



IOWA DEPARTMENT OF NATURAL RESOURCES

Sport Fish Restoration Research Findings

Rathbun Lake Habitat Assessment



Project Duration: 2009-2015

Location: Rathbun Lake (Appanoose County)



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Rathbun Lake Habitat Assessment

Rathbun Lake is one of Iowa's most important recreational destinations and supports popular crappie, Walleye and Channel Catfish fisheries. The health of these fisheries and the reservoir ecosystem are threatened by habitat degradation (e.g., shoreline erosion), poor water quality (e.g., high turbidity), and zebra mussel infestation. Zebra mussels were found in Rathbun Lake in late 2007, and have since been detected as veligers in openwater sampling in very low densities. This research examined the impact of stabilizing the shoreline in strategically chosen crappie spawning areas and monitored the zooplankton and ichthyoplankton (fish) communities at historical sites to determine if zebra mussels had affected the reservoir.

Goals

- Characterize the role of shoreline stabilization by riprap in structuring the littoral zooplankton, macroinvertebrate, and fish communities.
- Assess zooplankton and ichthyoplankton communities at historical sampling sites and document potential changes after zebra mussel establishment.



Results

- Riprap treatment of cove shorelines yielded few detectable differences in water quality, zooplankton communities or fish communities in Rathbun Lake. However, some differences between treatment and control coves appeared to be ecologically significant.
- For zooplankton, large-bodied cladocerans such as *Daphnia*, cyclopoid and calanoid copepods, and certain rotifers such as *Hexarthra* and *Trichocerca* were more abundant in riprapped areas. In contrast, rotifers such as *Asplanchna*, *Filinia*, and *Mytilina* were less abundant.
- Specific fish species were also more abundant in

riprapped areas, including White Crappie, Black Crappie, Largemouth Bass, and Gizzard Shad.

- The zooplankton and ichthyoplankton communities did not greatly differ from historical samples collected at the same sites.

Conclusions

- Community changes in riprap-treated coves suggest that water quality (especially turbidity) may have changed locally at a level we could not detect, but which made a difference for zooplankton and fish.
- Positive effects could be seen through increases in target species (crappie), an important forage fish (gizzard shad), and water quality-sensitive zooplankton.
- The Rathbun Lake crappie fishery would likely benefit even more from additional shoreline stabilization in other strategically placed areas.
- Based on historical samples, the plankton collected during this study can likely serve as a baseline community to which future samples can be compared if zebra mussels do successfully infest Rathbun Lake at a detectable level.

