

Summary Report to the
New York Ocean and Great Lakes
Ecosystem Conservation Council

Ecosystem-based Management in New York State: Taking the Next Steps

A Summary of Contributions by Participants at
Five Statewide Dialogues in 2006

Syracuse	September 18
Buffalo	September 19
New York City	September 26
Stony Brook	September 27
Albany	October 3

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Executive Summary

New York State is unique in the country in having extensive shoreline and major population centers along both its Great Lakes and ocean coasts. New York State is also an early and visionary leader in its commitment to ecosystem-based management (EBM), an innovative, integrated approach to managing human activities to ensure our ecosystems deliver the services people want and need. In addition to codifying this commitment, the 2006 New York Ocean and Great Lakes Ecosystem Conservation Act (Act) created the New York Ocean and Great Lakes Ecosystem Conservation Council (Council) to implement EBM and provide for better coordination among the nine State agencies with responsibility for managing the State's ocean and Great Lakes ecosystems. The Act charges the Council with eight tasks to accomplish and report to the Governor and Legislature by November, 2008.

This report is presented to the Council to inform future decisions regarding the next steps to advance EBM in New York State. It is based on the contributions of over 500 participants in five half-day dialogues held across the State in September and October 2006. The dialogues were titled *Ecosystem-based Management in New York State: Taking the Next Steps*. Participants felt strongly that the dialogues should be the beginning of more conversations and supported the idea of developing long term creative and collaborative governance processes to achieve sustainable economies and vibrant communities while securing the integrity of ocean and Great Lakes ecosystems for future generations.

The dialogues were not intended to result in any decisions or priorities nor to discuss the specifics of any particular ecosystem challenge or research need. They provided an opportunity for participants to mutually learn from EBM experts and each other, and discuss how EBM might benefit their own organizational objectives and interests. They explored ways to collaboratively use unique talents and resources to partner with the State and each other to advance EBM in New York State.

The overwhelming sentiment of participants was that EBM as a concept was a timely approach that held promise for addressing complex ecosystem issues. Ecosystem understanding is not necessarily the driving force of an action or inaction. Instead, economic, social, cultural, and political issues are the keys and also the obstacles. The dialogues were characterized by three main themes: knowledge, process and capacity building, and incentives.

Participants recognized the multiple levels and kinds of **knowledge** necessary and desirable to implement EBM, and felt strongly that broad, ongoing education was critical. Participants reinforced the necessity of compiling existing biophysical science and technical expertise into what the Act calls an ocean and coastal resources atlas and identifying, prioritizing, and fulfilling research needs. In addition, they noted the value of local knowledge and indigenous knowledge. Participants noted a number of issue areas that should be part of the collective knowledge of EBM. They included honoring different traditions of knowledge, clarifying EBM and its definition, the need for continuous education, integrating technical programs and initiatives, and a clearinghouse of accessible and useable data packaged for local decision-making use, with support and mentoring to build the skills needed to use the data.

For **process and capacity building** issues, participants recognized that EBM requires collaborative partnerships and were particularly concerned that the Council provide leadership to build feasible and appealing opportunities for interested parties and communities to participate as leaders and partners, to create ways by which partners' contributions can be recognized and valued, and to provide meaningful decision space so that partners can impact and influence decisions. Participants ideas included: communication is critical and integral to EBM, expand agency roles in EBM, and provide ongoing training, skills building and mentoring in collaborative processes.

Dialogue participants had strong concerns about creating and implementing **incentives** for implementing EBM in addition to communication, and process and capacity building. The participants discussed the need for adequate, stable funding, and accountability of the Council and its partners in advancing EBM.

Although this report is not an official document in a legal process, it does represent the good faith investments of over 500 stakeholders in five dialogues across the State and is witness to the aspirations and expectations of a broad diversity of interests to proactively and collaboratively pursue ecosystem-based management in New York State as part of the New York State Ocean and Great Lakes Ecosystem Conservation Act.

The Council's efforts to implement EBM in New York will take familiar and unfamiliar forms and require patience, hard work, and good faith. The State's commitment does not deny the complexity and challenges facing New York's ocean and Great Lakes resources and communities, but it does recognize that commitment to EBM is a necessary investment for long term sustainability. While it remains unknown what the future of EBM in New York will look like next year, decades, and a century into the future; as this complex initiative begins; the Council is joined by eager, talented, and experienced partners.

I. Introduction

This report is presented to the New York Ocean and Great Lakes Ecosystem Conservation Council to assist in determining the next steps for implementing ecosystem-based management in New York State. It presents a brief summary and synthesis of the contributions of over 500 participants in five half-day dialogues held across the State in September and October 2006. The dialogues were called *Ecosystem-based Management in New York State: Taking the Next Steps*.

What is Ecosystem-based Management? Ecosystem-based management (EBM) is an emerging, integrated approach to managing human activities that consider the entire ecosystem, including humans. A central goal of ecosystem-based management is to maintain ecosystems in a healthy, productive, and resilient condition so that they can provide the services humans want and need.

