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Discussion

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## DISCUSSION FOLLOWING THE REMARKS OF DR. TAYLOR, DR. REGIER AND MS. DOBSON

COMMENT, MS. DALLMEYER: We will put our panel of experts up here. Please remember if you have a question, when you get the microphone, please state your name for the Reporter.

QUESTION, DR. CARMODY: You just spoke about the application of global level ideas to the conservation project that you are undertaking here. I am curious to find out what consideration there has been of a protective approach or protective principle that we see reflected in, for example, Law of the Sea traveling stocks,<sup>1</sup> to the work that you are doing?

ANSWER, DR. REGIER: In Lake Erie, the fish association that was there 200 years ago crashed in the 1950s; it hit the wall. So, in effect, our only option is to help the lake recreate and foster its own self-organization towards a more desirable system. We will never go back to the pristine, but something better will come along. So the precautionary principle, if that is what you are referring to, in effect, now relates to taking precautions that we will not prevent the reorganization and revitalization of this system. It is not a protected precautionary principal in terms of protecting what is out there; rather, it is protecting future options to which the precautionary principle now relates.

QUESTION, MR. KING: I have two questions. One, I wondered whether the Law of the Sea-style ethics could be transferred to the Great Lakes.

The other thing was just a matter of curiosity (it consumed me while listening to Mr. Taylor's presentation). He talked about the rule that the lake trout, or one of these fish, were only allowed to be captured after its second breeding season. How do you know whether it has bred twice before or not?

ANSWER, MS. DOBSON: I think the Law of the Sea definitely had different considerations than what we are looking at here. But, I think that some of the ideas about how to deal with those could be adapted and put in place, and I think Professor Regier has a comment he would like to make. Like the co-management strategies, they are flexible and adaptable; you would not want to pick up what was done in Indonesia and do it in Cleveland. That is really the fundamental principle of International

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<sup>1</sup> That is, Agreement for the Implementation of the Provision of the United Nations Convention on the Law of the Sea of 10 December 1982 Relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks, U.N. Doc. A/CONF.164/37 (1995), available at [http://www.un.org/Depts/los/convention\\_agreements/texts/fish\\_stocks\\_agreement/CONF164\\_37.htm](http://www.un.org/Depts/los/convention_agreements/texts/fish_stocks_agreement/CONF164_37.htm) (last visited May 17, 2002).

development – that is, always being mindful of local conditions, cultures and biology so that things can be implemented that would actually help and make some sense, instead of using a template from some other place that ends up doing more harm than good.

ANSWER, DR. REGIER: In the Code of Conduct for Responsible Fisheries,<sup>2</sup> it says that sustainability is a *feature* of responsibility.<sup>3</sup> It does not equate responsibility and sustainability.

Coming back to your question about the relevance of something done for the Law of the Sea in the Great Lakes: the Code of Conduct framework agreement, created by the Food and Agricultural Organisation of the United Nations (FAO), consists of 17 policy objectives and 6 appendices that relate to responsible fisheries. One can take all of these 17 and apply them to different problems, and almost all fisheries can use a few of these. You can relate something in Lake Erie to almost all 17. One or two are deal with the open ocean, but the rest are not so limited. In fact, one of the appendices to the Code of Conduct of Responsibilities of Fisheries relates specifically to fresh water;<sup>4</sup> that appendix is supposed to be relevant to Lake Erie, at least in principle.

ANSWER, DR. TAYLOR: It is a basic principle of fisheries management to allow species to spawn at least one time to two times before harvest occurs; and it was Henry that suggested that we do this. We usually determine a fish's maturity by its length; thus, a length limit was imposed in the fisheries. Fish could not be harvested before it reached a certain size. Unfortunately, however, with lake trout we were unsuccessful in this because it takes so long for maturation to occur – seven to nine years – depending on the temperature of the water. With sea lamprey preying on them, it was never going to live that long. By the 1950s, the population had completely collapsed. We lost Atlantic salmon by about 1850. But that was when we were not protecting spawning stocks and were degrading their spawning habitats.

QUESTION, MR. CHARNOVITZ: From the presentation, it appeared that some norms were developing before the regulatory regimes had been fully agreed upon. Professor Ellison hypothesized that a small community can develop norms without law.<sup>5</sup> I am wondering to what extent we saw that in the Great Lakes fishery many decades ago, and, if so, was it confined to

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<sup>2</sup> U.N. FAO, *Code of Conduct for Responsible Fisheries*, available at <http://www.fao.org/fi/agreem/codecond/ficonde.asp> (Oct. 31, 1995).

<sup>3</sup> See generally *id.*, art. 7.

<sup>4</sup> FOOD & AGRICULTURE ORGANIZATION OF THE UNITED NATIONS, *INLAND FISHERIES* (Technical Guide for Responsible Fisheries, No. 6, 1996), available at <ftp://ftp.fao.org/fi/document/techguid/fishinl6.pdf>.

<sup>5</sup> Glenn Ellison, *Learning, Social Interaction, and Coordination*, 61 *ECONOMETRICA* 1047 (1993).

one side of the border or the other, or were they joint norms between the Canadians and the U.S. fishers?

