DIAMOND LAKE
KOSCIUSKO COUNTY
Fish Management Report
1995

INTRODUCTION

Diamond Lake is a 79 acre natural lake located northwest of the town of Silver Lake in southern Kosciusko County. Maximum depth is 39 feet. Land use in the 2,509 acre watershed is primarily row crop agriculture. Public access is limited to a privately owned boat ramp on the southeast shore and a county right of way near the northeast corner of the lake.

Diamond Lake was first surveyed by the Department of Natural Resources in 1964. Partial fish eradication was conducted in 1967 to reduce the number of gizzard shad and small panfish. The entire fish population was eradicated in 1973 and the lake restocked with bluegill, largemouth bass, black crappie, channel catfish, walleye, and northern pike. A barrier was placed in the outlet in an effort to prevent adult fish from migrating into Diamond Lake from Yellow Creek Lake. This barrier was removed in 1981 at the request of lake residents. Carp and gizzard shad had reestablished populations by that time. Channel catfish were stocked by DNR periodically from 1964 until 1987 and the Diamond Lake Conservation Club stocked 1,250 in 1992. Eight previous fisheries surveys were conducted on Diamond Lake, the last being in 1985. A fisheries survey was conducted 24-26 July 1995 at the request of the Diamond Lake Conservation Club to advise lake residents on management options.

RESULTS

The water was stained brown at the time of the survey due to recent rain. Water clarity was still fairly good with a secchi disc reading of four feet. Dissolved oxygen was not sufficient for fish survival at a depth of 15 feet. Submergent aquatic vegetation was very abundant in the littoral zone and dominated by Eurasian watermilfoil. Emergent vegetation, primarily spatterdock and cattails, was abundant around the shoreline.

Total catch during the survey was 1,594 fish of 25 species weighing 617.38 pounds. The surprise catch was a 5.9 inch bala shark

Forty-two spotted gar were collected. Length range was 15.8-28.9 inches. Gar are a captured in a gill net. This is an aquarium fish native to Thailand, Sumatra, Borneo, and Malaysia. Despite its name, it is not a shark but a peaceful relative of the minnow family. Someone must have tired of their aquarium and dumped the fish into the lake. This species is not tolerant of the colder water temperatures common in the Midwest during winter.

Bluegill was the most abundant species in the survey with 695 collected. Length range was 0.7-8.8 inches. Age groups I+ through VIII+ were represented. Over 75% of the bluegill collected were ages I+ and II+ and less than five inches in length. Seven inch and larger bluegill accounted for 2.9% of the bluegill catch. Growth was average through age IV+, then began to slow.

Almost 18% of the 274 gizzard shad collected were young-of-year (YOY) and averaged two inches in length. Fifty-eight percent were 10-11 inches in length. Shad accounted for 18.3% of the total weight collected.

Largemouth bass accounted for 16.4% of the total number of fish collected and 25.6% of the total weight. Seven were YOY, the rest represented age groups I+-VIII+. Length range was 1.5-21.9 inches. Thirty-four percent were legal size of 12 inches and larger. Growth was above average the first two years and average thereafter.

Yellow perch represented 7.6% of the sample by number and 5.2% by weight. Length range was 1.9-11.0 inches. Seventy-seven percent were eight inches and larger. Age groups I+ through VIII+ were represented. Growth was average the first two years and below average for older perch.

White suckers accounted for 5.8% of the sample by number with 93 collected. They accounted for 19% of the total weight. Length range was 9.1-20.0 inches.

major predator in Diamond Lake along with the bass and bowfin. They are a valuable asset to the fish community.

Ten carp were collected. Although representing less than one percent of the sample by number, they accounted for 14.3% by weight. Length range was 12.0-31.3 inches.

Diamond Lake contains both black and white crappie. Five of each were collected. Length range for black crappie was 5.6-9.0 inches and for white crappie, 8.5-11.5 inches.

Two channel catfish were collected, 8.8 and 22.1 inches. The Conservation Club stocked catfish in 1992 were 8-10 inches in length.

Two white bass were collected. Lengths were 13.3 and 16.1 inches. These may be adults that migrated up from Yellow Creek Lake.

The other 12 species collected were found in low numbers and not of significance to anglers.

