GREAT LAKES FISHERY COMMISSION

1999 Project Completion Report[1]

Exotics and Public Policy in the Great Lakes: The Results of a Workshop at the Biennial Great Lakes Water Quality Forum

by:

Eric Reeves[2],

[2] 57 Bayswater Ave
RR#6
Ottawa, ON K1Y 2E8

October 1999

[1]Project completion reports of Commission-sponsored research are made available to the Commission's Cooperators in the interest of rapid dissemination of information that may be useful in Great Lakes fishery management, research, or administration. The reader should be aware that project completion reports have not been through a peer review process and that sponsorship of the project by the Commission does not necessarily imply that the findings or conclusions are endorsed by the Commission.

Exotics and Public Policy in the Great Lakes: The Results of a Workshop at the Biennial Great Lakes Water Quality Forum Milwaukee, Wisconsin, 23 and 26 September 1999

Eric Reeves
Workshop Coordinator
21 October 1999

§ 1. Introduction

§ 1.1. *The exotics problem and political responses*. In the ten years since Canada and the United States first initiated policies designed to slow down the continuing invasion of the Great Lakes by exotic organisms in the ballast of transoceanic shipping, the problem of exotic invasions and their impact on biodiversity has become a matter of global concern. Canada and the United States, which were first prompted to act because of their joint responsibility for the unique ecosystem of the Great Lakes, are continuing their leading role. The United States has recently enacted legislation and promulgated an executive order designed to address various vectors of concern at a national level, and Canada has recently enacted national legislation providing extensive authority for federal regulations controlling exotics in ballast water at national level. Other proposals for dealing with the vector of ballast water are under consideration at the International Maritime Organization and the Senate of the State of California. Canada and the United States have both recently signed a multilateral treaty on Biodiversity, which includes a general commitment to address the problem of exotics, identified as one of the primary threats to native organisms and ecosystems.

Thus, exotics have become a salient environmental issue, at all levels of government. Public concern and formal legal documents do not, however, necessarily translate into effective regulatory policies. Although the various governmental actions taken since this issue drew attention in the Great Lakes are encouraging, representatives of the two governments have taken pains to point out substantive gaps in current programs in their reports to the International Joint Commission under the Great Lakes Water Quality Agreement. There is widespread agreement that there are significant limitations on the current regime, dependent on high seas ballast exchange, for the control of exotics in ballast water. There is an obvious need for better coordination of rules on the use of exotics for commercial purposes in aquaculture, baitfish, and aquaria administered by eleven different governments and a multitude of agencies at the federal, state, and provincial level in the Great Lakes.

§ 1.2. *The exotic policy workshop*. Given the number of initiatives now under consideration, and the number of questions about the actual effectiveness of current approaches, we thought this might be a good time to conduct a comprehensive review of policies on exotics. This serves as a ten-year update on Canadian and US progress since the first voluntary guidelines for exchange of ballast water were promulgated by the Canadian Coast Guard in 1989, in response to a call to action issued by the International Joint Commission and the Great Lakes Fishery Commission in 1988. The International Joint Commission, in partnership with the Great Lakes Fishery Commission and the Michigan Department of Environmental Quality Office of the Great Lakes, sponsored a one-day workshop on “Exotics Policy” at the Biennial Great Lakes Water Quality Forum in Milwaukee, Wisconsin, on 23 September 1999. This was followed up by a report to the public, with additional discussion, on 26 September 1999. (A copy of the agenda is attached.)

This after-action report presents the highlights of those discussions at the workshop and pubic session. An extensive white paper was prepared for the workshop,

beforehand, which provides a great deal of technical background and a wide-ranging discussion of policy issues. (The white paper provides detailed references to all the legal and political structures mentioned in this report, and is supported, in turn, by a comprehensive analysis of laws and policies for the control of exotics among the eleven jurisdictions in the Great Lakes in a report funded by the Michigan DEQ Office of the Great Lakes. Also, the white paper includes an appendix with a glossary of terms and acronyms used in the various fields of aquatic biology, marine engineering, and law related to exotics. Given those background documents as references, this report here is deliberately written without footnotes, references, and detailed background in order to allow a clear focus on the central issues.) The agenda of the workshop included threat evaluation, technology, economics, policies, legal regimes in the United States and Canada – and, most especially, future initiatives for improvement of those legal regimes. The workshop participants included representatives of US, Canadian, provincial, and state governments, environmental groups, biological and social scientists, and representatives of the affected industries, both shipping and aquacultural. (A list of participants, with contact information, is attached.) With such a wide range of issues to discuss, and such a wide variety of stakeholders represented, it was impossible to go into all issues, or even discuss even the major issues in the detail that they deserved, during a one-day workshop. Participants were invited to submit any follow-up comments they wished to make in writing. And we hope that this workshop will be looked upon as a beginning, not an end, of the discussion of the issues laid on the table.