ANSWER, DR. REGIER: Some of these norms were just typical of European or aboriginal culture. Some these concepts on spawning, for example, were defined, in legal documents going back to the 14th century in parts of Germany. So they brought some of those norms with them. But to some extent, modern progress overrode them all.

In the last 30 years, a whole series of informal norms developed that covered the whole ecosystem – just the lakes themselves at first but now encompasses the entire watershed basin – have been developing where there are no formal legal ones. This is what we speak of when we refer to a common-property resource (CPR) and cross-scale interactions. When it comes time to formalize some of these in law, I leave that to Tracy and other lawyers.

COMMENT, MS. DOBSON: It reminds me of the comment yesterday about the development of law beginning in sort of a step-wise fashion. It is a norm. Then you look at the Joint Strategic Management Plan,<sup>6</sup> which is not a legally enforceable document, but it is an important understanding between the parties. It may be able to stand as it is and does not need to be ratcheted up to a more formal level; it is working really quite well that way. But it could evolve slowly and move towards a more formalized approach.

COMMENT, DR. TAYLOR: A comment about the norms for fishing: indeed, they did transfer through cultures and historical perspectives both through the indigenous people as well as through the immigrant population. In reality, many Europeans were used to having carp and other species because their rivers degraded long before ours. Aquaculture was a common mainstay of our fisheries in the 1800s, but by 1870, the American Fishery Society was called the American Fish Cultural Society due to its concern about fish culture depletion around inland areas.

The Great Lakes itself, even when I was growing up in Lake Ontario, were not managed for the sake of the fisheries, but rather for shipping, water for cooling and municipal use, sewage, and industrial uses. In fact, the civil engineers that came over from Europe looked out from much of New York, and said, "We know what to do with your waste; put it out in the lake like we do the ocean." That caused many of our problems. There was not much in the way of fisheries management done in the Great Lakes until the 1960s when Pacific salmon were introduced and a recreational fishery was started.

QUESTION, MR. URAM: A question regarding what will drive management efforts in the future: you talked about the reintroduction of lake trout, a native species, and the attempt to get a balanced system back in place

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<sup>6</sup> GREAT LAKES FISHERY COMMISSION, A JOINT STRATEGIC PLAN FOR MANAGEMENT OF GREAT LAKES FISHERIES (1994).

again so that you can see naturally-reproducing stocks in the Lakes. You also talked about the introduction of the Pacific salmon and alewives and how the demand for those fish drove a lot of stocking. Then you had the bacterial kidney disease (BKD), resulting in a big drop in population there, yet you are still stocking those fish.

The reintroduction of fish into Lake Superior is something that is going on to attempt to recreate the ecosystem balance. So what is going to be driving these efforts in the future? Is it going to be the demand for the game fish that these recreational fishers are after, or more of a drive for a sustainable, balanced ecosystem, wherein we are looking at an approach that will be somewhat of a self maintaining system rather than cost-intensive system?

ANSWER, MS. DOBSON: We must keep in mind that there are many jurisdictions that are at work here, and each has a different focus or agenda. So it is not possible to say exactly what we are going to do. The Great Lakes Fishery Commission created two strategic visions in 1990 and 1992, and just last year, it put out the most recent version, which talks about the direction that it sees that things should head for the future. One of the pieces relates to something Henry and I talked about – that is, building and collaborating with institutional partners. I think that the Commission is increasingly looked to for leadership in this area.

Another thing that the Commission has done is that it has become increasingly successful in bringing about partnerships for research collaboration, which is really important because, as you can imagine, even though it is an international organization, it is somewhat limited in what it can do because of funding limitations. We are seeing more collaboration between them and the Environmental Protection Agency and Department of Fisheries and Oceans Canada. So they say: we have a problem; we have a brilliant idea. Let us get some information on this problem so that we can try to solve it. But as I am sure you are all aware, it takes a fair amount of money to do scientific research.

The GLFC has also identified a vision consisting of the three or four most important areas to target; after all, there are just so many. When we have our Board of Technical Experts meeting, we identify many issues, ranging from toxic chemicals, fish advisories, BKD, and early mortality syndrome. The list goes on and on. We cannot, at least in the short run, tackle all of these things. Perhaps, Bill or Henry can help me out and recall what the Commission targeted as to where attention should be directed.

COMMENT, DR. REGIER: I cannot remember the three rights offhand. There is also the Great Lakes Water Quality Agreement (GLQWA), which outlined the kinds of “impaired” uses that were to become unimpaired. Ten years ago, the Great Lakes Fishing Commission, which took the GLWQA vision as its own, led a very interactive process for a number of years that

culminated into the creation of the Ecosystem Charter. The core ideals are spelled out in a variety of different ways in these three documents (the Ecosystem Charter, the Vision, and the Great Lakes Water Quality Agreement).