EBM is based on scientific understandings of how marine and freshwater ecosystems function across a wide continuum of scale and scope. Traditional resource management approaches usually focus on a single species, sector, activity, or concern. EBM considers the interdependent and cumulative impacts of different sectors, including human, social, and economic activities. Some of the goals that generally guide EBM are:

- EBM emphasizes the *protection* of ecosystem structure, functioning, and key processes based on science;
- EBM is *place-based* in focusing on a specific ecosystem and the range of activities affecting it;
- EBM explicitly accounts for the *interconnectedness within systems*, recognizing the importance of interactions among many target species or key services and other non-target species;
- EBM acknowledges the *interconnectedness among systems*, such as air, land and sea;
- EBM *integrates* ecological, social, economic, and institutional perspectives, recognizing their strong interdependencies and mutual influences;
- EBM emphasizes *collaborative governance processes*, working together with citizens, landowners, businesses, local governments, interested organizations, and others to face problems, identify opportunities, make feasible improvements, and find common solutions. The processes are often as unique as the situation, but the common theme is the active participation of partners.

The processes that characterize EBM are evolving; often they are incorporated in processes known, for example, as collaborative governance, cooperative conservation, and community-based collaboration. Achieving sustainability in our economies, communities, and natural environment requires rethinking traditional, fragmented approaches to managing complex and interrelated problems.

As the 2005 *Scientific Consensus Statement for Marine Ecosystem Based Management* notes, ecosystem-based management is as much about managing ourselves as it is about managing the marine and freshwater ecosystems. Hence, EBM seeks to build cooperative, long-term alliances with communities to implement EBM.

The EBM Dialogues. In 2006, the New York State Legislature unanimously passed the New York Ocean and Great Lakes Conservation Act (see Appendix A). This distinguished New York as the

only state besides California to commit in law to pursuing an ecosystem-based management. The Act also created the New York Ocean and Great Lakes Ecosystem Conservation Council (Council) to coordinate the efforts of the nine State agencies with responsibility for managing the State's ocean and Great Lakes ecosystem (see Appendix B). The Council is chaired by the Department of Environmental Conservation Commissioner. The Deputy Secretary of State for Coastal Resources serves as executive director.

Because EBM is an innovative concept that is new, evolving, and adaptive, the Department of State (DOS) and the Department of Environmental Conservation (DEC) wanted to begin talking about it with interested stakeholders. The DOS entered into a memorandum of understanding with the State University of New York College of Environmental Science and Forestry and the State University of New York-Stony Brook to design, facilitate, and summarize five statewide dialogues. The purposes of these events were to introduce EBM, generate interest and ideas, and provide rich information to the Council to help guide the State's next steps to implement EBM.

Five half-day events were held in Syracuse, Buffalo, New York City, Stony Brook, and Albany in September and October 2006. The Council's inaugural meeting took place before the fifth dialogue in Albany. In order to encourage participation by a broad diversity of interests, the planning team identified and sent invitations to 1800 advocacy, professional, trade, industry, and other organizational stakeholders (see Appendix C).

<u>2006 EBM Dialogue Events</u>	
Syracuse	September 18
Buffalo	September 19
New York City	September 26
Stony Brook	September 27
Albany	October 3

The immediate objectives of these five dialogues was to provide opportunities for a broad diversity of stakeholders to learn about EBM and mutually learn from each other how EBM might benefit their own organizational objectives, and to begin exploring ways to collaboratively use unique talents and resources to partner with the State and each other to advance EBM in New York State. The dialogues were not intended to result in any decisions or priorities nor to discuss the specifics of any particular ecosystem challenge or research need.

Participants expressed a range of concerns, interests, and ideas regarding EBM in New York State. They felt strongly that the dialogues and this report should be the beginning of more conversations as well as creative and collaborative governance processes that will endure into the future to achieve sustainable economies and vibrant communities while securing the integrity of ocean and Great Lakes ecosystems for future generations.

This report summarizes and synthesizes the contributions of dialogue participants. It attempts to reflect the overarching themes that participants voiced, and is not meant to be exhaustive.

II. Overview of the Dialogues

Over 500 organizational representatives and citizens participated in the five similarly structured events held across the State (Appendix D). Each event began with an overview by George Stafford, the Deputy Secretary of State for Coastal Resources and the designated executive director of the Council. He explained New York State's commitment to EBM and the tasks that the Act charges the Council to complete by 2008.

Then participants learned from ecosystem-based management experts with not only scientific expertise but also practical application experience (see speaker biographies at Appendix E). Their presentations clarified EBM concepts, offered provocative perspectives, and focused the breakout conversations that followed.

Participants then gathered into smaller groups in separate rooms to mutually learn from each other about their organizational, community, and individual concerns and interests about EBM. They explored and compiled their ideas and discussed resources that might be needed for effective implementation of EBM in New York. They individually recorded their thoughts and ideas on contribution sheets (see Appendices F and G) that most agreed to leave with the facilitators. These contribution sheets serve as an ongoing record of the thoughtful, creative, and engaged participation that characterized the breakout conversations.

To supplement the contribution sheets, graduate students from the two sponsoring SUNY campuses acted as note takers.

Participants then reconvened in the large group and each participant had an opportunity to express a thought, idea, reaction, observation, or concern that was important to them and that they wanted participants to take with them and keep thinking about.

This brief summary and synthesis is based on a systematic analysis of the information from the individual contribution sheets and the detailed note taking of the breakout conversations.

Setting context for the Dialogues

Scientific understanding of marine and freshwater ecosystems has advanced over recent years. These advances have clarified our understanding about the ways that human activities on the land impacts water quality and the condition of aquatic species. We also better recognize and understand that the social, cultural, and economic health of communities depend on what happens in the water. Economies can falter when we fail to protect our ecosystem-based resources.

