GREAT LAKES FISHERY COMMISSION

1983 Project Completion Report[1]

Manage the Great Lakes Basin as a Home

by:

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And James Cowden

August 1983

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Dellard
This is the full report from which the EAGLR publication was drawn.
Carlos

MANAGE THE GREAT LAKES BASIN AS A HOME

UH HEM . . . THE OTHERS HAVE ASKED ME TO HAVE A WORD WITH YOU.

D R A F T

August 1983

A summary of proceedings culminating in a workshop,

"Implementing the Ecosystem Approach",

in Hiram, Ohio, March 22-24, 1983

PART A. OVERVIEW, OBSTACLES AND STRATEGY

by

W.J. Christie and J.R. Vallentyne

PART B. INITIATIVES DEVELOPED AT THE HIRAM WORKSHOP

by

Mimi Becker and James Cowden

THERE ARE ECOLOGISTS AND ECOLOGISTS

(We suggest this for inside front cover, perhaps opposite the life raft)

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PART A. OVERVIEW, OBSTACLES AND STRATEGY

by

W.J. Christie and J.R. Vallentyne

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INTRODUCTION

Many innovative steps have been taken by the Governments of the United States and Canada in dealing with international and environmental responsibilities in the Great Lakes basin. These include the Boundary Waters Treaty of 1909, the 1972 and 1978 Water Quality Agreements, new environmental legislation, cooperation on the water quality and fishing programs, coordinated surveillance, and research on human health, toxic materials, and land use related to the Great Lakes basin. These initiatives, each excellent in its own way, demand an integrative ecological framework.

A related consideration is that the activites in fisheries and water quality management, which are coordinated respectively by the Great Lakes Fishery Commission and the International Joint Commission, have reflected timely responses to shared problems, historically. The ecosystem approach as described here, and as exemplified by the recent agreement to establish Strategic Great Lakes Fishery Management Plans, simply reflects the latest of these ongoing adjustments to new perceptions of the mutual problems among the managing jurisdictions.

Conventional, nonintegrated practices of the 1970's included: single factor programs to deal with the effects of individual pollutants on water quality; single species programs to manage living resources; separate political and public activities by different resource users; fragmentation of functions, responsibilities and authority in various agencies; and narrowly focussed expertise. In spite of spectacular gains in fishery management, crises continued to emerge with distressing regularity. Resources continued to be lost, drinking water declined in quality and rose in price in many areas, recreational and aesthetic values were eroded and threats to human health from contaminants appeared with alarming frequency. A more integrated, pragmatic approach was needed to reduce public fears and uncertainties. In a nutshell, the Great Lakes basin was not being managed as a home.

In a significant change of direction, the Governments of Canada and the United States incorporated elements of an ecosystem approach to management

into a new Great Lakes Water Quality Agreement in 1978. In this, the Governments recognized for the first time that "restoration and enhancement of the boundary waters cannot be achieved independently of other parts of the Great Lakes Basin Ecosystem with which these waters interact."

The ecosystem concept is inherently "fuzzy", reflecting the interdependence of social, biological and physical systems. To assist managers in using it, four organizations drafted a proposal to develop a strategy for implementing an ecosystem approach to management in the Great Lakes basin - the International Joint Commission, the Great Lakes Fishery Commission, Great Lakes Tomorrow and the International Association for Great Lakes Research.

An international Steering Committee was established in 1981 and it developed a model for its undertaking which involved the following four steps:

(1) to prepare an overview describing the meaning and application of "ecosystem approach" in the context of the Great Lakes basin;

(2) to assess obstacles to its implementation in governments, industries, voluntary associations and individual persons on both sides of the border;

(3) to develop a strategy to further understanding and implementation of an ecosystem approach in the Great Lakes basin;

(4) to convene a workshop composed of persons broadly representative of society in the basin to evaluate the progress made and develop initiatives for implementing an ecosystem approach in the Great Lakes basin.

This report is an interpretive summary of the results of each of these stages. It illustrates and describes keys to managing the Great Lakes basin as a home. For the composition of the Steering Committee, pre-Workshop documents, and a list of terms and definitions, see the Appendix.

THE ONE RESPONSIBLE FOR POLLUTION

OVERVIEW OF ECOSYSTEM APPROACH

Since every person sees his or her surroundings from a unique point of view, universally acceptable definitions of ecosystem and ecosystem approach must be broad. This does not deny the need for definition. It only means that people can agree on common characteristics of holistic approaches without waiting for universal definitions. The ideas flow directly from abstract concepts to pragmatic initiatives. In what follows, we examine these ideas.

Ecosystems are natural or artificial subdivisions of the Biosphere with boundaries arbitrarily defined to suit particular purposes in hand. It is possible to speak of your personal ecosystem (you and the environment on which you depend for air, water, food and friends), the Great Lakes basin as an ecosystem (interacting communities of living and non-living things in the basin or our planetary ecosystem, the Biosphere.

The ecosystem concept recognizes that you are new, yet not new. The molecules in your body have been parts of other organisms and will travel to other destinations in the future. Now, in your lungs there is likely at least one molecule from the breath of every human being that has lived in the past 3,000 years, and the air around you will be used tomorrow by deer, lake trout, mosquitos and maple trees. The same is true of water, sunshine and minerals. Everything in the Biosphere is shared.

There is something very strange, deep and mysterious about the way that the building blocks of life are arranged as wholes that are in turn parts of larger wholes. Everything from atoms to galaxies with us in between is interconnected. Sharing and interconnectedness are the reasons why the boundaries of ecosystems (short for ecological systems) overlap. People understand this in a vague way. What they have not seen is how to relate to it.

There is a simple, yet profound, difference between "environment" and "ecosystem". The notion of environment is like that of house - something external and detached. In contrast, ecosystem implies home - something that we feel part of and see ourselves in even when we are not there. A home has

an added spiritual dimension that makes it qualitatively different from a house. It is a happier place because of the caring and sharing relationships among its inhabitants.

The emergence of an ecosystem approach to planning, research and management in the Great Lakes basin is not accidental. It is the most recent phase in a historical succession of management approaches from egocentric to piecemeal to environmental and now to an ecosystem approach. This succession arose from the burgeoning growth of population and technology in the Great Lakes basin. The ecosystem approach emerged in the 1970's with the realization, in part from toxic chemicals in human food chains, that people and environments can only be managed effectively in relation to ecosystems of which they are parts.

The essence of an ecosystem approach is that it related wholes at different levels of integration (us and ecosystems containing us) rather than interdependent parts (us and our environments). This calls for four-eyed vision - two eyes from the "egosystem" (a person, corporation, voluntary association, professional discipline, government or nation) looking outward at its external environment; and two from an ecosystem looking at the egosystem and its operational environment as a whole. This perspective, hereafter termed an ecosystem perspective, is crucial to human well-being and survival.

WHAT MUST BE DONE TO PRACTICE AN ECOSYSTEM APPROACH?

1. IMPROVE KNOWLEDGE of the operation and relationships of systems in nature.

2. DEVELOP A HOLISTIC PERSPECTIVE that takes account of the influences on us of larger systems of which we and our external environments are parts.

3. ACT in ways that are ECOLOGICAL (take account of that knowledge and perspective), ANTICIPATORY (forestalling events that would bring later regret), and ETHICAL (showing respect for other systems of nature comparable to our respect for other persons).

In the past, there has been too much focus on hierarchical structures and intra-organizational concerns. Now, the need is to develop networking and trans-organizational interests.

Because the consequences of preventing something from happening are invisible to the untrained eye, the benefits of an ecosystem approach are not readily discerned. Some examples of the evolution of management styles may help to clarify what is meant by ecosystem approach and to show the extent to which it is now in development:

1. Organic waste. First it was dumped wherever convenient - best of all in streams or lakes. Next, because of downstream problems, we developed energy-consumptive sewage treatment systems. An ecosystem approach focuses on energy and material recovery from sewage.

2. Eutrophication. First, it was ignored. When the odors became too strong, nutrient-rich effluents were diverted downstream. Then phosphorus was removed from sewage effluents. An ecosystem approach promotes reduction of use through low-phosphate detergents and more efficient use of fertilizers combined with nutrient recycling.

3. Oxides related to acid rain. At first the problem was not recognized. When problems arose locally, the "solution" was to build taller smokestacks. Then came removal of acids by scrubbing. Now, an ecosystem approach advocates energy conservation and the recycling of sulfur.

4. Water diversions and consumptive uses. The first rule was: divert, the more the better. Then the scale was increased to meet new shortages, encouraging export as a commodity. On the basis of an ecosystem approach, the new rule is to divert water sparingly - and only to recipients that practice an ecosystem approach.

5. Cancer. People were never indifferent to cancer; however, it is still commonly viewed in terms of single causes. On an ecosystem approach, real cures must be based on the knowledge that cancer is 80-90% environmental and with many contributing causes.

6. Toxic chemicals. At first, chemicals were used indiscriminantly. Then they were dealt with one by one with regulations after the fact as in the case of pesticides. With an ecosystem approach, the rule is to design with nature, particularly for long-lived compounds.

7. Energy shortages. Successive "solutions" were to ignore the problem, then to increase the energy supply and expand the grid with pricing to encourage greater use. An ecosystem approach encourages conservational pricing with inverse rate schedules to discourage greater use.

8. Traffic congestion. Successive "solutions" have been to curse; to build more roads and super-highways; and to improve public transport and with staggered hours. An ecosystem approach encourages decentralization through new forms of transportation and communication.

9. Pests. At first it was: "run for your life!" Then came broad-spectrum pesticides. Next it was selective, degradable poisons. An ecosystem approach calls for integrated pest management.

FIGURE - THE SELF-DESCRIBED PARAGON OF BEASTS

OBSTACLES TO IMPLEMENTING AN ECOSYSTEM APPROACH

Obstacles to implementing an ecosystem approach in respect to people, industry, voluntary associations and governments were independently examined by four authors from Canada and four from the United States. They brought a wide array of perspectives in their "development papers".

Marlene Fluharty (U.S.), citizen activist and Vice-Chairman of the Michigan Environmental Review Board, examined problems and opportunities from a personal perspective. Robert J.K. Walmsley (Canada), Associate Chief Judge, added to this, charmingly and with great effectiveness, by contrasting ecosystem concerns in his urban and rural neighborhoods. Based on a long career in industrial chemistry, Eugene E. Kenaga (U.S.) described challenges and opportunities to industry with special reference to hazardous substances. Paul Hunt of the Petroleum Association for the Conservation of the Canadian Environment presented a broad and authoritative account of corporate initiatives and concerns in environmental protection. Wayne Schmidt (U.S.) discussed problems in establishing federations of environmental groups. While agreeing on the need for an ecosystem approach, he asserted that the name would not sell "in Peoria". One of us (Jack Vallentyne, Canada), discussed the roles, problems and opportunities of voluntary associations in an historical and cultural context. David LaRoche (U.S.) and John Hall (Canada) jointly examined the virtues and limitations of the ecosystem concept from a Canada-United States political perspective.

The papers revealed no clear differences linked to national traditions or philosophy. All agreed that implementation of an ecosystem approach was a necessary, but difficult task; yet, progress - particularly in industry - was noted. Central issues identified by the authors were:

Personal perspective:

threats to livelihood, jeopardizing ecosystem concerns; fear, generating insensitivity to crises; hopelessness, from loss of control over our personal destinies; mistrust, of governments, "bosses," and industry - the last in respect to pollution for profit; confusion, from issue-by-issue reporting,

making it difficult to develop a broad ecosystem perspective; and differing perspectives, resulting from diverse backgrounds and specializations.

Business and industry:

the desire for demophoric growth and yet inability to deal with its collective consequences; competition and secrecy among industries, and between industry and government; conflicts in planning between what is "good" for society versus what is "efficient" for business and; the "here and now" of environmental impact assessments versus "everywhere and later" effects; mistrust of competitors, and of big government; and suspicion of emotional influence on governments by environmental organizations.

Voluntary associations:

inadequate representation, with few commmon forums in the Great Lakes basin for shared environmental views; ineffectiveness of adversarial organizations in responding to common causes; and organization and finances that are often weak.

Government:

lack of legislation incorporating the ecosystem concept; lack of public support for translating environmental concerns into a wider array of ecosystem concerns; and lack of trans-institutional networking, strengthening cross-linkages through interagency planning. There was no suggestion that there were not enough statutes or institutions, only that they could be better integrated.

Review of these issues revealed three major obstacles common to all groups:

a) Lack of an Holistic Perspective

The consequences of our acts in space and time are multicausal; inducing effects on ecosystems that turn back on us in revenge. We can no longer afford the shallow luxury of "out of sight, out of mind." We must look beyond

"here and now." To see the valley we must climb the mountain. To follow the flow of the river, our eyes must run with the water down to the sea and follow it back to its return to the land as rain.

Interconnectedness implies that problems have no precise boundaries in space or time. This is hard to cope with in a world where people and institutions want simplistic answers, "quick fixes," and more things. An holistic perspective demands knowledge of inter-relationships and a focus on cycles and rhythms at various levels of integration. In contrast, we and our institutions tend to be programmed in a linear, piecemeal fashion.

The public has not been well informed about ecological realities. In fact, media scares may act to draw attention away from the forces at work behind crises and the reasons why those forces are so pervasive and dangerous.

b) Predominance of "egosystem" thinking

In a world which has become increasingly adversarial, it is difficult to convince people to be even just a little less selfish. Future shock and the decline of organized religion seem to have conspired to encourage egocentricity. There is a need to balance egocentric and ecocentric views.

The growth of human activities in relation to finite resources and space demands new rules for sharing. At the beginning of the century, limitations on sport fishing in the Great Lakes aimed at equitable distribution. Now, sportsmen are accustomed to rationing based on species licenses and restricted creel limits. This came about because the angling population grew disproportionately to fish populations. It has not been a difficult adjustment or hard for people to grasp. It is more difficult for municipal politicians and factory managers to relate their waste effluents to the total loading of the receiving waters, and to accept more restrictive effluent standards.