§ 1.3. *The specific issues: A long list*. Some of the many specific issues put on the agenda included the following:

(1) What is the overall seriousness of the invasion of the Great Lakes by exotics, and the appropriate level of response to it? Should exotic be a primary focus of the Great Lakes Water Quality Agreement?

(2) What is the continuing threat from ballast water? How serious is the threat of pathogens in ballast water? Does there need to be more focus on other shipping vectors, such as hull fouling or marine sanitation devices.

(3) What is the threat from other vectors, including the "commercial uses" of aquatic organisms in aquaculture, the bait fish trade, and the aquarium trade? What are the advantages and disadvantages of the current regulation at the state and provincial level? Is local regulation by agencies with a cooperative relationship with the concerned businesses most appropriate, or is there a need for more federal or regional policymaking to insure effective controls on exotics?

(4) What is the threat from private activities, such as recreational boating and fishing?

(5) What is the comparison between the likely cost to the public of exotic invasions and the likely cost to the responsible industries for preventative measures? Should contamination of waterways by exotics be considered a form of "biological

pollution," subject to the same principles of liability and regulation as other forms of water pollution?

(6) Should exotics be dealt with under the framework of the GLWQA, or it is better to deal with them separately under the Great Lakes Fisheries Convention, the Great Lakes Basin Compact, the Biodiversity Convention, or some new national, binational, or multinational framework?

(7) Should state or provincial regulation of ballast water be preempted by federal regulation under the US National Invasive Species Act or the Canada Shipping Act? Should all regulation of ballast be consistent with international regulation under the International Convention for the Prevention of Pollution from Sea. Should Canada impose higher standards, under the Shipping Act, than currently authorized by the US NISA, on US and third-party vessels entering the St. Lawrence Seaway?

(8) Should owners of existing vessels which cannot conduct and efficient or safe exchange be required to retrofit their vessels or pay for shore side treatment of their ballast water? If not now, when? Should builders of new vessels be required to build systems for effective exchange or treatment of ballast into their vessels? If not now, when?

(9) Should there be national and binational "green lists" under the US Lacey Act, the Canada Fisheries Act, the GLWQA, or the CGLF? Or is it better to leave the regulation of importation of exotics for aquaculture, bait, and aquaria entirely under the local control of the states and provinces?

§ 1.4. *The specific issues: A short list*. Out of that wide range of issues, we attempted to focus in on three primary policy questions:

(1) Where do exotics fit into the Great Lakes political and legal structure, and, particularly, should they be a priority issue under the Great Lakes Water Quality Agreement?

(2) How can we improve controls on ballast water in the near future?

(3) What should be our approach to regulation of "commercial uses" of exotics in such areas as aquaculture, baitfish, and aquaria and ornamental ponds?

§ 1.5. *Quick summary*. Each of those three major policy questions had a different sort of reception, and the outcome of the discussions varied enormously among the three. To summarize very roughly, (1) we had an excellent exchange of views but no agreement on the question of whether or not exotics should be subject to some formal amendment to the Great Lakes Water Quality Agreement, (2) we had *unanimous* and emphatic agreement on some important elements of policy regarding the vector of ballast water, and (3) we failed to frame a common basis for discussion, to even "come to terms," with the problem of "commercial uses." Each of these issues are discussed below.

§ 2. Exotics, the GLWQA, and ownership of the problem

§ 2.1. *Background*. The IJC, established under the Boundary Waters Treaty and given responsibility for environmental issues under the Great Lakes Water Quality Agreement, has been the primary institution for focusing public and governmental attention on Great Lakes environmental issues. Other relevant institutions are the Great Lakes Fishery Commission, established by the Great Lakes Fisheries Convention, the US Great Lakes Commission Panel on Aquatic Nuisance species, established by the US Nonindigenous Aquatic Nuisance Prevention and Control Act, the US Invasive Species Council, established by a US Executive Order on Invasive Species, and forums which might be created under the multilateral Biodiversity Treaty. Although there might be arguments for one of these other organizations to take a leading role in coordination of binational exotic policy in the Great Lakes or North America, there was only limited discussion of that possibility. The central issue raised was whether or not exotics should be given more of a formal focus under the GLWQA – most particularly whether or not they should be subject of a revised annex on the subject.

