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Title: Near Shore-Wetland Fish Movements in the Great Lakes

Authors: Lee Schoen¹ (schoe1ls@cmich.edu), Jim Student (stude1jj@cmich.edu)¹, Joel Hoffman² (Hoffman.joel@epa.gov), Michael Sierszen² (Sierszen.michael@epa.gov) and Don Uzarski¹ (uzars1dg@cmich.edu)

¹Central Michigan University. Mount Pleasant, MI 48858.

²US EPA Mid Continent Ecology Division. Duluth, MN 55804.

Abstract

Linkages of Great Lakes coastal wetlands and near shore habitats are under-explored, yet 90 species of fish are known to utilize wetlands for spawning and/or nursery habitat. The duration and frequency of wetland use for pelagic species with mobile adult stages is also poorly understood. We evaluated the utility of otolith microchemistry as a tool for reconstructing habitat use of these species. Since otoliths integrate trace elements from the surrounding water on a daily basis, this microstructural analysis requires trace element gradients between the habitats of interest. Therefore, paired wetland-near shore water samples were collected at 12 sites across Lakes Michigan and Huron. Discrimination between the wetland and near shore sample was determined for 10 of 12 sites using linear discriminant function analysis (LDFA). However, the chemistry of two wetlands could not be distinguished from that of the near shore. This was likely due to wave exposure and pelagic mixing at these fringing wetlands. Multiple response permutation procedure (MRPP) supported the grouping in LDFA. Our data suggest that otolith microchemistry can be used to estimate fish movements between wetlands and near shore areas of the Great Lake as we analyze yellow perch otoliths to quantify wetland habitat use using the same suite of trace elements.

Task: SHC 2.1.4.4.

Product: Not apply