The means of reconciliation for those not fully acquainted with the ecosystem concept lies in seeing "the big picture," rather than concentrating solely on familiar and personal element. Domino effects in ecology are not only spatial, but leave permanent effects through time. An ecosystem ethic not only relates a citizen to his counterparts elsewhere, but to

generalizations unborn, some of whose members will be his own descendents. By training, law, convention and religious upbringing, people accept the Golden Rule, at least in principle, in their inter-personal relations: "Do unto others as you would have them do unto you." An ecosystem approach requires people to consider an even wider array of "others" than the others in the Golden Rule. This is hard to teach and even harder to accept.

c) Lack of a Preventive Approach

The ecosystem of the Great Lakes basin is not in equilibrium with the exponential increase in human activity. An apt analogy is that of a fool bent on doubling his intake of whiskey over constant intervals of time. He has a certain limited capacity that when exceeded produces undesirable consequences. The Great Lakes have similarly been overloaded with municipal and industrial wastes.

Crisis-management cycles induce heavy economic costs between the identification and resolution of problems. For eutrophication, these included water treatment, filtration, loss of recreational and aesthetic values, and reduced tourism and fishing. The situation is much more dangerous in respect to toxic chemicals from old dumpsites.

Announcements of newly discovered contaminants in fish and drinking water, each seemingly more persistent or deadly than the last, have become routine in the Great Lakes basin. Each becomes a crisis in its turn. Governmental reaction is often to shift dollars from prevention and research to diagnosis and treatment, mortgaging the future to pay for the past. The public, in turn becomes progressively disenchanted with the ongoing litany of chemicals - and more concerned with ones they know must be there and haven't been told about. This trend could end with people unconcerned with what they eat and drink.

Even under favourable circumstances, the Great Lakes will undoubtedly continue to produce unpleasant surprises. The aim, however, must be to constantly work towards managing the system so that public resources and public health will be progressively better protected from unanticipated shocks. Preventive practices are needed to reduce the frequency of costly surprises.

BE CAREFUL, WHENEVER HE GETS BEHIND HE TRIES TO CHANGE THE RULES.

STRATEGY FOR IMPLEMENTATION

Strategy is a plan to overcome obstacles in reaching an assigned objective. In our case, the objective was to further understanding and implementation of an ecosystem approach in the Great Lakes basin. Persons and organizations sympathetic to an ecosystem approach need little convincing of the urgency of the situation. They are the advance guard in making clear the need for managing the Great Lakes basin as a home. Others, more perplexed than disinterested, are the ones to which ecosystem strategy needs to be aimed.

One crucial aspect of strategy is the search for a common cause. In our case, it is the level of risk facing the society in the Great Lakes basin. This risk is greatest in respect to human health and economics; but threats to tourism, commercial fishing, recreational opportunities, aesthetics and quality of life are important. All members of society are at risk in this. Reducing the risk could be a unifying principle.

The question goes much further than direct hazards to health and economics. The greater risks - and opportunities - in the long-term lie in the effects of people on people via the ecosystem. For this reason, strategic concerns need to be broad and to take account of downstream and "down-time" effects.

The upstream-downstream situation in which people heap abuses on their neighbours below is a metaphor for the abuses we heap on each other via shared ecosystems. The fact that water circulates in lakes places shoreline communities in riparian relationships with each other. After the risks of poisoning one another via shared ecosystems have been removed, we will still face the problem of how to advance individually (personally, corporately, or municipally) in ways that do minimum harm to our neighbors. This has nothing to do with altruism or protection of nature in the traditional sense. It is practical long-term self defence.

With self defence as the primary concern, it becomes considerably easier to convince people of the need for more holistic views. Once done, they will have automatically converted some of their "egosystem" precepts to ecosystem

thinking. People could be receptive to a management system that avoids the nasty surprises, just as they have turned to systems of preventive dentistry and medicine.

The thrust of the foregoing is that the best strategy is "enlightened self-interest." It says first of all that, because all citizens in the basin share a common problem, they must be committed in their own interest to its solution. It extends the Golden Rule to the ecosystem in recognition of the essential need for self-preservation, "Do unto the ecosystems you share with others as you would have them do to the ecosystems they share with you." Enlightenment refers not only to appreciation of these realities; it recognizes the need for improved understanding and anticipatory management.

The reader may wonder at this paraphrase of the traditional Golden Rule wording used earlier. Our view is that many people have already found a balance between egocentricity and ecocentricity which satisfies them. Others however, still face the transition, and for them the process begins with a person orientation and evolves from that. It is far more difficult to think of other persons separated from us in either space or time (since they are invisible), than it is to consider the physical aspect of our habitat. Ultimately then the issue reduces to the need for an ethic of respect for nature, and this subsumes our care for other persons.

Following from this thought is the idea that we need to protect ecosystems in their external reality and also as symbols and of all that we value in our cultural heritages and traditions. When those symbols are tarnished, we not only feel diminished, but actually are diminished in the knowledge that we have sacrificed the underlying values that these symbols express. Greater use in ecosystem management of symbols such as the American eagle, the maple leaf and the Great lakes could enhance the basis for enlightened self-interest.

It should be clear that implementation of an ecosystem approach solely in the Great Lakes basin, or any other unit of the Biosphere, is not workable because of spill-over effects from functionally adjacent systems. For this reason, a major part of this strategy for implementation of an ecosystem approach must involve extension elsewhere.

Initiatives which attack symptoms are far less likely to have long-range success in preventing crises than those which strike at root causes. It is also clear that single attacks on specific issues are insufficient to deal with any one, let alone all three, of the basic obstacles. The following generic categories provide a framework for evaluating initiatives to further understanding and implementation of an ecosystem approach:

1. Improve public education and information.

2. Provide for better participation by the citizens in their environmental future.

3. Revise arrangements for payment of resource rents.

4. Improve application of existing ecosystem knowledge in management.

5. Accelerate the acquisition of new ecosystem science.

6. Revise institutional arrangements in keeping with the above.

7. Encourage more informed ecosystem outlooks.

The strategic questions to be asked of any initiative from the point of view of an ecosystem approach are:

1. Does it help people regain a sense of pesonal control over their own destinies?

2. Does it encourage an holistic perspective?

3. Does it enhance cooperative activities?

4. Will it contribute significantly to reduction of uncertainty?

5. Does it help managers overcome crisis?

6. Is it timely?

Clearly we will never achieve a Utopia where citizens agree on all things at all times, but rallying points are needed. Wars and great natural disasters have this unifying effect, but so far it has not been generally recognized that the environmental dilemma poses an equivalent peril for humankind. Institutions, which have developed to protect the interests of particular groups or individuals from others of differing interests, may in fact perpetuate mistrust rather than rally people to a common cause. This is not to suggest that we will ever cease to debate differences in an adversarial way. It is just that it is very difficult for advocacy groups and balancing institutions to adjust to the idea of common cause. When we become convinced of the need for coalitions to combat common enemies, management strategies based on an ecosystem approach will automatically come into play.

THE ECOSYSTEMS APPROACH DRIVING SCHOOL

THE HIRAM WORKSHOP

The Workshop was held on the campus of Hiram College, Hiram, Ohio, March 22-24, 1983. The 48 invited particpants (including nine Steering Committee members) brought with them a diverse array of talents broadly representative of people, industries, voluntary associations and governments in the Great Lakes basin. These included commissioners, industrial vice-presidents, newspaper reporters (in a non-reporting capacity), directors of voluntary associations and people whose personal viewpoints and actions seemed to epitomize an ecosystem way. James Kempkes, cartoonist, worked behind the scenes to integrate the overall effort. The focus was on ideas.

The Workshop began with individual perspectives of Steering Committee members on what the process was all about. This was followed by a review of participant responses to a pre-Workshop questionnaire. There was general agreement on the need for greater focus on linkages and inter-relationships to counteract piecemeal and single purpose approaches to pollution and resource management.

Plenary discussions, recorded on tape, alternated with brainstorming in five smaller groups provided with facilitators and recorders. Each group included people from government, industry, environmental organizations and others interested in personal development.

The first task was to characterize what was meant by "ecosystem approach." In response, many requested better definition and more direct language. Design criteria included a necessary knowledge base; comprehensive, integrative and anticipatory perspectives; democratic processes; an ethical approach toward long-term societal goals; and the ability to re-evaluate and change. Implementation criteria focussed on feasibility and management. Repeated reference was made to legal, political, bureaucratic and informational barriers to interagency communication. Overcoming these had to be the cornerstone of any ecosystem approach. A lack of political will was identified, resulting in inadequate allocation of resources to cooperative, transagency interactions. Specific mechanisms for developing and implementing an ecosystem approach were judged to be inadequate or lacking.

The remainder of the Workshop was devoted to generating specific, pragmatic initiatives to further understanding and implementation of an ecosystem approach in the Great Lakes basin. The initiatives were developed in the small groups and reviewed and amended on the basis of plenary discussions. At the final plenary session, participants provided direction for combining and inter-relating some initiatives. Several new ones were added. No attempt was made to priorize the initiatives or to elicit consensus statements.

Participants actively cooperated through the Workshop and came to fairly quick decisions. One of the most important results of the Workshop was the general recognition of the willingness of participants with very different backgrounds and philosophies to seek cooperative solutions to problems. This is something that would not have been predicted a decade ago. This is concrete evidence that people and organizations in the basin are moving in the direction of cooperative problem solving.

A summary of the proceedings and initiatives developed at the Workshop is given separately as Part B of this report, together with a list of participants. Conclusions and Recommendations listed below are those of the Steering Committee, based on both pre-Workshop and Workshop activities.

CONCLUSIONS

1. The iterative process of widening the circle from Steering Committee to authors representing the interests of people, industries, voluntary associations and governments in the Great Lakes basin and then to a full-fledged workshop was successful in terms of unearthing important issues and concerns.

2. The distinction between environmental management and ecosystem management is comparable to that of managing a house separately from the people in it and managing a home, a family and their dwelling, jointly.

3. To practice an ecosystem approach means to: IMPROVE KNOWLEDGE of the operation and relationships of systems in nature; DEVELOP A HOLISTIC PERSPECTIVE that takes account of the influences on us of larger systems of which we and our external environments are parts; and to ACT in ways that are ECOLOGICAL, ANTICIPATORY and ETHICAL in respect to other systems of nature. This means managing the Great Lakes basin as a home.

4. Obstacles to implementing an ecosystem approach from a personal perspective are: threats to livelihood, feelings of hopelessness, mistrust of organizations, confusion from issue-by-issue reporting, and differing personal perspectives.

5. Obstacles to implementing an ecosystem approach from business and industrial perspectives are: the desire for growth, competition and secrecy, conflicts in planning, mistrust of competitors, and suspicion of undue emotional influence by environmental organizations.

6. Obstacles to implementing an ecosystem approach from the perspective of voluntary associations are: lack of common forums for environmental views, ineffectiveness of adversarial organizations in working toward common causes, and weakness in organization and finances.

7. Obstacles to implementing an ecosystem approach in governments are: lack of legislation, lack of public support, lack of inter-agency planning and bureaucratic compartmentalization.

8. Major obstacles of strategic concern in implementing an ecosystem approach are: the lack of an holistic perspective, the predominance of "egosystem" thinking, and the lack of a preventive approach to crisis management.

9. The desirable strategy for implementing an ecosystem approach is "enlightened self-interest" enhanced by a focus on meaningful symbols for shared values in respect to common cultural heritages and traditions.

10. Existing institutional arrangements should be examined with a view to developing legal, political, bureaucratic and informational incentives to ecosystem management.

11. New and more popular images and terminology are needed to convey the meanings of the ecosystem concept and ecosystem approach to a wider audience. The refreshing vitality of ecosystem cartoons relative to words suggests the value of visual materials in elaborating ecosystem concepts.

12. Communications networks on shared ecosystem concerns would facilitate timely implementation of an ecosystem approach in functionally adjacent regions.

RECOMMENDATIONS

The Steering Committee recommends that the International Joint Commission alone or in conjunction with the Great Lakes Fishery Commission:

1. establish a continuing group to monitor and evaluate progress in implementing an ecosystem approach in the Great Lakes basin, with annual reporting and a five-year review in full;

2. produce and disseminate widely four fliers with examples and illustrations describing how to practice an ecosystem approach in government, industry, citizen groups and in personal behavior.

used to be "disseminate widely a small brochure or flier" ... an ecosystem approach."

B. INITIATIVES DEVELOPED AT THE HIRAM WORKSHOP

BY

Mimi Becker and James Cowden

INTRODUCTION

Initiatives to further understanding and implementation of the ecosystem approach were developed by individuals and working groups during the Hiram workshop, March 22-24th, 1983. Following completion of the Workshop, the recorded inputs of each group and plenary sessions were typed and reviewed for comments and recommendations regarding the fifty-three initiatives developed. The initiatives were then typed in draft form and reviewed at a Workshop Steering Committee Meeting. Further direction and clarification were provided. The original initiatives and the draft revisions with Steering Committee comments and requests for clarification were sent to all participants for comment and additions.

A number of the proposals submitted by the separate working groups dealt with similar themes and prescribed overlapping elements. Based on the recommendations from the final Plenary Session, Steering Committee recommendations and reviews by the participants, those initiatives closely associated were combined and revised. Others were clarified based on comments. The thirty-three initiatives presented in this report are the result of that aggregation.

The initiatives are presented in a format that begins with a Title, Description of the action proposed, and the statement of Background and Need that generated the proposal. The necessary Action to be taken provides some detailed direction as to what is to be done and who or what organization should initiate that action. Specific recommendations are made for actions that might appropriately be initiated by IJC, the Great Lakes Fishery Commission, Great Lakes Tomorrow, The Ecosystem Workshop Steering Committee, the Parties to the Boundary Waters Treaty, State and Provincial Governments, universities and others. When relevant, a Comment section provides related information, explanation or references. Finally Related Proposals among initiatives are identified by number and title.

Workshop participants strongly recommended that a working definition for "The Great Lakes Basin Ecosystem" be developed and that a general set of criteria describing the context in which to develop an ecosystem approach be stated so as to provide the basis for review and evaluation of the initiatives developed.

