

# **Westwood Run Lake**

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## **INTRODUCTION**

Westwood Run Lake is a 173 acre impoundment located approximately four miles west of New Castle, Indiana in Henry County. The lake, Westwood Park, and surrounding land are under the jurisdiction of the Big Blue River Conservancy District. Fish management activities and stockings are controlled by the Division of Fish and Wildlife (DFW). A largemouth bass slot size limit was recommended in 1990 due to an overabundant bass population which was severely cropping off the bluegill population. The slot limit was imposed in 1992 to decrease the bass population which would thus improve bass growth rates and reduce excessive predation on panfish. The slot size limit protects bass between 12 and 15 inches long but allows anglers to reduce the excessive numbers of small bass. During a fisheries survey in 1997, the bass population was nearly half of what it was prior to implementation of the slot limit. Despite the dramatic decrease in the bass population, growth of 4-year-old and younger bass remained relatively unchanged. With reduced predation, it was expected that the panfish populations would increase and their growth would slow. However, bluegill abundance in 1997 was very similar to 1995 while the redear and crappie populations decreased during the same period. Growth of panfish continued at well above normal rates. The present surveys of Westwood Run Lake were conducted to evaluate the predator/prey balance. A determination will be made as to whether the largemouth slot size limit should remain in effect.

## **METHODS**

### **LARGEMOUTH BASS POPULATION ESTIMATE**

A largemouth bass population estimate was conducted April 29 to May 18, 1999 to determine what changes have been made in the bass population since implementation of the slot limit. The shoreline was divided into 15, one-third mile stations. Each station was sampled twice (15 minutes per sample) with D.C. electrofishing gear at night for a total effort of 7.5 hours. All bass collected were measured to the nearest 0.1 inch. Scale samples were collected from one bass per 0.1 inch group for age and growth calculations. All bass were marked with a left pectoral fin clip and released within the boundaries of the station they were collected from. Capture of fin clipped largemouth was recorded for population estimate calculations (Schnabel Method).

### **FISH COMMUNITY SURVEY**

A fish community survey was conducted June 7 to 9, 1999. Survey effort consisted of one hour of night D.C. electrofishing, six experimental mesh gill net lifts, and eight trap net lifts. Collected fish were identified to species, measured to the nearest 0.1 inch, and weighed to the nearest 0.01 pound. Scales were collected from the dominant species (except for largemouth bass) for age and growth analysis.

## RESULTS

### LARGEMOUTH BASS POPULATION ESTIMATE

Two thousand one hundred and thirty-one largemouth bass were collected and fin clipped. One hundred and eighty-nine bass were recaptured. The 1999 largemouth population estimate for Westwood is 10,155 (+-737), or 59 bass per acre. While the bass population is far lower than what was observed in 1992 prior to the implementation of the slot limit (13,552 bass), it has increased compared to the 1995 and 1997 estimates (9,651 and 7,134 fish, respectively). The 1999 estimate of stock-size bass (8 inches and larger) is 5,048 (+-428) or 29 per acre. The estimate of stock-size bass is up slightly compared to 1997 (4,483) and is considerably higher than in 1995 (3,007).

Collected bass ranged from 3.1 to 21.5 inches and averaged 8.2 inches long. While there is still a large proportion of bass in the lake less than 9 inches long, some dramatic improvements in the size structure has occurred since the slot size limit went into effect in the summer of 1992. In 1992, bass were stockpiled in the 8 to 12 inch range and very few fish exceeded 15 inches long ([Table 2](#)). By 1995, the proportion of bass 15 inches and larger improved, however there were still few bass longer than 18 inches. By 1997, the proportion of largemouth 18 inches and longer climbed to 1.6 percent and increased to 1.8 percent in the present survey. Judging from the largemouth bass length frequencies observed since the slot has been in effect, it appears that anglers begin harvesting bass at around 10 inches.

