



GLEN PROGRAM PLANNING CONCEPT PAPERS

March 18, 2023

Dear Great Lakes Ecoregion Network colleagues:

As we look at GLEN's future, our program planning team has identified five potential priorities for GLEN programs and related activities. We sought input from our GLEN members and colleagues on where GLEN should focus its efforts. To help them in filling out the short survey, we sent them brief concept papers for each challenge— these are just conceptual at this stage; details will be fleshed out as we identify priorities and levels of interest among participants. The document with the GLEN Concept Papers is in this file identified as "GLEN Concept Papers – Feb 2, 2023."

The results of that survey are in another document entitled "Glen Program Plans Survey Results" (in a file entitled "GLEN Survey Results – names removed." We removed the names of those who filled out the survey for privacy reasons, but left in their locations.) This summary of results shows substantial support for working on all of the issues. Please be sure to read the suggestions and comments on each of the issue areas. This includes substantial valuable ideas.

We were delighted to see how many of you volunteered to work on the issues. Of the thirty-three people who filled out the survey, nineteen volunteered to help on one or more issue. Of course, it's not too late for you to volunteer if you haven't done so already.

Our thanks for the efforts you have made in so thoughtfully filling out the survey.

If you have any questions or additional thoughts, please contact Jane Elder (jane@janeelderstrategies.com) or John Jackson (jjackson@web.ca).

GLEN PROGRAM PLANNING CONCEPT PAPER #1:

Climate Change Impacts in the Great Lakes-St. Lawrence Region

Problem: Climate change is disrupting weather patterns in the Great Lakes-St. Lawrence region in ways that threaten the viability of cold and cool-water habitat and increase sediment and nutrient loading from intense storms. Warmer waters, can increase the occurrence and duration of algal blooms. Climate disruption is also increasing variability in lake levels, and the threat of heat and lake-effect storm events that place human communities at risk.

Need: While there are many federal, state/provincial, and local plans in various stages of development to address some of these challenges at some level, there is no coordinated climate response plan for the Great Lakes-St. Lawrence ecoregion that focusses on ecological and human communities across the watersheds. While many impacts will occur as local disasters, local solutions alone will be insufficient to safeguard the system.

Proposed Outcome: GLEN recommends **establishing a transnational** (across the U.S., Canadian, and Indigenous nations in the region) **coordinating body to develop a shared ecoregional climate change resilience and adaptation strategy** to optimize protection for the chemical, physical and biological integrity of the Great Lakes and the St. Lawrence basins and to safeguard human communities in the region. The body would work with existing agencies and organizations to provide guidance, technical support, and access to science for local, state/provincial, regional, and federal plans, and identify priority needs and shared challenges across the basin. Mechanisms to establish this body might include a new annex in the GLWQA or a new trans-border body, or a formal partnership among existing regional bodies.

Proposed GLEN activities: Develop a working group on Great Lakes-St. Lawrence climate strategies; Host a series of webinars on system-wide impacts that require trans-border coordinated strategies; convene a series of workshops and/or a leadership conference to develop recommendations, engage the Parties and regional coordination bodies to establish a new coordinating body; set parameters for plans, coordinating mechanisms, benchmarks, and accountability.

GLEN's Capacity to work on this issue: GLEN members have strong networks in transborder collaboration, experience with the strengths and limitations of bi-national bodies that coordinate Great Lakes policy, and expertise in local and regional climate change impacts in the region and emerging adaptation, resilience, and mitigation strategies in the region.

GLEN PROGRAM PLANNING CONCEPT PAPER #2

Habitat and biodiversity (biological integrity) in the Great Lakes-St. Lawrence Region

Problem: In spite of more than 50 years of efforts, habitat loss, driven by development or degradation (from food web contamination by toxic substances, nutrient pollution, pathogens, sedimentation, invasive species, and disruptive climate change) continues to take a toll on the diversity and resilience of native species in the Great Lakes and St. Lawrence ecoregions. Healthy biodiversity is integral to healthy aquatic and terrestrial ecosystems, including their capacity to sustain water supplies and water quality. Although there are some coordinating mechanisms, e.g. Great Lakes Fishery Commission, and the U.S.-Canada-Mexico Commission for Environmental Cooperation, neither body has the breadth nor focus needed to drive coordinated strategies for broad biodiversity protection across the region.

