

# **North America's "Freshwater Seas": Making the Connection Between Science, Policy and Management**

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Good evening! It's both an honor and a pleasure to address this annual gathering of the International Association for Great Lakes Research. I've had the good fortune to have attended many of these events over the years. And, it's clear that this association – since its establishment almost 40 years ago – has both witnessed and helped shape some of the most innovative approaches to freshwater research and basin governance on the face of the earth.

Innovation – and progress – as well all know, are seldom achieved as quickly as we'd prefer. Marcel Cadieux, former Canadian Ambassador to the United States, once described the evolution of Great Lakes governance as a "glacial movement," and I suspect most of us would agree with that assessment.

If we step back and take an historical perspective, however, the fact that progress is being made is undeniable. Over the course of the last several decades, this region has seen some profound changes in institutional arrangements for basin governance. It has seen advances in monitoring and surveillance capabilities to document and respond to ecosystem changes and stresses. It has seen scientific discoveries and applications that have led to dramatic changes in our approach to resource management. It has seen some remarkable improvements in the health of the ecosystem, though much remains to be done. And, over the decades this association, as the preeminent body of its kind in North America, has nurtured much of this evolution.

I received my invitation to speak at this banquet several months ago, and I very quickly settled upon an appropriate title, "North America's "Freshwater Seas": Making the Connection Between Science, Policy and Management."

And, while the title remains relevant to my remarks this evening, I must admit that the message I planned to deliver has evolved considerably over these last few months. Over this period, it's clear that the lakes have been "re-discovered" by our elected officials and policymakers. Proposals for new laws, policies, programs, institutions and funding arrangements are swirling around us, and I suspect we'll see many more such proposals in the months to come.

My message this evening is a simple one. We are in the midst of profound changes in Great Lakes governance. The way we do business ten years from now – even five years from now – is likely to be

fundamentally different from the way we do business today. But change does not necessarily infer progress. The key – the linchpin – to progress is to ensure that all management decisions – and the laws, policies, programs and institutions that support those decisions – are based upon sound and objective science. And that's where your work – as individual scientists and as an association – has come to play a critically important role.

To advance this plea for a stronger connection between science, policy and management, I will focus my remarks this evening in four areas.

- ▶ First, I will briefly introduce you to the role and responsibility of my agency, the Great Lakes Commission. For almost fifty years, we've labored to promote informed public policy decisions on a range of issues and, consequently, the interface between science, policy and management has been a central focus.
- ▶ Second, I'll try to capture – in just a few minutes time – a sense of the flurry of regional and national attention the Lakes have garnered in recent years and, even more so, in recent months. In so doing, I'll focus on the implications of this for Great Lakes research.
- ▶ Third, my intent is to be very practical and pragmatic. I'll offer, for your consideration, my personal observations on a series of specific actions that can and must be taken if we are to move the notion of a stronger linkage between science, policy and management from concept to application.
- ▶ Fourth, and finally, I'll share a few thoughts about the role of science in the future of Great Lakes governance and, hopefully, stimulate some additional thinking – and action – in that regard.

By way of preface, I will state the obvious and say that there has been an historic disconnect between the science, policy and management communities – a phenomenon that is most certainly not limited to the Great Lakes-St. Lawrence River region. Rather, this disconnect is embedded in – and exacerbated by – the fundamental differences in the mind set, motivation, training and perspective of the different disciplines engaged in resource management.

Rich Thomas, former director of the Great Lakes Regional Office of the International Joint Commission, wrote a seminal paper on this subject almost 30 years ago. It's titled "Problems of Organization in the Science, Politics and Management of Water." It is literally the first article I have my environmental policy students read each semester. In this article, he profiles – and then contrasts – what he terms the "normal characteristics" of a scientist, a politician and a bureaucrat. (The legitimacy of his thesis of course, is based on the assumption that there is such a thing as a "normal" scientist, politician or bureaucrat. Perhaps he should have used the term "typical.") In any event, he makes a convincing argument that their respective characteristics are, at best, separate and distinct and, at worst, fundamentally incompatible. He also relates this to what he calls the "institutional life cycle" and argues that, due to these differences, management institutions ultimately evolve into bureaucratic entities where scientists and scientific support are little more than afterthoughts.

Thomas' arguments, by his own admission, paint a rather gloomy picture of the prospect of science, policy and management working in harmony. And, while I'm not nearly as pessimistic on the subject, he does raise some very legitimate points about the challenge of basin governance in light of a very complex array of policymakers, opinion leaders and associated viewpoints. Add to this an equally complex array of issues – and the laws, policies, programs and institutions in place to address them – and the governance challenges becomes both clearer and more imposing.

