

State of the Great Lakes Islands

An Executive Summary

Karen E. Vigmostad
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Thirty thousand islands dot the Great Lakes, often forming chains of islands known as archipelagos. The vast majority of these islands lie in the Canadian waters of Lake Huron's Georgian Bay. The islands range in size from no bigger than a large boulder to the world's largest freshwater island, Manitoulin. While the Great Lakes are well known as globally significant bodies of water, their islands are not despite forming the world's largest freshwater island system. Not only are the islands not well known, but also the state of our knowledge about them is quite poor.

We do know a great deal about the general characteristics of islands. By their very nature, islands are vulnerable and sensitive to change. Islands are like living organisms, whose "body" changes as water levels rise and fall and as the forces of erosion and accretion take their toll. Islands often suffer violent weather events due to their 360-degree exposure to the elements as winds sweep across the open water. Isolated for perhaps tens of thousands of years from the mainland, islands rarely gain new species, and their resident species often evolve into endemics (i.e., species found nowhere else) that may be larger, smaller, or of a different color than mainland varieties. This means that islands are vulnerable to, among other things, the introduction of exotic species (i.e., species not already living on the island).

Concurrent with their vulnerability, islands strongly attract humans to their shores. Islands capture our imagination as romantic places of mystery and seclusion. The complication comes when developers want to create places for people to go on these islands. As we have watched happen in the Caribbean Islands over the past 50 years, the process of island development is one in which the ownership of the island changes hands from local to foreign control (McEachern and Towle 1974). The first waves of people to visit islands are small in number and are attracted to the natural surroundings and quiet. Over time, more and more people come as airport runways and docks are built, hotels constructed, and natural areas paved over and filled in. This in turn brings a new type of person who wants a different experience: less wild, more cultural. Foreign banks and hotel corporations buy more and more land from islanders, and decisions about the island's future are made more and more frequently in corporate boardrooms in distant lands.

In the Great Lakes basin, these forces of development and globalization are on the horizon for our islands. Over the past several years several five-acre islands have been sold through a national auction for several million dollars. Manitoulin Island is in the midst of many considering development proposals. Calls for ecotourism opportunities increase and visitation is up at Isle Royale National Park and the Manitou Islands of Sleeping Bear National Lakeshore. A new ferry is put in place to carry more people more quickly to Beaver Island. What is troubling is that this is happening before we have a good understanding of the natural values of these islands and how these contribute to our well being. Just what do we have, and what are we giving up? How can we enjoy the islands without loving them to death?

THE U.S.-CANADA GREAT LAKES ISLANDS PROJECT

In 1995 we sought to increase the state of our knowledge by establishing the U.S.-Canada Great Lakes Islands Project at Michigan State University. We spent a year talking to people and gathering information about the islands. We wanted to create a project to serve as 1) a catalyst to start a basin-wide "conversation" about the islands and conservation of biological diversity and 2) a central base or focal point for activities, data, and information about the islands. We designed the project to build on the following groundbreaking work:

- ◆ Dr. Judith Soule's comprehensive island inventory of Michigan's 600 Great Lakes islands (Soule 1993). Dr. Soule's report was funded by the Michigan Coastal Management Program and published in 1993. In her extensive bibliography of scientific studies of various Great Lakes islands, only a few consider more than one island.
- ◆ Susan Crispin's work on Great Lakes biodiversity (Conservancy 1994). This project is being undertaken the Nature Conservancy's Great Lakes Program with support from the U.S. Environmental Protection Agency's Great Lakes National Program Office
- ◆ Dr. George Francis's leadership and publications on Great Lakes conservation programs based at the University of Waterloo's Environmental and Resource Studies Department.

As we talked to Soule, Crispin, and Francis, and to other highly experienced island researchers such as Robert Brander, Dr. Hans Blokpoel, and Dr. William Scharf, we began to piece together a picture of these islands as extremely interesting and quite possibly very significant.