§ 2.2. *The existing terms of the GLWQA.* A little bit of background is necessary to frame the issue. (Please also see § 9 of the workshop white paper on "Exotic Policy.") Article II of the GLWQA states that the general purpose of the agreement is "to restore and maintain the chemical, physical, and *biological* integrity of the waters of the Great Lakes Basin Ecosystem." (Emphasis added.) Exotics are mentioned in Annex 6, dealing generally with pollution from shipping sources, but only with regard to the specific vector of ballast water, and only in tentative terms. Annex 6 § 1(b) calls upon the US and Canadian agencies responsible for pollution from shipping (US Coast Guard, Transport Canada, DFO, Canadian Coast Guard) to conduct "studies to determine if live fish or invertebrates in ballast water discharges into the Great Lakes System constitute a threat to the system." That is all. As I wrote in a report to the IJC in 1997, when then speaking on behalf of the US Coast Guard, "By that standard, we have already achieved complete success. Yes, we have studied ballast water. Yes, it is a threat to the lakes. (And, by the way, we've also found evidence that other things in the ballast water, such as pathogenic microbes, are also a threat.)" That, of course, is not the end of the task by anyone's standard. In fact, the US and Canadian agencies with the responsibility for pollution from shipping under Annex 6 have pressed as hard as they can with a binational research strategy designed to find practical ways to met the threat. But, as one Canadian officer still with that responsibility said at the workshop, the lack of a clear mandate for further action in the GLWQA undermines that effort. That, at least, is the premise for the idea of some addition to the agreement.

§ 2.3. *Points of agreement and disagreement.* Although the participants in the workshop did include a good number of people working on other Great Lakes environmental issues without prior involvement in the specific problem of exotics, there was no disagreement voiced with the basic proposition that exotics ought to be considered a "priority," among problems such as toxic contaminants and loss of habitats in the system, and that this was the natural logic of an "ecosystem approach" to Great

Lakes environmental management. Nor was there any disagreement with the idea that the Great Lakes Water Quality Agreement should be read to include concern with exotics as part of the threat to the "biological integrity" of the lakes. There was, however, definite and articulate disagreement on the question of whether or not there should be some formal change to the agreement – specifically a new annex – to better focus attention to this problem.

§ 2.4. *Reasons for a new GLWQA annex*. The majority of the participants thought that it was time for a new annex on exotics. (But I must remind the reader that, given the fact that most of the participants were invited because of their expertise and prior experience working on exotics, the forum was biased in this direction.) Some of the specific points voiced were that exotics are "persistent biological pollution," analogous to persistent toxic contaminants, that the GLWQA has always been an evolving document, changing in response to increases in scientific understanding of threats to the system, and that clear recognition of exotics as a priority issue in the document would have concrete value in providing a basis for funding requests by government agencies attempting to deal with the problem. It was also pointed out, in comparing the relative priorities of exotics compared to toxics, that the invasions of exotics (such as the sea lamprey and the zebra mussel) create the need to add biocides to the lakes.

§ 2.5. *Reasons for not amending the GLWQA*. A carefully framed opposition to the idea of a new annex, or any other amendment to the agreement, was voiced by a representative of a major Great Lakes ENGO. He emphasized that in his view (1) exotics *are* certainly a priory issue which must be dealt with, and (2) exotics *are* already covered by the general terms of the agreement. Nevertheless, he had strong reservations about he idea of "opening up the agreement" to any amendment, even for this important issue, because of the possible consequences for the integrity of the agreement as a whole, and the practical dangers of a long, exhaustive debate over the multitude of new provisions being considered by various parties in the Great Lakes community. In follow-up comments at the public session he also pointed out that we have limited time and resources (a comment which, I would take it, applies to both the ENGOs and the rather limited staffs of the government agencies working on exotics in the Great Lakes) and that a proposal for a new annex might be counterproductive because of the time and attention taken up with fighting over the terms of amendments instead of working on the substance of the issue.

§ 2.6. *Other approaches to the problem*. The GLWQA and the IJC are not the only way to deal with Great Lakes environmental issues – and there need not be only one structure and institution for doing so. A couple of the participants at the workshop made the point that exotics are now a national and global problem, and suggested in general terms that we ought to be looking to new forums for focus on the problem at those levels. I asked, in response to those comments, if they were suggesting that it was a problem to be turned over to such bodies as the US federal ANS Task Force or the new US Invasive Species Council. One participant, indeed, said that we ought to be expanding our focus to all ecosystems, terrestrial and avian as well as aquatic, in order to better share ideas for solving the problem. However, there seemed to be little feeling that those forums

provided effective means for working on our Great Lakes issues. It was also pointed out that we need to coordinate throughout North America with other *regional* bodies, such as the other panels being set up in the United States under the general sponsorship of the federal ANS Task Force and a new mandate in US NISA 96, and perhaps also the regional councils being set up to consider coastline and port specific regulations on ballast water in Canada under the recent amendment to the Shipping Act.