David Allee of Cornell University once stated that “the complexity of the hydrology of a river basin is exceeded only by the complexity of the institutional arrangements established to manage it.” There’s much truth to this statement. And, it’s also a very appropriate segue to my first objective this evening: a brief introduction to the Great Lakes Commission. It’s an organization that was formed for the very purpose of convening and harmonizing many voices, many disciplines, and many points of view.

The Commission was established just shy of five decades ago through the initiative of the Great Lakes governors and associated action of the state legislatures. At the time, the region was experiencing some particularly profound environmental and economic challenges and opportunities, and the states realized they had no mechanism to discuss and collectively act on such issues.

The outcome of this realization was the Great Lakes Basin Compact of 1955, an interstate agreement founded in state and federal law that established the Commission and charged it with promoting the “orderly, integrated, and comprehensive development, use and conservation of the water resources of the Great Lakes Basin.” The compact specifically provides the Commission with research, advisory and recommendatory authorities on matters that include resource management, environmental protection, transportation and sustainable development. Members include senior agency officials, legislators and governor appointees. And, for the last several years, Ontario and Québec have had associate member status and an active role in all initiatives.

The Commission’s focus over the years has evolved with the interests of its membership, but science-based support for management decisions has always been a priority. And, over time, data and information – and what we do with it – has become our lifeblood. We have no regulatory authority or enforcement powers, and we can’t compel our members – or anyone else for that matter – to act in a certain way. We rely entirely upon our power of persuasion – as an honest broker of research, policy analysis and management innovation – to effect change. Our goal is to place data, information and analysis on the decisionmaking table, pull up a chair for every interested party, and facilitate an informed outcome, whether it be consensus or a clear articulation of differing views.

This honest broker function is no simple task, particularly in an era where legitimate research is too often obfuscated by what is popularly referred to as junk science or advocacy science, a form of “research” that conveniently spins the facts to suit predetermined outcomes. Even Albert Einstein once said – tongue-in-cheek I hope – “If the facts don’t fit the theory, change the facts.”

In recent years, the Commission’s leadership has established a niche for the organization at the crossroads of science, policy and management. Water withdrawal and use . . . air quality . . . land use . . . wetlands health . . . maritime transportation . . . observing systems. . . aquatic invasive species . . . oil and hazardous material spills. These are but a few areas where we are working to strengthen science/policy linkages in the region.

I’d also note that we are working hard to build capacity in the broad area of science-based decision support. And, we’re aggressively pursuing some innovative partnerships – with government and academia – to accomplish this.

It really is an exciting time for Great Lakes governance and a time for opportunities to strengthen the science/policy /management linkage. As my second of four objectives this evening, I’ll take a few minutes to speak to the flurry of activity – most notably in recent months – this is thrusting the Great Lakes – at long last – into a much more prominent spotlight.

The glacial movement of Great Lakes governance – as I referred to earlier – appears to be accelerating, and accelerating quickly. For decades, there have been periodic calls for a concerted focus on ecosystem

restoration, protection and sustainable use. And, unquestionably, there has been progress, albeit in more of an incremental, piecemeal approach than many would prefer.

Only in recent years, however, have the Lakes begun to enjoy the national and international attention they have long deserved yet never received. Consider, for example, this selective litany of developments:

- ▶ The U.S. General Accounting Office has taken an unprecedented interest in federal and regional Great Lakes programs and, more generally, intergovernmental coordination and the delivery of science. Just last Friday, for example, GAO presented testimony titled. “A Comprehensive Strategy and Monitoring System Are Needed to Achieve Restoration Goals.”
- ▶ Large scale ecosystem restoration has become a rallying cry and unifying force for otherwise disparate sectors of the Great Lakes community.
- ▶ Legislation calling for a multibillion dollar infusion of funds for ecosystem restoration has been introduced in both Houses of the U.S. Congress, and other complementary bills are now in the hopper, with more on the way.
- ▶ Great Lakes agencies and organizations – both within and outside government – have rediscovered the art of strategic planning and are feverishly developing their vision for the Lakes and associated priority actions. And, there are literally hundreds of restoration-related plans already on the books – most on a geographically limited or topic specific basis.
- ▶ The Great Lakes Governors, earlier this month, conveyed to Congress a set of recommended short-term initiatives to advance a set of nine restoration priorities.
- ▶ The U.S. Commission on Ocean Policy just last month released its report and, in so doing, has recognized our nation’s “fourth seacoast” as an element of national policy.
- ▶ Even more recently, the President has issued an Executive Order formally recognizing our lakes as a “national treasure” and establishing a cabinet level task force to strengthen cooperation and collaboration among U.S. federal agencies and, more generally, with the range of U.S. and Canadian interests.
- ▶ Add to this the “Great Lakes Renewal” focus in Canada, as well as other efforts that are raising the Great Lakes profile, such as the national invasive species strategy.