Consensus was to use the following working definition of the geographical limits of the Great Lakes Basin Ecosystem:

"The Great Lakes Basin Ecosystem means the interacting components of air, water, land and living organisms within the drainage basin of the St. Lawrence River".

The context for identifying the specific characteristics of an ecosystem approach to decision-making or policy development involves the explicit consideration of short and long range biological, physical, social, economic, political and ethical dimensions of a problem or proposal.

Workshop participants agreed that a number of qualities or criteria could be used to recognize, design or implement an ecosystem approach in the Great Lakes Basin. Those that they held in common are listed below and provide the context for the specific initiative recommendations that follow.

Recognition of an Ecosystem Approach

-- An ecosystem approach is holistic and:

- It accepts the principles of ecology; recognizing ecological cycles, acknowledging the Laws of Conservation of Matter and Energy, acting to maintain species diversity and otherwise showing concern for a healthy genetic pool.

- It recognizes the interrelationships with it subsystems, is aware of its relationships with larger ecosystems and identifies feedback relationships between various parts of the system. Balance and health are key characteristics.

- It is aware that continued and major disturbance or violation of ecological principles will have, over time, detrimental effects on the ecosystem and could endanger not only the Great Lakes Basin Ecosystem, but the planet.

Design of an Ecosystem Approach

-- Accurate, scientifically based data in usable form is the key to design and implementation of an ecosystem approach.

-- Policies and practices are anticipatory. They will consider long and short term consequences of actions as well as locational impacts.

-- Because the ecosystem is dynamic, change is constant. An ecosystem approach must provide for constant monitoring, evaluation of decision impacts and be adaptable to change.

-- It considers all materials transformation cycles, and gives discrete attention to production, consumption and waste cycles. It deals with net materials and energy budgets.

Implementation of an Ecosystem Approach

-- The approach to decision-making will recognize diversity, be democratic, multi-disciplinary, provide for conflict reduction and resolution and be equitable.

-- Choices to implement a given policy or program will be based upon the abilities of the ecosystem to sustain itself.

-- Decisions will incorporate knowledge of environmental, political, socio-economic and ethical impacts of the proposed action and will evidence concern for potential "unseen consequences".

-- Strategies for implementing an ecosystem approach:

- are clearly communicated to the actors
- are adaptable
- provide identifiable rewards
- are technically and politically feasible

- identify needs for natural, human, technical and financial resources
- demonstrate need
- identify appropriate short and long-term time frames for actions, impacts
- have managers who:
  - are committed to minimizing adversarial relationships
  - can encourage participatory decision-making
  - are able to cope with scientific uncertainty
  - know the geographical boundaries toward which the program is directed
  - are realistic regarding the action and its potential for achieving change within the required time frame

SUMMARY OF INITIATIVES BY TITLE

GROUP A. IMPROVING SCIENTIFIC DATA ACQUISITION AND USE

1. Standing Board on Data Analysis and Synthesis
2. Great Lakes Basin Information Center
3. Great Lakes Basin Ecosystem Information System
4. Status Report on the Great Lakes Basin Ecosystem
5. Networking Among Decision-makers

GROUP B. INSTITUTIONAL CHANGE FOR ECOSYSTEM MANAGEMENT

6. Ecosystem Reference to IJC
7. International Conference on the Great Lakes
8. Great Lakes Policy Analysis Institute
9. Review Institutional Capabilities for Implementing The Ecosystem Approach
10. Integrated Ecosystem Management
11. Assimilative Capacity for Pollutants and the Ecosystem Approach
12. Transboundary Ecosystem Impact Assessment
13. New Mechanisms for Resolution of Conflicts Over Ecosystem Management
14. Enactment of the Uniform Transboundary Pollution Reciprocal Access Act
15. Ecology City - Pilot Study
16. Value Impact Analysis - Pilot Study
17. Advice for State and Provincial Legislatures

GROUP C. PAYING THE COSTS FOR RESOURCE USE

18. Binational Task Force to Encourage the Ecosystem Approach
19. Create a Great Lakes Rehabilitation Fund
20. Full Cost Pricing: Internalizing Pollution Costs
21. Paying the Bills for Environmental Protection
22. Implementation Incentives and the Ecosystem Approach

GROUP D. EDUCATION AND PUBLIC AWARENESS

23. Education and the Ecosystem Approach: Getting the Context Right
24. Cross-disciplinary Courses in Ecosystem Management
25. Public Education and the Ecosystem Approach--Innovative Approaches

GROUP E. IMPROVING CITIZEN PARTICIPATION, ACCESS AND COMMUNICATION

26. Centers for Great Lakes Information
27. Dialogue Network: Enhanced Communications
28. Improved Decision Making toward Ecosystem Management
29. Coalitions to Pressure the U.S. and Canada to Establish Long and Short-term Research and Monitoring Standards and Goals
30. Environmental Bill of Rights
31. Improve Public and Industrial Input to IJC
32. User Participation in Regulation
33. Political Action and the Ecosystem Approach

INITIATIVE 1. STANDING BOARD ON DATA ANALYSIS AND SYNTHESIS

DESCRIPTION: Creation of an IJC Standing Board on Information (acquisition, analysis and synthesis)

BACKGROUND AND NEED: Ecological management in the Great Lakes Basin requires a "Great Lakes Perspective". If Canada and the United States wish to manage the Great Lakes with widsom, they must have information about the Great Lakes as a whole system. This requires a bilateral data analysis and synthesis capability either under or available to a bilateral entity such as the International Joint Commission. At present no binational board or entity exists for the Great Lakes Basin that can provide guidance for the development of conservation (ecological) policy. Data about the Great Lakes are not always compatible, thereby limiting its usefulness in looking at system behavior. Must of the existing data is not analysed, interrlated or synthesized in ways to make it useful to policy makers and resource managers. In spite of the existence of a massive data base, there is a lack of comprehensive land and water resource data analysis and synthesis. Conflicting and overlapping policies exist without binational or even interstate coordination of decision-making or program implementation which recognizes ecosystem impacts.

ACTION: The International Joint Commission should, either under its existing authority as defined in the Water Quality Agreement, the Treaty and practice, or if need under requested authority from the parties, establish a Standing Board on Information Acquisition, Analysis and Synthesis. The task would be to review current data, acquire key missing data, ensure its compatibility, oversee its analysis and ensure that its relationship to other data about the ecosystem is identified and interpreted (synthesized). This would provide the basic "ecosystem data" to be provided to the parties and decision-makers and resource managers.

A small core staff qualified to integrate, synthesize and interpret such information would provide a secretariat for the Board. The primary objective of this Board would be to improve the capability to advise governments on needed programs and policies affecting the Great Lakes Basin based on an ecosystem approach to management.

COMMENT: This is an implementing action. The Standing Board could oversee the operation of the Great Lakes Basin Information Center and the Development and Operation of the G. L. Basin Ecosystem Information System (See Initiative 2 and 3 Information).

RELATED PROPOSALS:

2. GREAT LAKES BASIN INFORMATION CENTER
3. GREAT LAKES BASIN ECOSYSTEM INFORMATION SYSTEM
4. STATUS REPORT ON THE GREAT LAKES BASIN ECOSYSTEM
5. NETWORKS AMONG DECISION MAKERS

INITIATIVE 2. GREAT LAKES BASIN INFORMATION CENTER

DESCRIPTION: Establishment of a Great Lakes Basin library and data base to acquire and make available to persons and agencies, comprehensive information on the state-of-the-Great Lakes Basin ecosystem, including who is using it and how, how it is changing, and what the existing standards, regulations, and policies are.

BACKGROUND AND NEED: Around the Basin there are nine senior governments, two federal governments, hundreds of regional and local governments, dozens of universities and thousands of industries and other users who affect the ecosystem. They all need information on which to base decisions, design protective and remedial programs and legal and regulatory systems that provide the institutional base for managing the system. A common pool of information is needed to make effective use of the best ideas and avoid duplication of research and data collection.

ACTION: The International Joint Commission has authority to access information in all jurisdictions in the Basin and therefore would be the obvious entity to run the center. It should build upon the extensive IJC Library being developed in the Great Lakes Regional Office in Windsor. The IJC should request the governments for mandate and resources to expand its present information and data acquisition program. Computer terminals or mini-access branches could be located in existing government and academic institutions and in major public libraries in major cities in the Basin.

Cost-sharing should be utilized with major contributions from government and industry users. Information access could be provided by telephone, telex or compatible computer (e.g. Telidon). The center would also identify other sources for information and refer users.

Data to be compiled by the Information Center would include such data as that required to effectively implement the Water Quality Agreement, data on toxic chemicals in the ecosystem, regulations and remedial programs information, data on impacts of lake resource user activities such as industry, electrical generating facilities, shipping, fishing, recreational use, water supply, wastewater management, etc., and an updated comprehensive inventory of the ecosystem (e.g. the fishery, wetlands, wildlife, human populations, water quality & quantity, etc.).

COMMENTS: This initiative is dependent upon the work of the Standing Board on Data Analysis and Synthesis and upon the development of a Great Lakes Basin Ecosystem Information System. See Initiatives 1 and 3.

RELATED PROPSALS:
1. STANDING BOARD ON DATA ANALYSIS AND SYNTHESIS
3. GREAT LAKES BASIN ECOSYSTEM INFORMATION SYSTEM
27. DIALOGUE NETWORK
26. CENTERS FOR GREAT LAKES INFORMATION

INITIATIVE 3. GREAT LAKES ECOSYSTEM INFORMATION SYSTEM

DESCRIPTION: A binational, interagency information system that will develop collaborative networks among decision-makers, allow exchanged information on ecosystem problems and opportunities, and utilize a single information system for characterizing, organizing, referencing, retrieving and analyzing scientific information about the Great Lakes Basin Ecosystem. Information should be available to scientists, policy makers, managers and the public in organized, synthesized usable formats. The system should be capable of developing a data base and modeling capacity for projection of integrative scenarios of alternative Great Lakes futures. Information could be provided to all user groups through a series of illustrated atlases and in addition, to agency decision makers in computer simulation models to understand their options and anticipate consequences of their decisions.

BACKGROUND AND NEED: An ecosystem approach to a decision-making process attempts to anticipate the consequences and outcomes of decisions. Canada and the United States have spent millions of dollars gathering information and data on the Great Lakes system, but the existing information is not in forms readily usable by decision-makers or understandable by the public. Improved decision-making tools are required. We should not continue to manage the Great Lakes by chance. They are too valuable a resource.

ACTION: The IJC could instruct its Science Advisory Board (or the Data Analysis and Synthesis Board) to draft a proposal for developing such a system. If feasibility is probable, then IJC should recommend that the governments provide the resources for developing the system. IJC should be the responsible agency as it has the authority to access information.

Specific expertise required will include those of data analysis and interpretation, communication skills to develop and creatively package the information for the atlases, and programming skills to develop the computer model simulations.

COMMENTS: Atlases would have to be updated on a regular basis. This would provide for two major dimensions of the recommended Great Lakes Information Center.

RELATED PROPOSALS:

1. STANDING BOARD ON DATA ANALYSIS AND SYNTHESIS
2. GREAT LAKES INFORMATION CENTER

   All others dependent upon access to above information such as those relating to ecosysem assessment, assessing and improving institutional and resource management arrangements, etc. This is a keystone intiative.

27. DIALOGUE NETWORK
26. CENTERS FOR GREAT LAKES INFORMATION

INITIATIVE 4. STATUS REPORT ON THE GREAT LAKES BASIN ECOSYSTEM

DESCRIPTION: Develop and update periodically a status report, or comprehensive "report card" on features of the Great Lakes Basin ecosystem that are of binational and interjurisdictional interest.

BACKGROUND AND NEED: Under various formal binational treaties, conventions and agreements as well as informal; arrangements, some measures of basic-level governance now being practiced with respect to lake levels, water quantity, water quality, are valued fish, parasitic sea lamprey, migratory birds and wetlands.

All of these ecosystem features are interrelated ecologically, economically and politically. They are also strongly affected by practices on land and upwind. Yet governance--such as it is--is largely practiced on a feature by feature basis, as though all components of the ecosystem acted independently. As a step toward educating managers and users of the Great Lakes on the complexity and current status of the Great Lakes Basin Ecosystem, a comprehensive report card might be issued and updated periodically. The report card would serve as a basis to monitor and maintain ecosystem health. Attached is a rough approximation of such a status report. (Note: Successes should also continue to be monitored and maintained).

ACTION: At the binational level, a joint committee of experts now associated with the activities under the Boundary Waters Treaty of 1909, the Migratory Birds Treaty of 1917, and the Great Lakes Fishery Convention of 1955 should be convened by the Great Lakes Fisheries Commission to produce a concise, comprehensive report of the current state of the Great Lakes Basin Ecosystem.

The Status Report then should be updated about every three years. This document could be made available as an expression of expert judgement rather than as an accountibility document. The experts involved in developing the report card should include agency employees as well as members of non-governmental organizations. It might be organized as a Delphic decision process to identify issues of concern for monitoring via the status report.

The status report could be used as one dimension of a monitoring system to assess ecosystem response over time. It could also be used as a basis for decision-making about remedial or anticipatory action and future development as well as being an educational tool. Specific data for use in preparation could be gleaned partially via the new Great Lakes Environmental Information System.