§ 2.7. *A cautionary comment from the marine industry*. In the course of the discussion about a possible new annex to the GLWQA, a representative of the Great Lakes transoceanic marine industry pointed out that other provisions in the agreement on toxics include standards for their control, and that, without such specific standards for controlling exotics in ballast water – which should be worked out in cooperation with industry before being legislated – any amendment to the GLWAQ was pointless. That was a useful prologue to the next major issue discussed.

§ 2.8. *Ownership and leadership*. At a later point in the session I also asked the participants to comment, more generally, on who they felt had "ownership" of the problem. (This was one of the specific questions I was asked to address by the informal advisory group of representatives from the organizations sponsoring the workshop.) One of the other presenters immediately amended that that to speak of "co-owners," which I agreed with. None of us have ever had the idea, as I put it, that there was any value in trying to appoint an "exotics czar" or any one organization to dictate policy to others. But we were interested in identifying organizations to which we can reasonably look to for leadership on the issue. There was no general consensus on this question. There were the following comments:

(1) Perhaps the two general categories of vectors presented to the workshop, ballast water and shipping, on one hand, and "commercial uses" such as aquaculture, baitfish, and aquaria on the other, are naturally different in the applicable policy structure, with shipping being more of an international issue and the commercial uses being more of a state and provincial issue. Therefore, it might be most productive for the IJC to take the lead in coordinating US and Canadian action on ballast water and shipping, while the Great Lakes Fishery Commission provides the same leadership for coordinating state and provincial action on commercial uses.

(2) This should be a national issue, and we need to be coordinating with other regional bodies to make it more so.

(3) Each of these specific vectors raise different issues and are covered by different laws, therefore there is little purpose in trying to combine action on all vectors. There should be a vector-by-vector approach. (This was, of course, directly at the other end of the continuum from a prior comment, that we should try to combine action with those working on terrestrial and avian organisms.)

(4) It was argued, again, that the GLWQA provides the best structure in the region for coordinating action among agencies.

(5) This was seconded by a comment from industry that the IJC is a good institution for coordinating action on ballast because it has a mandate to create a "level playing field" between the US and Canada.

(6) It was also pointed out that action can proceed on "multiple tracks" among many agencies, with the IJC playing a general coordinating role.

(7) It was suggested that the IJC should also be coordinating with the US and Canadian Council for Environmental Coordination (CEC) established under the North American Free Trade Agreement (NAFTA).

(8) One of the academic experts asked "Who has a short list?" of priorities for action among the various agencies involved. (I do not believe there was any answer to this question.)

(9) One of the government managers commented that "impotence is born of complexities," which I took to mean that part of the problem may be the number of legal structures and institutions involved in the process.

§ 3. Ballast water and standards

§ 3.1. *Substantive agreement on ballast water standards*. There was remarkable agreement among all participants – notably including representatives of the shipping industry as well as government and environmental groups – on the following basic propositions for dealing with the primary vector of ballast water:

The IJC should bring to the attention of the governments the need for–

(1) a meaningful *standard* for regulating exchange or treatment of ballast water, and

(2) an *incentive* for industry to met (or exceed) that standard.

Agreement on those basic ideas is likely to mask some significant disagreement on important details, such as what the standard should be, or how incentives and regulations should be framed. Nevertheless, this is an important consensus on a specific approach that should be taken to dealing with the primary vector for transcontinental aquatic invasions.

§ 3.2. *Background*. The problem of a lack of a ballast water standard is discussed in detail in §§ 3.6 & 7.3 of the white paper. The US legislation, NANPCA 90 and NISA 96, stated a general requirement for exchange of ballast on the open ocean or use of "environmentally sound alternative ballast water management methods" if the US Coast Guard "determines that such alternative methods are as effective as ballast water exchange." (16 USC § 4711(b)(2)(B)(iii).) It was left up to the US Coast Guard to

specify by regulation the standard for an adequate ballast exchange or alternative methods. Although it has recognized the need for a better standard, the only one which the Coast Guard has adopted so far is a salinity test, at 30 parts per thousand, as an indirect way of verifying the fact of an open ocean exchange. There are a number of problems with that standard, including that (1) even if a vessel begins with pure fresh water, this only indicates an approximate exchange of 85% by volume, (2) in fact, many vessels begin with salty or brackish water, sometimes including highly saline water from the Mediterranean, which vitiates the validity of that standard as proof of a substantial exchange actually washing out organisms which can survive the salinity, (3) the salinity standard has little relevance to other technologies such as a filtering, heat, biocides, or treatment ashore, (4) the salinity standard says very little about the actual biological content of the water, and (5) the general assumption, which is particularly of concern to the marine industry, is that some much higher but presently unspecified standard will necessarily have to be adopted in the future.

