

Martindale Pond

Fish and Wildlife Research and Management Notes

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Date: March 6, 2001

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INTRODUCTION

Martindale Pond is a 15—acre borrow pit that was created during the construction of Interstate 70. The pond is located just east of Jacksonburg, Indiana in Wayne County. The Division of Fish and Wildlife (DFW) purchased the pond for use as a public fishing area. The last fisheries survey conducted in 1996 found an overabundant and slow growing bluegill population. This was similar to what had been found since 1990. One reason for the stunted bluegill population was the lack of predatory pressure from a largemouth bass population that was fairly low in number. The poor bass population was a result of poor recruitment of young fish into the population. Bass recruitment likely suffered because of predation on bass eggs by bluegill. Another contributing factor to the overabundant bluegill population has been excessive submergent vegetation. Submergent vegetation provides hiding places for small bluegill. This makes it difficult for largemouth to find and forage on these abundant small fish. In 1996, submergent vegetation was heavy, as it had been since the mid 1980's when annual chemical treatments were begun. Chemicals only provided temporary relief to the vegetation problem and not long term control. Therefore, grass carp stockings were recommended in hopes that they would provide more year-round control. In 1997, 118 grass carp that averaged 10 inches long were stocked. A fisheries survey of Martindale Pond was conducted in 2000. The purposes of the survey were to evaluate the predator/prey balance and to determine the effectiveness of grass carp at controlling submergent vegetation.

RESULTS AND DISCUSSION

The present survey was conducted June 27 and 28, 2000. Survey effort consisted of 0.5 hour of D.C. electrofishing at night, two experimental mesh gill net lifts, and one trap net lift. Collected fish were measured and scale samples were taken from game fish for age and growth analysis. Weight estimates were calculated using central Indiana average weights.

A total of 299 fish was collected that weighed an estimated 90.58 pounds. Seven species and hybrid sunfish were represented in the survey.

Bluegill was the most abundant species collected by number (54.2 percent) and third most abundant by estimated weight (12.9 percent). In 1996, bluegill accounted for 66.5 percent of the sample number and 12.8 percent of the sample weight. One hundred and sixty-two bluegill were collected in the present survey that weighed approximately 11.64 pounds. Bluegill ranged in length from 2.2 to 6.2 inches and averaged 4.6 inches. Only seven percent of the bluegill were considered harvestable (six inches or longer), a slight increase from the 1996 level of five percent. Proportional stock density (PSD) of bluegill is the proportion of 3.0 inch and larger fish that are 6.0 inches and larger. The PSD in the present survey was 3. Balanced bluegill

populations have PSD's that range from 20 to 40. Compared to other central Indiana bluegill populations, bluegill at Martindale are growing normal at one-year-old and then slightly to well below normal to 5-years-old.

The Bluegill Fishing Potential (BGFP) index is an objective rating system that was developed to rate bluegill fishing in Indiana lakes and ponds (Ball and Tousignant 1996). The four parameters used to calculate a BGFP score are density, growth, PSD, and RSD8 (relative stock density). Much like in 1996 when the Martindale bluegill fishery scored 7 out of a possible 40 points, the 2000 bluegill fishery received a "poor" rating with a score of just 4. Slow growth of bluegill resulted in the "poor" rating because it has caused the population of bluegill to be dominated by fish that are less than 6 inches long.

Redear sunfish abundance was dramatically higher in 2000 than it was in 1996. In the present survey, redear made up 21.4 percent of the sample number and 14.4 percent of the estimated weight compared to the 1996 levels of just 2.1 percent and 2.6 percent, respectively. During the present survey, a total of 64 redear was collected that weighed an estimated 13.00 pounds. Redear were found up to 9.3 inches and on average were 6.4 inches. Thanks in part to the dominant 1996 year class and a successful 1995 year class, almost 61 percent of the redear collected were 6 inches or longer. However, redear recruitment has apparently suffered the last several years as no 1- or 2-year-old redear were sampled. Growth of redear at ages 3 through 5 is slightly below normal.

Thirty-five largemouth bass, that weighed an estimated 50.92 pounds, were collected. Largemouth percent abundance by number (11.7 percent) was slightly higher than in 1996 (9.9 percent), however, bass abundance by weight increased substantially from 8.9 percent in 1996 to 56.2 percent in the present survey. Largemouth abundance by weight increased because the average size bass collected jumped from 6.6 inches in the previous survey to 13.2 inches in 2000. Largemouth were found up to 19.3 inches long and over 54 percent of those collected were at least 14 inches long. While bass are growing slightly below normal to 3-years-old, largemouth are almost 2 to 2.5 inches longer at 2- and 3-years-old than those found in 1996.

Largemouth bass PSD is the proportion of 8.0 inch and larger fish that are 12.0 inches or larger. Balanced largemouth populations have PSD's that range from 40 to 60. The Martindale bass fishery had a PSD of 83 which indicates the fishery is unbalanced in favor of older, larger fish and that recruitment has probably been poor. This was the case since less than 30 percent of the bass collected were either 1- or 2-years-old. In balanced largemouth populations, the year classes of 1- and 2-year-old bass tend to be the dominant ones collected. Recruitment is suffering because of excessive predation on bass eggs by nest invaders, primarily bluegill, and because of competition between bluegill and fingerling bass for food and space.

