IAGLR
LAKES Letter

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This issue explores the linkage between science and policy. It includes stories showing how this boundary has been bridged, where work still remains, and advice to consider in bridging that gap.

Restoring Great Lakes Areas of Concern highlights value of research

By John H. Hartig, IAGLR Great Lakes Science-Policy Advisor; Visiting Scholar, Great Lakes Institute for Environmental Research, University of Windsor



IAGLR, WITH FUNDING from the Fred A. and Barbara M. Erb Family Foundation, has been working on a 3-year project with the Aquatic Ecosystem Health and Management Society and others to evaluate what has been achieved and learned through more than 30 years of developing and implementing remedial action plans (RAPs) to restore Great Lakes Areas of Concern (AOCs) (see project timeline on page 2).

All involved are keenly aware that cleanup of AOCs has been difficult and time consuming. These communities overcame challenges in defining the scope, size, and nature of the problem and in how to even begin the work of unburdening the waters from years of abuse and neglect. They faced costly and confounding choices in tackling the legacy of toxics buried in sediments: whether and how to proceed, at what cost, and where to find the resources. In different ways and through varied approaches, they came to appreciate the importance of engaging and empowering the community in driving the cleanup. In so doing, they animated impactful processes that empowered local residents as partners.

Pollution prevention and control of contaminants at their source were priorities for all AOCs. These communities also came to incorporate in their work the restoration of habitat for fish and wildlife, resulting in a powerful and satisfying restoration of the life in and around the lakes that was such an integral part of their historic beauty and gift to human denizens. By cleaning, reclaiming, and reconnecting local communities to the waters, these communities have also catalyzed local economic development and community rebirth to the tune of hundreds of millions, even billions, of dollars of economic benefits and countless new jobs for local residents. They have also rebuilt the emotional connection—the "love of the lakes"—that is such a defining attribute for those lucky enough to live in their vicinity.

This project clearly shows the value and benefit of Great Lakes research that was the foundation of these cleanup efforts and the importance of strengthening science-policy-management linkages as part of efforts to accelerate the sustainability transition. Four examples of scientific advancements in AOCs are presented below.

Prior to the onset of RAPs in 1985, there were no comprehensive programs in Canada and the United States to assess biological impacts of contaminated sediment, estimate risk, and apply evidence-based decision making. Governments, research scientists, and RAP groups had to figure out how to make decisions on the severity and geographic extent of sediment contamination, on whether or not to remediate, on what techniques to use, and how to get the money for contaminated sediment remediation, if necessary. In many

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respects, both the Canadian and U.S. contaminated sediment assessment and remediation programs came out of the RAP program.

A second example of a scientific achievement in AOCs is quantifying habitat loss and degradation and establishing priorities for habitat rehabilitation and enhancement. Prior to the onset of RAPs, it was often said that "habitat had no home." Responsibility for habitat was fragmented among many stakeholders. RAPs made habitat a priority and challenged management agencies to address it explicitly. Restoration of fish and wildlife habitat had to be addressed in a systematic and comprehensive fashion, which was particularly challenging in urban AOCs. In many cases, RAPs helped make sure that habitat was an integral part of community master plans. Early involvement of habitat scientists in project planning and partnerships was essential to habitat project success.

A third example is quantifying the relative contribution of toxic substances from all sources in order to set management priorities. Mass balance frameworks were successfully used to quantify loadings of priority contaminants, establish baseline conditions to gauge future progress, predict benefits associated with loading reductions, and better understand ecosystem dynamics.

The final example is establishing clean up guidelines that are specific, relevant, measurable, feasible, and achievable. RAPs were a pioneer in quantifying "how clean is clean," identifying ecosystem recovery targets, and working in and through RAP institutional structures to ensure relevancy, feasibility, and achievability.

For more information about this project visit iaglr.org/aoc/.

This project is an example of how members can engage with IAGLR to expand our impact. John Hartig secured funding and led the initiative, with IAGLR acting as the fiduciary and providing oversight and communications support. This opportunity may be of special interest to members interested in science transfer and strengthening the science-policy linkage. If you're interested in leading a similar initiative, contact IAGLR President Paul Sibley, president@iaglr.org.

Project Timeline

May '17 *Restoring Great Lakes Areas of Concern* **symposium at IAGLR's Conference on Great Lakes Research**

2018 **Selected papers from symposium published in special issue of** Aquatic Ecosystem Health and Management

Aug '19 ***Great Lakes Revival*** **published featuring 10 case studies that highlight the value and benefits of science-based cleanup of polluted areas of the Great Lakes**

2020 **Monograph to be published as part of the Ecovision World Monograph Series**

2020 **Review article in** Journal of Great Lakes Research **planned**



Photo at left courtesy of Buffalo Niagara Waterkeeper; photo at right courtesy of Joe Cascio.

Buffalo River restoration has been a catalyst for creating waterfront public spaces in Buffalo, New York. These before and after photos capture the community's success story, one of 10 case studies researched during this project. Cleaning up the Buffalo River spurred improved public access to the river, which in turn contributed to waterfront economic revitalization, including more than $428 million of waterfront development between 2012 and 2018. Without the cleanup of this and other AOCs, such waterfront revitalization throughout the Great Lakes would not have been possible.