COMMENT, DR. TAYLOR: It was critical that the Clean Water Act and the Clean Air Act were passed at around the same time we were trying to rehabilitate the Great Lakes, for without the legislation, the cleanup efforts would have been in vain. The topics which were highlighted in the Strategic Visions for the Great Lakes Commission was (1) that the signatories would work in collaboration with each other to improve Great Lakes governance, and (2) while sea lamprey control was important, the signatories would work to reduce the use of chemical control and increase the use of either low-head barrier dams or sterile- male-release-techniques.<sup>7</sup> One of the Clean Water Act's unintended consequences was that, while it was a great thing for our water quality, it also provided many more streams for the sea lamprey to spawn. So, we had an increase in the number of streams that needed control measures because the Cuyahoga got clean enough to have sea lamprey.

To have self-staining populations, the regional partnership must work together to move towards self-sustaining fisheries. Of course, one of the challenges is that new exotics keep coming in and interrupting the food web. Now, there is no way you are going to get rid of salmon, for example; they are self reproducing. Some 40 percent of the streams that feed into the Lakes have self-reproducing salmon. But we had to rehabilitate that system. We lost a lot of the genetic diversity, and while we have gone a long way toward the ideal, there is a lot more work to be done.

QUESTION, MR. RUNNALS: You sort of anticipated my question. Fourteen years ago, I was involved in first State of the Great Lakes Environment Report and I remember the two things that struck me at that point: first, this whole question of whether we were going to be able to make the transition from a put-and-take fishery to one where there was natural reproduction. I wonder if there is a quick "report card" that anybody could give us on how that is actually working.

Second, I was wondering about the state of the fish advisories. Are we still only getting to the stage where these things look wonderful, you can catch them, they look fabulous, but you better not eat them because they glow in the dark? Are we seeing a decline in the number of fish advisories?

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<sup>7</sup> This technique uses sterilized sea lamprey males to be competitors with normal males during the spawning season, thus reducing the number of fertilized eggs. GREAT LAKES FISHERY COMMISSION, STERILE-MALE-RELEASE-TECHNIQUE: AN INNOVATIVE SEA LAMPREY CONTROL METHOD (GLFC Fact Sheet No. 6, 2000), *available at* [http://www.glfc.org/pubs/FACT\\_6.pdf](http://www.glfc.org/pubs/FACT_6.pdf).

These seem to be two kinds of ecosystem indicators; they were the ones that people worried about fourteen years ago. Where are we now with those?

ANSWER, MR. REGIER: Let me tackle the fish advisory part of your question. That is a real difficult issue for fishery people because they are using pesticides and lampricides to control pests, and these chemicals taint the fish a little bit and contributes to the overall contaminant load. However, they remain committed to phasing out both of these types of chemicals. The fisheries managers have always been on record as strongly supporting the IJC and efforts under the Water Quality Agreement<sup>8</sup> to clean up contaminants in general by preventing their entry into the water.

As we all know, the Federal governments on both sides, especially the Canadian government, more so than the U.S. government, decided ten years ago to get out of the game of cleaning up the Great Lakes, and especially on contaminants. Fortunately, the thermodynamics of these contaminants is that high concentrations escape the Lakes and enter into the atmosphere. That is fortunate for the Great Lakes, but unfortunate for the Arctic seals and the Inuit. The problem is that the Canadian federal and provincial government operated out of the Great Lakes Water Quality Agreement passively and relied on thermodynamics to help reduce the level of contaminants.

The U.S. has made more of a show of being involved, but nothing to the extent that is needed to clean up these lakes.

ANSWER, DR. TAYLOR: There is still controversy between the different states on the fish advisories in terms of what levels of contaminants are dangerous. They are continuing to work on trying to figure how to best present this. The human health affects are always questioned in terms of signs, but I believe in the precautionary approach. Along with the increase in the education of the public, much effort has been put into cleanup and reducing the impacts of chemical contaminants. Biological contaminants appears to be the topic of the day. People are hearing more about the new aquatic exotic species that are coming into the Lakes from ballast water.

One thing I notice about humans is that we have to have a major emergency before we pay attention to some things. We just keep repeating the cycle. So, hopefully, we can do this integration of what the total ecosystem needs and what we must do to pay for its resolution. How do you pay for chemical clean up? I think, certainly, the inflowing stream of chemical contaminants has been significantly abated from what it was. But I would always be vigilant in making sure that we watch the area.

As to your question of whether or not we are actually getting to the stage where significant parts of the fishery are moving away from the put-and-take

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<sup>8</sup> That is, the Agreement on Great Lakes Water Quality, U.S.-Can., Apr. 15, 1972, 23 U.S.T. 301, *amended* Nov. 22, 1978, 30 U.S.T. 1383, *amended* by Protocol, Nov. 18, 1987, T.I.A.S. No. 11,551.

fishery, I think we are in many respects. Certainly, the amount of stocking of salmon has gone down partly because of the increase in the food base. People are much more cautious about the disease issues and about what is being done, and I think there is been a general cleanup in many of the river systems that have helped spawn to survive.

COMMENT, MS. DALLMEYER: I am afraid we have to cut it off here. I want to thank these panelists for coming to talk fish tales with us, and you will have a chance to talk to them more this evening. Please join me in thanking everyone.