Dialogue Guest Presenters

Dr. James Cantrill (Syracuse, Buffalo, Albany)
Professor Environmental Communication, Northern Michigan University; former U.S. Chair, Sustainability Initiative of the Lake Superior Bi-national Program.

Dr. Larry Crowder (New York City, Stony Brook)
Stephen Toth Professor of Marine Biology & Director, Duke University Marine Lab.

Langdon Marsh (Syracuse, Buffalo)
Former commissioner, New York State Department of Environmental Conservation; current Fellow at the National Policy Consensus Center, Portland State University, Oregon.

Dr. Ellen Pikitch (New York City, Stony Brook)
Executive Director of the Pew Institute for Ocean Science and Professor in Marine Biology and Fisheries at the University of Miami's Rosenstiel School of Marine and Atmospheric Science.

A number of recent gatherings have focused on ecosystem-based management. For example, the Pew Oceans Commission, the U.S. Commission on Ocean Policy, several State of the Lakes Ecosystem Conferences on the Great Lakes, the Great Lakes Regional Collaborative, and subsequent deliberations among policy-makers, scientists, non-governmental organizations, and others have agreed that a combination of human activities on land, along our coasts, and in our coastal waters are unintentionally but seriously affecting marine and freshwater ecosystems. These impacts generally include:

- altering food webs
- changing the climate
- damaging habitat
- eroding coastline
- introducing invasive species
- polluting coastal waters

Although these problems have been previously identified and programs are enacted to address them, the health of the nation's marine and fresh water resources continue to deteriorate, and the demands on its marine and Great Lakes resources continue to increase and compete. EBM has emerged nationally to build on the strengths of existing programs and initiate new integrated approaches to more effectively protect and restore U.S. oceans and Great Lakes ecosystems.

Ecosystem-based management is different from ecosystem management. Ecosystem management implies that it is possible to control and manage an entire ecosystem, and this is increasingly recognized as an unrealistic and unfeasible way to address marine and freshwater ecosystem challenges. Ecosystem-based management recognizes that 1) humans cannot control or manipulate entire ecosystems and 2) because humans are a significant part of marine and freshwater ecosystems, policy, regulations, and management must address the ways by which human activities and ecosystems synergistically impact each other.

New York is unique in the country in having extensive shoreline and major population centers along both its Great Lakes and ocean coasts. In the last few years, both have been the subject of national attention because of the threats they face and the potential they represent for revitalizing the Northeast and Midwest economies.

However, most existing regulatory regimes and legislation are largely defined by artificial biophysical boundaries that do not correspond to, for example, the flow of water or air, or the habitats of the animals and plants that healthy communities depend on. Therefore, with the growing knowledge and understanding of ecosystems and human impacts, managers, policy-makers, and resource users at all levels are increasingly being asked to take the dynamics of ecological relationships into account to protect and restore healthy and productive Great Lakes and ocean ecosystems.

Agencies at both the federal and state levels are doing good work and making progress to restore and protect environmental and human health. EBM offers a way for these agencies to enhance their existing programs by coordinating their efforts, sharing their knowledge, learning from local and indigenous knowledge, and maximizing their agencies' resources.

EBM has emerged as a promising approach to protect and restore healthy ecosystems and the resources that depend on them because of its combination of 1) increased scientific understanding, 2) increased public awareness of the continued deterioration of the nation's marine and freshwater resources, and 3) a growing endorsement by diverse interests that cooperation and collaboration are productive and desirable.

The Executive Director's opening remarks offered the following background information:

A number of U.S. and New York benchmarks have raised awareness and commitment to EBM (see also Appendix H). For example, the Pew Oceans Commission released its report, *America's Living Oceans: Charting a Course for Sea Change: A Report to the Nation* in March 2003. The U.S. Commission on Ocean Policy's September 2004 report, *An Ocean Blueprint for the 21st Century* called for decisive, immediate federal action to carry out 212 recommendations to halt the steady decline of the nation's oceans and coasts. Concerning the Great Lakes, the U.S. Environmental Protection Agency's and Environment Canada's sixth State of the Lakes Ecosystem Conference in 2004 reinforced the bi-national commitment to developing and implementing an ecosystem-based approach to Great lakes management.

In March 2005, the U.S. Commission on Ocean Policy and the Pew Oceans Commission both called on the U.S. to adopt "ecosystem-based management" as a cornerstone of new ocean policies, and in December, 2005, over 200 academic scientists and policy-makers built consensus on a definition and the key elements of EBM in their *Scientific Consensus Statement on Marine Ecosystem-Based Management*.

In October, 2005, a day long New York State Ocean and Great Lakes Symposium brought together over 100 marine and freshwater resource experts and representatives from business, academic and research institutions, state and local governments, and non-governmental organizations to identify the issues of scientific and management concerns, and explore policy changes to support applying EBM to protect New York's ocean, bays, and Great Lakes.

Also in October 2005, the State Assembly held a forum seeking public advice on how to address current issues affecting the health of the ocean.

A common theme in the national reports and public forums held in New York was to build on existing programs and laws, and organize institutions to manage resources on an ecosystem basis.