The DFW annually stocks approximately 1,500 channel catfish at Martindale that average about 10 inches long. At Martindale and many other small bodies of water, catfish lack the necessary spawning habitat to reproduce in high numbers and most of the catfish that are spawned fall prey to largemouth bass. In the present survey, there were 11 channel catfish collected that ranged from 10.3 to 14.1 inches long. Channel catfish stocked in the fall of 1999 at Martindale averaged 10.2 inches and ranged in length from 7.4 to 13.1 inches. Therefore, the catfish collected in the

present survey were likely from the 1999 stocking. The absence of larger channels indicates that anglers are utilizing the stocked fish.

The other fish collected were hybrid sunfish, black crappie, white sucker, and white crappie. Several hybrid sunfish from 6 to 8 inches long were collected. The bulk of the crappie measured just 7.5 inches or less, while the largest was a 10.7 inch black crappie. None of these fish are abundant enough to significantly contribute to the harvest.

As in the past, submergent vegetation was heavy at Martindale Pond. At the time of the survey, approximately 65 percent of the pond was covered with milfoil, a form of submergent vegetation. Milfoil had covered around 80 percent of the pond about three weeks prior to the survey. It was then that nearly 1/3 of Martindale was treated with chemicals to eliminate milfoil near the boat ramp and major shore fishing area. The treatment was successful, however, much milfoil remained in other areas of the pond. An additional 1/3 of the pond was chemically treated upon completion of the fisheries survey. The second treatment reduced coverage to around 20 percent.

CONCLUSIONS AND RECOMMENDATIONS

The fishery at Martindale Pond remains unbalanced in favor of prey. While not quite as numerous as they were in 1996, bluegill still accounted for over 54 percent of all fish collected by number. Bluegill growth also remains poor and is the reason that only 7 percent of those collected were at least six inches long. Largemouth bass are not abundant enough to provide the predatory pressure needed on bluegill to significantly reduce their numbers and improve their growth. As it stands now, bluegill are likely the ones controlling bass abundance rather than bass controlling bluegill abundance.

Contributing to the overabundant bluegill population is the amount of submergent vegetation in the pond. Excessive vegetation (over 20 to 25 percent coverage) not only hinders angler use, but it results in overabundant and slow growing bluegill. First, bluegill are able to hide in the abundant vegetation and avoid predation by largemouth bass. Also, in the case of Martindale where there are relatively few nutrients available to drive the food chain, nutrients that could be used for fish food production become tied up in plant production. This means even less food for the abundant bluegill and the young of all species.

More intensive weed control to reduce milfoil coverage is needed before the fishery at Martindale can be expected to improve. The grass carp stocked in 1997 have not provided the desired level of control. However, it is felt that if there are enough grass carp present, they can provide an adequate amount of control. Grass carp are desirable at Martindale because their escape from the pond is unlikely, they can reduce the amount of chemical used, and they can provide year-round control that most chemical treatments do not. To boost the amount of control provided by grass carp, it is recommended that 120, 10-inch grass carp be stocked in 2001. With the addition of these fish, it is hoped that they can nearly eliminate all of the submergent vegetation. This would provide bass a much better opportunity to prey on bluegill. Vegetation will continue to be monitored annually in late spring or early summer. If grass carp are not

providing an adequate amount of control or better angler access is required around the boat ramp and major shore fishing area, then supplemental chemical treatments will be performed.

Even if vegetation is nearly eliminated as a result of the grass carp and chemicals, it is unlikely that the existing bass population could overcome the severe imbalance of the fishery. The bluegill population needs to be thinned before bass recruitment can recover. In an attempt to correct the imbalance, up to 225 (15 per acre) largemouth bass (12 inches or larger) should be stocked in 2001. The largemouth will be stocked to provide an immediate impact on bluegill abundance and to provide a boost to future bass recruitment. These bass will come from culled hatchery broodstock and or from lakes that have excessive bass populations.

The next fisheries survey of Martindale Pond will be conducted in 2004. This survey will evaluate the predator/prey balance and the effectiveness of grass carp to control submergent vegetation. By 2004, if vegetation control is successful and largemouth bass have been stocked, there should be a noticeable change in the fishery.

Channel catfish provide one of the few quality angling opportunities at Martindale Pond. However, catfish recruitment is likely negligible due to the lack of spawning habitat and predation on young catfish by largemouth bass. To sustain the catfish fishery, a total of 1,500 channels that average at least 10 inches long should continue to be stocked annually.

Anglers targeting largemouth should have some success catching bass that meet or exceed the minimum size limit of 14 inches or longer. Anglers are encouraged to release all bass so that predatory pressure on bluegill is maximized. For anglers that do harvest bass, there is a five fish daily bag limit. Panfish anglers will likely encounter numerous small bluegill. Redear sunfish should provide the highest quality panfishing opportunities. Catfish anglers are reminded there is a ten fish daily bag limit for those caught from lakes.

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.

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