IOWA DEPARTMENT OF NATURAL RESOURCES

Sport Fish Restoration Research Findings

Assessment and Development of Underwater Structure to Attract and Concentrate Fish

Project Duration: 1980-1984
Location: Statewide Impoundments

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Assessment and Development of Underwater Structure to Attract and Concentrate Fish

One of the simplest goals of fisheries research and management is to shorten the time between bites. This goal can be accomplished in many ways, and fisheries managers employ several tactics – stocking, population assessment, water quality improvements, and fish habitat installation. Fish habitat can include a large variety of structures, but in the late 1970s fish habitat improvement efforts focused on structures designed to attract and concentrate fish. This project was started to evaluate several types of fish attractors.

Methods

Bluegill, crappies and Largemouth Bass were sampled from four study lakes using traditional angling gear. All angling gear was identical and anglers fished a structure and control area on the same day, with equal effort. Control sites were 100-300 feet away from the structure site, in an area with similar depth and bottom substrate. Between July 1 and October 8, over 1,200 hours of angling effort was evenly split between fishing on structures and control sites.

Results

With over 24,000 fish sampled, Bluegill, crappie and Largemouth Bass were the most common fish collected during this study. Over 18,000 of the fish sampled were crappies, and 59% of these fish were sampled from structure sites (versus control sites). Bluegill were the second most abundant fish sampled, numbering just under 5,000 fish, and 75% were taken at structure sites. Nearly 650 largemouth bass were sampled during the study, and 87% of these fish came from structure sites.

Catch rates while angling showed a wide difference between structure sites and control sites. On average, per hour catch rates of Largemouth Bass were 5.6 times higher on structure versus control sites. Crappie catch rates were 4.3 fish per hour higher, and Bluegill were 5.3 fish per hour higher on structure sites. The maximum differences were up to 30 times higher on structure sites for bass.

Bluegills caught on structure were up to 1 inch smaller than fish caught at control sites, but there was no difference in the size of crappies or largemouth between structures and control sites.

Hawthorn Lake was the only lake with more than two structure types. The table below shows comparable catch rates for each species at Hawthorn Lake. All values are adjusted such that control catch-effort is unity.

	Control	Brush	Stakes	Tires	Ridges
Bluegill	1.0	1.7	2.5	3.0	6.9
Crappie	1.0	1.9	1.1	0.6	2.5
Bass	1.0	1.8	2.6	5.6	1.3

Conclusions

No one structure type was the best at all times, for all fish. Earthen ridges/mounds produced the best overall results, followed by brush and stake beds. The recommendations from the study were that multiple habitat types be installed in lakes, especially during construction or renovation. Shoreline and bottom contour modifications were of primary importance.

Improving fish habitats paves the way for better fish production, and higher concentrations of fish on structures. Habitat enhancement increased fishing success, and predictable, concentrated fish result in happy, successful anglers – because we shorten the time between bites.