In July 2006, the New York State Ocean and Great Lakes Ecosystem Conservation Act became law. The Act creates the New York State Ocean and Great Lakes Ecosystem Conservation Council to coordinate the development and implementation of ecosystem-based management in New York based on sound science, a new level of collaboration, and multi-jurisdictional ecosystem-based management.

Among the responsibilities of the Council are:

- promoting greater understanding, protection, restoration, and enhancement of New York's ocean and Great Lakes ecosystems, as well as sustainable economic development and job creation;

- developing policies to guide agency programs and activities that affect New York’s coastal ecosystems, and coordinating agency activities to integrate ecosystem-based management and build on existing laws and programs;
- encouraging scientific research and information sharing that will help inform and enhance ecosystem-based management decisions and capabilities;
- establishing and/or strengthening regional and federal coordination and partnerships to address complex coastal resource issues that extend across boundaries;
- integrating New York’s private and public academia, research, and not-for-profit institutions more effectively in developing and advancing coastal-based ecosystem management; and
- ensuring that community needs and aspirations are accommodated.

The Council will deliver a report to the Governor and State Legislature no later than November 1, 2008. This report will demonstrate that improvements can be accomplished in the eastern Lake Ontario and Long Island Great South Bay coastal ecosystems; define executive and legislative actions necessary to integrate ecosystem-based management with existing programs; include a plan, schedule and funding opportunities for implementation of executive actions; create an ocean and coastal resources atlas; establish a research agenda that identifies priority issues in need of further research; identify opportunities for regional ecosystem-based management with neighboring states and the federal government; and recommend actions to preserve, restore, and protect submerged aquatic vegetation populations and meadows.

The Council’s inaugural meeting was held in Albany on October 3, 2006, before the fifth EBM dialogue. Several brief, preliminary reports were presented to the Council, including a brief overview of the preceding four dialogues.

Council members include the heads of these state entities:

- *Department of Agriculture and Markets*
- *Empire State Development*
- *Office of General Services*
- *Department of Environmental Conservation*
- *Department of State*
- *Office of Parks, Recreation and Historic Preservation*
- *Department of Transportation*
- *New York State Energy Research and Development Authority*
- *State University of New York*

A new category in the State’s 2006 Environmental Protection Fund was created and allocated \$3 million in the 2006 State budget to support the work of the Council. Two EBM demonstration projects are in their early stages (see Appendices I and J). One focuses on the Sandy Creeks watersheds in eastern Lake Ontario; the other focuses on the Great South Bay in Long Island’s South Shore Estuary.

III. Summary and Synthesis of Participant Contributions

The five statewide dialogues were timely opportunities for interested parties to begin a conversation to better understand EBM, its potential benefits, and the possibilities for collaborative partnerships to implement it. This section provides a brief summary of those conversations.

These dialogues were preceded by the October 2005 *New York State Ocean and Great Lakes Symposium* and while the two events are complimentary, each focused on and highlighted a different aspect of EBM. The Symposium focused on scientific, technical management, and economic issues of EBM, particularly offshore energy infrastructure, coastal dependent industries, and ports operations; habitat protection, open space and sustainable fisheries; and watershed management and water quality improvements. One of the strong themes that emerged out of the Symposium was the need for improved intrastate and interstate governance, as well as coordinating research and education.

Sound science about complex ecosystem challenges will always be at the core of EBM. To an equally significant degree, the success of the Council will also depend on processes to effectively and efficiently achieve its benchmark EBM goals for 2008 and decades beyond. That is, how agencies engage each other and multiple and diverse stakeholders in its tasks.

The dialogues were based on the other keystones of effective ecosystem-based management; collaboration, partnership, and inclusiveness of stakeholders. Some participants insisted that process is arguably the critical element. They told of experiences of good science going unheeded because of a lack of political will or local involvement.

Therefore, the primary focus of the statewide dialogues was to begin the conversation about various aspects of the integrative process of implementing ecosystem-based management in New York.

As noted earlier, this summary and synthesis are not presumed to be exhaustive. They provide a level of “ground-truthing” about significant aspects of “doing” EBM in New York State. As such, this report serves as the impetus for continuing the conversations among stakeholders, including the Council, to mutually learn, deliberate, and be effective, active partners with each other.

Participants did not view these dialogues as ends in themselves, but the beginning of innovative and ongoing involvement and contribution. They are eager to continue what these dialogues have begun.

The following section reviews participants’ reflections on EBM, and then presents a synthesis of their conversations. These are arranged by three major themes: knowledge, process and capacity building, and incentives.

Participants’ Reflections on EBM

The overwhelming sentiment of participants was that EBM as a concept was a timely approach that held promise for addressing complex ecosystem issues. Many recounted experiences in which ecosystem understanding was not necessarily the driving force of an action or inaction. Instead, economic, social, cultural, and political issues were the keys and also the obstacles.

“The success of EBM depends on the trust that forms among stakeholders which begins at things like this dialogue.”
~Participant

They also noted that top-down regulation will not be effective by itself to meet current and future ecosystem challenges. It is critical that in addition to policy and regulation, a grassroots, bottom-up dynamic be supported.

In this regard, EBM offers a number of appealing benefits identified by participants. In addition to biophysical science, EBM focuses on gauging human behavior that impacts the economic and other services that ecosystems provide to communities. EBM offers an incentive for calculating the value of these ecosystem services as a market incentive for encouraging positive behavior choices and policy. It requires that people think with a cumulative mindset to consider the “bigger picture” or macro perspective in addition to the narrower micro levels of specific interests or projects that may target specific ecosystem aspects.