THE MICHIGAN WORKSHOP

We received funds from the Michigan Coastal Management Program and the National Oceanic and Atmospheric Administration to support these efforts and to host the first United States-Canada workshop to assess the status of the Great Lakes islands. The main purpose was to draw together a small targeted group of people who manage, study, live on, or otherwise care about Great Lakes islands. Some of the 35 people we found work for state and federal agencies that own and/or manage islands (e.g., NOAA, MCMP and other Great Lakes state coastal programs, Parks Canada, U. S. National Park Service, the U.S. Forest Service, U.S. Fish and Wildlife Service, U.S. EPA's Great Lakes National Program Office, Senator Carl Levin's office, Georgian Bay Association, and Old Mission Peninsula Township planning office). Others work as private consultants, university researchers, or government officials that study islands (e.g., botanists, ornithologists, wildlife biologists, ecologists, island biogeographers, historians, and conservation biologists). By design, this hand-selected group was multi-disciplinary, multi-jurisdictional, and binational. Further, each person not only brought to the group years of island experience, but an incredible personal commitment to the islands. This lent a particular dynamism to the workshop that we had not anticipated.

We carefully constructed the workshop to cover a great deal of territory in three days. We started workshop with a leadoff commentary by Susan Crispin. Crispin had gone through the regional Great Lakes biodiversity data to look specifically at islands. By the end of her talk, we all began to understand that these islands are not only significant, but they are indeed *globally significant*. After more and more talks, and discussions between talks, we began to realize, as Judy Soule put it, that all the superlatives we had been using to describe the islands during the three days--unique, special, exceptional, fantastic--are indeed appropriate

THE PROCEEDINGS

The full proceedings are *the first collection of papers about the islands of Great Lakes*. Although there are still gaps, the workshop papers create a basic framework of what we know about the islands and their significance and state of protection. The proceedings encompass the prepared papers and talks, as well as summaries of the discussions, findings, recommendations, and commitments of the participants. The individual papers are the work of their authors, while the joint sections were forged out of dialogue and consensus among the participants. A smaller team wrote the findings and recommendations directly after the workshop based on those discussions.

While the work supported by this grant cumulates with the proceedings, the project continues. Copies of the proceedings will be presented to policy-makers in the U.S. and Canada. We will widely distribute the executive summary including on the Internet. We will continue to staff the office, maintain the home page, and serve the newly forming island network. Specific project activities will center on actualizing the recommendations presented here such as securing commitments and funding to begin work on a basin-wide island conservation strategy.

We hope that you, the reader, enjoy the executive summary and make an effort to share the information widely. We suggest you let people in leadership positions know that the islands of the Great Lakes deserve special care and attention. We hope you pay close attention and comment on proposals involving islands in your state or province. We also hope you support or even initiate efforts to fund more island research and conservation. We invite you to contact us with your questions, concerns, and your own recommendations, and let us know how you would like to get involved. The future of these islands rests in all of our hands.

OVERVIEW OF THE PAPERS

Part I -- State of Our Knowledge

The leadoff commentaries in Part I outline the state of our knowledge about Great Lakes islands. Susan Crispin, at the time director of science for The Nature Conservancy's Great Lakes Program in Chicago, Illinois, reviewed Great Lakes Natural Heritage data on biological diversity¹, or biodiversity, looking particularly at the islands. Her path-breaking paper *The Global Significance of Great Lakes Islands* reveals the factors pointing to the Great Lakes islands as being globally unique and significant. Crispin points to the lakes themselves as an incredibly large freshwater system with tremendous climatic effects on the region that create a distinctive island biota with many endemic species and rich biodiversity. She gives a lake-by-lake review of many of the special features of the islands. She warns that the small size of the islands makes them vulnerable to losing species from human disturbance and their remote locations make it difficult to gain new species. Crispin suggests we think of islands as "an important component in a much larger Great Lakes conservation

¹ Biological diversity is a complicated concept. As human populations have grown and expanded, we have increased the density of people and the amount of area we inhabit such that other species have been eliminated or greatly reduced in numbers. This is said to have reduced the *diversity*--or breadth in terms of numbers--of *biological species* on Earth. At the same time, evidence is growing that a rich diversity of species provides a tremendous and irreplaceable "biological service" of what might be thought of as planetary ecological stability that benefits human as well as other species. The term biological diversity, or biodiversity for short, has several meanings. First, biodiversity refers to the total number of species (i.e., plants plus animals plus birds, etc.). It also refers to the total number within species (e.g., total number of ruby-throated hummingbirds) as well as the genetic diversity across sub-populations of species (e.g., ruby-throated hummingbirds nesting in the Great Lakes basin and in southwestern Arizona). A final level is diversity at the level of individual genetic codes (i.e., the variation of this particular ruby-throated hummingbird compared to another). Many argue that one of the most important tasks humans face is to retain as much biodiversity at all these levels as possible (Wilson and Peters 1988; Reaka-Kudla, Wilson, and Wilson 1997).

