

Experimental Management of Stunted Bluegill Lakes

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Abstract.—A cooperative 8-year study was conducted by fisheries managers and researchers to evaluate three techniques for improving stunted bluegill *Lepomis macrochirus* populations in 12 southern Michigan lakes. Four other lakes served as controls. Three years of pre-treatment and 6 years of post-treatment data were collected on bluegill growth, size structure, and recruitment. The techniques tested were (a) treatment with the selective toxicant antimycin to thin-out small bluegills; (b) stocking large fingerling walleye *Stizostedion vitreum* to thin-out small bluegills by predation; and (c) catch-and-release regulations to protect predators and large bluegill. The four treatment groups, each with three replicates, were: antimycin-only, walleye-only, antimycin + walleye, and antimycin + catch-and-release.

All treatment lakes except two showed some response in bluegill growth or size structure to the treatments. In those two lakes apparently insufficient numbers of bluegill were thinned-out by antimycin treatments to elicit a response. By contrast, bluegill population characteristics of control lakes were relatively constant through time. For 2/2 antimycin-only lakes, bluegill populations improved immediately, but only slightly, and benefits lasted for 2-6 years. Populations then reverted to slow growth and sparse numbers of bluegill 7 in and larger. The antimycin effect was similar in other lakes which had been treated in combination. For 3/3 walleye-only lakes, bluegill populations improved considerably as a delayed response evident by the 5th year after stocking and persisting through the last year of study (6th). For 2/2 antimycin + walleye lakes, bluegill showed a combination of those immediate and delayed responses. Quality of those bluegill populations improved considerably with some 8-in bluegills generated. Surprisingly, bluegill responses occurred at relatively low densities of walleye. Antimycin + catch-and-release lakes (3/3) showed the best response of all, with enough large bluegill produced to merit ranks of “excellent”. However, declining bluegill growth signals that even those lakes may eventually revert.

Study results led to the recommendation that large fingerling walleye be routinely stocked as a tool for improving stunted bluegill lakes. Special regulations to limit harvest are continuing indefinitely at the three former catch-and-release lakes and results will be monitored to determine if permanent restructuring of the bluegill population and fish community have been accomplished.

Bluegill *Lepomis macrochirus* populations dominated by slow-growing and small (stunted) individuals are the most common and important management problem in inland lakes of southern