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The Great Lakes, A 35th Year Anniversary: Time to Look Forward

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The year 2007 marks the 35th anniversary of the Canada-US Great Lakes Water Quality Agreement (GLWQA). On April 15, 1972, Prime Minister Pierre Trudeau and President Richard Nixon signed the GLWQA. This Agreement expresses the commitment of Canada and the United States to restore and maintain the chemical, physical and biological integrity of the waters of the Great Lakes Basin Ecosystem. The GLWQA has had substantial influence on the cleanup and restoration of the region. The progress made since 1972 is evidenced by the documentation by scientists of the presence of spawning lake whitefish, the resurgence of cormorant population, the rediscovery of sturgeon populations, and the return of nesting and fledging bald eagles. Threats to the Great Lakes in the face of climate change, invasive species, habitat loss, and more, demand a renewal and revitalization of the GLWQA. The time is now to renovate the binational promises.

At the turn of the 20th century, reasonable people recognized that water does not abide by politics. The Boundary Waters Treaty of 1909, signed by Canada and United States was the first attempt to protect the shared waters of the two nations. It created an independent third party with a mandate to help prevent and solve disputes between the two nations. The International Joint Commission (IJC) has been a global archetype for cooperative problem solving of transboundary pollution between Canada and the United States. Since the 1909 Boundary Waters Treaty, the IJC has used experts, serving in their personal and professional capacities, to undertake independent fact-finding and provide independent advice for problem resolution. The conviction of those who negotiated the Boundary Waters Treaty was that solutions to the boundary problems should be based on deliberations of a permanent binational and equal institution, rather than through bilateral negotiations of diplomacy. The achievement of the common good as a basis for consensus has been the goal of the Commission for nearly a century.

A major achievement of the Commission was the study it undertook in 1960 and which led to the signing in 1972 of the Great Lakes Water Quality Agreement (GLWQA) (Canada-United States 1972). These IJC activities were a result of the highly influential 1964 request by Canada and the United States (termed a "reference") to study pollution in Lake Erie and elsewhere in the lower lakes (LeMarquand & Scott, 1980). Scientists associated with the IJC found that excessive phosphorus loads from anthropogenic sources were resulting in severe eutrophication of Lake Erie and Lake Ontario (Vollenweider, 1968). The 1964 reference induced the creation of the GLWQA, one of the most significant contributions of the IJC to Great Lakes revitalization in its history (Krantzberg, Bratzel, & McDonald, 2006).

This year marks the 35th Anniversary of the Canada-US Great Lakes Water Quality Agreement (GLWQA). On April 15, 1972, Prime Minister Pierre Trudeau and President Richard Nixon met to sign the GLWQA. This Agreement expresses the commitment of Canada and the United States to restore and maintain the chemical, physical and biological integrity of the waters of the Great Lakes Basin Ecosystem. The GLWQA has had substantial influence on the cleanup and restoration of the region. The progress made since 1972 is evidenced by the documentation by scientists in 2005 (first time since 1916), 2006, and 2007 of the presence of spawning lake whitefish and eggs in the Detroit River, the resurgence of cormorant populations, the rediscovery of sturgeon populations, and the return of nesting and fledging bald eagles.

For 35 years, the Great Lakes regime has looked to the GLWQA as the mechanims for binational cooperation to keep our lakes, rivers, streams and coasts safe for human and nonhuman uses. The GLWQA is responsible for many important advances, including billions of dollars spent by governments to improve water quality, protect and rehabilitate habitat and biodiversity, and address water infrastructure needs.

It is worth celebrating tremendous progress achieved under the GLWQA, while at the same time being mindful of Great Lakes scientists that warn us this vast water body is in peril, and could be approaching a tipping point. Bails et al. (2005) remark:

> There is widespread agreement that the Great Lakes presently are exhibiting symptoms of extreme stress from a combination of sources that include toxic contaminants, invasive species, nutrient loading, shoreline and upland land use changes, and hydrologic modifications. Many of these sources of stress and others have been impacting the lakes for over a century. These adverse impacts have appeared gradually over time, often in nearshore areas, in the shallower portions of the system, and in specific fish populations. Factors such as the size of the lakes, the time delay between the introduction of stress and subsequent impacts, the temporary recovery of some portions of the ecosystem, and failure to understand the ecosystem-level disruptions caused by the combination of multiple stresses have led to the false assumption that the Great Lakes ecosystem is healthy and resilient.(p.1)