portfolio." She proposes we look for commonalities among the biological resources as well as ownership and management patterns as we work to build collective conservation strategies. She urges us to be pragmatic and to use existing structures and institutions to advance the conservation of Great Lakes islands.

Dr. Judith D. Soule, now director of the Michigan Natural Features Inventory, details the status of Michigan's 600 Great Lakes islands in *Biodiversity of Michigan's Great Lakes Islands: Knowledge, Threats, Protection*. Soule suggests that Michigan has a lead role to play in island conservation policy-making because Michigan Great Lakes islands are exceptionally varied in terms of "geology, geography, history, and biodiversity". She argues that the islands be considered "a single irreplaceable resource and protected as a whole if the high value of this natural heritage is to be maintained." She describes the bird, fish, plants, and shoreline ecosystems of many islands highlighting the marshes, colonial waterbirds, neotropical migrant songbirds, endemic plants, and towering dunes.

Soule points out that while the islands have only 1/100th of the land area of the state, they hold 1/10th of the threatened, endangered, or rare species--seven times more than would be expected. She attributes this to their isolation which has protected them from disturbance; a moderated climate; their locations at edge of state boundaries; and being the sole location for nesting colonial waterbirds. Soule outlines the research values of islands, status of our knowledge of biodiversity, and identifies high priority islands for inventories. She lays out the protected status by county and details inventory and protection needs. She urges a bold protective action for islands whose biological integrity "should be *at the top of the list of priorities* in decisions about future use, ownership, and potential development of the islands". Because the islands are a globally unique heritage, policies should protect the islands as a system and look to *anticipate and prevent the loss of biodiversity* and to *retain ecosystem integrity*.

Dr. George Francis reveals in *Conservation Programs* that even though we have set aside important coastal areas, we have never agreed upon a basin-wide conservation goal nor do we have a forum for discussion. He suggests that we don't even know how much of a "conservation job" we have already accomplished because we face updating, reinterpreting, and making new judgments with existing data. Francis describes many outstanding collaborations in the Great Lakes basin that are addressing the conservation of biodiversity at large and even landscape levels. He suggests we can help new local efforts by reviewing the literature and cataloging successful endeavors. Francis lists existing binational agreements such as the Ecosystem Charter for the Great Lakes-St. Lawrence that could be supportive of island conservation strategies.

Part II -- Background Papers and Talks

The next set of papers provides background on some of the key components of island ecosystems. Drs. Hans Blokpoel and William Scarf summarize recent research on hundreds of islands in their paper *The Importance of Great Lakes Islands as Nesting Habitat for Colonial Waterbirds*. Blokpoel and Scarf found that natural islands of the Great Lakes were home to nine species of colonial waterbirds in 572,800 nests during 1989-91. The nine species in order of prevalence are Ring-billed Gull, Herring Gull, Double-crested Cormorant, Common Tern, Caspian Tern, Great Blue Heron, Black-crowned Night Heron, Great Egret, and Great Black-backed Gull. These birds nest

near one another hence they are called "colonial". They prefer islands, especially the ground nesters, because islands tend to be free of ground predators when compared with the mainland.

Blokpoel and Scarf analyzed the data for relative importance of natural Great Lakes islands as nesting sites for these nine species. They found islands to be of high importance (i.e., 76-100% of nesting pairs chose islands over mainland) for five species (Double-crested Cormorant, Great Egret, Great Black-Backed Gull, and Caspian Tern, and Black-crowned Night Heron in the U.S. only); of medium importance (26-75%) for five species (Black-crowned in Canada only, Great Blue Heron in U.S. only, Ring-billed Gull, Herring Gull, and Common Tern); and of low importance (1-25%) for only the Great Blue Heron in Canada. They conclude that in *absolute* terms Great Lakes islands are a "unique and important natural resource" supporting over a million nesting adult colonial waterbirds. They also conclude that in *relative* terms the islands are important as the preferred habitat for five of the nine species. Conservation strategies are complicated by the fact of the exploding populations of cormorants. They recommend targeting conservation efforts at the Common and Caspian terns. They suggest that an overall, basin-wide, multi-agency conservation strategy needs to be developed to protect these important Great Lakes waterbirds and their island habitat.