For example, commercial and recreational fishing interests concerned with native brook trout, alewife, eel, shellfish, aquaculture, etc., have gradually started thinking about how the survival of these species are related to other issues such as estuaries, dam removal, and water quality.

Discussions touched on how EBM offers an overarching perspective by which to identify and more efficiently work with, and build on agencies’ areas of expertise and coordinate existing networks, create new ones, and link different levels of government and otherwise isolated programs. Participants identified the potential to streamline regulation and provide accessible, usable data sets and information for local decision making and public use.

It can build incentives for the politically drawn boundaries of home rule to become transparent and flexible as communities collaborate to address ecosystem issues that impact their communities’ economic vitality and other quality of life issues of importance to them. The benefits and challenges of the “coupling and uncoupling” of natural and political boundaries was a common topic.

“There are no right answers, just smart decisions. That takes more people and collaboration and the balance of conflicting interests. We’ve got to be willing to work this stuff through.”
~Participant

“We need to put ourselves in the ecosystem’s ‘shoe’ and think about sustainability, have patience, and think long-term planning. We need to be willing to make investments that may not have immediate results and we need to do it through partnerships so it lasts.”
~Participant

EBM offers a management approach that moves beyond addressing environmental problems in a traditionally piecemeal and reactive way. Instead, EBM recognizes the impact of present behavior on future generations, and many participants noted the wisdom and appeal of the First Nation measure of thinking ahead about cumulative impacts to seven generations. The “place-based” nature of EBM appealed to many participants.

“This is not just about fisheries or any special interest. It requires a look at land-based activities that affect water quality as well. We need to incorporate the watersheds, waterways and bays into ecosystem-based management instead of the project-based and fragmentary approach. And don’t forget cumulative impacts—they’re just as damaging to the health of our waters.”
~Participant

It should be noted that participants continually reminded each other that they must have realistic expectations. Scientific processes are very different from political processes, yet both require rigorous assessment to regularly assess whether any current approach is hindering or helping to achieve EBM goals. Implementing EBM will no doubt require some “out-of-the-box” thinking and risk-taking based on best available science. When scientific knowledge is not possible or available, it may require leaps of faith in policy using a precautionary principle.

They reminded each other that EBM is a long term process that may require short-term trade-offs, perhaps at some expense to community sectors. These trade-offs need to be recognized and offset by incentives to encourage and reward.

Although a sense of urgency drove the State’s commitment to EBM, the immediate focus, beginning with these short dialogues, is creating opportunities for progress and partnership. The challenge of balancing short term goals within long term objectives within a political context was a common topic, unsettling to many.

Several desired some kind of framework or the formation of a time table of specific goals against which to measure progress, or at least a prioritizing of short term tasks. In addition to their support, participants also expressed a strong sense of uncertainty about what EBM really entailed, how it might impact their interests, and what roles they might play. Others noted several initiatives and organizations with EBM qualities as well as a growing number of cases that could provide guidance for best practices and leadership.

The following section synthesizes the three main themes that characterized participant contributions. The first theme relates to issues of **Knowledge**. The second theme relates to **Process and Partnerships**. And the third theme relates to **Incentives**.

Theme I: Knowledge This section presents the general concerns and ideas that participants expressed regarding the multiple levels and kinds of knowledge that are necessary and desirable to implement EBM. Participants reinforced the critical value of compiling existing biophysical science and technical expertise into what the Act calls an ocean and coastal resources atlas. They also recognized the value of identifying, prioritizing, and fulfilling research needs. They also recognized the value of local knowledge and indigenous knowledge. In sum, they placed a high priority on how all these different traditions of knowing might be gathered, integrated, distributed, and productively used for good decision making and program development.

Definition & Distinction of EBM. Several participants expressed their continuing confusion about what distinguishes ecosystem-based management from the more familiar concept of ecosystem management (EM) (see Appendix K, for other frequently asked questions). They wondered if EBM is too confusing a term to use for general public use and in specific program names. Others noted that both terms offer little appeal for local enthusiasm and support because they are abstract and too technical sounding. Participants offered examples of EBM local program names, such as “Lands for Life” that were easier to remember and offered more appeal because the objective is clear in the name. EBM may be the approach used, but also using names that reflect EBM place-based programs/initiatives might encourage stronger citizen interest and support.

Educating About EBM. Participants agreed that clear definition and information about EBM is essential. As the next step, they urge the Council to produce basic information in an appealing way for broad distribution to familiarize citizens with the concept. If such information is available, many organizations stand ready to use their various resources to distribute it to their members, constituents, networks, students, elected officials, and others. This information could simply be appropriate text. It might also be completely produced hard copy or electronic brochures or flyers that are ready to be widely distributed by organizational partners. They offered to add EBM to agendas for their regularly scheduled meetings and other venues for explanation and discussion.

Participants strongly emphasized that in order for EBM to be effective in the short and long terms, the State needs the involvement of current and future generations, beginning with children. EBM needs to be a way of thinking, not a program done separately or an add-on to how communities otherwise do their business and individuals live their lives. Therefore, they identified education about sustainability and EBM as a priority of critical significance. Being aware of the mutual interdependence of ecosystems and humans in a complex, dynamic system needs to become a part of how individuals and communities measure their decisions and actions.