EXAMPLE: REPORT CARD ON THE MANAGEMENT OF THE GREAT LAKES BASIN ECOSYSTEM 1983

- Reduction of disease transmission through drinking water filtration and disinfection	*	
- Reduced dumping of material with high BOD	*	
- Restricting discharge of waste water from ships and pleasure craft	*	
- Reduced use of certain persistent pesticides, e.g. DDT	*	
- Control on dumping of acutely toxic substances, and substances that are modified naturally to become toxic, such as mercury	*	
- Controls on loadings of mine tailings	*	
- Reductions on water diversion used for flushing Chicago's wastes out of the Basin	*	
- Controls of overkill of migratory birds	*	
- Reduction of phosphorus loadings through detergent bans and efficient sewage treatment plants		*
- Control on commerce with some contaminants, e.g. PCBs		*
- Revision of harmful fishery policies and practices		*
- Integrated management of sea lamprey		*
- Restriction on the introduction of exotic organisms		*
- Programs to reduce disease transmission through fish hatcheries		*
- Stocking of large piscivores (salmonids) to control small plankton		*

- Controls of excessive fishing even by acceptable methods		*	
- Reductions of loadings of industrial waste chemicals even if only moderate toxicity	*		
- Less destructive practices in mining and dredging of sand and gravel	*		
- Some correction of destructive channelization practices	*		
- Organized data collection, storage and analysis	*		
- Coping with small to moderate catastrophes by emergency measure organizations	*		
- Controls on the intensity of use of natural parks by recreationists	*		
- Province of Quebec industrial and municipal inputs to St. Lawrence River			*
- Long range transport of atmospheric pollutants			*
- Waste heat loading by electric utilities			*
- Leaching and runoff of contaminants from landfill and diffuse source			*
- Erosion controls at urban developments and construction			*
- Destruction of wetlands			*
- Controls on local water diversions at Sault Ste. Marie Rapids to preserve key fish habitat			*
- Entrainment and impingement of small organisms by water intakes			*
- Eutrophication through nutrients from diffuse sources on land			*
- Involvement of citizens in decision processes			*
- Persistance and presence of lethal chlorinated hydrocarbon and other contaminants			*
- Synergistic, additive effects of contaminants			*

- Adequate budgets to enable continuation of research and surveillance and monitoring progress in pollution control	*
- Backsliding in existing programs	*
- Increasing sediment accumulation of polynuclear aromatic hydrocarbons	*
- Massive diversion of water into and out of the Basin	*
- Winter navigation in narrow and shallow connecting waters	*
- Inability of native salmonids to re-establish satisfactory stocks	*
- Major accidents with ships transporting hazardous substances	*
- Increased consumptive use of water	*
- Increased mineral and oil extraction from under the lakes	*
- Nuclear accidents in electric generating facilities	*
- Contamination of groundwater aquifiers	*
- Public apathy	*

COMMENTS

Related to initiatives regarding acquisition, analysis and interpretation of data synthesis and it can assist with data synthesis and can be disseminated as a basic educational tool via IJC and G. L. Information Center.

RELATED PROPOSALS: 2. GREAT LAKES INFORMATION CENTER
3. GREAT LAKES ENVIRONMENTAL INFORMATION SYSTEM
1. STANDING BOARD ON DATA ANALYSIS AND SYNTHESIS

INITIATIVE 5: NETWORKS AMONG DECISION-MAKERS

DESCRIPTION: Develop collaborative networks among decision-makers within the Great Lakes Basin that will allow exchange of information regarding ecosystem problems and opportunities. Make deliberate attempts to reduce binational bureaucratic barriers to implementing the ecosystem approach.

BACKGROUND AND NEED: Binational and interjurisdictional collaboration has gradually developed in many forms with respect to many issues. It may be timely to foster fuller developments in a planned way.

Both in the International Joint Commission and Great Lakes Fisheries Commission, there have developed "lower houses". In the IJC, the Water Quality Board has come to act in this way. The Great Lakes Fisheries Commission's Council of Lakes Committees may develop further in this direction. Under the GLFC separate Lake Committees are now conducting studies and making decisions that are of inter-jurisdictional and binational nature. It might be very useful in working toward a more integrated approach, if Water Quality Board members and their colleagues in the various jurisdictions were to participate in the Lakes Committees. Alternatively, the expanded Lake Committees might come to be sponsored jointly by the Great Lakes Fisheries Commission and the International Joint Commission.

Under governance arrangements now in place with respect to binational features of the Great Lakes Basin Ecosystem, too many civil servants devote too much time and energy in developing and maintaining separate bureaucratic structures. Though the initial purpose of each is to help focus action in the interest of economy, they tend to evolve so as to have the opposite effect at the ecosystem level of integration. Their main purpose may become to protect the security of civil servants. The more bureaucratic the organization, the less competent it is to deal with ecosystem matters, especially in the binational Great Lakes Basin.

ACTION: 1) Reassert and implement the principle that persons appointed to binational Boards, Councils, Committees Task Forces, etc., act collegially. They should only be permitted to intervene as guardians of vested interests upon declaration of potential conflict of interest. Chairmanships should be rotated and membership should turn over at the rate of at least 20% per year.

2) A drift toward creation of a "lower house" of the Commissions such as the Water Quality Board of the IJC and Council of Lake Committees of the GLFC might be fostered. These "lower houses" could develop Lake Committees further to deal more comprehensively with conflicting issues.

3) Great Lakes Tomorrow, the International Association of Great Lakes Research and Great Lakes United might collegially take the lead in fostering the emergence of a collegial ecosystem network to monitor bureaucracies formally instituted by Commissions and governments.

4) A Great Lakes Basin Ecological Information Centre should be developed under the joint sponsorship of the IJC and GLFC. This information repository would be accessible to agencies with management responsibilites, concerned organizations and citizens.

RELATED PROPOSALS:

3. GREAT LAKES BASIN ECOSYSTEM INFORMATION SYSTEM
2. GREAT LAKES BASIN INFORMATION CENTRE
12. TRANSBOUNDARY ECOSYSTEM IMPACT ASSESSMENT
9. REVIEW OF INSTITUTIONAL CAPABILITIES FOR IMPLEMENTING THE ECOSYSTEM APPROACH

INITIATIVE 6. ECOSYSTEM REFERENCE TO IJC

DESCRIPTION: Governments are asked for a Reference to IJC to investigate the interjurisdictional decision-making process from an historic as well as contemporary perspective and to address the question of whether an holistic (ecosystem) approach to environmental decisions is a preferable and feasible approach.

BACKGROUND AND NEED: Environmental decisions and actions (with respect to management of the Great Lakes Basin and water resources) in the past have not normally been taken with holistic views in mind. The result has been that actions taken in isolation sometimes have led to detrimental impacts not recognized at the time action was taken (e.g. End-of-the-pipe approaches to wastewater management led to air pollution and deposition of contaminants anyway when sludge resulting from sewage tretment processes was incinerated).

If it is determined that additional policies and/or institutional arrangements are needed to implement an ecosystem approach, it is unlikely that such will be established without legislation and appropriation of resources. Therefore the need must be clearly established, solutions proposed and benefits identified.

If we are to use an integrated systems approach to management of the Great Lakes Basin ecosystem, linkages between programs and practices must be established.

ACTION: The governments of Canada and the United States should prepare a Reference to the International Joint Commission to examine whether a holistic (ecosystem) approach to management of the Great Lakes Basin is feasible at this point in time. The IJC should present its findings in a form that identifies the rewards and suggests the processes for establishing political feasibility. The report should be provided in a form usable by the Great Lakes Basin community.

COMMENT: The Boundary Waters Treaty of 1909 and the 1978 Water Quality Agreement provide the basis for the above reference.

RELATED PROPOSALS:

4. STATUS REPORT ON THE GREAT LAKES BASIN ECOSYSTEM
9. REVIEW INSTITUTIONAL CAPABILITIES FOR IMPLEMENTING THE ECOSYSTEM APPROACH
10. INTEGRATED ECOSYSTEM MANAGEMENT

INITIATIVE 7. INTERNATIONAL CITIZENS'S CONFERENCE ON GREAT LAKES BASIN ECOSYSTEM

DESCRIPTION: A conference jointly planned by citizens of the United States and Canada to review government action on implementation of an ecosystem approach in the Great Lakes Basin, to formulate a Great Lakes Environmental Bill of Rights, to review progress on initiatives developed at the Ecosystem Workshop, and to develop additional support for the goal of restoration and preservation of the basin ecosystem.

BACKGROUND AND NEED: The political will to implement an ecosystem approach in the Great Lakes Basin must be strengthened and a public presence and stake in this approach be more explicitly identified. Governments require incentives and policy directives from their constituents. Therefore this conference based on the UNEP Inland Seas program, would be initiated and planned by representative citizens with invitations to governments and agencies to participate. The rationale for attempting this model is to permit free-wheeling consideration of new approaches and open evaluation of present approaches, both strategies difficult for governments to initiate.

ACTION: The Steering Committee for the Hiram Workshop (IJC, IAGLR, GLT, GLFC representatives) might initiate the planning for such a conference with broadly based public participation. Funding should be sought from a number of sources, including private organizations, foundations, governments.

The Conference should be held prior to the negotiations for the next Water Quality Agreement, either in early 1985 or late 1984.

RELATED PROPOSALS: 30. ENVIRONMENTAL BILL OF RIGHTS FOR THE GREAT LAKES

INITIATIVE 8. GREAT LAKES POLICY ANALYSIS INSTITUTE (GLPI)

DESCRIPTION: Establish a well funded independent policy institute similar to the Conference Board of Canada, C.D. Howe Institute or Resources for the Future.

BACKGROUND AND NEED: There is a continued widespread concern about the ecosystem on the part of the public but due to the fractionalized nature of the environmental groups and the lack of experience of such groups in formulating public policy, no overall coherent set of objectives, initiatives and funding has emerged.

Public policy as a discipline draws together economics, ecology, social, technical and environmental viewpoints to provide a consistent policy overview and scorekeeping system. Disciplined policy analysis in this field would provide the basis for coordinated and sustained support by citizens, governments and industry with respect to policy issues.

ACTION: As a first step, preliminary funding should be obtained to permit the formation of a binational group of government and industry representatives and environmental and policy specialists to outline an appropriate structure, objectives and funding requirements for the GLPI. Included would be a review of environment of environment initiatives such as the Center for the Great Lakes sponsored by the Joyce Foundation.

A well funded policy institute should be established to: 1) examine current methods for resource decision-making; 2) develop an appropriate framework for setting environmental objectives and to monitor activities of government agencies in relation to objectives; 3) sponsor studies into policy institutions that could be desirably undertaken by government, industry, associations.

The GLPI would have funds to disseminate published reports, respond to public enquiries, etc. The institute would be funded by a percentage allocation of tax revenues from Federal, State and Provincial governments backed by a joint agreement.

COMMENT: The GLPI must be very well funded in order to attract the best available talent. It must be headed by a Board of prominent individuals who are very respected for objective practical policy work and are not connected directly to specific government or business interests.

The organization head would be expert at public policy and capable of establishing the management systems required to fund diverse studies in a variety of centers through grants and to establish ongoing institute staff documentation and research.

RELATED PROPOSALS: The Great Lakes policy analysis institution could provide technical assistance for the development of mechanisms for:

12. TRANSBOUNDARY ECOSYSTEM IMPACT ASSESSMENT
9. ASSESSMENT OF INSTITUTIONAL CAPABILITIES

INITIATIVE 9. REVIEW INSTITUTIONAL CAPABILITIES FOR IMPLEMENTING THE ECOSYSTEM APPROACH (LIMITED TO LAWS, AGENCIES AND CERTAIN CITIZEN ASOCIATIONS).

DESCRIPTION: This initiative is intended to provide for an inventory of laws, regulations, agency procedures, policies, resources, programs and resources; and of association charters and structures. In addition, several case studies of important past actions and programs undertaken in the Basin to resolve major environmental problems and manage natural resource opportunities would be prepared as a basis for assessing current capability for implementing the ecosystem approach. Strengths and inadequacies would be identified and models for new or modified laws and institutions developed.

This would provide a basic portion of the information needed by the IJC to implement Initiative (10) Integrated Ecosystem Management.

BACKGROUND AND NEED: Lawmakers and government agencies, in part at the urging of citizen associations, have made significant progress toward mitigating several environmental problems in the Basin. Agencies and associations, however, were largely created and structured to deal with specific issues as were laws providing for agencies and their mandates and charters providing the purpose of associations. These are now seen as (1) encouraging fragmentation in the context of the ecosystem approach and (2) somewhat prone to programs and solutions that result in some damage to the ecosystem as well as wasteful use of resources, and therefore, somewhat contrary to the ecosystem approach. Some change in laws, agencies and associations may be appropriate in order to facilitate implementation of the ecosystem approach.

ACTION: Comprehensive studies, directly limited to the Great Lakes Basin, of laws, agency mandates and structures, and charters and structures of certain associations should be undertaken soon. Conclusions and recommendations for change, if any, should be elements of such studies. Major independent institutions experienced in such studies should be utilized to structure and conduct these studies with the assistance of the governments and associations. Funding for the studies should be from independent sources. The IJC should indicate need for the results of such a review as basic to the evolution of ecosystem management strategies. It can provide some technical assistance.

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COMMENTS: IJC institutional analyses accomplished under Pollution from Land Use Activities Reference Group and others can provide some basis for this review.

RELATED PROPSALS: This could be undertaken by:

8. GREAT LAKES POLICY ANALYSIS INSTITUTE and to provide for
10. INTEGRATED ECOSYSTEM MANAGEMENT
12. TRANSBOUNDARY IMPACT ASSESSMENT

INITIATIVE 10. INTEGRATED ECOSYSTEM MANAGEMENT

DESCRIPTION: IJC should expand the roles and technical capabilities of standing boards and strengthen roles and staff capabilities at its Great Lakes Regional Office to provide the capacity to evaluate impacts of proposed major developments on Great Lakes Basin ecosystem and to consider ecosystem implications of existing/emerging problem areas.

BACKGROUND AND NEED: What new tasks are imposed on the Governments of Canada and the United States and the IJC as greater recognition emerges of the interrelationships of water, land, atmosphere, plant and animal life and the effect of man's work? Does this emerging awareness suggest an early broadening of governmental concern and cooperation beyond water quality to a consideration of ecosystem integrated management for the Great Lakes Basin? Major consideration should be given to the impact of land management and resource development within the Great Lakes Basin on the latter's ecosystem. The ecosystem is defined to include land, air, water, biological and social systems.