**Table 2.**

**Largemouth bass size comparisons for Westwood Run Lake from 1992 to 1999.**

	<b>Percent of largemouth bass less than 12 inches</b>	<b>Percent of largemouth bass less than 15 inches</b>	<b>Percent of largemouth bass less than 18 inches</b>
<b>1992</b>	15.7	0.4	0.4
<b>1995</b>	8.5	4.8	0.2
<b>1997</b>	5.0	3.0	1.6
<b>1999</b>	13.9	3.9	1.8

Largemouth growth is nearly exactly on average when compared to bass growth in other central Indiana lakes and ponds. Bass growth has improved dramatically since 1990 which is when the slot limit was recommended. In the present survey, bass were 12.8 inches long at 4-years-old while they were just 10.7 inches at 4-years-old in 1990. Bass growth has stabilized recently and is nearly identical to growth observed in 1997.

### FISH COMMUNITY SURVEY

A total of 748 fish was collected that weighed 178.76 pounds. Eleven species and one hybrid were collected in the survey. Six species of submergent vegetation were observed with curlyleaf pondweed being by far the dominant species. In all, submergent vegetation covered

approximately 15 percent of the surface area of the lake. At this level of coverage, vegetation should not cause any fish management problems. However, some dense coverage of submergent vegetation was observed in many of the major shore fishing areas which hampers angling for those without boats.

By far, bluegill was the dominant species collected by both number (57.4 percent) and weight (37.0 percent). The 429 bluegill collected weighed 66.13 pounds. Bluegill relative abundance is the highest observed since the slot limit went into effect, and is far higher than that observed in 1990 when the slot was recommended. Bluegill were collected up to 8.7 inches long and averaged 5.6 inches. Just less than half of the bluegill collected were considered a harvestable size of 6 inches or larger. The size structure of bluegill is far more balanced compared to when the slot limit was recommended. In 1990 the largest group of bluegill was from 6 to 7.5 inches. The irregular length distribution of bluegill in 1990 indicates poor recruitment as a result of excessive predation by bass. In the present survey, it appears as though recruitment has improved since there is a fairly even distribution of bluegill from 4 to 8 inches long.

The Proportional Stock Density (PSD) of bluegill is the proportion of bluegill that are 3.0 inches and larger that are also 6.0 inches and larger. The PSD of bluegill collected by electrofishing in the present survey was 40. The bluegill PSD was 46 in 1997, 27 in 1995, and 63 in 1990. Balanced bluegill populations have PSDs which range from 20 to 40.

Growth of 1- and 2-year-old bluegill was normal and well above normal at ages 3 through 5. Since 1997, growth of 1- and 2-year-old bluegill has slowed slightly. An objective rating system, known as the Bluegill Fishing Potential Index (BGFP), was developed to assess bluegill fishing in lakes and ponds ([Ball and Tousignant 1996](#)). The BGFP score is derived from criteria which includes bluegill density, growth, PSD, and RSD8 (relative stock density). Out of a possible 40 points, the current bluegill fishery at Westwood scored 24 which ranks it as a good bluegill fishery. In 1997, the bluegill fishery scored excellent with 32 points and good in 1995 with 25 points.

A total of 122 redear sunfish was sampled that collectively weighed 27.24 pounds. Redear were second in abundance by number (16.3 percent) and third by weight (15.2 percent). Redear abundance is the highest ever observed at the lake. Lengths of redear ranged from 3.6 to 11.0 inches with the average fish measuring 6.6 inches. Over 89 percent of the redear sunfish collected were six inches or longer. As in the past, redear are growing well above normal. All year classes of redear from 1993 to 1998 were collected. However, the dominant year class, by far, was spawned in 1997.

A total of 108 largemouth bass was collected during the fish community survey that weighed 37.77 pounds. Largemouth ranked third in abundance by number (14.4 percent) and second by weight (21.1 percent). Relative abundance of bass by both number and weight is the lowest ever observed. Bass up to 15.9 inches were collected during the June survey. The length frequency of bass was very similar to that observed during the population estimate.

Twenty-one yellow perch were collected that weighed 7.31 pounds. Perch ranked fourth in abundance by number (2.8 percent) and sixth by weight (4.1 percent). The perch population has

remained fairly low which has resulted in some high quality perch in the lake. Yellow perch up to 12.2 inches were found, and better than half of the perch observed were 10 inches or larger. As in the past, perch are growing extremely fast.

