IAGLR
LAKES Letter

The vital role of long-term large lake research

CONTENTS

1 A decadal-scale science strategy for the Great Lakes
2 Association News
A note from the ED
New scholarships announced
Scholarship deadline coming up
Award nominations open
IAGLR 2023 updates
4 Member News
Kudos
Welcome new members
Time to renew!
New member spotlight
Ruth Duncan
Pubudu Kumarage
6 Submerged sinkholes of Lake Huron
8 Sea lamprey, science, and successful invasive species control
10 Great Lakes Benefactor Profile: Great Lakes Fishery Commission
11 20 years of Lake Sturgeon research, outreach & management on the Black River
12 Community News
Lakebed 2030 conference
Book Review: *Water, A Biography*
14 Season of Giving

A decadal-scale science strategy for the Great Lakes

by Gail Krantzberg and Val Klump



THE INCREASING STRESS on freshwater resources across other North America—prolonged droughts, wildfires, agricultural productivity losses, aquatic ecosystem collapse—has led many to label the Great Lakes region as a potential "climate refuge" almost entirely because of an abundant supply of freshwater. The population of the Great Lakes region and its reliance on the waters of these "inland seas" are only projected to increase. The use of the lakes for the transport and international trade of petrochemicals, grain harvests, coal, iron ore, and a wide variety of other commodities, along with recreation, drinking water, waste disposal, fisheries harvest and consumption, and energy production, results in an unavoidable set of complex interdependences.

This complexity and the Great Lakes' vast size and intricate governance require coordinated and integrated multinational research programs and infrastructure on par with that devoted to oceans. In 2018, the International Joint Commission's Science Advisory Board undertook development of the first-ever comprehensive decadal-scale science strategy for the Great Lakes via a series of forums, surveys, and workshops involving a broad spectrum of the scientific and research management community.

The goal was to establish a roadmap for placing the Great Lakes region on a sound scientific footing for ensuring effective management and permanent sustainability of the system. The importance of acquiring a fundamental understanding of the functioning of this unique ecosystem is hard to overstate and represents the challenge facing contemporary scientific, resource management, and political communities. Science today has numerous new tools with the potential to unlock many of the questions posed and to fill gaps in our knowledge at resolutions and precisions previously unavailable to the study of the Great Lakes. These tools and the practitioners who will wield them can usher in a renaissance of Great Lakes science with benefits that extend far beyond the next decade.

It is estimated that the additional investment needed to accomplish the goals and vision over the next decade is approximately $100 million per year, two-thirds of which is projected to be invested directly in the research enterprise via new and enhanced programs in process studies, monitoring, data management, and centers of excellence. The remaining third is directed at updating and supporting the Great Lakes research fleet, observing systems, and associated analytical capacity.

Many research initiatives will require effort that extends beyond the time frame of an individual project or even a decadal-scale commitment and will require interdisciplinary groups and networks of professionals working across institutional boundaries. Fostering our ongoing understanding of the Great Lakes would benefit from the creation of a number of permanent centers of excellence that focus on long-term, basin-scale, interdisciplinary, and cross-cutting approaches in key evolving areas of research, modeling, socioeconomic analysis, data acquisition, diversity, and coordination across knowledge systems.

continued

A NOTE FROM THE EXECUTIVE DIRECTOR



Since last August, I have had the opportunity to deep dive into the operations of IAGLR, meeting members of the board in person in Windsor, participating in the planning of the 2023 conference, and working with and learning from our amazing staff. I've benefited from past experiences with the association, both as a program committee member for the 2012 conference and as president in 2014.

Defining the role of the executive director continues to mature, as this position is new (IAGLR has had only two other EDs for a short time in the past), and this topic will be on the agenda of the next board meeting for further refinement. In this role, I hope to be helpful not only to our board, committee members, and staff by providing operational support, but to our members by expanding the reach and impact of the association, and, by extension, the value of large lake science. I am particularly interested in positioning IAGLR as a resource for decision makers looking for advice to support and develop evidence-based policies.

Of course, IAGLR's value as a resource lies in the strength and diversity of our membership. We've recently engaged with ACCESS+, an initiative funded by the National Science Foundation that seeks to extend the breadth and number of STEM professional societies engaged in addressing diversity, equity, and inclusion. IAGLR was invited to assess our own diversity efforts, and the results helped to identify areas where we need to improve. By taking part in this cohort of scientific societies, we are able to share experiences and access resources. For example, we were eligible to compete for a mini grant and were awarded $1,000, which will be applied to support our first IDEA+ scholarships (see page 3). Our engagement in these efforts is supported by our Inclusion, Diversity, Equity, and Accessibility + Committee.

In the coming weeks, we are looking forward to launching the new membership portal, as well as the call for abstracts for the annual conference. We welcome sponsors and exhibitors, as well as Great Lakes Benefactors and individuals to support our work. We are in the midst of identifying a new lead editor for the *Journal of Great Lakes Research* and hiring a new conference coordinator. This month I had the opportunity to represent IAGLR at the Canadian Science Policy Centre conference and share about how young professionals can bridge science and policy. And in December, IAGLR will be part of an invited session at the World Science Forum with our colleagues from the African Center for Aquatic Research and Education.

This combination of strengthening our internal capacity and taking advantage of external opportunities to showcase the value of large lake science makes for a promising new year!

Best wishes,

Jérôme Marty

continued from p. 1

Over the last 50 years, through efforts aligned with the 1972 Great Lakes Water Quality Agreement, Canada and the United States have dedicated billions of dollars to cleaning up legacy environmental pollution, restoring lost habitats, and dealing with stresses like invasive species. These investments have remarkably improved the integrity of the Great Lakes ecosystem, yet clearly it will take more than a decade to complete cleanup and restore degraded areas throughout the basin.

To place ourselves in a position where the need for restoration is moot, however, will require a far better understanding of how this system functions, how it will respond to inevitable changes, and what proactive response strategies will entail. For many of these new stresses, the vulnerability and threats they represent are simply not known. Adverse impacts, however, are not a given, and avoiding future restoration is unquestionably of immense economic, environmental, and social value.

The next step is to formulate and take action on a Great Lakes science plan that is transnational in scope, organization, and governance structure; promotes an integrated program of competitive, peer-reviewed science; defines the research capital investments necessary for the execution of the plan; fosters a scientific, technical, and professional workforce trained in Great Lakes natural and social science; and determines the nature of a consortium of Great Lakes centers of excellence, including the governance and management structure to establish viable and inclusive institutions. We plan to discuss these next steps at a town hall meeting at IAGLR's Conference on Great Lakes Research in Toronto next May.

Ultimately, the Great Lakes Decadal Science Strategy is not just about science. It is about ensuring and protecting the health and prosperity of the people. Unlike many freshwater reservoirs around the globe, the Great Lakes will be here 100, 500, and 1,000 years from now—a perspective that places a decadal strategy within its proper context.

Gail Krantzberg is professor of engineering and public policy at McMaster University. Val Klump is a professor emeritus in and former dean of the University of Wisconsin-Milwaukee's School of Freshwater Sciences.