“Education needs to focus on how everything is connected and the need for individual stewardship. This is the driver of EBM because if the will of local citizenry is not in place, then all the agency driven programs in the world won’t be effective.”

~Participant

Participants felt that if EBM is ultimately about humans managing themselves, then public information and education are the essential keys for raising awareness, increasing understanding, and changing behavior, including children. Everyone needs to understand and appreciate the interdependent dynamics of ecosystems that include humans and the impacts that their own behavior has on them and hence, their community and their own quality of life. Many participants strongly advocated that the Commissioner of Education be added to the membership of the Council to not only emphasize this point, but provide institutional leadership to frame appropriate school curricula to reflect sustainability through an ecosystem-based perspective.

Learning About EBM. Participants want a mechanism for collecting detailed cases of EBM, both successful and less successful, especially in New York State. Many were knowledgeable and some had personal experiences in cases with EBM characteristics. Participants felt that EBM cases held much value for learning, training, and building community capacity. For example, they illustrate what EBM looks like. They demonstrate the potential for productively working through complex issues and thus build confidence. They highlight best practices of process as well as the mine fields to avoid. They also present diverse applications and innovative ideas for taking advantage of unique local circumstances and opportunities. They provide the basis for networking. They provide leadership models and schemes for stretching management resources. Participants offered many more values.

As one participant said, “People like stories for a reason. They’re powerful.” Participants suggested that the Council provide a clearinghouse mechanism to gather and track cases of EBM, as well as opportunities to learn about various EBM cases. Such a clearinghouse could also provide building a knowledge base using these cases to distill best practices and incorporate this knowledge

into training and mentoring services. It could also provide the basis on which to build public education, and to recognize and celebrate effective initiatives. Participants felt strongly about this.

Scientific/Technical Knowledge. Participants viewed EBM as an exciting concept to envision, and they embraced its ultimate long term goals of ecological and community sustainability. Most participants were very familiar with the biophysical challenges facing New York’s coastal resources and could easily list them. Most participants have been or are currently involved in various programs, initiatives, and proposals to address these challenges. These programs range from being very local to international, especially concerning the Great Lakes. Some programs are smaller concerning a particular place, while others are large scale. Some are focused on single issues; others on ecosystems. Some of these programs and initiatives reflect EBM characteristics.

“As a charter boat captain on Lake Ontario for many years, it is important to me to see that something is done to reduce the level of pollution in Lake Ontario and other bodies of water to ensure a healthy population of fish so one can enjoy eating some of the fish, rather than be warned not to.”

~Participant

Participants easily listed many existing initiatives, too many to accurately list in this report. Examples include the recently completed Lake Ontario Coastal Initiative (LOCI) as well as several works done on the Hudson River, Lake Champlain, Lake George, the Great Lakes, the St. Lawrence River, the Tug Hill Region, Long Island Sound, Long Island’s South Shore, and the watersheds, basins, and tributaries of these and many others. These have produced valuable knowledge on particular areas, regions, or issues.

Participants wondered how existing initiatives such as these might be integrated and, in some cases, shifted to a more EBM approach. For example, participants wondered how ecosystem boundaries could be and would be identified, how small or how large. For example, would the Hudson River Valley be appropriate, or all of Lake Ontario? Might it be more productive to narrow the focus? Many participants felt that watershed planning and management initiatives came close to illustrating this dynamic of defining ecosystem boundaries and, in many cases, exemplified characteristics of EBM.

Participants wondered what impact an EBM approach would have on current programs being implemented. They felt strongly that an enormous amount of productive and valuable science has already been conducted and compiled. They urged the Council to not reinvent the wheel as it creates the data atlas and pursues the other tasks called for in the 2006 NYS Ocean and Great Lakes Ecosystem Conservation Act.

Participants discussed the emphasis on coastal ecosystems and communities, but cautioned that activities in terrestrial and benthic ecosystems also hold critical significance for the health of the coasts. For example, in what ways does deep water trawling impact coastal resources? In addition, they noted that what might appear to be a regional issue might have statewide and broader implications. For example, several participants noted that the only commercial hazardous waste landfill in New York State and the entire northeast is located a short distance upgradient from the

Lake Ontario and the Niagara River. How would EBM address this situation? How might EBM assess the potential impacts if this landfill proposes to expand to operate an additional 25-30 years?

Participants identified a number of needs regarding scientific and technical knowledge. One is for an ongoing mechanism to identify and prioritize research gaps. Another is compiling the existing data into a clearinghouse of accessible and useable data packaged for local users such as computer generated models and geographic information systems that offer the potential of more informed decision making. Such a clearinghouse can also act as the central depository of relevant research, cases, ongoing processes, available data, etc.

Another is providing data in accessible and useful forms that can be accessed and productively used for decision making by EBM collaborative governance groups. Another is building the capacity of decision makers, communities, and others to use these data productively. Finally, another is creating a mechanism to identify and collect exemplar cases and best practices for adaptation and application to other situations. Organizations and universities are willing partners to assist in the workload of these important tasks.

Integrating local and indigenous knowledge. Participants readily supported the solicitation and integration of other kinds of knowledge in addition to biophysical science. This included not only social science approaches, but also local and indigenous knowledge. Many examples were provided to support their value, not only for the significant information provided, but also for the relationships that are often built by honoring these other kinds of knowing. Participants wanted support for learning how to integrate this knowledge, and how to base decisions on that integration. Some discussed the concept of arriving at “good enough” decisions that honored different values. Such decisions might not be optimal in terms of scientific understanding, but would allow actions to go forward in a positive direction, be monitored, and adapted.