Dr. William Scharf reviewed the literature and his own extensive banding experience in an attempt to understand *The Importance of Great Lakes Islands to Neotropical-Nearctic Migrants*. Dr. Scharf believes that Great Lakes islands are of particular importance to migratory neotropical-nearctic species for three reasons. First, birds flying at night over the open water are exhausted and when dawn comes the remote islands may be the only land in sight. Second, islands are often the northward extensions of mainland that follow the flying patterns of the birds and weather so are natural gathering areas. Finally, many islands are the intended summer nesting destinations. Scarf himself has banded a hundred species of long-distance migrants on Beaver Island (Lake Michigan) over a three-decade period.

The future of these birds is of growing concern because their winter homes in Central and South America as well as their summer Great Lakes nesting areas are increasingly being lost to development which causes fragmentation of habitat. The conservation of Great Lakes islands is critical to the overall protection of these species which (on Great Lakes islands) include: American Redstart, Yellow Rumped (Myrtle), Magnolia, Nashville, and Wilson's Warblers; Red-eyed and Philadelphia Vireos; Bank Swallow; and Indigo Bunting. Indeed Scharf finds that "islands may...represent some of the best remaining contiguous forested habitats for many species".

Dr. Francesca Cuthbert of the University of Minnesota presents *Wildlife Issues on Great Lakes Islands*. Cuthbert points that island studies have made important contributions to ecological and evolutionary theory by the likes of Charles Darwin, Alfred Russell Wallace, Robert MacArthur, and E. O. Wilson. Indeed, island biogeography theory (discussed by Thomas Nudds below) is used to help plan conservation efforts on "islandized" mainland habitats. Cuthbert found over 400 wildlife studies involving Great Lakes islands in Soule's 1993 report. The studies can best be described as inventories and most involved Isle Royale (Lake Superior) and the islands of northern Lake Michigan on the topics of contaminants, critical breeding habitat, habitat management, general ecology, endangered species recovery, general biology, migration, and distribution.

Cuthbert reminds us that while islands have historically been important to birds and other wildlife, this is now intensified as mainland habitats have been fragmented and lost to human development: "Great Lakes islands continue to provide relatively undisturbed, and in some cases pristine, habitat conditions similar to those that existed prior to European settlement." Cuthbert outlines the value

of wildlife research on Great Lakes islands. The islands are "living laboratories" for studies of the impacts of herbivores, predator-prey relationships, evolution and extinction, population dynamics, animal cycles, dispersal, and rapid population growth. They are also valuable for studying human-induced changes and conservation such as comparative mainland studies of human impacts, environmental contaminants, global change, recreation impacts, and endangered species. The islands will continue to be "especially valuable sites for studying *environmental change* issues that are of significant concern to the global community."

While much of Dr. Thomas Nudds of the University of Guelph discussion of *Island Biogeographical Theory*² is incorporated into recommendation 3, there are a few additional points to highlight. Nudds stresses that when we craft arguments for conservation, we need to distinguish between the scientific and the moral, ethical, and aesthetic. In order to be scientific we must first establish a baseline to assess change, not just observe a situation and say it is a problem. Fragmentation of habitat provides a good example where we can recreate an understanding of a habitat at pre-European settlement and then measure the change from then to present day. His studies have shown that in fact the woodlots of southern Ontario do have significantly fewer species than our best estimate of the pre-settlement condition. Nudds reminds us that we have created "functional islands" such as Point Pelee (Lake Erie), a peninsula surrounded by agricultural development which has "islandized" the peninsula into a functional island with the accompanying vulnerabilities.