Significantly, this is but a sampling of recent developments that suggest that the stage is being set for a new phase in the evolution of basin governance.

Change is certainly in the air, but will progress result as well? There is a lot of heat being generated but will there be light? Will our lakes be cleaner, healthier and more sustainable? These questions are the subject of some debate at present. The optimists tell us that we’re getting our house in order – new institutions, new plans and new studies will make us more effective and efficient stewards of the resource. The pessimists tell us that we already have enough institutions and plans and studies – perhaps too many. What we need is money and action, and lots of it. I suspect there’s merit in both perspectives.

We all know that grand pronouncements, bold plans, new laws and innovative institutions do not necessarily translate into cleaner, healthier and more sustainable lakes. They are but a means to an end. And, without

exception, the value and impact of these initiatives – singly or collectively – will be determined by a single factor: the extent to which they are based upon, and apply, sound science .

As members of the research community, we need to recognize this as a critical factor. Has the research community been adequately involved in the development of legislative and policy initiatives? Are the seemingly endless lists of restoration and protection priorities grounded in sound science? Have we adequately defined the term “restoration” from a scientific standpoint? Do we have science-based benchmarks to tell us where we need to go and when – and how – we will get there? Do we have the research base – and the requisite capabilities – to deliver on our policy promises? And, do the multitude of current proposals for new planning councils, committees and task forces regard science as a centerpiece or a sidelight? These are all very relevant – and very fair questions. And, we need to “get to yes” on all of them if true progress is to be realized.

A character in the cartoon strip Pogo once lamented the challenge of “insurmountable opportunities.” This is a conclusion that one might logically reach in light of the science/policy/management linkage and the litany of new governance initiatives now being vetted.

I would argue, however, that the opportunities are imposing, but far from insurmountable. To address my third objective this evening, I offer, for your consideration, my personal thoughts on a series of six specific actions that might be taken to strengthen the science/policy linkage during this time of accelerated evolution in Great Lakes governance. Each of these actions is tied to a recent or ongoing policy initiative.

The first such opportunity is the impending review, and prospective revision, of the U.S. - Canada Great Lakes Water Quality Agreement. For more than 30 years, this agreement has served as a focal point for science-driven approaches to the restoration of the physical, chemical and biological integrity of the Great Lakes ecosystem. Its latest amendments, however, date back some 17 years. This has prompted many to question whether the Agreement, in its present form, serves as a memorial to the past, or a beacon for the future. The formal review process will be triggered by the impending release of the 12<sup>th</sup> Biennial Report on Great Lakes Water Quality. However, the groundwork has begun to be laid. Earlier this year, the Science Advisory Board of the International Joint Commission sponsored a workshop that focused exclusively on the scientific aspects of the Agreement. The intent was to advise the Commission and, ultimately, the two governments, on some of the key considerations for review. What do the scientific advances of the last 17 years tell us about the goals and objectives for Great Lakes restoration and protection? How have ecosystem conditions – and uses – changed over this time, and what implications does this have for the Agreement? And, how can we best apply science to address the evolving needs of a dynamic ecosystem and ever-changing set of social values and preferences? These are among the critical questions that must be addressed.

Irrespective of the fate of the many legislative and policy proposals being bandied about in Congress, the Great Lakes Water Quality Agreement will remain a centerpiece for binational governance and ecosystem restoration and protection. It is a science agreement, and its review and revision must be based upon sound science, not political expediency or the tug and pull of various interest groups. Thus, the research community has an obligation to establish a central role in the process.

A second opportunity is found in the work of the International Joint Commission’s Council of Great Lakes Research Managers, one of the institutions established to support implementation of the Great Lakes Water Quality Agreement. The Council is presently engaged in the development of a comprehensive research strategy for the Great Lake system – an effort of unprecedented scope. This is a most timely exercise, given that the preponderance of the Great Lakes community is focused on identifying and prioritizing restoration and protection needs. The Council’s work can go a long way in ensuring that research initiatives are responsive to policy priorities – and vice versa. This work, it seems to me, will also be invaluable in

addressing many of the objectives of a new restoration-related bill that Congressman Ehlers of Michigan is soon expected to introduce. The Great Lakes research community would be well advised to fully participate in, or otherwise support the Council's initiative.

A third opportunity is found in the State of the Lakes Ecosystem Conference and its efforts to develop and apply science-based indicators to both assess and help promote ecosystem health. The SOLEC process has been underway for more than a decade, but there is a new found sense of urgency in moving it forward. The recent U.S. GAO reports and testimony make it clear that ecosystem restoration simply cannot succeed in the absence of such indicators. The President's new Executive Order, which establishes a cabinet level interagency committee to coordinate federal activities, also speaks to this need. And, further, Congressman Ehler's anticipated bill calls for "specific benchmarks" to measure achievement of restoration goals. Members of the research community are well advised to embrace the SOLEC process when the 2004 edition of this biennial event takes place in Toronto this October.