Eighteen green sunfish and 16 pumpkinseed were collected. Combined, these species accounted for 4.5 percent of the total sample by number and 1.3 percent by weight. Both species are some of the smaller members of the sunfish family which rarely exceed 6 inches long.

Fifteen channel catfish were collected that weighed 26.46 pounds. Lengths of channels ranged from 9.4 to 23.2 inches. Catfish are stocked every two years by DFW in order to provide an additional fishing opportunity. The most recent channel catfish stockings occurred in the fall of 1998 and 1996. It appears as though the catfish collected that ranged from 9.5 to 11.5 inches were from the 1998 stocking, and those from 16 to 18 inches were stocked in 1996. The large gap in the length frequency between these two size groups indicates that there is little or no catfish reproduction or recruitment occurring. Catfish generally are not able to maintain their own populations in small impoundments due to a lack of spawning habitat and predation on their young by largemouth bass.

Of the 12 crappie sampled, half were black crappie and the other half were white crappie. Combined, these species comprised just 1.6 percent of the collection by number and 0.8 percent by weight. Crappie ranged in length from 4.5 to 8.7 inches.

Other species collected included four brown bullhead, two black bullhead, and a single hybrid sunfish. All of the bullheads were impressive individuals with the largest measuring nearly 16 inches long.

## **CONCLUSIONS AND RECOMMENDATIONS**

Numerous changes in the Westwood fish community were expected to occur as a result of the lake being placed under a largemouth bass slot size limit. At the time of the recent surveys, the slot limit had been in effect for nearly seven years. As expected, the bass population had decreased as a result of anglers being allowed to harvest bass less than 12 inches long. The 1999 bass population estimate is considerably lower than that observed in 1992 but is higher than the 1997 estimate. However, relative abundance of bass by both number and weight has declined. Since 1990, bass growth has improved considerably and has now stabilized at the central Indiana average.

One effect of the lower bass abundance is the improvement in the panfish populations. Bluegill and redear sunfish abundance are currently the highest ever observed at the lake. Prior to the slot limit, bluegill recruitment was very low which resulted in a skewed bluegill population composed primarily of individuals 6 inches or larger. The bluegill population is now well balanced with a good proportion of fish less than 6 inches while still maintaining a high percentage of quality fish to harvest. Despite the increase in relative abundance of bluegill and redear, their growth continues to be above normal. If bass abundance declines much further, the bass may not be able to keep panfish cropped to a tolerable level. This would result in slowed growth of panfish and smaller panfish.

The largemouth bass slot size limit did an admirable job of improving the balance of the Westwood fishery, however, it is now time to return to a minimum size limit before the fish community shifts too far in favor of prey species. It is recommended that in the upcoming Administrative Rules revision process, a largemouth bass 14-inch minimum size limit for Westwood Run Lake be proposed. If adopted, the regulation will likely go into effect sometime during the 2001 fishing season.

The low number of channel catfish collected indicates that the stocked channels are being well utilized by anglers and that little or no catfish reproduction is occurring. For these reasons, it is recommended that the biennial stockings of channels should continue. The next stocking of channel catfish should occur in the fall of 2000. The current level of submergent vegetation coverage should not cause any negative effects to the Westwood fishery, however, it is likely restricting use by shore anglers. The Big Blue River Conservancy District should consider budgeting money for aquatic herbicides so that the vegetation along the heavily utilized bank fishing areas could be reduced. DFW biologists can be consulted to determine when and where chemical applications should occur.

The next fisheries survey at Westwood should be conducted in June of 2001. That survey should once again focus on the predator/prey balance in the lake and growth of the dominant game species. The best fishing opportunities at Westwood would be for bluegill and redear sunfish. Many hand-sized or larger bluegill and redear should be available to harvest. Bass fishing should be good and a fair number of large fish should be caught. The regular stockings of channel catfish should maintain desirable opportunities for catfish angling. Crappie and perch opportunities should be fair.

## **LITERATURE CITED**

Ball, R.L. and J.N. Tousignant. 1996. The development of an objective rating system to assess bluegill fishing in lakes and ponds, Research Report. Indiana Department of Natural Resources. 18pp.