While a full paper could not be included here, Dr. Emmet Judziewicz of the Wisconsin Department of Natural Resources presented vital information on *Islands and Plants*. Judziewicz has done extensive surveying of the flora of Great Lakes islands especially of the Isle Royale and Apostle Island archipelagos of Lakes Superior. He described finding interesting disjuncts (species found outside their normal range) on the two archipelagos coming from all directions: the Arctic north; the west including the Pacific northwest and the Rocky Mountains; the east; and the south. Judziewicz pointed out that island endemics (species found nowhere else) are actually quite rare in the areas that he was worked. The "hotbed" for island endemics like pitcher's thistle, Lake Huron tansy, Michigan mocking flower, and lakeside daisy appears to be in the dolomite areas near the Straights.

Judziewicz has done a rare plant survey on the very old pre-Cambrian sandstone Apostle islands collecting data on 1,400 grid points. These islands are actually the remnants of an old braided river channel that created a very unique archipelago with grid-like regularity of spacing. The islands are hemlock hardwood forests with some pines on the sand spits. There are a number of sand spit complexes, usually on the south ends of the islands where sediment-bearing currents converge. They are an excellent place to study the effects of logging, fires, and deer browsing. Outer Island has one of the largest remaining virgin hemlock hardwood forests in the Great Lakes region at the north tip near the lighthouse. Judziewicz described what became an unexpected problem identified at the workshop: the vegetative destruction brought by deer on islands.

Like Nudds, Judziewicz has tried to test island biography theory on Great Lakes islands with mixed results. He did not find that diversity increased with island height as the theory would predict. He computed number of species per area curves and did find that islands had 100 species per area versus 250 species per area on the Midwestern mainland.

² A few concepts from island biogeography theory are a tendency toward faunal collapse, and the number of species per a given area decrease as size of island decreases and as distance from mainland increases.

Another paper that could not be included here was the talk by David Synder of Apostle Islands National Park on *Islands and Human Culture*. Synder shared many entertaining stories about the human cultural aspects of the Great Lakes islands. He has found that people living on Great Lakes islands are a tough breed, often barely surviving and frequently not there by choice. Synder describes three types of islanders: the temporaries, the locals, and the summer folk. The temporaries are people sent to islands to work without having a choice such as lighthouse keepers. Some of these "temporaries" ended up staying over 30 summers. The locals are those who went to live on islands by choice like the Norwegian fisherman in Lake Superior. The summer folk include people coming from Kansas City or Omaha to escape hay fever season or the pressures of city life. Because of their long, intimate connection with islands, all three types of islanders have much to teach us about islands including the flora and fauna.

Part III -- Case Studies

We asked participants to share case studies of successful efforts that would help us better understand and protect islands, especially in terms of biodiversity. Mary Alice Snetsinger, who at the time was with Parks Canada and the Thousand Islands National Park, presented information on *the Thousand Islands Ecosystem Project*. This is a seven-year pilot project attempting ecosystem management of the Thousand Islands National Park following the principles outlined by Edward Grumbine in 1994. These islands lie at the west end of the St. Lawrence River and are remnants of worn mountain peaks along the granite formation of the Frontenac Axis. Snetsinger is working with many different agencies and local land trusts. These efforts include FASTLINE, the Frontenac Axis-St. Lawrence Information Network for the Environment, which allows a wide sharing of regional information. They are also using satellite technology to begin to detect changes, and aerial photography to support park planning by locating sites with potential natural or culture interest. Stewardship is a key component in their efforts because of the important role landowners play in the conservation of island ecosystems.

Patrick Northey of the Georgian Bay Association shared the efforts of his organization to find new ways to protect Georgian Bay islands in his talk *The Littoral, a New Vision for the Eastern Georgian Bay*. The word *littoral* refers to a geographic area that "depends on or is related to the shore". Northey describes the vision of his organization to "change political organization from an east-west to a north-south orientation" which would "follow existing patterns of use and activity along the coastal area and outer islands and channels." They have hired a planner to develop an economic framework for ecotourism that is locally developed, provides tourism jobs in each community, and empowers more jurisdictions to protect the water and landscape.