Problem areas relate to agriculture, forestry, recreation, wetlands and nearshore fisheries, habitats, shorelands, natural hazard lands, mining, urbanization, industrial development, waste management practices, conversion of agricultural lands to urban or industrial uses, indiscriminate clearing of land for agriculture, diversions and other consumptive uses of water, airborne emissions, particularly of PCBs, other chlorinated hydrocarbons and of oxides of nitrogen and sulphur which result in "acid rain", transportation and energy use, and widespread use of salt for de-icing roads.

There are presently no effective means for forwarding propsals which might impact the Great Lakes Basin ecosystem to the IJC for evaluation prior to development. The IJC is without the tools to effectively consider emerging problems unless they affect Great Lakes levels, diversion of waters out of the system, or a matter that the two countries have traditionally set before it.

ACTION: The International Joint Commission should continue to pursue its water-based mandate with reference to interrelationships that link land, air, water and biological and social systems, but the ecosystem concept transcends water.

As a first step in this process, the two countries with the assistance of the International Joint Commission, should consider program linkages and priorities; expand the roles and the technical capabilities of standing boards to serve the objective of ecosystem/integrated management; and strengthen the role and staff capabilities of the regional office of the IJC in carrying out a program responsive to ecosystem/integrated management of the Great Lakes.

COMMENTS:

RELATED PROPOSALS:
3. GREAT LAKES BASIN INFORMATION SYSTEM
1. IJC STANDING BOARD ON ANALYSIS-SYNTHESIS
2. GREAT LAKES BASIN INFORMATION CENTER

INITIATIVE 11. ASSIMILATIVE CAPACITY FOR POLLUTANTS AND THE ECOSYSTEM APPROACH

DESCRIPTION: The notion of "assimilative capacity" for any level of pollutants in bodies of water has no basis in ecological science and should therefore not be a consideration in setting water quality standards or effluent limits. Future Great Lakes Water Quality Agreements should state this.

BACKGROUND AND NEED: The assumption that water has an assimilative capacity for certain levels of pollutants is widespread. This assumption has been used to justify the discharge of various biodegradable and other wastes to receiving waters and to support the concept of mixing zones. There is however, no discharge without an impact on water quality. Such impacts are usually deleterious to the health of the recipient ecosystem which in turn reflects first on the more sensitive uses of the ecosystem.

Actions based on the assumption that water has an assimilative capacity usually result in some of the sensitive uses of the "assimilating" ecosystem being sacrificed to upstream degredative uses that exploit the so-called "assimilative capacity". Here "upstream" refers to the atmosphere as well as surface and ground waters. Assimilative capacity is a euphemism for a politically imposed or politically negotiated abuse of an ecosystem. Continued use of this concept in interjurisdictional decision-making will increase the degredation of the Great Lakes.

ACTION: The parties should explicitly address the issue of "assimilitive capacity" in the fifth year review of the Water Quality Agreement, acknowledging that any pollutant at any level has an impact on the system even though it may not be economically feasible or practical to control all pollution. This review should be the basis for public discussion prior to renegotiation of the Water Quality Agreement.

RELATED PROPOSALS: 26. FULL COST PRICING
4. STATUS REPORT ON THE GREAT LAKES BASIN ECOSYSTEM
6. ECOSYSTEM REFERENCE TO THE IJC

INITIATIVE 12. TRANSBOUNDARY ECOSYSTEM IMPACT ASSESSMENT

DESCRIPTION: 1) Assess adequacy of present policies and practices
2) Develop a model for an integrated assessment process for analyzing the G. L. Basin Ecosystem and transboundary impacts of proposals for human activity in the Basin.

BACKGROUND AND NEED: An ecosystem approach requires anticipatory behavior. While all jurisdictions in the Great Lakes Basin have some form of mechanism for assessing the potential impact of future human activity on the environment, they differ markedly in the extent to which the review process takes into account non-local, non-quantifiable and ecosystemic considerations. The consideration of extra-territorial ecosystemic impact will be unguaranteed and spasmodic unless the statutory scope of the enquiry mechanisms is expanded. There is a need for an examination of how the environmental assessment mechanisms can be more accommodating to each other both legally and institutionally. We also need to rethink environmental assessment. The requirement remains though, the process has acquired some very negative connotations. In addition, there is presently no provision for binational or IJC review of impacts that may result from proposals for human activity or of the implications for meeting the objectives set forth in the Water Quality Agreements.

ACTION: A joint U.S./Canadian task force should consider current criteria and the scope of environmental assessment, examining existing requirements and practices of the several jurisdictional levels in the Great Lakes Basin, as well as the potential for incorporating binational and ecosystemic impacts. A model of the integrated assessment process should be developed to provide guidance in improving and strengthening current practice.

Impetus and assistance for the joint Task Force could come from the IJC. The Commissions' mandates under the Water Quality Agreement of 1978, particularly with respect to monitoring and advising the parties relative to the General and Specific Objectives and to improve its own capabilities to fulfill its responsibilities and functions under Article VII and Article X regarding consultation and review and Article XI on implementation.

COMMENTS: Assistance can be provided by such organizations as Canadian Environmental Law Association, the Environmental Law Institute, Environmental Defense Fund and others. IJC/GLFC involvement would be very important.

RELATED PROPOSALS:

14. UNIFORM TRANSBOUNDARY RECIPROCAL ASSESS ACT
9. REVIEW OF INSTITUTIONAL CAPABILITIES FOR IMPLEMENTING THE ECOSYSTEM APPROACH
8. THE GREAT LAKES POLICY ANALYSIS INSTITUTE. THE INSTITUTE COULD PROVIDE FOR COORDINATION OF THE TASK FORCE WORKING IN COOPERATION WITH IJC AND THE GREAT LAKES FISHERY COMMISSION
3. GREAT LAKES BASIN ECOSYSTEM INFORMATION SYSTEM
4. STATUS REPORT ON THE GREAT LAKES SYSTEM

INITIATIVE 13. NEW MECHANISMS FOR RESOLUTION OF CONFLICTS OVER ECOSYSTEM MANAGEMENT

DESCRIPTION: This initiative calls for transnational environmental dispute resolution based on Articles IX and X of the 1909 Boundary Waters Treaty either through use of the IJC's "fourth power" for arbitrating disputes or expansion of the treaty powers of the IJC and/or development of a mutually acceptable process and vehicle for environmental mediation such as a Board or Panel.

BACKGROUND AND NEED: There is presently no mechanism in place for the resolution of environmental or resource conflicts or for development of information that might assist in reducing or resolving conflicts. Adversarial processes tend to freeze opinions and make mutually agreeable solutions, which may be compromises, difficult to obtain. Information developed for conflict resolution or for use in adversarial processes may be very limited in its consideration of important facts. In addition adversarial processes tend to lead to polarized positions, creating fear and frustration among the public, as the issue of what solution will allow the ecosystem to regain health or remain healthy is often not addressed.

Courts on both sides of the border are being asked by litigants to resolve complex cases of environmental damage. They are being hampered by the narrow focus of common law remedies, restrictive rules governing such things as causation, proof, standing to sue, the technical constraints or legal procedures and rules of private international law which prevent a court from considering extra-territorial effects, both at the international and at the interstate or interprovincial levels. Articles IX and X which give the IJC a direct decision-making role have not been used and the consequences of moving the IJC from its current regulatory, information-analysis and consultative role to include dispute resolution should be examined and if found to be infeasible a new alternative should be developed. Other alternatives to be considered or to be incorporated to serve an IJC role would be those that could provide expert analysis of the problem so that the mediation-arbitration process would not be hampered by inadequate information regarding the nature of the problems and identification of potential alternatives for resolution that are ecologically sound. It would be necessary to provide adequate access to information and funding for operation (binational) as well as the authority for overseeing implementation of the result of the mediation or arbitration

ACTION: 1. The parties or the IJC should commission a scholarly assessment of the potential and limits of environmental mediation as it applies to transjurisdictional problems and for consideration of applying IJC's power of arbitration, and/or other alternatives.

2. Establish a Binational Board (it could be under the Commission or independent) that is capable of reviewing environmental complaints or conflicts and recommending or ordering action after mediation. Public to have access to information used.

3. Board could use panels of experts (interdisciplinary) to assess problems, recommend solutions. Panels could be funded by states, provinces and offending parties to a specific problem (i.e. utilities re acid rain), but panel experts would have to be independent. Based on requests to be made by the parties initiating request for mediation or resolution of the problem, the panel could provide expert advice to the Board in terms of specific solutions to the problem at hand. Would require transnational framework and authority to investigate complaints.

COMMENTS: The use of the panel could contribute toward "anticipatory" conflict resolution if expanded to include assessment of the specific problems with a "generic" interpretation that could apply to developing recommendations for prevention of similar problems elsewhere. This initiative involves actions that could be mutually supportive. Courts of law must be retained at a last resort.

RELATED PROPOSALS: 14. THE UNIFORM TRANSBOUNDARY POLLUTION RECIPROCAL ACCESS ACT

30. ENVIRONMENTAL BILL OF RIGHTS

INITIATIVE 14. ENACTMENT OF THE UNIFORM TRANSBOUNDARY POLLUTION RECIPROCAL ACCESS ACT

DESCRIPTION: A model law drafted by the National Conference of Commissioners on Uniform State Laws and the Uniform Law Conference of Canada in 1982 and recommended for enactment by states and provinces. It would permit suits when both parties reside in jurisdictions that have enacted the Uniform Act. The Act would acknowledge the fact that ecocystems do not recognize the boundary between Canada and the United States.

BACKGROUND AND NEED: Longstanding legal principles in both nations bar, in essentially all instances, a lawsuit for damages caused by pollution that crosses the international boundary. Pollution crossing boundaries may take a variety of forms ranging from simple escapes between adjacent lands to extremely complex problems such as acid raid and nuclear emissions.

It is generally a recognized rule of law that actions for damages, trespass, nuisance or negligent injury in respect to lands located in other actions are local and may be brought only in the state where the land is situated. While this rule has been criticized, the courts generally follow it. It is significant in that unless the alleged lawbreaker can be "found" in the state where the injury takes place, an action for damages is for all interests and purposes precluded. The purpose of this reform is to change local action rules and provide equal access for victims of trans frontier pollution to the courts of the jurisdiction where the contaminant originated. The law would allow transboundary intervention in environmental hearing and regulatory actions as well as in suits.

ACTION: Four states have already passed this Act. It is advisable that the Province of Ontario and other Great Lakes states pass the legislation. Information about the model law should be provided to policy makers, including legislators and interested citizen groups. Copies may be obtained from the National Conference of Commissions on Uniform State Laws, 645 N. Michigan Avenue, Ste. 510, Chicago, ILL.

RELATED PROPOSALS: 13. NEW MECHANISMS FOR RESOLUTION OF CONFLICTS OVER ECOSYSTEM MANAGEMENT

INITIATIVE 15. ECOLOGY CITY--MUNICIPAL PILOT PROJECT

DESCRIPTION: Communities willing to act as model cities in designing and implementing an ecosystem approach at the municipal level should be identified on each side of the border.

BACKGROUND AND NEED: Principles of an ecosystem approach are difficult to implement on a broad system-wide scale. Design and implementation of laws and regulatory processes as well as educational programs proceed at a snail's pace. The opportunity for trial and error is limited. On a small community scale, decisions can be made and put into action much more rapidly and modifications/corrections made more easily. Lessons learned can be transferred to other communities. Communities such as Green Bay Wisconsin might be appropriate. The GLFC has already begun an ecosystem restoration project in Green Bay.

ACTION: Choose the communities willing to undertake the project and obtain community participation in the development from government, chamber of commerce, community groups and unions in the development of the programs.

Make a community inventory of needs, problems, opportunities, consider the environmental quality, resources, alternatives, job opportunities and educational sources and technical expertise.

Develop a plan and programs centered around specific projects or programs such as waste reduction-recycling; water and energy conservation, improved public transportation, community gardens, public awareness regarding ecotoxins, new age technology, "right to know" legislation, air quality improvement, etc. Results of activities and programs shoud be evaluated and recommendations developed for larger scale implementation.

COMMENT: Dr. Ross Hume Hall at McMaster University has been developing the details for such a pilot project.

RELATED INITIATIVES: 16. VALUE IMPACT ANALYSIS--PILOT STUDY

INITIATIVE 16. VALUE IMPACT ANALYSIS--PILOT STUDY

DESCRIPTION: Application, to a pilot pgoram, of a decision-making process that would include value impact analysis. The development of value impact analysis in the design of an ecosystem approach at the municipal level (see ECOLOGY CITY), or in the development of a management plan for Allegany State Park might be suitable vehicles for testing this approach to decision-making.

BACKGROUND AND NEED: A value impact analysis is an as yet untried method of gathering information and placing quantifiers on those elements which are currently difficult or impossible to measure. Incorporating value impact analysis into the decision-making process for natural resources management would provide a more holistic context for decisions. The process encourages consideration of specific values, long term benefits for the ecosystem, an integrated approach, is future oriented, participatory, look at total cost/benefit questions, is concerned with questions of equity, minimizes adversarial relationships and proposes to be realistic toward action and change.

ACTION: This pilot study could be initiated through the State University of New York and/or the Institute of Social Research, the University of Michigan and in cooperation with McMaster University (if ECOLOGY CITY) is used) and management plans for either Allegany State Park or the city can be developed incorporating value impact analysis. Funding and cooperative arrangements must be identified. Collaboration with local and state agencies is important and will be required. The results would be monitored, evaluated and results shared with the Great Lakes Basin community and others.

COMMENT: This approach to decision-making has been developed by Lester Milbrath at SUNY Buffalo and details have been provided in paper given to the Workshop.

RELATED PROPOSALS: 15. ECOLOGY CITY: MUNICIPAL PILOT PROJECT

INITIATIVE 17. ADVICE FOR STATE AND PROVINCIAL LEGISLATURES

DESCRIPTION: State and Provincial Academies of Science volunteer through official channels to provide or find (outside) qualified persons to provide scientific advice to legislative committees dealing with environmental affairs or other programs that would directly affect an ecosystem approach in the Great Lakes Basin.