§ 3.3. *Industry comments on the lack of a standard*. That last point led directly to one of the comments voiced several times, with emphasis, by at least two of the representatives of the transoceanic marine industry at the workshop. They did not disagree with the idea that something more (including things which will cost them money) is necessary before we can say that we have dealt properly with the primary vector of ballast water. And they clearly agreed with the proposition that it makes a great deal more sense to built new technologies into vessels at the time of construction rather than be forced to engage in the more expensive process of retrofitting old ships. They pointed out, however, that is unreasonable to expect the industry to take the initiative in spending money on new technologies, for either new or old vessels, when they do not know what the ultimate standard will be. They are fearful that any technology proposed for use in the near future may later found to be inadequate (just as it is widely agreed that the current exchange practice, with the limitations of current ship design, is inadequate) and this could well led to a process which is both damaging to the economy and ineffective in protecting the environment. Along these lines, one representative also voiced a concern that the Great Lakes, with its natural choke point in the St. Lawrence Seaway, seems to give the government agencies too convenient an opportunity to experiment on measures here, which can severely impact the competitiveness of the Great Lakes and Seaway trade. (She pointed out that there are only a limited number of the smaller and older "handysize" vessels which can trade through the Seaway, and they could end up going elsewhere if there is a special expense added to entry through the Seaway.) As she put it, "We should not be Guinea pigs for the nation," and there must be a "level playing field" between the Great Lakes and other regions of the United States. I take the sense of that comment to mean, among other things, that the emphasis should be on developing *national* standards for ballast water. It should also be mentioned that this is particularly appropriate when one considers the even more questionable applicability of the current salinity standard for the protection of saltwater coastal ecosystem around North America.

§ 3.4. *Other comments on standards*. Government representatives acknowledged the logic of those industry comments. Several emphasized the need for standards which

prompt "market solutions," leaving the choice of specific technologies and changes in ship design to those in industry with the most expertise in managing their own business. In other words, the idea is to develop "end of the pipe" standards which specify how clean the water needs to be in terms of its biological content, rather than government requirements for specific technologies. One industry representative had warned against the tendency for government to settle on "the one solution" in terms of a favorite technology, and there was strong agreement that government should avoid that approach. How a standard should be framed was more problematic. How high should the standard be? (Our ultimate goal, of course, would be to have 100% sterile water, but that is not practicable in the foreseeable future.) Is it technically feasible to specify indicator organisms and laboratory protocols which relate in a biologically meaningful way to the actual level of biological threat in the water? (Some work along those lines has already been done by the various studies of the biological content in ballast water conducted by Canada, but there are still arguments to be resolved among biologists before a scientifically valid standard can be framed.) These questions were raised and discussed somewhat, but obviously require much more detailed work.

§ 3.5. *Legal framework for a standard*. Also, how should the standard be legally promulgated? (The white paper makes a detailed argument in favor of a tax-and-rebate system of market incentives tied to a biological standard.) In response to a petition received from a large number of environmental organizations, US EPA is now considering a standard for ballast water under the permitting requirements of the US Clean Water Act. (One may see some of the background to this legal issue in the *Analysis of Laws & Policies Concerning Exotic Invasions of the Great Lakes* prepared for Michigan DEQ Office of the Great Lakes, § 312.) A professor of law argued that the CWA provided a preferable means for setting a national US standard because of US EPA's expertise in dealing with this sort of process, the provisions for public consultation in the statute, and strong enforcement provisions. (These points, and others, are addressed in detail in a paper submitted to the workshop by Sandra B. Zellmer, Professor of Law at University of Toledo College of Law, "Using the CWA to Vanquish Exotic Species from Waters of the United States," 23 September 1999. Also, in that paper, she articulates reservations about the tax-based system of market incentives argued for in the white paper.) The idea of dealing with a whole separate system of permitting under the CWA, and the EPA, was quite disagreeable to the industry representatives. They argued that just the process of compliance administration would add significant costs. In rebuttal, it was argued that a standard might be set in an efficient way through a general nation-wide permit, perhaps worked out in cooperation with the US Coast Guard and its use of its independent authority under NISA 96. Specific legal frameworks under Canadian law were not discussed.

§ 4. Commercial uses and arguments about the meaning of "aquaculture."