Theme II: Process and Capacity Building This section presents the general concerns and ideas that participants had regarding the partnerships and collaborations that EBM requires. Participants were convinced of the value and potential of collaborative governance in which multi-sector stakeholders co-labor to achieve common goals. They identified key shifts in perspective and several critical skill areas that need to be improved to build agency, stakeholder, community, and citizen abilities to contribute to EBM. This is what is meant by capacity building.

To support the collaborative partnerships that EBM requires, participants were particularly concerned that the Council provide leadership to build feasible and appealing opportunities for interested parties and communities to participate as leaders and partners, to create ways by which partners’ contributions can be recognized and valued, and to provide meaningful decision space so that partners can impact and influence decisions. The following sub-sections detail participants’ strongest conversation threads about process and capacity building.

The Process Challenge and Promise of EBM. By its very definition, EBM brings holistic approaches to integrate what are often viewed as competing perspectives of ecology, economy, and society, rather than focusing primarily on biophysical ecosystems. Further, it focuses on place-based scales, and these places are defined by flexible boundaries within larger encompassing ecosystems. It focuses on a long-term perspective, and it focuses on human systems. EBM

implementation emphasizes engaging diverse interests in not only top-down processes but also grassroots processes.

This combination of EBM characteristics both intrigued and perplexed participants. As other parts of this report describe, participants recognized the multiple benefits of an EBM approach and the commitment to active, collaborative processes to implement it. Many also acknowledged that collaborative governance processes seemed daunting but not deterring. They recognized the challenges of doing collaborative partnerships well, and they also expressed their desire and commitment to invest good faith and resources in them. They were convinced of their value, but want more skills and confidence to structure, maintain, and engage in such processes.

Participants' recounted stories of their own experiences in productive collaborations reinforced the recognized value and growing appeal of such processes, but they also demonstrated that they are still the exception rather than the rule, especially regarding complex and contentious environmental and natural resource management issues. Participants spent significant time talking about the critical role of collaboration and the need for sustained and productive partnerships to implement and sustain EBM. Further they talked about the critical communication and support needed for them to be effective in achieving goals and satisfying to participants.

Communication as the Critical Key. A lack of communication is often blamed for a lack of trust or effectiveness, not only for education and mutual learning but also for effective collaborative processes and support. Participants drew their desired lines of communication among every level of government, from local through international. They stressed their desire for the Council to be proactive, bold, innovative, and consistent in initiating and maintaining healthy lines of communication.

They also valued open communication channels with the Council, its member agencies, and all stakeholders. They value support for communicating with their members and constituents about, for example, the economic and social benefits of EBM for local communities. Communication is not to be viewed as information transmittal, nor is it to be viewed as some necessary add-on to a technical, regulatory process to inform the public. Participants insisted that communication be valued as an integral component of EBM.

Participants could not emphasize enough the need and value of communication, and the grim prospects for EBM without it. They pledged their organizations' and their personal creativity, resources, and efforts to assist in strengthening and sustaining it. The rest of this section offers participants' suggestions for improving communication.

"If we think that, at the end of the day, it's really about managing people, then it's really crucial to communicate effectively and convincingly at the most local scale of municipalities and individuals."
~Participant

Expanded Agency Roles Participants felt that government entities, such as the nine state agencies comprising the Council, need to proactively expand their roles. Many are defined by missions of providing service or regulating activities. To accomplish the short and long term objectives of EBM, agencies must expand their missions to include the significant roles of convener and facilitator. These role expansions must occur on several levels, and the skills that are needed to

effectively play these expanded roles cannot be assumed to inherently be present but dormant within each agency. Therefore, participants encouraged the Council's agency members to assess their own collaborative capacity inside their own operations and, if necessary, engage in training or other activities to bolster it.

Further, New York's commitment to EBM and the creation of the Council recognize that its nine member agencies have traditionally pursued separate but overlapping and complementary missions. Some agencies have productive working relationships with each other; others have little history of working with each other. Now, EBM requires that they collaboratively work together to effectively achieve EBM goals. Therefore, participants encourage the nine state agencies to assess and create opportunities to collaborate with each other. Finally, participants urge agencies to be open to the building of collaborative governance processes among the Council and coastal resource stakeholders.

Building collaborative capacity is the most visible and necessary requirement for EBM. Espousing collaborative intentions does not make it so. Participants recited examples of effective partnerships in their interactions with state agencies, but they also recognized that quite often, these depended on individuals within agencies, not on agency culture. This capacity for collaboration will be an evolving improvement that participants look forward to playing a continuing active role in achieving. Expanding how agencies think of their roles takes the first step.

“Government agencies need to enhance their own collaboration, horizontally and vertically, and shift government resources from control to extension and facilitation. EBM should help the agencies articulate their need for internal change and growth.”

~Participant

Really be Collaborative. Participants strongly stressed the need and desire for ongoing processes that are “truly collaborative.” They recognized that these kinds of processes do not simply happen by declaring them and that ongoing training and mentoring in these processes is necessary. If collaborative processes were already a routine part of how coastal resources are managed, they would not be explicitly part of what EBM calls for.