Need: Current regional cooperation on fisheries, research, and invasive species, near-term and long-term efforts to restore biological integrity are important but inadequate, and objectives are complicated by the presence of invasive species and climate disruption. There has been some progress in addressing food web contamination issues from endocrine disruptors and other threats,, but we are likely to live with steady state or incremental reductions for decades to come. Critical habitat in the region is well-documented but we lack a timeline and clear protection/restoration objectives and legislative and administrative mandates to drive action.

Proposed Outcome: An ecoregional biological integrity plan with clear objectives and levels of commitment from public and private entities in the region. Inspired by global initiatives to protect 30% of terrestrial Earth in conservation lands by 2030 to reduce extinction rates and buffer climate impacts, we recommend an intense regional effort to protect and restore critical Great Lakes-St. Lawrence habitats from headwaters to riparian areas to coastal habitat, as well as inland wetlands and forested lands (especially in the Lake Superior basin) that can serve as important natural carbon sinks This goal would require transborder cooperation and shared objectives, and likely public-private partnerships to identify and protect areas that can 1) optimize refuge areas for native and migratory species, including cold-water and cool-water species, 2) transitional habitat and species where climatic conditions are unlikely to be able to support native species, 3) fisheries management that gives priority to native species over introduced species 4) urban and suburban “greening projects” from urban forestry to community gardens to reduce heat-island effect and provide micro-habitats for pollinators, birds, and other wildlife.

Proposed GLEN activities: Convene relevant, agencies, NGOs, Indigenous leaders, academics and others for a Great Lakes biodiversity summit to identify state of knowledge and practice, needs, opportunities, goals, priorities, timelines and institutional commitments. Establish

working teams to pursue shared benchmarks, metrics and indicators to measure progress, and work to secure public and private funding to support a ten-year initiative.

GLEN capacities: Several GLEN leaders have extensive background in biodiversity and habitat conservation in the Great Lakes-St. Lawrence connection and familiarity with related challenges such as water quality and climate change and could form the core of a working group.

GLEN PROGRAM PLANNING CONCEPT PAPER #3

Agricultural policy reform to protect water quality, habitat, and climate resilience

Problem: Modern industrial agriculture practices remain the primary sources of Great Lakes nutrient pollution. Erosion and runoff from large-scale crop production (primarily for livestock feed or ethanol) pollutes tributaries throughout the Great Lakes ecoregion with sediments, bacteria, pesticides, and fertilizers. High fertilizer and pesticide inputs and annual cultivation practices also degrade soil productivity, and large-scale crop operations can degrade or destroy wetlands, woodlands, or perennial grasslands—natural habitats that play a vital role in water filtration and carbon. Large-scale animal operations concentrate animal wastes, increase risk for potential disease outbreaks, and carry high risks for soil contamination, including heavy metals and pathogens. They also pose contamination risks for local surface and groundwater contamination in the Great Lakes basins.

Voluntary programs have failed to meet ecological goals and will continue to, especially in the U.S., but also in Canada where provinces have jurisdiction over farming practices. The U.S. Clean Water Act lacks authority to regulate most agricultural pollution sources. Nutrient pollution (especially phosphorus) triggers algal blooms and the conditions that enable cyanobacteria that produces toxic mycrosistin and other toxin (blue-green algae) outbreaks, posing serious risks for drinking water supplies and recreational uses. Algal blooms can also lead to oxygen depletion, degrading habitat—sometimes creating dead zones that cannot support aquatic life. Bacteria and pathogens from manure (as well as septic systems) can make waters unsafe for swimming. While well-documented in the Great Lakes, agricultural pollution is a global problem that needs 21st-Century solutions.

Although many farmers have shifted practices to reduce erosion and promote soil health (e.g., no-till, cover crops, organic farming, crop diversification, etc.) they lack sufficient institutional and economic supports. Conventional practices focused on export markets still dominate in the Great Lakes region.