BACKGROUND AND NEED: Both provincial and Great Lakes state legislatures are very short staffed. Legislators typically seek scientific advice, if at all, only when faced with specific questions concerning narrow ecological issues. Persons and organizations attempting to influence environmental legislation also tend to address only narrow issues. Also, there is need to provide scientific, technical advice early in the legislative consideration of an issue. Legislators need exposure to ecological principles and many legislators are eager to learn if they are apprised of the significance of an issue.

ACTION: The Presiding Officer of each of the Provincial and State Academies of Science should provide official notice to the clerk and presiding elected officials in each legislative body of the scientific resource available through the Academy. Notices to individual legislators would also be in order. The Academies would have to be prepared to specify their own experts willing to assist and could also identify "outside experts" from citizen organizations, etc., who could address the issue in question. Being able to chose experts from within a jurisdictional/election district would enhance the "political" acceptability of such scientific advice.

COMMENT:

RELATED PROPOSALS:

INITIATIVE 18. ESTABLISH A CONTINUING BI-NATIONAL TASK FORCE TO ENCOURAGE THE DESIGN AND ADOPTION OF POLICIES LIKELY TO MOTIVATE BEHAVIOR IN A DIRECTION CONSISTENT WITH AN ECOSYSTEM APPROACH

DESCRIPTION: Establish (via governments or IJC) an interdisciplinary task group to evaluate Great Lakes related policies and programs and actions that are/have been compatible with an ecosystem approach and to recommend alternatives to those that need improving. The Task Force would also provide suggestions on implementation of alternatives.

BACKGROUND AND NEED: During the late sixties and seventies, there were major administrative efforts to regulate effluents, emissions, land uses and harvests of wildlife. These administrative-regulatory efforts were partially successful in correcting the most obvious abuses; but the costs of controls are high and regulations are often clumsy and inefficient whether they are applied to fisheries, hunting of wildlife, air pollution control or the disposal or management of hazardous wastes.

During the next two decades, we are likely to see a trend to de-regulation, either back to the overuse and abuse of common environmental resources or to various alternatives to present regulatory systems. It is critical to evaluate the effects of a return to the "overuse and abuse" scenario and the other options that might be posed in place of the present systems, so that recommendations can be developed for the adoption of those that will work toward achieving a healthy Great Lakes Basin ecosystem.

ACTION: Either the governments cooperatively, the IJC or the Great Lakes Fishery Commission should designate a binational, interdisciplinary, high-level task force that would include politicians, industrialists, administrators, researchers and environmentalists in order to take stock of successes and recommend alternatives for further action.

Alternatives to be explored should include such options as a) pricing policies which reduce stresses on the environment and discourage the use of scarce resources at particular times and/or locations; b) effluent charges and transferable discharge permits that encourage a reduction of technological externalities and hence a reduction in the level of emissions; c) more cost-effective administrative approaches and others as can be identified.

Theoretical and methodological work done specifically in relation to the Great Lakes by the task group would have many applications elsewhere and the task force effort could provide a model for other efforts in other areas of the globe.

RELATED PROPOSALS:

3. GREAT LAKES BASIN ECOSYSTEM INFORMATION SYSTEM
28. IMPROVED DECISION-MAKING
22. IMPLEMENTATION INCENTIVES
9. REVIEW OF INSTITUTIONAL CAPABILITIES FOR IMPLEMENTING THE ECOSYSTEM APPROACH
4. STATUS REPORT ON THE GREAT LAKES BASIN ECOSYSTEM
12. TRANSBOUNDARY ECOSYSTEM IMPACT ASSESSMENT

INITIATIVE 19. CREATE A GREAT LAKES REHABILITATION FUND

DESCRIPTION: A tax on consumptive resource users (i.e., water for irrigation, cooling towers, fishing, etc.), to finance the necessary measure to reach and maintain the intent of the Great Lakes Water Quality Agreement.

BACKGROUND AND NEED: The Great Lakes are a classic example of "common property" (i.e., that used by all and considered a necessity for life--air, water), made more difficult by management that falls under eleven major jurisdictions in two sovereign countries. While it is not feasible to consider "privatization" of the Lakes, the principle of "polluter pays" (endorsed by the Organization for Economic Cooperation and Development-OECD-to which both Canada and the United States belong) could be activated under some kind of binational agreement. The "conservative" political mood in both countries might be helpful in gaining acceptance of a proposal based on this principle, since it would help off-set government expenditures for pollution control. In addition, economists have given considerable attention to the notion of "effluent fees" as a compensatory component to regulation for pollution control.

ACTION: The Great Lakes Fishery Commission, the International Joint Commission, Great Lakes Tomorrow and the International Association of Great Lakes Research should call for a technical, economic and legal feasibility study to be done on the levying of "user fees" for the Great Lakes and their resources and earmarking these for a rehabilitation fund. Some kind of fee schedule would be placed on consumptive uses of Great Lakes water, fish and other resources impacting the system such as gas and oil, large scale dredging or modification for navigation, power. The fee schedule should be related to the funding needed to implement a full-scale rehabilitation program, including surveillance and monitoring costs. Some data are available as a "first cut" - e.g., IJC water diversion and consumptive use studies; the Great Lakes International Surveillance Plan proposals (GLISP); the pollution from non-point sources studies (PLUARG); the Great Lakes Ecosystem Rehabilitation Studies (GLER); and economic assessments of fishery benefits by the Great Lakes Fishery Commission (GLFC).

The study should consider arrangements for binational cooperation on the organization and use of a rehabilitation fund, probably under the aegis of the IJC.

The non-governmental sector, i.e. corporate, academic and citizen groups should participate in the study along with representatives from local government.

Recommendations should be made public and forwarded to the parties for consideration in amending legislation, the treaties and Water Quality Agreement.

RELATED PROPOSALS: 20. FULL COST PRICING
21. PAYING THE BILLS FOR ENVIRONMENTAL PROTECTION
22. IMPLEMENTATION INCENTIVES

INITIATIVE 20. FULL COST PRICING: INTERNALIZING POLLUTION COSTS

DESCRIPTION: Designate a binational study group to:

1) Do a technical, legal and economic feasibility study to address the internalization of environmental fees, surcharges and penalties and explore other measures for internalization of pollution costs.
2) Develop means for doing feasibility assessment for proposed development schemes and review processes (including hearings) for approving or "licensing" developments, that adopt the principle of "full cost pricing" to assess the societal worth of the proposed undertaking. This process would have to be designed to go beyond the conventional economic interpretation of "opportunity costs" that are often ignored in development decisions.
3) Make recommendations to federal, state and provincial governments.

BACKGROUND AND NEED: The Great Lakes and their Basins are examples of the "common property" dilemma. Industries and muunicipalities should internalize the costs of environmental monitoring, research and enforcement; permits and processes; cleaning up and rehabilitation of the environment.

The "profitibility" of private investment is influenced by the institutional ground rules under which the accounting for returns to investment are determined. Hidden subsidies often ignore social and environmental disruptions while ensuring "profitability" in terms of financial gain to the investors.

The consequences too often are exploitative development as can be seen whenever the real social and environmental costs of private enterprise emerge. Current examples are the costs of permissive practices of industrial waste disposal (e.g. Niagara region) and costs about to be incurred by the over expansion of forest product industries vis-a-vis forests in Canada. Conventional economics have long recognized the concept of "opportunity costs", i.e., benefits foregone by choosing one option over another. These commonly are thought of as loss of present values on services being received and something that can be handled by compensation payments if necessary.

This concept needs to be expanded to consider the "replacement cost" of lost natural assets, i.e. the costs of rehabilitating degraded resources and environments as a result of "profitible development". This need not prevent development that incurs such costs from taking place, but it will serve to draw the necessary attention to consider alternative means of replacing values lost or finance equitable social adjustments in order to base the decisions on whether or how to proceed.

An "ecosystem approach" requires this more careful consideration of costs and benefits associated with a wider recognition of consequences. It would help move society towards the ideal of "sustainable development". Briefly state the latter means that no society worth having should be based on economic processes that systematically undermine the ecologic bases required for their own continuance.

While the initial reaction to "full cost pricing" will be negative because of the assumption that it will mean more costs or taxes to industry, this need not necessarily be the case. The adjustment that may be required for mitigative measures, replacement costs, or compensation payments associated with investments for development should be sought within existing taxation or financial incentive policies. A number of corporations have already found that "pollution prevention pays".

ACTION: The Ecosystem Workshop Steering Committee should initiate the development of a binational study group to being the practical investigations as specified above in the Description. The corporate sector must be involved. In its work, the group should not encourage the use of fines as a means of raising funds for agency budgets. Penalties, fees, surcharges, other incentives should be related to the potential environmental impact of the emissions/pollution. A series of practical investigations to ascertain appropriate means for doing feasibility assessment prior to approval that will incorporate full cost pricing of the proposal should be undertaken. Cooperators in the activities to be undertaken could include the Center for the Great Lakes in Chicago.

The public must be involved in the consideration of recommendations to be made to the governments. Public hearings and tribunals of various kinds provide some opportunity for discussion and consideration of development proposals from the "old school". A strategy for monitoring the implementation of the resultant practices should be developed. It could include organizations that do "action research" working in cooperation with various "intervenors at hearings". Initially the challenge would be to document the hidden costs and subsidies that may be the key factors in determining whether or not whatever is being proposed is "feasible". Other mechanisms should be used or developed if not already available -- i.e., use of environmental assessment processes, etc.

RELATED PROPOSALS:

19. GREAT LAKES REHABILITATION FUND
21. PAYING THE BILLS FOR ENVIRONMENTAL PROTECTION
22. IMPLEMENTATION INCENTIVES
18. BINATIONAL TASK FORCE ON THE ECOSYSTEM APPROACH
9. REVIEW INSTITUTIONAL CAPABILITIES FOR IMPLEMENTING THE ECOSYSTEM APPROACH

INITIATIVE 21. PAYING THE BILLS FOR ENVIRONMENTAL PROTECTION

DESCRIPTION: Develop more options such as permit charges and tax incentives that shift more the costs of environmental protection from the taxpayer to the consumer thus providing a more secure financial base for environmental protection.

BACKGROUND AND NEED: Recessions and depressions bring drastic cuts in budgets of agencies and institutions charged with environmental monitoring, research and enforcements. In any event, budget allocations depend on the annual priorities of funding bodies, while the needs of ecosystem may be greater or lesser depending on progress made and stresses added. The management and protection of the ecosystem requires constant monitoring and the enforcement of preventive or remedial programs is critical to continued progress.

Existing costs for environmental protection are paid primarily by the taxpayers for support of monitoring, research and enforcement. The present policies in both countries need to be re-evaluated.

ACTION: Governments (initiatives by the Provincial, State and Federal governments as appropriate to their mandates) should reassess the various incentives and disincentives as indicated and change practices to internalize the costs to the industry or municipality providing the product or service so that they can be directly passed to the consumer as follows:

Charges for permits should help pay the costs of the permitting process and future monitoring. Industries and municipalities should internalize these costs and pass them on to the consumer instead of having taxpayers pay the total cost of monitoring and permitting programs.

Tax incentives should be available to business willing and able to foster basic research to solve environmental problems which are in the interest of the protection and enhancement of the ecosystem. Projects would have to be approved by government agencies on a contract basis. Some examples of such projects are: (1) better purification techniques for water such as removal of low concentrations of organic and inorganic pollutants;

(2) improved engineering designs with less loss of energy and increased recycling of natural resources in the manufacture of all kinds of chemical products; (3) determination of long-range toxicological effects of trace amounts of chemicals or combination of chemicals in air and water; (4) encourage pre-market testing with use of environmental impact statements for potential toxic chemicals.

Fines are presently not very effective enforcement mechanisms in most cases. Fines should be significant enough to provide more of an incentive for compliance so that polluters do not find it cheaper to pay a fine than comply with regulations. New legislation should address this issue. While the use of fines to pay for operating budgets of environmental protection agencies could lead to abuse, some provision should be made for the return of monies levied to environmental protection activities.

RELATED PROPOSALS:
20. FULL COST PRICING--INTERNALIZING THE POLLUTION COSTS
22. IMPLEMENTATION INCENTIVES
19. GREAT LAKES REHABILITATION FUND
9. REVIEW INSTITUTIONAL CAPABILITIES FOR IMPLEMENTING THE ECOSYSTEM APPROACH

INCENTIVE 22. IMPLEMENTATION INCENTIVES FOR AN ECOSYSTEM APPROACH

DESCRIPTION: An interdisciplinary task force to develop incentives for implementing an ecosystem approach in the Great Lakes.

BACKGROUND AND NEED: At present, incentives do not favor resources that are shared in common. Possible incentives and rewards are not specifically identified and related to what might be gained or lost by governments, industry and the public by implementing an ecosystem approach in the Great Lakes Basin. The issues of cost savings, improved quality of life, equitibility, better environmental health, positive incentives, etc., need to be addressed for each sector.

ACTION: A joint task force representing interdisciplinary perspectives from government, industry and the public should be established to study and evaluate potential incentive mechanisms that would be balanced and equitable that could be used in the Great Lakes Basin to assist in achieving ecosystem management of basin resources.

One example of a successful incentive that illustrates the ecological approach is in the area of energy conservation both at personal and industrial level.

RELATED PROPOSALS:
15. ECOLOGY CITY
20. FULL COST PRICING
21. PAYING THE BILLS FOR ENVIRONMENTAL PROTECTION: INTERNALIZING COSTS

INITIATIVE 23. EDUCATION AND THE ECOSYSTEM APPROACH:
GETTING THE CONTEXT RIGHT

DESCRIPTION: Curriculum revision to strengthen primary and secondary educational systems to improve basic understanding of principles of ecology and to learn about how they apply to the Great Lakes Basin Ecosystem.

BACKGROUND AND NEED: The discrepancy between public perceptions and scientific understanding can only be partially overcome in the near term. If public understanding of ecological principles is to be improved over the long term, there is need to strengthen primary and secondary school system curricula. Students must be taught ecological theories, principles and related knowledge: e.g., interdependence, natural systems cycles and the difference between house (environment) and home (ecosystem) in respect to management. Education must move from dealing with public health, environmental and/or conservation issues along toward holistic thinking basic to managing the Great Lakes Basin as a home. In addition to curriculum revision and funding resources, teacher training will be required. Decisions about management of problems at their source or choice of alternatives to prevent long term ecosystem contamination with toxic pollutants require a different orientation than that provided to most public school teachers.

