DISCUSSION

Water chemistry parameters were normal for an impoundment in central Indiana. The lake was thermally stratified with the thermocline extending from 10 to 18 feet (bottom). Dissolved oxygen was adequate for fish survival to a depth of around 10 feet.

Aquatic plants found during the survey included common cattail, duckweed, watermeal, filamentous algae, coontail, watermilfoil, and three species of pondweed (curlyleaf, American, and sago). Curlyleaf pondweed and coontail were the most abundant types of plants at the time of the survey. Curlyleaf pondweed is often a problem at this lake early in the growing season, but typically dies back by mid-summer. At the time of the survey curlyleaf pondweed was heavy

along the shoreline except where it was treated with herbicide, but also appeared to be dying back in other areas. Overall, aquatic vegetation appeared to be adequate in relation to fish habitat needs but not excessive in terms of recreational use.

Fish sampling effort produced 545 fish weighing a total of 358 pounds and representing seven species. Gizzard shad dominated the catch by number (35 percent) followed by bluegill (28 percent), largemouth bass (27 percent), channel catfish (5 percent), warmouth (3 percent), and black crappie (3 percent). Gizzard shad were also most abundant in the sample by weight (38 percent), followed closely by largemouth bass (36 percent), channel catfish (15 percent), bluegill (8 percent), black crappie (1 percent), and warmouth (1 percent). The only other species collected were two yellow bullheads which made up less than 1% of the catch by number and weight. Gizzard shad were collected for the first time and consisted of 188 fish ranging from 6.3 to 15.6 inches in length. Four year classes of gizzard shad were collected (ages 1, 3, 4, and 5). Year class strength was variable with most fish collected between ages 3 and 4. There were a few 1-year-old and 5-year-old gizzard shad, however, no 2-year-old fish were sampled. Gizzard shad weights were average for 13 inch and smaller fish. Growth was poor for 1-year-old but 3-year-old and older fish had growth rates above average when compared to gizzard shad at other area lakes.

One hundred and fifty bluegill were collected with individuals ranging from 1.5 to 8.5 inches in length. Most bluegill (53 percent) were 6.5 to 8.5 inches and from the 1993 thru 1996 year classes. Bluegill growth rates were average for all ages in comparison to growth at other area lakes.

The largemouth bass sample consisted of 148 fish ranging from 4.5 to 15.0 inches in length. Legal size largemouth bass comprised 11.5 percent of the catch. Most of the fish (57 percent) were 12.0 to 13.5 inches long, from a strong 1995 year class. Largemouth bass less than 4.5 inches were not sampled. Largemouth bass growth rates and weights were average in comparison with bass from other impoundments in the area.

Twenty-five channel catfish were collected during sampling. Channel catfish ranged in length from 13 to 24 inches. The absence of channel catfish smaller than 13.5 inches indicates that very little if any natural reproduction is occurring in Green Valley. The presence of channel catfish is due to stocking efforts by the Department of Natural Resources. Nine hundred channel catfish were stocked annually in Green Valley Lake in 1995, 1997, and 1999.

A total of 14 black crappie was collected during the survey. They ranged from 6.0 to 11.5 inches in length and were from the 1996 and 1997 year classes. Growth for the 1997 year class was average, but growth from the 1996 year class was above average.

The only other fish collected were 18 warmouth and two yellow bullhead. Warmouth and yellow bullhead were both collected in previous surveys. The present low abundance of both species does not appear to be detrimental to the fishery.

CONCLUSION AND RECOMMENDATIONS

Gizzard shad were collected for the first time in Green Valley Lake and dominate the fishery. The introduction of gizzard shad does not appear to have negatively affected the fishery thus far. Gizzard shad year class strength appears to be variable and growth slow for smaller fish. The slow growing gizzard shad are likely being consumed by largemouth bass and hence, not capable of a huge population explosion.

The fish population still has a satisfactory sport fishery and appears to be fairly well balanced. Largemouth bass are abundant enough to control gizzard shad and panfish abundance through predation, which provides good numbers of harvestable size bluegill for anglers. Largemouth bass fishing opportunities remain fairly good with a high number of fish for catch and release as well as a fair number of legal size fish available. Other fishing opportunities for anglers include a good channel catfish population and a fair black crappie fishery.

Growth of largemouth bass is average in comparison to other area bodies of water. However, very few 1-year-old largemouth bass were collected. The absence of small fish collected may be attributed to a number of reasons, including biases in gear against small fish, low bass reproductive success, competition with other fish, or a combination of these. The presence of gizzard shad may also have a negative effect on largemouth bass recruitment through competition with bass for zooplankton.

Aquatic vegetation control has been conducted at Green Valley Lake since the late 1960s. The objectives of this program are to control excess vegetation which might provide too much cover for panfish, and to provide additional access for shoreline fishing opportunities. Aquatic plants are necessary for both fish and wildlife populations, so large areas of vegetation are left untreated. Although vegetation has been abundant enough to limit shoreline fishing during some years, the treatment program has been relatively successful and should be continued.

Natural reproduction of channel catfish at Green Valley Lake is virtually nonexistent and the catfish population is entirely dependant upon supplemental stockings. The stocking program should be continued with biennial stockings of 901 fish. The next stocking should occur in 2001.

Since the last fisheries survey the fish community has expanded to include gizzard shad. Other species populations seem to be in balance and no changes in management strategies need to be implemented. The gizzard shad population is a new addition to Green Valley and may not have reached its full impact on the fish population. For this reason, another fisheries survey should be conducted at Green Valley Lake in two or three years.