Need: After 50 years of attempting to achieve clean water with voluntary producer actions, we need to shift strategies to tackle the root causes of the scale and kind of agricultural pollution in the Great Lakes region. Reforms should include economic support in the U.S. and Canada for alternatives to conventional commodity production for global markets, including incentivizing diverse food for regional and national markets appropriate to the assimilative capacity of the region's soils and aquatic systems. In the U.S. these shifts are nearly impossible without reforms in the U.S. Farm Bill. In addition, the U.S. needs a new regulatory framework for agricultural water pollution. The long-term arc of Farm Bill and Clean Water Act reforms requires that we take interim steps, including stronger cooperation and shared goals between EPA, state

environmental and agricultural agencies and farm operations to target the largest sources, develop aggressive reduction strategies, measure reductions, and report findings.

Outcomes: Amend the U.S. Clean Water Act to regulate agricultural water pollution (this is a long-term goal—no hope for near-term meaningful change in divided Congress and hostile courts). Reform the U.S. Farm Bill, starting in 2023, to create incentives that promote alternatives to commodity exports, including perennial crops, pastured dairy, local food production, organic and regenerative farming, and small and mid-sized animal production operations, and promote similar alternatives in the provincial governments of Ontario and Quebec towards developing and establishing new models that promote better farming practices, reduce chemical inputs, and promote water quality and healthy habitat.

Proposed GLEN activities: Host a transnational workshop on agricultural policy (in both the U.S. and Canada) and Great Lakes implications this spring/summer (before the U.S. Congress takes up the 2023 Farm Bill.) Develop position paper on the Farm Bill and hold a Zoom briefing; ally with other environmental groups working on the 2023 Farm Bill.

GLEN's capacities relevant to this topic: GLEN has several leaders with deep experience and strong networks in working on pollution from agricultural sources, including nutrients that drive algal blooms, and bacteria from animal operations who could form the core of a working group.

Precautionary strategies for persistent toxic pollutants and radionuclides

Problem: Despite the commitment of the GLWQA to zero discharge and virtual elimination of persistent toxic substances, their presence and accumulation in our water bodies continues to threaten all life within the ecoregion. These harmful substances, such as endocrine disruptors, damage the ecosystem and have devastating impacts on the health of wildlife and humans. Toxic contamination also results in restrictions on drinking water and on the consumption of fish and wildlife, which cause negative impacts, particularly to Indigenous communities, communities of colour and low-income people.

Need: All persistent toxic substances need to be eliminated from the Great Lakes and St. Lawrence ecoregion through an anticipatory approach to ensure that they do not continue to pose a threat to all life. The approaches that the Parties to the GLWQA have taken have been reactive, not precautionary, and are ineffective in ever meeting the goals of zero discharge and virtual elimination of persistent toxic substances. There is a pressing need to ban more of these substances, substitute their use with non-toxic compounds, and to remove, treat and contain toxic substances already in our lakes and rivers. The small number of chemicals of concern defined by government needs to be expanded to include radionuclides as well as emerging toxic substances and microplastics.

Proposed outcome: GLEN recommends that the Parties measure the extent to which the principles of zero discharge and virtual elimination are applied in the Great Lakes and St. Lawrence basin and issue an annual report on their success in preventing new discharges and removing old accumulations. Within this strategy, focus would be on product or process redesign to eliminate the use of toxic substances as well as to prevent new toxic substances being used as substitutes for banned pollutants. In addition, the small number of chemicals of concern defined by government should be expanded to include radionuclides as well as emerging toxic substances and microplastics. There is also an urgent need to assess the adequacy of methods used for contaminated sediments, particularly over the long term, given evidence that sediment control mechanisms can become on-going leaking sources of persistent toxic substances to the ecoregion over time.

Proposed GLEN activities: Develop a strategy with other ENGOs, Indigenous communities, health organizations and community leaders to lobby the Parties as well as state, provincial and municipal governments to enact zero discharge and virtual elimination through changes to public policy. Mechanisms will include new legislation and regulations as well as changes in current legislation to ensure that these principles are embedded in approvals made at all levels of government.

GLEN's capacities relevant to this topic: Many of GLEN's members have worked on zero discharge and virtual elimination and persistent toxic substances for decades, and are on the leading edge in thinking through solutions to these issues.