ACTION: Because the curricula developed must deal with a complex binational ecosystem, the IJC should provide leadership in this endeavour by developing "model" curricula as part of its public information function. It could work through a task group of representatives from Provincial and State departments of education, universities (including Sea Grant in Minnesota, Wisconsin, Michigan, Ohio and New York) and key professional organizations (National Educational Association's Science and Social Studies Teachers, Geographers in Ontario, etc.), and private environmental education organizations (Great Lakes Tomorrow).

It is recognized that some of this work has begun through efforts of Sea Grant, Ontario Ministry of the Environment and Enviroment Ontario and Great Lakes Tomorrow. Present curriculum material should be reviewed, revised and added to as needed to develop a binational approach to the Great Lakes Basin Ecosystem.

The Federal Governments and others can provide incentives, guidelines and resources. Legislators wil have to be educated as to the practical importance of this initiative so appropriate legislative guidance and resources will be forthcoming.

COMMENT: By evaluating and building on curriculum initiatives already begun by Sea Grant and Ontario - Canada under COA for the states and the province and adapting Great Lakes Tomorrow's Decisions for the Great Lakes program, substantial progress could be made in a short time. The Decisions Program has been designed for adults. (See 2).

RELATED INITIATIVES: 24. CROSS-DISCIPLINARY COURSES IN ECOSYSTEM MANAGEMENT
25. PUBLIC EDUCATION AND THE ECOSYSTEM APPROACH - INNOVATIVE IDEAS

INITIATIVE 24. CROSS-DISCIPLINARY COURSES IN ECOSYSTEM MANAGEMENT

DESCRIPTION: Development and initiation of interdisciplinary courses in ecosystem management (such as Decisions for the Great Lakes) within universities and other institutions of higher education with credits available in each participating department (economics, sociology, political science, biology, etc.), so student majors and professors will have increased opportunities to contribute and participate.

Introduction of ecosystem perspective in professional training of engineers, chemists, biologists and other specialists and development of continuing education courses in ecology and systems management for practicing professions and resource managers.

Incorporation of the ecosystem perspective into other courses, including computer science.

BACKGROUND AND NEED: To implement ecosystem management strategies in the Great Lakes Basin, it is necessary to develop attitudes, models and skills for dealing with cross-disciplinary or "systemic" ecological decisions. Traditional courses in ecology do not adequately take account of the human component, including human institutions. Courses in systems analysis are often deficient in taking full account of nature. Few other courses even attempt to adopt cross disciplinary approaches. Thus the average college student is encouraged to develop segmented linear approaches to problem solving. More cooperation within the various learned/scientific societies is also needed to encourage formal institutional approaches.

ACTION: Courses addressing Great Lakes related problems from an interdisciplinary perspective should be developed within the various institutions of higher education and in professional training pgorams in the states and provinces. University faculty would have to take the initiative. A pilot program is in progress, initiatied by Great Lakes Tomorrow to train adult decision-makers. This has been adopted and will be offered for graduate and/or undergraduate credit at four universities in the Lake Erie Basin in 1984-85. Specific issue oriented courses should be developed as well.

Need for interdisciplinary academic programs relating to the Great Lakes Basin Ecosystem should be articulated by the International Joint Commission and the Great Lakes Fisheries Commission. Universities should be informed and their participation solicited.

COMMENT: Decisions for the Great Lakes may eventually be offered in at least 24 universities around the International Great Lakes. It should be evaluated and adapted as appropriate. The resource manual: DECISIONS FOR THE GREAT LAKES is available for use. Great Lakes Information Centres could be a basic resource.

RELATED INITIATIVES:

23. EDUCATION AND THE ECOSYSTEM APPROACH: GETTING THE CONTEXT RIGHT
25. PUBLIC EDUCATION AND THE ECOSYSTEM APPROACH - INNOVATIVE IDEAS
26. GREAT LAKES INFORMATION CENTRES

INITIATIVE 25. PUBLIC EDUCATION AND THE ECOSYSTEM APPROACH-INNOVATIVE IDEAS

DESCRIPTION: Innovative techniques tuned to specific audiences are needed to communicate ecosystem ideas and practices.

BACKGROUND AND NEED: Individuals have little knowledge of the Great Lakes Basin or how their personal lifestyles might be affected by the ecosystem approach. Public awareness of the state of ecosystem knowledge (conditions, legislation, etc.), is extremely low and urgently needs attention with emphasis on binational problems and solutions. The major goal should be to give people practical information on how they can live an ecosystem lifestyle at home. To accomplish this, innovative educational techniques must be developed and implemented to reach both the general public and community leaders. Implementing the ecosystem approach incorporates our increasing awareness of our relationships with all life, relating it to a larger whole. The "Lake Erie is Dead" theme of the early 1970's was an extremely effective communication mechanism for altering the general public to the pollution plight of the Great Lakes. But the pendulum of public opinion has swung away from the environmental focus of the 1970's. Since the ecosystem approach will be viewed by most as being of lesser importance than other current issues, a particularly innovative educational approach will be necessary. More-over, because the target audience is multifaceted, reliance on single educational approaches will probably fail. Many types and channels of communication must be employed to create a receptive climate and willingness to institute change.

IMPLEMENTATION: Marketing may be the key to putting this proposal into action. Innovative, non-traditional approaches need to be explored. Some examples:

a) Extension course by newspapers: The Ecosystem Approach and household management for the general public.

b) Great Lakes floating classroom: Move from port to port, local arrangements coordination, general public orientation.

c) Unit materials for the classroom: Written materials and creative activities (i.e. films, games, etc.). Similar approaches could be adapted and applied to adult education.

d) Develop and distribute ecosystem computer simulation games with emphasis on relationships as "man in nature" and "win/win" solutions to real problems. Impact on school and home markets.

e) Great Lakes decisions workshops: Continuation and expansion of programs underway by Great Lakes Tomorrow.

f) Publish a non-technical book on the Great Lakes Basin System (Professional writer work six months ($20-30k) teamed with an ecologist to produce book).

g) Design a series of TV and/or radio spots. (Effective way of reaching public).

Marketing the innovative approaches: Use currently existing networks with available resources:

Who	Focus	When	How
Politicians	Managers	Elections and between	lobbying, caucuses
Business leaders	Managers	Not just at hearings	individually or through associations such as PACE
University Students	Future decision makers	fall and winter	through clubs, assoc., or public events on campus
Youth groups	Learning	Year long/especially summers	puzzles, games, cartoons
Churches	Personal	Sundays	by denomination, through association
Individuals	Personal	Everyday	Lifestyle (concern)

Provide information in usable form. Cost varies depending on examples. De-emphasize short-term public funding; rather seek diverse, long-term funding from local sources, private foundations and municipalities and industries who are Great Lakes Water users.

RELATED PROPOSALS:
26. CENTERS FOR GREAT LAKES INFORMATION
2. GREAT LAKES BASIN INFORMATION CENTER
27. DIALOGUE NETWORKS: ENHANCED COMMUNICATIONS
24. CROSS-DISCIPLINARY COURSES IN ECOSYSTEM MANAGEMENT

INITIATIVE 26. CENTERS FOR GREAT LAKES INFORMATION

DESCRIPTION: Establish or expand centres at key universities in the Great Lakes Basin to facilitate: 1) development of Great Lakes Basin information; 2) public access and use of information; and 3) university based expertise related to improving/developing an ecosystem approach to important resource/ environmental issues.

BACKGROUND AND NEED: In most locations, university resource (information and expertise) on Great Lakes related natural resource and pollution issues is not directly accessible to the public. If there were various university centres around the Great Lakes to facilitate public use of an ecosystem approach, participants would develop for themselves a common understanding of a range of man-environment perspectives on any issue. This understanding would encourage participation in decision-making processes and encourage use of the ecosystem approach at botgh local and regional levels of government.

Experience has shown (by the Ecosystem Workshop or Decisions for the Great Lakes, for example): (1) that people with differing perspectives can work together to develop a common, holistic understanding of ecosystem issues and alternatives; and (2) that when they do so, decisions are likely to be wiser, more acceptable and less subject to adversarial challenges. Differing viewpoints can be systematically considered in developing a common understanding of issues and alternatives. Centres would encourage this type of approach.

ACTION: Establish or expand centres at key universities around the Great Lakes so they will be equipped to serve as a resource on the ecosystem approach in the Great Lakes basin. The centres would:

1) facilitate an ecosystem approach to local and basin decision-making through the use of holistic systems analysis;

2) facilitate broad-based public participation in relevant policies and programs;

3) conduct related short-term research, involving citizens as appropriate;

4) develop better methods than presently used to accomplish the above tasks;

5) participate in the Dialogue Network via computer to keep in touch with information and issues related to the entire basin.

Centres would facilitate action and disseminate information, but would not advocate specific solutions. They would have computer access to the Great Lakes Information System.

Centre Board of Directors could themselves be multi-perspective and multi-disciplinary, including public and private sector representatives.

COMMENTS: Decisions for the Great Lakes programs in Lake Erie basin seem to be evolving in this direction in some locations - Buffalo, St. Catharines.

Resources to establish and run such centres are scarce. Creative funding on a cooperative basis will be required.

RELATED PROPOSALS:
27. DIALOGUE NETOWRK
28. IMPROVED DECISION-MAKING TOWARD ECOSYSTEM MANAGEMENT
3. GREAT LAKES BASIN ECOSYSTEM INFORMATION SYSTEM
24. CROSS-DISCIPLINARY COURSES AND ECOSYSTEM MANAGEMENT
31. IMPROVE PUBLIC AND INDUSTRIAL INPUT TO THE IJC
25. PUBLIC EDUCATION AND THE ECOSYSTEM APPROACH - INNOVATIVE IDEAS

INITIATIVE 27. DIALOGUE NETWORK: ENHANCED COMMUNICATION

DESCRIPTION: Tie in with commputer network (e.g. I.P. Sharp or GIESO or ARPANET) via time-shared terminals to continue the dialogue begun at the Hiram Workshop in a network communications context to clarify operational criteria for "ecosystem thinking", etc. (see below)

BACKGROUND AND NEED: The working out of ideas developed in a preliminary way at the Hiram Workshop in Hiram depends on continued, easy access communication. There is a need to find ways to distribute concepts, provide information and guidance to other members of the public including: established interests vying for influence on decision-making; and established organizatios that make or implement decisions with respect to specific ecosystem issues, problems and opportunities. Both the information and development of specific actins or strategies as well a more formal decisions would benefit by access to a Dialogue Network. This would provide a basis for broader recognition of benefits, more adequate monitoring of the consequences of actions and provide for some cost-sharing with respect to the decision process among users of the network.

ACTION: Tie in terminals with a network would be provided or made accessible to all participants at the Hiram Workshop (initially) and expanded to others interested for electronic mail at cost. An overview authority (or grant) would provide the single-network function costs and a fee ($50.00/month) charged for terminal access. Expanding the network to serve others than the Workshop participants would cost about $25,000. The Network function costs to continue work begun in Hiram would run about $15,000 for six months.

COMMENTS:

Some of the participants, including Dr. Ed Masteller at Penn State, Behrend, who was involved with the Decisions Program, have done some developmental thinking about setting up a network that would also be accessible to local citizens.

A Computer Bulletin Board would also be useful in such a network.

Information produced via the suggested Great Lakes Information System could also be accessed and used in this network.

RELATED INITIATIVES:

3. GREAT LAKES BASIN INFORMATION SYSTEM
10. INTEGRATED ECOSYSTEM MANAGEMENT
4. STATUS REPORT ON THE GREAT LAKES BASIN ECOSYSTEM
12. TRANSBOUNDARY ECOSYSTEM IMPACT ASSESSMENT
32. USER PARTICIPATION IN DECISIONMAKING
26. CENTERS FOR GREAT LAKES INFORMATION
2. GREAT LAKES BASIN INFORMATION CENTER

INITIATIVE 28. IMPROVED DECISION-MAKING TOWARD ECOSYSTEM MANAGEMENT

DESCRIPTION: Establishment of an improved system for making environmental/ resource development decisions to allow input from all parties involved in or affected by a proposal and for more extensive consideration of social and enviromental implications.

BACKGROUND AND NEED: The IJC public hearing and other current public consultation processes used in making decisions about the protection and management of Great Lakes basin resources are inadequate. So are those of the parties and of the state, provincial and local governments.

Alarmism, political expediency or irrational defenses by involved and affected parties can result in under-reactive or over-reactive decisions. The need is for emotional issues and political considerations to be considered in proper perspective, leading to decisions based on sound ecosystem management principles.

An improved decision-making process with respect to those issues that will affect the Great Lakes basin ecosystem quality should be developed and implemented by the IJC and the parties to the Agreement and Treaty.

ACTION: The IJC and the Parties to the Boundary Waters Treaty and the Great Lakes Water Quality Agreements should design a public consultation system that will allow for input from all parties involved in or affected by a proposal (for development or major recommendations for action under the agreements).

Basic Components of such a system:

1) Information: All parties must receive in understandable form sufficient information to appreciate what is involved in the project or program proposal. (Warning: this is not easy as current understanding of problems and controls is more complex than in the past.)

2) Response Time for public input must be sufficient to provide for access to and review of materials and to allow input in time for consideration by initiators.

3) Proposal Amendment and Socio-Economic Assessment: the proposal should be amended based on public input. It should be then explained and justified by a socio-economic impact assessment conducted, if possible, by a third party with high credibility.

4) Response: Time for further public review, analysis and comment must be adequate.

5. Final Decision should be made by a Review Board composed of representatives of involved and affected parties.

OTHER INFORMATION: For additional suggestions and important concepts basic to the design of the socio-economic impact assessment, see pages five and six of the unpublished manuscript submitted to participants at the Hiram Workshop by Lester W. Milbrath, SUNY Buffalo entitled, "Public Decision Making With Regard to Managing a Natural Resource".

