

A STANDARDIZED METHOD FOR MONITORING THE TREATMENT AND CONTROL OF INVASIVE *PHRAGMITES AUSTRALIS* ALONG THE GREAT LAKES COASTLINE AND ASSESSING THE EFFECTS OF TREATMENT ON ECOSYSTEM BIODIVERSITY

The U-M Water Center engages researchers, practitioners, policymakers, and non-profit groups with the goal of supporting, integrating, and improving current and future restoration and protection efforts.

The grants program is an important part of the Water Center's efforts to enhance restoration and protection activities by engaging exceptional multi-sector teams in advancing evaluation and assessment of restoration projects.

FOR MORE INFORMATION

Maeghan Brass
Restoration Specialist
U-M Water Center
Phone: 734.763.0662
Email: maebrass@umich.edu

graham.umich.edu/water

INVESTIGATORS

Laura Bourgeau-Chavez, Michigan Tech Research Institute (lb Chavez@mtu.edu)
Colin Brooks, Michigan Tech Research Institute
Jason Carlson, Applied Ecological Services

ADDITIONAL CORE TEAM MEMBERS

Michigan Tech Research Institute: Anthony Landon, Amanda Grimm, Zach Laubach
Applied Ecological Services: Steve Apfelbaum, Michael McGraw

PROJECT SUMMARY

Phragmites australis is an aggressive invasive species that contributes to the degradation of overall wetland quality and ecosystem services in the Great Lakes. Significant resources are expended on its control but assessments of treatment activities, particularly at the landscape scale and with regard to native vegetation recovery, are often lacking. The purpose of this study is to develop a standardized method for monitoring the effectiveness of herbicide spraying as a management technique for controlling *Phragmites australis*.

This project will evaluate the effectiveness of past herbicide treatments on *Phragmites* and the post-treatment restoration response of natural vegetation and faunal biodiversity in two study areas: Green Bay and Saginaw Bay. Treatment effectiveness will be assessed in a nested scaling design, from field surveys to high resolution aerial imagery to moderate resolution satellite imagery. A comparison will be made of pre-treatment *Phragmites* distribution maps of the U.S. coastal Great Lakes (circa 2008-2010) with post-treatment imagery and field surveys collected by the project team. Aerial imagery will be interpreted and classified for *Phragmites* identification, effectiveness of herbicide treatment, and restored wetland function. Standardized biodiversity sampling protocols currently used by the Great Lakes Instrumentation Collaboratory will be used for continuity. Cost-efficient monitoring methods will be developed for satellite-based Landsat 8 and/or PALSAR-2 imagery, cross-walked with airborne high resolution multispectral imagery.

This project will fill a current knowledge gap regarding the effectiveness of herbicide treatment on the restoration of native wetlands. This information will be invaluable for assessment of the current typical management approaches (herbicide, burning or cutting) and the development of future management approaches. It will also provide novel analysis of post-treatment recovery of wetland ecosystems in the coastal Great Lakes by placing wetland response into the context of the greater regional landscape.



Michigan Sea Grant



Connect, engage,
revitalize...**PURE BLUE**

The Water Center is part of the University of Michigan's Graham Sustainability Institute.
It is supported by funds from the Fred A. and Barbara M. Erb Family Foundation and the University of Michigan.