GLEN Program Planning Concept Paper #5

Landscape Integrity: Physical integrity in Great Lakes watersheds and waters

Problem: The 1978 Agreement called for restoring and maintaining the chemical, physical and biological integrity of Great Lakes waters, but physical integrity has received limited attention in the basin. At the landscape scale, wetland and riparian degradation, and hydrological changes have reduced natural filtration, increased “flashiness” (and thus polluted runoff) from rain events, and compromised habitat. Dredging, in-lake and near-shore dredge-disposal facilities, and shoreline hardening have also changed physical integrity of near-shore waters. At many industrial sites, river mouths and harbor bottoms, legacy pollutants have contaminated soil and sediment, most notably in the 43 Areas of Concern (AOCs). Some remediation technologies have caused loss of benthic habitat and species from dredging and dredge disposal sites.

Land-use planning has lost momentum in recent decades while development pressure threatens riparian and shoreline areas. With increasing climate change impacts, the region anticipates new development pressures from climate migration. The Great Lakes ecoregion lacks a cohesive strategy for landscape-based strategies that can enhance water quality and biological health while also supporting human communities in the Great Lakes basin. Restoration work to address historic damage across the ecoregion has made significant strides, from dam removals to “re-meandering” rivers, but these efforts are not necessarily integrated with larger strategies for contemporary and emerging threats.

For AOCs/ZIPs in particular, post-delisting re-development can pose the threat of new ecological damage, lost opportunities for ecological resilience, and more burdens on local communities.

Need: The region needs greater commitments and action to restore and protect high-functioning terrestrial and aquatic ecological systems. Expanding and integrating current restoration activities with strategies that also address the interrelated pressures of climate instability and private monetization of recovering shorelines is essential to ecological health and to life after delisting. Near-term priorities include:

- Establishing physical integrity priorities in the Great Lakes ecoregion, and then identifying critical existing (and potential) conservation lands to meet the global 30 by 30 challenge to strengthen ecological resilience for the ecoregion.
- Investments in ecological and community resilience of de-listed AOC/ZIP sites and other distressed landscapes
- Oversight and support for long-term management, and local government involvement in maintaining AOCs/ ZIPs.

Outcomes: Landscape-scale

1. **A regional land and waterscape resilience plan** identifying priority habitats, ecosystem functions and sites, ownership profiles, conservation status, and

opportunities for optimizing ecological health and resilience, (e.g., dam removal, native species restoration, connectivity corridors between isolated sites, etc.).

2. **New indicators for physical integrity** (landscape, tributary and in-lake) that support biological and chemical integrity within specific types of physical systems and habitats. An example for stream systems includes: floodplain connectivity, upstream-downstream connectivity, surface-groundwater connectivity, landscape condition, and the amount and kinds of land covers surrounding a stream. Ecological function indicator examples include water infiltration capacity, natural sediment traps, biological diversity, functional habitat.

3. **Potentially a new physical integrity annex to the GLWQA** and/or local, state, provincial and/or federal legislation to enforce actions to accomplish its purpose.

Outcomes: AOCs/ZIPs

1. Funding and technical support for local restoration/regeneration objectives, to transition de-listed sites to “Areas of Protection” [Technical support needs include hydrologists, fluvial geomorphologists, limnologists with expertise in benthic organisms and local traditional ecological knowledge.]
2. Regional guidance to develop state/provincial and/or site-specific objectives for maintaining recovered sites including development restrictions/criteria, publicly shared research on existing habitats, species, natural water flows, and local community uses and priorities.
3. An IJC or Parties-funded analysis of long-term physical and biological impacts of contaminated sediment remediation methods, including effectiveness, trade-offs, lessons learned from completed delisting projects and alternatives to dredging and to shoreline disposal facilities.

Proposed GLEN activities: We will consult with major Great Lakes NGOs, Indigenous communities, university researchers and government leaders to evaluate what has worked, what hasn’t and what is needed now to restore and maintain Great Lakes ecosystem integrity. Our role would be to help decision-makers fully understand how a physical integrity strategy helps them support the health and sustainability of Great Lakes assets.

GLEN Capacities: GLEN has an informal network of citizen groups and allies who have been involved in restoring and maintaining Great Lakes AOCs and St. Lawrence River ZIPs for the past 30-35 years. Most of these groups, even in delisted AOCs, remain committed to long-term restoration and protection of these areas. Some engage in lawsuits against developers and local governments over proposed projects that would jeopardize remediation successes. GLEN also has members with experience in watershed management, habitat restoration, and consensus-building among diverse decision-makers (Great Lakes Regional Collaboration). Our history and our dedication to strengthening Great Lakes advocacy through engaging and expanding this network is our greatest leverage.