While we have cause to celebrate a 35 year anniversary of a landmark agreement, we need to focus forward to the next 35 years, at least. Article X of the GLWQA Agreement states that the Parties shall conduct a comprehensive review of the operation and effectiveness of this Agreement following every third biennial report of the [International Joint] Commission (IJC). The IJC's 12th Biennial Report, released in 2004, triggered this important science, program and policy review which commenced May 2006 and concluded in October 2007. A decision must now be made whether to revise the GLWQA based on the outcome of the review, or leave the Agreement unchanged. This is a watershed moment for the Great Lakes, with the opportunity to renovate a shared promise to improve and protect the Great Lakes Basin ecosystem.

The need to revise the GLWQA is clear. Presently, historical sources of stress have combined with new ones to reach, as pointed out by the authors of the Prescription for the Great Lakes (Bails et al., 2005), a point at which ecosystem-level changes occur rapidly and unexpectedly, a tipping point, where the traditional relationships between sources of stress and the expected ecosystem response break down. A clear example of ecosystem break down is the reappearance of a zone of complete oxygen depletion in the western and central basins of Lake Erie; a phenomenon so complex, teams of government and academic researchers still have not resolved the cause. Another example of pending catastrophic change is the rapid decline and loss of the once abundant amphipod *Diporeia* in sediment of much of Lake Michigan and Lakes Huron and Erie, with dire implications for fisheries and food webs.

As we look out at the next 35 years, there is no question that the biggest threat to the Great Lakes basin ecosystem is climate change. Most climate change impact assessments project warmer air and water temperatures, changes in the amount, form and timing of precipitation, less

ice cover and a shorter ice season, lower net basin supplies and reductions in water levels in the Great Lakes Basin (Lofgren et al., 2002; Croley, 2003; Mortsch et al., 2000; WQB 2003). We must adapt the tools that we have, like the GLWQA, to address this and other emerging threats. The GLWQA should be revised to approach solutions using integrated watershed resource planning and implementation. The growing threats to the Great Lakes are due to cumulative insults to our landscapes.

Under current governance regime, the Great Lakes and St. Lawrence region is one where people, the environment and the economy are at increasing risk. The impediments to more integrated environmental regulation remain considerable and include the enduring single-medium approach to pollution control of federal programs and limitations of state, provincial, municipal or regional innovation. Nonetheless, regulatory integration need not be dismissed as a theoretical pleasantry that is politically unattainable. The inability to stem the re-emergence of threats to the integrity of the ecosystem is symptomatic of the accountability complex for the Great Lakes basin ecosystem. A move toward greater integration in the Basin can be generated if scientists, policy professionals and political leaders increasingly recognize the limitations of current approaches and are willing to devise binational alternatives (Krantzberg, 2007).

If the GLWQA is to fully embody the ecosystem approach, the governing responsibilities and relationships need to change. A shared vision that evolves through the review of the GLWQA is a way to align roles and responsibility and clarify accountability and leadership.

The Report containing the review findings will be transmitted to the Governments of Canada and the United States. There is no promise of transparency wherein other orders of government, the public, and other stakeholders will be engaged in "the next steps" as yet undefined, of the Agreement Review. Perhaps there will be engagement, for to reinvigorate the revitalization and protection of the Great Lakes requires inclusive participation by those who share a common vision and work to a common purpose. To abandon the populace in this watershed potential for Great Lakes renewal is to lose an unprecedented opportunity.

Optimism that the Great Lakes will be revitalized under a revised and contemporary GLWQA will result if the Parties facilitate the emergence of a shared vision supported by the Great Lakes community, are methodical in reviewing and renovating the GLWQA, are transparent in reiterations, and are bold in thinking about new collaborative approaches to protect and enhance this global treasure. This is a lengthy and difficult journey. On this 35th anniversary of the GLWQA, if we take our time to get it right, we can make the Lakes Great.

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