A fourth opportunity presents itself in the form of the draft report of the U.S. Commission on Ocean Policy. The product of a Congressionally-mandated study, this report was released last month and there's all of eight days left before the comment period expires. This report – all 413 pages of it, along with many dozens of recommendations – it expected to result in some sweeping changes in how ocean and freshwater policy is devised, and how science is delivered to support such policy.

Many of us have worked diligently to ensure that the Great Lakes are rightfully acknowledged as "freshwater seas" as ocean policy is developed, and the draft report demonstrates mixed success in that regard. But it does a reasonable job of recognizing the monitoring, surveillance and research needs of our marine and freshwater resources. It also makes a compelling case for an Integrated Ocean Observing System and, consequently, for the Great Lakes Observing System that is the focus of some concerted attention by a number of Great Lakes partners at this time. The Great Lakes research community would find that time invested in commenting on the report – and establishing a presence in its implementation – would be time well spent.

A fifth opportunity to strengthen the science/policy/management linkage is found in the bills presently before Congress that provide for a multi-billion dollar infusion of funds into restoration efforts, and also establish advisory bodies to help direct those funds to deserving programs and projects. To their credit, the bill sponsors have been very receptive to input from the broader Great Lakes community. And, its clear that such input will be carefully considered as the bills evolve over time. It's imperative that the research community engage in the process.

I note, for example, that neither the House nor Senate bill defines the term "restoration". What are we referring to here? Restoring the ecosystem to pre-European settlement conditions? To some arbitrary past condition? Or to some prospective future ecosystem state? And what constitutes "restoration" ? Is it limited to a return to natural conditions, or does it include maximizing beneficial uses, including economic, social and cultural? To be sure, these are policy issues with multiple dimensions. But the decisions ultimately need to be based upon sound science. If any public funds – our taxpayer dollars – are to be directed by the billions to specific projects, we need assurances that the science exists to support the desired outcome. In the months ahead, there will be continuing opportunities to shape this legislation and, once again, the research community is well advised to make its presence known.

A sixth opportunity relates to the new Executive Order I mentioned earlier. It's primarily an initiative to better coordinate U.S. federal programs, but it does call for the development of outcome-based goals relying upon "data and science-based indicators of water quality and related environmental factors." It also calls upon a cabinet-level task force to "ensure coordinated federal scientific and other research," and to ensure

implementation of the Great Lakes portion of the Global Earth Observation System. This Executive Order is important because unlike the many bills under consideration right now, it's real – it's being implemented. Every effort should be taken to ensure that this task force – and its working group – are guided and influenced by the research community.

And, finally, there's other regional initiatives underway where a strong science/policy/management linkage will be critical to success. Just a few weeks from now, public release of a draft implementation plan for Annex 2001 of the Great Lakes Charter is anticipated. Our ability to formulate a compelling argument against harmful water withdrawal, diversion and consumptive use proposals will ultimately be a function of the strength of the scientific argument. It's abundantly clear that there are unmet needs in this area, and it's abundantly clear that the process will be measurably strengthened if the research community weighs in as the draft is released for comment and as the Annex is ultimately implemented.

The same is true for the ecosystem protection and restoration priorities being advanced by the Great Lakes governors in consultation with the premiers. This has been an open and inclusive process and it's in our collective best interest to ensure that the priorities – and their implementation – are based upon sound science.

I'll conclude my litany of "insurmountable opportunities" at this time, fully recognizing that you all may have others to add to the list. The window of opportunity to strengthen our science/policy/management linkages has never been open wider.

My fourth and final, objective this evening is to leave you with a closing thought about the role of science in the future of Great Lakes governance. And, this relates directly to the title I selected for my remarks.

The Great Lakes have been aptly described as the world's largest freshwater laboratory for scientific experimentation. They are also the world's largest laboratory for institutional experimentation. What we do here, and what we learn here, has global applications and global implications.

It's somewhat ironic that the global notoriety we have long enjoyed does not translate to the national level as well. There's cause for some optimism, given the recent legislative and policy developments I noted earlier, but the Great Lakes have yet to be truly recognized – in both the United States and Canada – for their national significance.

Simply put, we need to do a better job of marketing ourselves. They learned how to do it in Florida, with a campaign to restore "America's Everglades." They learned how to do it in Chesapeake Bay, connecting restoration with an effort to preserve a piece of our national heritage. And, we need to do it here by publicizing the virtues of "North America's freshwater seas." We need a binational campaign to this effect. The benefits for our science, our policy and, ultimately, the health and sustainable use of the resource will be substantial.

Thank you again for the opportunity to share my thoughts this evening. And thank you for all your efforts to "Restore the Greatness!"