RELATED PROPOSALS: 16. VALUE IMPACT ANALYSIS

INITIATIVE 29. COALITIONS TO PRESSURE THE U.S. AND CANADA TO ESTABLISH LONG AND SHORT-TERM RESEARCH AND MONITORING STANDARDS AND GOALS.

DESCRIPTION: Establishment of coalitions to provide Congress and Parliament with information about the consequences of cuts in funding and programs for research and monitoring on the Great Lakes. Develop short-term strategy to fund U.S. programs threatened or disrupted by U.S. EPA budget reductions and program priorities. Establish a long-term strategy of need. Couple with a major public information and media information program in key centers around the Great Lakes.

BACKGROUND AND NEED: Environmental groups, water-related scientists and IJC have all expressed concern over the loss of various programs now threatened or being terminated that have major impact on the Great Lakes system or on the ability of the two nations to meet the joint objectives set in the Water Quality Agreement. Monitoring and research provide the fundamental underpinnings needed to understand this ecosystem. Monitoring wil allow us to respond to significant shifts in quality or developing problems. The programs must be in place if we are to be able to make wise decisions about the future of the Great Lakes and if we are to respond to rapid changes in the ecosystem.

ACTION: Short term: Coalesce a group of Great Lakes environmental groups (GLT, Pollution Probe, Sierra Club, Federation of Ontario Naturalists, et al) fishing interests, boaters, interested business and industry and some former employees of the research and monitoring operations to meet with U.S. or Canadian delegations to explain the consequences of the cuts and to provide this information to Executive departments as appropriate (Office of Budget and Management, EPA, OMNR, DOE, etc.). Public attention should be focused on this effort through the holding of public meetings at major cities in the region, and prepared statements provided to the news media.

Long term: Work through IJC and major research centers on both sides of the border to establish a strategy for long-term commitment to research and monitoring required to achieve and maintain ecosystem health in the Great Lakes. Need, expense and rewards should be identified.

Funding resources for this effort could be provided through the coalition, from other public interest groups such as universities, foundations, recreational groups and business which all benefit from achieving and maintaining a healthy ecosystem.

RELATED PROPOSALS:

9. REVIEW INSTITUTIONAL CAPABILITIES FOR IMPLEMENTING THE ECOSYSTEM APPROACH
4. STATUS REPORT ON THE GREAT LAKES BASIN ECOSYSTEM
3. GREAT LAKES BASIN INFORMATION SYSTEM

INITIATIVE 30. ENVIRONMENTAL BILL OF RIGHTS FOR THE GREAT LAKES

DESCRIPTION: An environmental bill of rights for the Great Lakes would be developed as a "charter" and incorporated into the Great Lakes Water Quality Agreement as well as requiring appropriate change in present policy at provincial, state and federal levels.

BACKGROUND AND NEED: Currently, at least in Canada, it is extremely difficult for citizens to obtain standing in the courts or official proceedings in relation to environmental issues. It is becoming more difficult in the United States. While the concept of "rights" should be extended to natural resources in the basin, it is important that citizens are first extended "rights of standing and access" which are guaranteed.

ACTION: The issue should be considered (possibly by the Great Lakes Conference as suggested in that Initiative) and by the parties. Legislation should be developed and an amendment to the Water Quality Agreement incorporated that would include:

- the right to a healthy shared ecosystem
- standing of citizens and natural resources in both the judicial and administrative processes
- public input into the regulation-making process
- access to information rights
- reversal of the onus of proof so that proposers will have to prove that the action is NOT harmful rather than citizens having to prove that it is
- funding of intervenors in action

Responsibilities of citizens could also be identified.

RELATED PROPOSALS: 14. UNIFORM TRANSBOUNDARY POLLUTION RECIPROCAL ACCESS ACT
7. GREAT LAKES BASIN ECOSYSTEM CONFERENCE

INITIATIVE 31. IMPROVE PUBLIC AND INDUSTRIAL INPUT TO THE IJC

DESCRIPTION: That the IJC receive and respond to formal inquiries or delegations from public or industrial interest groups concerned with problems within the Great Lakes Basin Ecosystem.

BACKGROUND AND NEED: In addition to IJC advisory boards, public and industrial interest groups within the Great Lakes basin represent a relatively untapped source of information that might not otherwise reach the IJC given the existing reporting structure. Existing arrangements do not make provision for formal presentations to IJC at its annual reviews. A group with information that needs consideration would submit a formal written report and recommendation in time for response at the IJC annual meeting. The onus on IJC would be for response in terms of its recommendations to the Parties.

ACTION: Some public interest group might initiate a test action on this at the next IJC review of progress under the Great Lakes Water Quality Agreement.

INITIATIVE 32. USER PARTICIPATION IN REGULATION

DESCRIPTION: Provide for user group participation inregulatory decision-making with a view to sharing responsibility for management of the resource - i.e. fisheries.

BACKGROUND AND NEED: Regulatory agencies have a central role to play in the management of fishery resources to ensure that the resource is used on a sustained yield basis, and to ensure that different user-groups obtain their fair share of the resource. However, regulatory agencies should share the responsibility for the management of the resource with the various user-groups.

Over the years, there has been an ever-increasing amount of government regulation of the use of such resources as fisheries of the Great Lakes. This is so presumably because fisheries are generally considered to be common property and freely open to any user. This, the assumption goes, sets them apart from most land-based resources and makes them susceptible to the "tragedy of the commons." While it is true that wild fish populations do not belong to anyone, it hardly follows that they are completely shared property with open access. In fact, limited entry in the commercial fishery, the separation of the major user-groups in space and time, and the allocation of quantitative rights (quotas) indicate that the fishery is not common property and open access.

Allowing the users to participate in decision making, and making it possible for the different interest groups to police themselves in ways that are mutually acceptable to their members, would reduce costs of management and foster responsibility within these groups. Otherwise, the management agencies would find themselves increasingly entrapped in a hopelessly complicated management system which is both difficult and costly to implement.

ACTION: The key to self regulation is to devise a mmanagement system whereby user groups could reap benefits of their own restraint. This could probably be done by explicitly allocating to the various user groups certain minimal resource use rights. These rights would probably be phased in gradually, while involving these groups in the decision-making process, so that a sense of responsibility and sufficient internal cohesion would evolve within groups and associations of recreational, native fishermen and commercial fishermen.

Tools of biological management are not sufficient to achieve this. There is need for a new breed of resource manager who can deal with social issues and political processes as well as with biological data. Perhaps the Great Lakes Fisheries Commission should take leadership.

RELATED PROPOSALS:

22. IMPLEMENTATION INCENTIVES AND THE ECOSYSTEM APPROACH
20. FULL COST PRICING: INTERNALIZING POLLUTION COSTS
18. BINATIONAL TASK FORCE TO ENCOURAGE THE ECOSYSTEM APPROACH
19. CREATE A GREAT LAKES REHABILITATION FUND

INITIATIVE 33. POLITICAL ACTION AND THE ECOSYSTEM APPROACH

DESCRIPTION: Encourage the adoption of "ecosystem approach" platforms by politicians and political parties and the election of parties and politicians willing to make some commitment to the "ecosystem approach".

BACKGROUND AND NEED: State, provincial and federal governments have now assumed a major role in determining the condition of the Great Lakes Basin Ecosystem. They make decisions concerning water and air quality standards, zoning and land use, locations and methods of toxic waste disposal, protection of wildlife habitat and resource management, etc. If an ecosystem approach is to become a reality, then political parties and elected officials must be convinced that voting constituencies value the Great Lakes Basin Ecosystem. Elected officials (in the U.S.) and political parties (in Canada) represent these voting constituencies. In Canada, accountability is encouraged by working with ministers and ministries and opposition critics rather than with individual elected officials as in the United States.

ACTION: Persons and organizations, individually and in coalition with others could assist by:

1) identifying and defining the environmental and ecosystem election campaign issues

2) becoming informed about each candidate's (U.S.) or party's (Canada) record of votes and actios on these issues and their positions on issues for which no record exists.

3) endorsing and supporting candidates and parties with good environmental records or positions by means of active campaign work and provision of financial contributions.

RELATED PROPOSALS:
2. GREAT LAKES BASIN INFORMATION CENTER
26. CENTERS FOR GREAT LAKES INFORMATION
27. IMPROVED DECISION-MAKING TOWARD ECOSYSTEM MANAGEMENT
9. REVIEW INSTITUTIONAL CAPABILITIES FOR IMPLEMENTING THE ECOSYSTEM APPROACH

APPENDIX

I REMEMBER WHEN IT FIRST CAME, IT CUT TREES, STARTED FIRES . . . MADE A MESS. NOW IT HARDLY LEAVES A TRACE. MUST BE EVOLVING!

A. STEERING COMMITTEE FOR THE HIRAM WORKSHOP

Organization	Canada	United States
International Association for Great Lakes Research	W.J. Christie, Ontario Ministry of Natural Resources	John E. Gannon,[1] State University of New York at Oswego
Great Lakes Fishery Commission	Henry S. Regier, University of Toronto	Daniel R. Talhelm, Michigan State Univ.
International Joint Commission (Science Advisory Board)	J.R. Vallentyne,[2] Department of Fisheries & Oceans	William E. Cooper,[3] Michigan State Univ.
		Clay Edwards (IJC Liaison)
Great Lakes Tomorrow	George R. Francis, University of Waterloo	Mimi Becker, Hiram College
Member at large		H.H. Prince Michigan State Univ.

- -

[1] John Gannon served from May 1982 to May 1983. Those preceeding him included: Noel Burns (National Water Research Institute, Canada Centre for Inland Waters) from August 1980 to December 1980; Vic Bierman (U.S. Environmental Protection Agency) from December 1980 to March 1981; David N. Edgington (University of Wisconsin-Milwaukee) March 1981 to June 1981; and Marlene Evans (University of Michigan) from July 1981 to May 1982.

[2] Chairman of the Steering Committee

[3] W.E. Cooper served as Co-Chairman from July 1982 to March 1983

B. PRE-WORKSHOP DOCUMENTS*

1. "The Egosystem and the Ecosystem: An overview prepared by the Steering Committee for a Workshop on 'Implementing an Ecosystem Approach'". 42 pp.

2. "The Web of Life - A Personal View" by Robert J.K. Walmsley. 13 pp.

3. "Ecosystem Management for the Great Lakes Basin - A Personal Perspective" by Marlene Fluharty. 11 pp.

4. "Business Considerations Pertaining to the Interactions of Man's Activities in Ecosystems" by Eugene E. Kenaga. 23 pp.

5. "The Ecosystem Approach and Canadian Industry" by Paul Hunt. 12 pp.

6. "Implementing the Ecosystem Approach (via Associations--United States)" by Wayne Schmidt. 16 pp.

7. "Team-Work (Voluntary Membership Associations - Canada)" by J.R. Vallentyne. 16 pp.

8. "Implementing an Ecosystem Approach at the Government-Political Level in the United States and Canada" by David LaRoche (U.S.) and John Hall (Canada). 13 pp.

9. "A Strategic Approach to Ecosystem Management" by W.J. Christie. 23 pp.

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*A limited supply of these is available on request to the Great Lakes Regional Office, International Joint Commission, 100 Ouellette Avenue, Windsor, Ontario N9A 6T3

C. TERMS AND DEFINITIONS

association: a voluntary membership organization with or without political objectives; nongovernmental and not necessarily associated with environmental interests.

behavior: a pattern of conduct exhibited by living or nonliving forms of organization.

Biosphere: the planetary system of living and nonliving matter consisting of the atmosphere, hydrosphere (lakes, rivers, circulating ground water, glaciers, oceans), lithosphere (soils, sediments, exposed rock surfaces) and living organisms in the outer sphere of the Earth; capitalized to make its status and influence apparent.

demophoric: a term referring to human physiological and technological metabolism considered jointly; from the Greek roots demos (population) and phora (technological production-consumption).

ecosystem: a subdivision of The Biosphere containing living and non-living matter, with boundaries arbitrarily assigned to suit particular purposes. Here, the term is used to designate ecosystems with human components.

ecosystem approach: a set of behavioral practices that takes account of the consequences of actions and inactions at various levels of integration ranging from personal to planetary. Characteristics include: knowledge of the operation and interrelationships of systems in Nature; an holistic perspective; and behavior that is ecological, anticipatory, and exhibits an ethic of respect for other systems of nature.

ecosystem view: a view that looks at us and our environments as an integrated system.

"egosystem": an organized unit of nature with a self-centered point of view; a living organism, species, economic system or corporate enterprise.

egosystem view: the self-centered view of an "egosystem" looking out at its operational environment.

Great Lakes basin: the drainage basin of the St. Lawrence River at or upstream from the point at which the St. Lawrence River becomes the international boundary between Canada and the United States.

holistic: the view that every unit of nature is whole to which its parts are subordinate and a part in respect to larger wholes.

individual: a member of a population viewed as such rather than as a creative and unique person.

levels of integration: the notion of systems within systems as in the sequence . . . atoms, molecules, organelles, cells, tissues, organs, physiological systems, organisms, populations and communities, ecosystems, Biosphere . . . Universe.

natural: broadly, in reference to Nature; narrowly, in reference to that part of the Universe within which we are in intimate contact - the Biosphere.

person: a creative human being with inner drives and interests; used in opposition to "individual", meaning a member of a population to which the interests of the person are subordinate.

succession (ecological): a sequence of changes in an ecosystem following a change in the influence of one or more forces, living and non-living.

D. WORKSHOP PARTICIPANTS March 22, 1983

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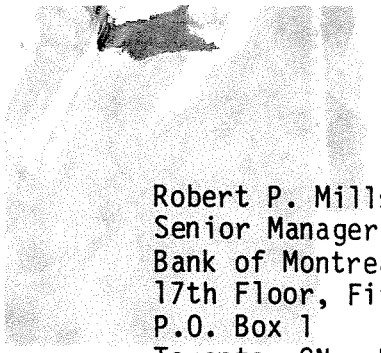

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