§ 4.1. *Failing to come to terms*. There is general agreement on the significance of the threat from ballast water (although other shipping vectors, particularly hull fouling, need to be better addressed), no one is in doubt about what we are talking about when we talk about ships, and the shipping industry has been involved in a very professional

manner, from the beginning, in formulating policy about exotics in ballast water. The world of "commercial uses," meaning aquaculture, baitfish, and commercial importation of exotics for aquaria and ornamental ponds, seems to be rather different. As discussed in § 4 of the white paper, there is disagreement about how to even define "aquaculture," and about whether or not various forms of it constitute a significant threat. As evidenced at the workshop, moreover, there is a noticeable lack of a good working relationship between government regulators concerned about exotics and proponents of the aquaculture industry. My use of the term "commercial uses" as a general category – with "aquaculture" in the form of fish farming for food, baitfish transportation, and importation of exotics in aquaria and ponds framed as separate subcategories – was deliberately chosen in an effort to get beyond semantic arguments. The effort failed. When the discussion turned to this topic, it immediately degenerated into vehement arguments about how one defines "aquaculture," about the supposed misrepresentation of the different sorts of activities covered by that term in the white paper, and accusations that the white paper was therefore an unfair attack on the industry, all delivered in a rather acrimonious manner. At that point, I asked the most vehement speaker to please follow up with some written comments on where he thought the white paper was misleading and did not attempt to press that discussion further in the workshop. It was simply not productive. It was obvious that representatives of the industry had not come prepared to have the same sort of substantive discussion which the shipping industry representatives were prepared for

§ 4.2. *Intergovernmental coordination*. We had representatives from various state and provincial agencies, including both some of those responsible for regulation and promotion of aquaculture, on one hand, and several of those responsible for control of exotics, on the other. There was a noticeable difference in approach towards the issue evident in the comments of those different agencies, and an apparent lack of communication among them. I would submit that this is in itself is a significant piece of information which should be given consideration. In the white paper, and in more detail in the Michigan report which provided the basis for the summary comment on this issue in the white paper, I pointed out that there is a general lack of coordination on policies for the regulation of these commercial uses among the eleven different jurisdictions and multitude of separate agencies within jurisdictions in the Great Lakes region. This failed attempt at consultation at the workshop only emphasized the nature of the problem.

§ 4.3. *Some comments on the nature of the threat*. We did manage to have some preliminary discussion at the level of a very rough threat evaluation. We had an academic expert who had conducted a study of the threat from various forms of aquaculture. He, in fact, had taken care in his morning presentation to stress the fact that "aquaculture" covered a broad range of activities presenting different kinds and levels of threats. He proposed that one needs to look, specifically, at (1) the type of facility (discussed in the white paper), (2) its water source, (3) the type or species of organism, (4) what it is being raised for (such as food or bait), and (5) how it is sold, among other factors. In his opinion, the greatest threat was from the wild harvest of baitfish, because this had the definite potential to involve the accidental collection of non-target species. One of those speaking for industry who vehemently objected to my whole analysis in the

white paper did agree with this idea that there was a threat from wild bait harvest, but emphasized his view that "aquaculture" in the sense of fish-farming for human food consumption was not a problem. Other participants raised concerns about a new industry for the sale of live food fish, and about the problem of disease in aquaculture generally.

§ 5. Some academic reactions to the policy analysis in the white paper

§ 5.1. *A request for other views*. The white paper was necessarily a one-sided view of some of the policy issues. In particular, I made some specific arguments in § 10 of the paper suggesting that we need to consider moving away from the traditional form of "command and control" regulation, or regulation which relies on specification of engineering standards, in favor of setting more general ultimate standards and giving the industry an incentive, as well as flexibility in meeting those ultimate standards, through some sort of tax and rebate system. As part of the design of the workshop, I specifically asked some academic experts, one a political scientist and another a law professor, to provide a critique of these policy recommendation. (They both had experience in dealing with environmental issues, but did not have prior experience working on exotics. They thereby brought well-considered but refreshing views to the table.) They were asked to be critical. They did as asked (very well, in my opinion) and here are rough summaries of their comments:

§ 5.2. *Comments by a political scientist on regulatory policy*. "We do not want an 'optimal level' of invasions." (This referred to the cost-benefit analysis in the white paper.) Therefore traditional "command and control" regulation may be most appropriate for this problem. Also, (1) the white paper neglected the problem of intra-lake transfer of exotics, (2) exotics are only part of the problems in the Great Lakes, and (3) we should not "unilaterally disarm" ourselves in responding to exotics by denying ourselves all use of biological controls. He made some specific policy recommendations (just in case anyone thought that I had no competition in raising controversy from a fellow political scientist), including that (1) we need to throw a lot of money at this problem, and create a lot of agencies, (2) it might be that the federal government should take over from the states, and (3) the IJC should form its own board to deal specifically with exotics. But he added, at the report out to the public, that he was very pessimistic about the "old fashioned ways" for dealing with this problem because of the politics of it.

