

## Evaluation of an Man-Made Walleye Spawning Reef

Wilbert C. Wagner

Michigan Department of Natural Resources  
Marquette Fisheries Research Station  
488 Cherry Creek Road  
Marquette, Michigan 49855

*Abstract.*—I assessed walleye egg deposition and juvenile production from a man-made spawning reef installed in Six Mile Lake, Michigan, in which no walleye reproduction had previously been found. In 1981-86 night observations were made at the reef and along the entire shoreline to determine the number of spawners using the reef. The maximum number of spawners per observation seen on the reef each year ranged from 20 (1983 and 1986) to 38 (1984). Walleyes also were seen on a nearby sand-detritus area, where the maximum number per observation seen each year ranged from 11 (1982) to 39 (1984). Overall, approximately equal numbers of spawners were seen at the two areas. Estimated egg deposition on the reef ranged from 22,000 (1985) to 1,082,000 (1982) and averaged 501,000. Eggs were deposited on the sand-detritus area, but no estimate was made of the total number. Juvenile walleye production was assessed by estimating the number of age-1 walleye present in the lake the following year. To assess production on the sand-detritus area in 1985 and 1986, walleyes were allowed to spawn on the reef, then the eggs were killed with Antimycin. The mean estimated number of age-1 walleyes was 2.3 times higher during years without Antimycin treatment compared to years with treatment. But the difference between non-treatment and treatment years was not statistically significant at the 95% level. Degradation of the reef by siltation was slight during its first 7 years; no settling into the sand occurred nearshore. Also estimated were the number and mean lengths of walleyes, bluegills, pumpkinseeds, and bullheads in June 1980-87; depth distribution of walleyes in June as determined by fyke nets; and changes in benthos due to the change in substrate when the reef was installed.

The walleye *Stizostedion vitreum* is one of the most desirable coolwater sport fishes. However, relatively few Michigan inland lakes support good walleye populations due to inadequate natural reproduction and recruitment (Schneider 1975). Walleye populations have been established and maintained in many lakes by planting fry or small fingerlings. Although stocking provides satisfactory fishing in some of these lakes, hatchery production is limited and expensive.

If unsuitable spawning habitat is the limiting factor for self-sustaining populations, man-made spawning reefs may be beneficial.

By 1979, fisheries managers had constructed spawning reefs in six inland lakes in Michigan's Upper Peninsula and more were contemplated. However, it was unknown if walleye spawned on these reefs or if worthwhile numbers of fry were produced. Three studies that evaluated man-made reefs