Susan Crispin made a second contribution in her paper on *The International Alvar Conservation Initiative*. Alvar is a special type of ecosystem first described in Scandinavia and in North America found only in the Great Lakes basin (with 90 percent in Ontario). Crispin describes these communities as looking like an "abandoned airfield": "flat bedrock, with cracks and crevices which plants have gained a toehold." They support a wide diversity and unique mix of prairie and arctic-boreal species such that when in bloom they are so spectacular that they are referred to as nature's rock gardens. Crispin describes the international alvar conservation project and outlines some lessons learned: new money is needed for new projects; there is much support for truly international projects; coordination on this large of scale require a big commitment of time; and decision-making can be improved by agreeing on key objectives and operating principles as a large group and conferring smaller decisions to lead actors.

Linda Witkowski of Isle Royale National Park shared *the Wilderness Management Issues at Isle Royale National Park*. Isle Royale is the only island national park in the United States and is a federally designated wilderness area. Witkowski describes the challenges of managing the remote Isle Royale. One challenge is to develop a new general management plan to guide decisions and actions. Another is to address external and internal impacts such as noise, overcrowding, and toxic contaminants. The final challenge is one of lack of adequate resources to study and protect the park.

Angus McLeod of Parks Canada discussed *The Land Trust Movement in Canada*. Land trusts are organizations “dedicated to helping safeguard open space, cultural resources, and wildlife habitat in communities and states and provinces.” McLeod notes that land trusts are the fastest growing conservation movement in the United States, growing at the rate of one per week. They are established in local communities and use a wide range of strategies--from providing information to buying land--to conserve nature. He outlines a large slate of protection “tools” such as conservation easements used by land trusts. McLeod suggests that community-based land trusts have great potential on Great Lakes islands because many are privately owned.

Robert Brander, recently retired from the National Park Service, described *The Biosphere Reserve Model in Relation to Lake Superior Islands*. Biosphere reserves are a type of internationally designated protected area. These reserves were conceived as a way to “achieve a sustainable balance between the conservation of biological diversity, economic development, and maintenance of associated cultural values.” Brander suggests the Lake Superior islands are particularly suited to serve as biosphere reserves especially in terms of sentinels to detect the long-range transport of toxic materials.

Sylvia Taylor of the Michigan Natural Areas Council outlined *the Vegetation Monitoring for the Grand Island National Recreation Area*. When her organization presented detailed concerns over the management of the Grand Island (Lake Superior) as a newly designated national recreational area, they were asked to serve as technical consultants to develop a vegetation monitoring plan. Taylor outlines efforts to set up the program on this large 13,558 acre island near Pictured Rocks National Lakeshore in Michigan.

Christopher Clampitt of the Michigan chapter of The Nature Conservancy gave background on *Les Cheneaux Islands and the Northern Lake Huron Shoreline Program*. Clampitt described the long-term commitment of his organization to working with the local communities in this area known as one of America’s Last Great Places. Their approach is to work with the local community toward landscape or ecosystem conservation. This type of conservation spans large areas of land, which in this case includes an eighty-mile stretch of biologically rich shoreline rich dotted with many endangered and threatened species.

Gordon Hayward, Peninsula Township gave the final case study on *The Purchase of Development Rights*. Hayward is a township planner and helped bring about a path-finding way to preserve agriculture on Old Mission Peninsula through the purchase of development rights. His paper describes the process the township used and details the way the program works.

Commonalities

The list of commonalities was developed during a whole-group discussion held after all the papers and case studies were presented. Some of the more important commonalities are:

- ◆ The natural features of Great Lakes islands are extremely diverse
- ◆ Portions of some islands are much more important than others and need protection
- ◆ Human factors are common across case studies in terms of threats and desired uses
- ◆ We need inventories and baseline information including land use histories are needed
- ◆ People and their cultural history are an integral part of many island experiences and we need to include them
- ◆ Islands that are not yet "developed" need special consideration and protection
- ◆ We need to develop an institutional framework for sustainable island management
- ◆ We must learn island limits--economic, infrastructure, biologic--and their biological values
- ◆ The inherent popularity of islands means we can "love them to death"

Part IV -- Island Needs

The needs for Great Lakes islands were discussed in terms of these six areas:

- ◆ Inventorying and research
- ◆ Conservation programs
- ◆ Coastal policy and land use
- ◆ Cultural resources
- ◆ Public-private partnerships and land trusts
- ◆ Networking and clearinghouses

Key participants were asked to give a 10-minute overview on each topic, then we broke into small groups to brainstorm and prioritize island needs. Unfortunately, space doesn't permit listing them here, and because they are like a shopping list they are difficult to summarize. We plan to post them on our home page in the near future.