§ 5.3. *Comments by a law professor on regulatory policy*. She agreed that (1) we need to have performance standards and (2) that exotics are part of "ecosystem integrity." However, much as did the political scientist, she argued that we should not be so quick to discount the value of the traditional and much-maligned "command-and-control" form of regulation. In fact, she argued, the well-tried process of permitting under the US Clean Water Act can be of major value in dealing with ballast water because (1) the permitting system comes with strong enforcement mechanisms, including a good process for federal delegation of enforcement authority to the states, (2) the act includes valuable provisions for public participation in the regulatory process (which she argued is discouraged by a tax-based system of regulation), (3) permits can be used as a means to create performance standards, and (4) the CWA has valuable provisions for judicial review of the permitting

process. Moreover, given the experience which EPA has with the administration of this system, it is a process which could be accomplished efficiently and quickly. It provides a basis for uniform national standards, but does not preempt state laws which set a higher standard. Their still remains a need to coordinate policy with Canada, but the GLWQA provides the appropriate framework for that, just as it does for other pollution controls administered by the US EPA under the CWA.

§ 6. Other topics and takes on the issues

§ 6.1. *Other contributions*. Those are the highlights of the discussion focused on some specific major issues. There was, of course, much else discussed. The following comments were offered by individual participants:

§ 6.2. *A policy structure*. One academic expert on public administration in the area of environmental policy, who submitted a workshop paper on this topic, summed up the current state of our progress on developing "exotic policy" with the comment that it "flunks the test" for an effective policy structure. (See Paul J. Culhane, Professor of Public Administration, Northern Illinois University, "Reflections on Doing Battle Against the Last Invasion," 23 September 1999.) I have to agree, of course. That is why we needed this workshop.

§ 6.3. *Blunders ahead*. Another academic expert (the political scientist mentioned above) asked the group to discuss "the blunders ahead." Participants had many to mention. These included, in the order in which they were voiced:

(1) Writing "one best way" for dealing with the problem into law. (I took this to refer particularly to ballast water control technologies.)

(2) Rushing ahead with legislation.

(3) Too much focus on controlling past invasions rather than prevention of new ones.

(4) Failure to make use of existing policy structures. This participant also argued that it was a mistake to assume that policy makers were pushing for "one solution," as suggested in point (1) above.

(5) Continuing to just do research while invasions continue.

(6) Incorrectly assuming that the public is fully aware of the nature of the problem. This participant made specific reference to the problem of "mom and pop" businesses, such as those involved in the baitfish trade, who are yet unaware of their role in the problem, and suggested that sport fishing organizations and businesses could be better used to inform such people. She also made the point that sport fishing groups could be better used to support political action, because they are broad coalitions, but that they are less involved than they should be because of the "stigma of environmentalism."

(7) Defining the problem in terms which were too narrow. This participant made the point that the problem was not just a technical and legal one, and that we needed more "adaptive" solutions.

(8) Opening up the issue beyond aquatics (which had been suggested as a good thing earlier in the session by another participant).

(9) Being too preoccupied with toxics (to the exclusion of exotics).

§ 7. Immediate priorities

§ 7.1. *Getting down to the bottom line*. Finally, at the end of the day of the workshop, as we ran out of time to deal with issues which could have well been the subject of a week-long workshop, I asked the participants to focus in on three questions before they ran for their airplanes: (1) What are the *very most important* priorities generally? (2) What are the *specific goals* that we should set for action in a 5-10 year plan for dealing with ballast water? (3) What are the *specific goals* that we should set for action in a 5-10 year plan for dealing with commercial uses? Again, these were not points of consensus, but rather points made by individual participants (although some of the points below combine related comments from more than one participant).

§ 7.2. *General points on priorities (applicable to both shipping and commercial uses):*

(1) Need management plans, with monitoring and public reporting.

(2) Need to monitor invasions and communicate the findings to the public on the internet.

(3) Need to develop some short-term solutions while continuing to work on long-term goals.

§ 7.3. *Priorities for dealing with ballast water:*

(1) Begin with Clean Water Act permitting standards for ballast water, which will start low but work up. (Several participants, particularly representatives of state and tribal agencies, supported the use of the CWA for dealing with ballast, despite the strong opposition from industry. Another contrary comment, not from industry, was that the CWA process might apply to new construction – presumably by application of the requirement for installation of the "best practical technology" but would not be so applicable to existing vessels.)

