A COMPREHENSIVE STRESSOR-RESPONSE MODEL TO INFORM ECOSYSTEM RESTORATIONS ACROSS THE GREAT LAKES BASIN

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

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Connect, engage, revitalize…*PURE BLUE*

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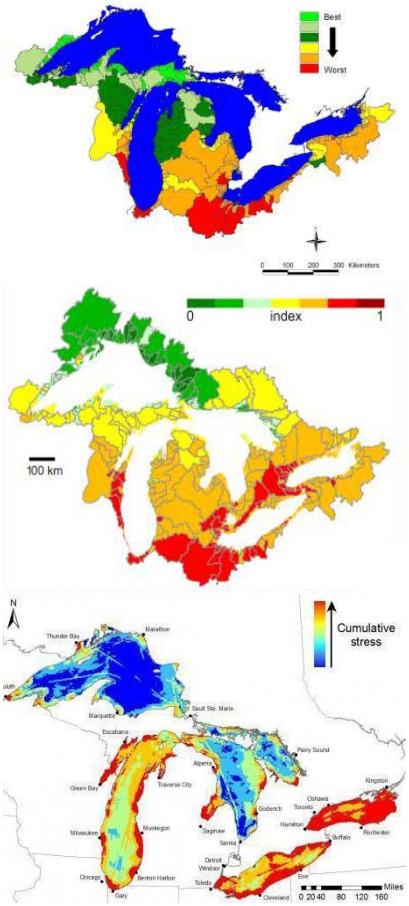
PROJECT SUMMARY

Successful restoration of the Great Lakes requires comprehensive data capable of depicting stress types and sources, enabling the prioritization, execution and evaluation of restoration actions. Essential needs are identifying causes of impairment and locating "reference" conditions that can guide restoration targets and indicate success.

Two projects have recently characterized human activities across the Great Lakes Basin. Together, these datasets can identify stress types that threaten biota anywhere in the basin.

- The *Great Lakes Environmental Indicators (GLEI)* project (and daughter product *Watershed Stressor Index - WSI*) maps and ranks risks of land-derived stressors for each watershed basin wide.
- The *Great Lakes Environmental Assessment and Mapping (GLEAM)* project depicts individual and composite threats of 34 stressors summarized for 1-km^2 pixels across the lakes.



Environmental stress mapped across the Great Lakes Basin by GLEI (US only), WSI, and GLEAM.

The project team will integrate the GLEI and GLEAM maps to produce a single composite stressor map that spans the entire basin. The team will use existing biological data, collected by a variety of partners, to validate the maps and quantify stress-response relationships. Important project outputs include:

- An evaluation of different approaches for quantifying the human disturbance gradient, ultimately determining if the simpler WSI approach performs as well as more time and data intensive GLEI and GLEAM approaches.
- A suite of indicators for nearshore and open water habitats, complementary to those developed for coastal habitats, that can be used to identify areas for restoration and protection and to evaluate remediation efforts.
- A step-by-step guidance tool to a) help users identify maps and indicators that will best address specific questions related to the type and distribution of anthropogenic stress and b) interpret that information's meaning and limitations, including uncertainty.
- Recommendations for the long-term storage, maintenance and dissemination of Great Lakes spatial and biological data.

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