

## STUDY PERFORMANCE REPORT

State: Michigan

Project No.: F-80-R-16

Study No.: 230521

Title: Influence of lotic and nearshore habitats on fish populations in Great Lakes and inland lake ecosystems, with emphasis on walleye

Period Covered: October 1, 2014 to September 30, 2015

**Study Objectives:** (1) To assess the extent of natural reproduction of Walleye *Sander vitreus* in the Michigan waters of Green Bay via marking stocked fish with oxytetracycline (OTC) and describing their contribution to Walleye year classes; and (2) To assess the relative influence of river spawning habitat, estuary conditions, juvenile-adult growth habitat, and supplemental stocking on spawning runs of Walleye (and estimates of percent natural reproduction) in various river-influenced systems in Michigan.

**Summary:** A manuscript addressing Objective 1 was published (Zorn 2015). We amended the study to produce a publication addressing Objective 2 in 2016.

**Findings:** Job 7 was scheduled for 2014-15, and progress is reported below.

**Job 7. Publish report.**—A manuscript addressing Objective 1 was published and is included with this report. The following is a summary of how Objective 1 was addressed and my findings. I quantified recent contributions of stocked Walleye fingerlings to populations in Little Bay de Noc (LBDN) and Big Bay de Noc (BBDN) in northern Green Bay, Lake Michigan. Oxytetracycline-marked Walleye fingerlings were stocked in June, and late summer gill net and night-time boat electrofishing surveys were used to index Walleye year class abundance and collect juvenile Walleyes for hatchery mark evaluation. For the 2004 to 2009 year classes, 76% of age-0 to age-3 Walleyes examined from LBDN were of wild origin, and 62% in BBDN were naturally-reproduced fish. Survey catch rates of juvenile Walleyes were similar for stocked and non-stocked year classes. Assessment catch rates of age-1 and age-2 Walleyes differed significantly by location, with average catch rates in LBDN often being ten times higher than in BBDN. Age-0 Walleyes persisted to older ages and were well-represented at numerous sampling locations in LBDN, but few age-1 and older Walleyes were caught in BBDN. Differences in growth between hatchery-reared and wild Walleyes appeared minor compared to differences between bays. Based on stocking records and creel estimates available since 1985, the harvest rate of Walleyes was not significantly correlated to numbers of Walleyes stocked four to six years earlier in LBDN or BBDN. Despite low stocking rates, stocked fish likely provide some contribution (though not statistically significant) to Walleye year classes and the sport fishery in LBDN, but their contribution in BBDN was less apparent. Managers should weigh the trade-offs of supplemental stocking in Great Lakes waters when considering requests for hatchery Walleyes in smaller lakes and rivers, especially when stocking resources are limited.

I amended the study to produce a publication addressing Objective 2 in 2016. In addition, a study summary was prepared (Attachment 1). This progress report was completed as scheduled.

Zorn, T. G. 2015. Contribution of stocked walleyes to populations in northern Green Bay, Lake Michigan. *North American Journal of Aquaculture* 77:409-422.

Prepared by: Troy G. Zorn

Date: September 30, 2015