Part V -- Findings and Recommendations

A small work group spent an additional day synthesizing and summarizing the workshop learnings. Briefly, the recommendations coming out of this workshop are three-fold:

1. Support Island and Island Archipelagos Conservation Planning

Governments and other institutions should facilitate and support efforts to develop and implement *island and island archipelago conservation strategies* protective of biological integrity. The goal of these strategies should be to *maintain the cultural and economic activity of island communities in ways compatible with the conservation of biological integrity*. This recommendation goes beyond standard notions of sustainable development, which do not specify the primacy of the protection of biological integrity.

2. Document and Share Successes and Failures

Efforts should be made to create and foster the sharing of information and experiences among Great Lakes island and island archipelagos associations and initiatives. Efforts should also be made to develop and share case studies describing the successes and failures of similar initiatives. To support this, we need to connect island communities to one another, researchers, and policy-makers through the Internet.

3. Base Conservation Planning on "Good" Scientific Information

A first priority is to **assemble an "inventory of inventories"** of species for all islands and archipelagos. Based on this, an assessment of the need for targeted inventories of different groups of species across different islands--to achieve basin-wide representation--can be carried out. Further, where locally driven initiatives are already underway, this information can be made available, or the local constituencies can request help with designing inventories of their own.

Part VI -- Next Steps

At the end of the workshop, participants identified the next steps they felt are necessary as well as the commitments they agreed to make:

- ◆ Work toward the development of conservation strategies for Great Lakes islands and archipelagos.
- ◆ Urge governments and other institutions to facilitate and support these conservation strategies.
- ◆ Produce this set of proceedings and circulate to island and archipelago associations and interested agencies and organizations for additional information and comment. A second, larger *State of the Great Lakes Report* would then be finalized a year or two later. This report will pave the way for future development of a basin-wide *Great Lakes Islands Conservation Strategy*.
- ◆ Strengthen the communication network among people concerned with island conservation.
- ◆ Co-sponsor a workshop with island groups and associations to share information and ideas about island conservation.

Some of these efforts are underway while others are being planned or will be taken on in the future. A fascinating feature of the workshop was to hear this group of mostly scientists stress that these proceedings be distributed throughout the basin for a grassroots review.

Summary

We can now say with certainty that the natural biological diversity of the islands of the Great Lakes is of global significance. During the workshop we began to grasp the fact that islands are not "islands". While islands look separate--indeed the word "island" implies a distinct separation--islands are truly intricately connected parts of a greater whole. We also learned there are many excellent initiatives and programs already underway from which to build new efforts and partnerships. We talked about the threats facing islands and their many needs. Fortunately, we believe that it is not too late. Many important islands have intact representative ecosystems and are home to rare and endangered coastal species.

We hope this document can serve as a springboard to launch needed cooperative, holistic efforts to better understand, protect, and manage the islands of the Great Lakes as a collective. The participants at the workshop have pledged to continue to work together and some cross-jurisdictional projects are in the works. Of critical importance is the development of a basin-wide island conservation strategy. We hope readers of this report will support the development of this strategy, as well as the other excellent efforts underway throughout the basin.

References

- Conservancy, The Nature. 1994. *The Conservation of Biological Diversity in the Great Lakes Ecosystem: Issues and Opportunities*. Chicago: The Nature Conservancy.
- McEachern, John, and Edward L. Towle. 1974. *Ecological Guidelines for Island Development*. First ed, *IUCN Publications New Series No. 30*. Morges, Switzerland: International Union for Conservation of Nature and Natural Resources.
- Soule, Judith D. 1993. *Biodiversity of Michigan's Great Lakes Islands: Knowledge, Threats and Protection*. Lansing, MI: Michigan Department of Natural Resources.

For further information contact:

Karen E. Vigmostad, Director, U.S.-Canada Great Lakes Islands Project
Department of Resource Development, Michigan State University
115 Manly Miles, East Lansing, Michigan 48823
517/432-6218, FAX 517/353-1812, E-mail vigmo@msu.edu
<http://rdserv1.rd.msu.edu/islands>