DISCUSSION

In the 1985 survey, 950 fish of 20 species were collected. With the same sampling effort in 1995, 1,594 fish of 25 species were collected. The larger 1995 survey catch was the result of improvements in sampling equipment.

Bluegill catch increased from 265 to 695 between the last two surveys. Bluegill increased from 27% to 43 % of the sample. Growth has declined to some extent but weights have not changed. The large 1993 year class should reach six inches and enter the fishery in 1996.

Gizzard shad remain the second most abundant fish in the survey but relative abundance declined from 27% of the sample in 1985 to 17%. YOY shad were less abundant than expected for a July sample.

Largemouth bass catch increased from 110 in 1985 to 261. Relative abundance increased from 11% of the sample to 16%. Growth at age I+ has improved but was slower for older bass. Weights were unchanged from 1985. In 1985, 20% of the bass were 12 inches and larger. That increased to 34% in the 1995 survey. A 12 inch size limit and increased acceptance of catch and release fishing over the past ten years may be helping to maintain a higher bass population.

Yellow perch relative abundance was about the same as in 1985 but the number collected increased 112%. Length distribution and weights were unchanged but growth of age V+ and older perch declined.

Channel catfish have not maintained a population in Diamond Lake through natural reproduction. A few fish from the Conservation Club's stocking remain but not enough to sustain a fishery. If lake residents want to maintain a fishery for channel catfish, they will have to stock them on a regular basis.

The carp population has not changed over the past ten years. A few large individuals are present and are not significantly influencing the fishery.

The collection of an exotic fish is disturbing. Thankfully the bala shark is a tropical fish that should not survive in this climate. The responsible party and number released is unknown. The number of exotic species now found in the Great Lakes are a prime example of the ecological harm that can occur. Diseases and parasites can also be introduced which could devastate native stocks. The release of any fish into the wild requires a permit from the Division of Fish and Wildlife.

The biggest problem facing Diamond Lake is excessive growth of aquatic vegetation, especially Eurasian watermilfoil, an exotic. This plant grows very early in the year shading out native plants and forming dense mats at the surface that restrict boating, fishing, and other use of shallow areas. Because it only reproduces vegetatively in North America, it can be controlled through the use of herbicides at the proper time without adversely affecting native plants. A certified aquatic applicator should be consulted. Harvesting is not recommended as small fragments left floating can sprout to form colonies in other areas of the lake and can also be spread to other lakes on boat trailers and propellers.

Diamond Lake is one of six interconnected lakes that drain to the Tippecanoe River. There is little elevation difference between the various lakes and the river. Preventing movement of fish between lakes or from the river is economically impracticle. This is the reason carp, shad and other fish were able to repopulate Diamond Lake following the 1973 renovation.

Best fishing opportunities at Diamond Lake are for largemouth bass and yellow perch. Bluegill are plentiful but quality remains poor. There seems to be a strong fish community relationship between gizzard shad abundance and bluegill population quality. When shad are abundant, bluegill are usually low in number and small in size. In 1980, when shad comprised less than 1% of the survey catch by number, 13.8% of all bluegill three inches and larger were seven inches and larger (RSD-7). In 1983, 1985 and 1995 when shad ranked first or second by number and weight, bluegill RSD-7 was less than 5%.

The stocking of a large esocid (northern pike or muskellunge) or walleye would not adversely impact the fishery, might be an additional control on carp and shad, and provide an occasional trophy fish. However these fish tend to migrate a great deal and in this open system it would be impracticle to try to prevent movement out of Diamond Lake. Channel catfish would provide a good return for the investment if the Diamond Lake Conservation Club wishes to maintain that fishery. It is unlikely that natural reproduction would be sufficient to sustain the population of any of these species. Continued periodic stocking would be required.

RECOMMENDATIONS

1. The Diamond Lake Conservation Club and lake residents should consult certified aquatic applicators to initiate a long term aquatic vegetation control program.

2. If the Diamond Lake Conservation Club wishes to stock fish, the district fisheries biologist should be consulted as to species, size and number to stock. A stocking permit is required.

3. The Diamond Lake Conservation Club is asked to contact the district biologist or fisheries supervisor if lakefront property suitable for a public access site becomes available.

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Date: 22 February 1996

Approved by:

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