

Abstract Submitted
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Optimal design of artificial reefs for sturgeon¹ CODY YARBROUGH, ALINE COTEL, ABBY KLEINHEKSEL, University of Michigan — The Detroit River, part of a busy corridor between Lakes Huron and Erie, was extensively modified to create deep shipping channels, resulting in a loss of spawning habitat for lake sturgeon and other native fish (Caswell et al. 2004, Bennion and Manny 2011). Under the U.S.–Canada Great Lakes Water Quality Agreement, there are remediation plans to construct fish spawning reefs to help with historic habitat losses and degraded fish populations, specifically sturgeon. To determine optimal reef design, experimental work has been undertaken. Different sizes and shapes of reefs are tested for a given set of physical conditions, such as flow depth and flow velocity, matching the relevant dimensionless parameters dominating the flow physics. The physical conditions are matched with the natural conditions encountered in the Detroit River. Using Particle Image Velocimetry, Acoustic Doppler Velocimetry and dye studies, flow structures, vorticity and velocity gradients at selected locations have been identified and quantified to allow comparison with field observations and numerical model results. Preliminary results are helping identify the design features to be implemented in the next phase of reef construction.

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