(2) Focus on the "best practical technology" for ballast (as in other areas of pollution under the CWA) and ask researchers for their opinions on immediate best options for IJC recommendations to the governments.

(3) Need immediate audit of the implementation of the current exchange regime. (Was also argued that the current regime is well monitored, but the problem is that we already know that it is ineffective.)

(4) Need short-term plan for dealing with the NOBOBs (vessels reporting "no ballast on board," but carrying residual ballast, not currently regulated).

(5) Need requirement that any ship built after 2004 or 2005 incorporates some experimental design for dealing with ballast water.

§ 7.4. *Priorities for dealing with commercial uses:*

(1) Need to change the culture, through education, and work with industry within the framework of the HACCP system ("hazard analysis of critical control points").

(2) Need to redefine some US state agency roles, and need to bring some of the smaller agencies (agencies more directly concerned with some aspects of aquaculture?) into the regulatory process.

(3) Need a common Great Lakes "green list" (list of approved species, on which species must be listed before they are allowed for use) and a process for consultation among the agencies in the Great Lakes.

§ 8. Further discussion at the report to the public

§ 8.1. *The report to the public*. At the report to the public on 26 September 1999 I presented an oral summary of some of the main points, especially the bottom-line results of the discussion of the main issues in §§ 2-4 above. I was assisted in this by a number of the participants in the workshop, including Mr. Chris Wiley, Canada DFO, Cdr. Pat Gerrity, US Coast Guard, Prof. David Davis, University of Toledo Department of Political Science, Mr. Ed Michael, Great Lakes United, Ms. Maxine Appleby, Great Lakes Sport Fishing Council, and Mr. Mike Ripley, Chippewa-Ottawa Treaty Fishery Management Authority. (Where they had additional comments in the discussion at the public report, I have incorporated those in the relevant section of the report of the workshop above.) Because the workshop itself had been by invitation (although anyone not on the original lists expressing an interest was extended an invitation) we made sure to make time for additional comments from the floor at the public report. A representative of an environmental organization argued that there has been "not really so much progress" on exotics, and that we need to "be urgent." A representative of an angling group argued (1) that fish diseases are a big issue, and (2) that we should begin taxing the ships in order to get action.

§ 9. Additional written comments

§ 9.1. *Comments from the Ontario Federation of Anglers and Hunters*. Finally, I invited all of the participants to submit additional written comments on any of the issues discussed in the workshop. (A number of the participants are also being invited to submit articles for consideration as part of a feature on the workshop in the *Toledo Journal of Great Lakes' Law, Science & Policy*.) To date, one such follow-up comment has been received, from the Ontario Federation of Anglers and Hunters. (That 3-page letter, from Ms. Beth MacKay, Biologist, is attached.) It stresses (1) the need to take immediate action, with supporting funding, on the NOBOB vessels, (2) that this should not wait on international efforts at the International Maritime Organization, (3) support for the concept of performance standards, encouraging market-driven technologies, (4) the imperative to establish new vessel construction standards, including standards to address NOBOBs, (5) the need for an "action" or "communication" plan to raise the priority of exotics for the governments, and (6) that there is a need for more IJC leadership under the GLWQA, which should be broadened to include this part of the threat to the ecosystem, from all vectors of exotics as well as ballast water.

§ 10. **Thanks**

I would like to thank all of the participants, and most especially those who invested the considerable time and energy necessary to prepare formal presentations to the workshop, for their highly informative contributions. In retrospect, there were some defects in the design of the workshop, which were entirely my fault. Primarily, we simply did not have adequate time to address the wide range of important issues on the agenda. Nevertheless, the high quality of the contributions by the participants, and their tolerance of my unreasonable expectations, gave us some valuable substance from this effort.

– Ω –

Attachments:

Workshop Agenda
Workshop Participant List
Paul J. Culhane, "Reflections on Doing Battle Against the Last Invasion," workshop paper (23 September 1999)
Sandra B. Zellmer, "Using the CWA to Vanquish Exotic Species from Waters of the United States," workshop paper (23 September 1999)
Beth MacKay, Ontario Federation of Anglers & Hunters, letter (1 October 1999)

References:

Eric Reeves, *Exotic Policy: An IJC White Paper on Policies for Prevention of the Invasion of the Great Lakes by Exotic Organisms* (15 July 1999)
Eric Reeves, *Analysis of Laws & Policies Concerning Exotic Invasions of the Great Lakes* (15 March 1999)