

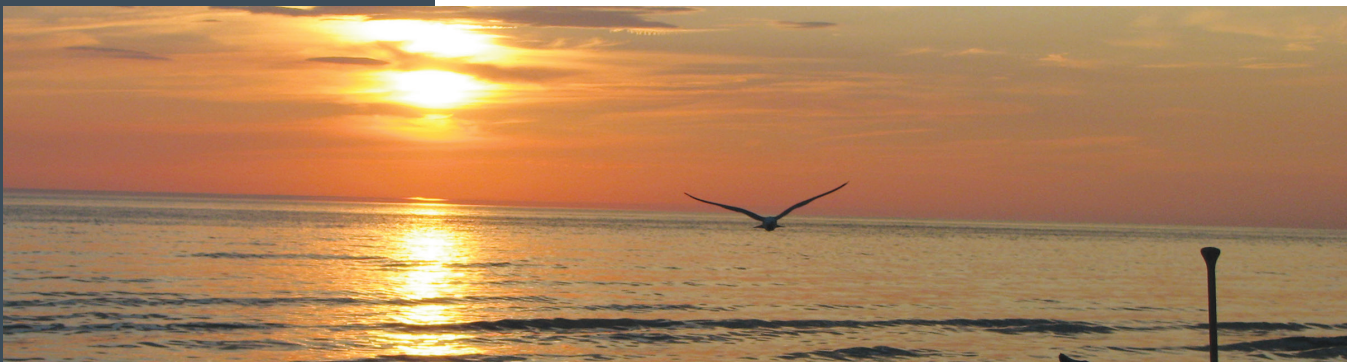
Overview

- **Purpose:** 1) Develop a set of future watershed scenarios; 2) identify planning and management actions that could be taken to address negative implications of the scenarios; and, 3) vet and validate the scenarios and recommendations.
- **Partners:** New York Sea Grant (NYSG), Northeast Regional Climate Center, U.S. Geological Survey, and Cornell University.
- **People:** NY State Lake Ontario Lakewide Action and Management Plan (LAMP) Coordinator, and various community members, environmental groups, anglers, boaters, local legislators, and local environmental agencies.
- **Impact:** A report summarizing the recommendations developed through the workshops informed the adoption of scenario planning as a technique by NYSG and the NY state government. The scenarios also contributed to capacity-building through their use in several higher education courses at Cornell University.

Under the Great Lakes Water Quality Agreement, the governments of the United States and Canada are committed to restoring and protecting the Great Lakes ecosystem through Lakewide Action and Management Plans (LAMPs) for each of the five lakes. In 2015, the Lake Ontario LAMP needed recommendations for watershed planners to consider when adapting existing and new plans to incorporate climate change. This project consisted of a series of workshops that brought together stakeholders and researchers from multiple disciplines to: 1) develop a set of future watershed scenarios; 2) identify planning and management actions that could be taken to address negative implications of the scenarios; and 3) vet and validate the scenarios and recommendations.

The Lake Ontario Scenarios project built on a prior workshop (Workshop I), held in 2012 by New York Sea Grant (NYSG), in which [four plausible climate and demographic scenarios](#), using the axes wetter-drier and population growth-loss, for the Lake Ontario watershed were developed. A 2014 GLISA Small Grant awarded to NYSG went toward three additional workshops - Workshop II (May 2015) and Workshops III A and B (November 2015) - with the goal of identifying strategies that would be effective for the region no matter which climate/growth scenario came to pass. Because the scenarios had been developed prior to awarding the small grant, there was no new science to co-produce. But in addition to funding the work, GLISA's role in the project was to compile information about the four scenarios, create a handout for workshop participants, and contribute expertise in scenario planning. Workshop II was a 2-day event and included representatives from GLISA, the Northeast Regional Climate Center, U.S. Geological Survey, Cornell University, and the NY State Lake Ontario LAMP coordinator. Participants used the four scenarios to draft policy recommendations for the future of the Lake Ontario watershed. Workshops III A and B were evening workshops with community members, environmental groups, anglers, boaters, local legislators, and local environmental agencies. Participants rotated through five stations where they had a chance to discuss the draft actions from Workshop II, add or modify actions, and vote on

A gull at sunset, Lakeview Wildlife Management Area, eastern Lake Ontario.
Image credit: Katie Maitland



the best recommendation at each station.

The main output from this project was a report summarizing the recommendations developed through the workshops, which fell into five sectors: water resource management, infrastructure, land use planning, ecosystem management, and water-dependent businesses. The most significant long-term impact to date appears to be a change in practice - the adoption of scenario planning as a technique - by NYSG and a workshop participant from NY State government. Riobart Breen, who participated in Workshop II, provided two examples of NY State agencies (with which he is associated) that applied scenario planning because of his experiences in the workshop. The NY Department of State integrated scenario planning into its Lake Ontario resilience planning initiative, Coastal Lakeshore Economy and Resiliency (CLEAR). Six years later, the NY Department of Environmental Conservation plans to use scenario planning approaches with local communities that will be developing climate adaptation and resilience plans (although work slowed due to the COVID-19 pandemic). NYSG has adopted the approach for use in its internal decision-making and continues to work with GLISA on a new scenario process for lake levels with funding from the NOAA Climate Program Office.

The scenarios may also have contributed to capacity-building through their use in several higher education courses. Project Principal Investigator Katherine Bunting-Howarth presented the scenarios and policy recommendations to the NY Great Lakes Basin Advisory Committee; she also shared the scenarios in a guest lecture to an architecture class at Cornell. Workshop participant Breen used them in a course he taught on climate adaptation and resilience policy. The project effectively built upon previous work and engaged a broad cross-section of the target region in the process of scenario planning. This not only fulfilled its intended short-term goal of informing the Lake Ontario LAMP, but it also changed long-term practice by incorporating a new and dynamic approach (i.e., scenario planning) to climate change adaptation planning.

“Working with diverse stakeholders to plan for uncertain futures is a challenging, yet rewarding process. Bringing GLISA and NY-based science together with local knowledge and ideas generates powerful actions that communities can take today to benefit tomorrow.”

– New York Sea Grant project team member

About GLISA Advancing Climate Knowledge for Adaptation and Resilience with Great Lakes Communities

Established in 2010, GLISA is a collaboration between the University of Michigan and Michigan State University, supported by the National Oceanic and Atmospheric Administration (NOAA). As one of 11 NOAA Regional Integrated Sciences and Assessments (RISA) teams, GLISA works at the boundary between climate science and decision-makers, striving to enhance Great Lakes communities' capacity to understand, plan for, and respond to climate impacts now and in the future. Our team of social and physical scientists collaborates to:

- Develop usable climate information tailored to stakeholder needs;
- Develop, implement, and evaluate resources and tools to apply climate information to decision-making;
- Facilitate collaborative activities, education, and training and support stakeholder networks; and,
- Investigate emerging climate issues and synthesize findings for practitioners.



Great Lakes Integrated Sciences + Assessments (GLISA)

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Example of GLISA's boundary chain model of stakeholder engagement for the Great Lakes Climate Adaptation Network (GLCAN). Climate information is tailored and moves through different boundary organizations (links in the chain) to connect science to users. Adapted from Lemos et al. 2014.