Communication and expanded agency roles have already been presented as key foundational elements of collaborative governance. Participants felt that much of the potential for effective EBM rests on these. They also call for the involvement of all key stakeholders. Participants noted that some interests were not adequately involved in the dialogues. In particular, industry, sportsmen and sportswomen, recreationists, and agricultural interests were underrepresented, as were local elected officials. Although some First Nation representatives participated, the sense was that more involvement would be valuable and welcomed.

“This is an evolving process that will necessitate honest looks at what we do and how we do it. Continue forums to interact. Engage the partnerships and keep up the good work!”

~Participant

In addition, participants strongly endorsed the collaborative learning approach of the dialogues. Many noted that this was the first time that they felt they had not only learned from others, but that others had really listened to and learned from them. Participants endorsed more opportunities for

people to interact with each other, learn from each other, and appreciate others' perspectives, experiences, and knowledge. They listed diverse kinds of events and activities, such as educational conferences, workshops, symposia, "cottage" meetings, civic/interest group meetings, community conversations, and brown bag and coffee talks.

In order to sustain such a robust, energetic dynamic, participants encourage the Council to use partnerships, delegate leadership, and use their power to facilitate and convene. For example, participants recognized the value in strengthening existing professional organizations and university programs to assist communities in addressing issues such as zoning, and providing data management and process skill building to revise their comprehensive master plans to emphasize sustainability. Another is to use existing networks such as user groups, professional associations, schools, watershed groups, intermunicipal organizations, government entities, cooperative extension, non-government organizations, soil and water conservation agencies, etc.

Ongoing Skills Building. Two essential aspects of collaborative processes are content and relationships. Participants fully recognize the necessity of supporting biophysical science research and data production. However, they also feel it is essential that the Council support collaborative processes with the same level of commitment.

To do this, participants felt it is critically important that the Council invest financial and human capital in building the capacity of agency personnel, researchers, decision makers, and other stakeholders to effectively structure and participate in collaborative processes. Participants placed strong emphasis on the following general needs for ongoing skills learning and process support:

- Increasing understanding of EBM, cases, best practices
- Building collaborative governance processes
- Engaging in principled negotiations to work out trade-offs, compensatory support
- Resolving/preventing disputes and conflict escalation
- Building and maintaining networks among diverse stakeholders
- Engaging in strategic, long term planning
- Revising comprehensive master plans
- Integrating local and indigenous knowledge into decision making
- Using scientific and economic data in multi-stakeholder processes
- Setting and using process accountability measures of effectiveness

"EBM requires a change in perspective to rally interests towards a common goal. The idea behind this is not new; however, coordinating all the groups and agencies to achieve this is new."

~Participant

Theme III: Incentives This section reflects the general concerns and ideas that dialogue participants had about creating and implementing incentives for implementing EBM. This theme resonated strongly among participants. It includes the first two themes of communication, and process and capacity building and goes further to consider what else is needed to implement decisions that collaborative partnerships produce.

Productive Processes. Participants felt the most powerful incentive for effectively implementing EBM is providing ongoing and robust opportunities for stakeholders and communities to be involved in productive processes, as the previous section discusses. As the proverbial line says, “Build it and they will come.” Participants envisioned involvement at every level, from local to regional, and offered several examples. They recognized the enormous challenges of not only building people’s ability and will to engage in such processes, but also providing the resources for coordinating and supporting such processes.

Participants noted that the satisfaction of being part of effective, productive processes was a powerful incentive for doing more. However, the opposite was also true. Being part of ineffective processes resulted in fatigue, disillusionment, and even conflict. That meant that these processes could not be left to chance in hopes that people have the skills to be effective and efficient. It required ongoing strategic efforts to build understanding, skills, and hold such processes accountable. Part of such a strategy must prioritize educating children as well as adults to encourage a general attitudinal shift, as discussed in Theme I regarding Knowledge.

Funding Stability. Funding for research and program implementation is always needed, and will continue to be. Participants recognized and expressed appreciation for the legislative and executive commitment to EBM by the creation of a new category in the State’s Environmental Protection Fund (EPF) to support the Council’s activities and mandated tasks. They also noted that the appropriation of \$3 million in 2006 was too small to really make a significant difference, considering the identified needs. In addition, some felt that putting the funding for EBM in the EPF made it too vulnerable to annual state budget battles and inconsistent funding levels. Others felt it was well-placed in the EPF. In addition, funding is needed to support any short term trade-offs that might be necessary or desirable to lay the foundation for long term sustainability.

What everyone agreed on was that research, collaborative processes, and program implementation need dependable, appropriate, and consistent funding. Many participants asked where the money was going to come from, and many threads of the conversations came back to the questions of funding and funding equity. Although funding is an issue for nearly every state program, participants stressed that the deteriorating condition of New York’s ocean and Great Lakes coastal resources do not allow for the luxury of time and inadequate funding.

Political Will for Non-partisan EBM. In addition to financial funding support for EBM, participants felt that other kinds of support were critical as well to keep EBM from “being put on a shelf.” The implementation of EBM seeks to achieve short term goals but with a long term view. Therefore, a great deal of discussion focused on how to support the momentum of EBM through election cycles. Participants feared that EBM would gather short-term political moss and stall or be viewed as attached to one political turf or another. There was a strong sense that the next 24 months leading up to the legislated 2008 deadline for the Council achieving critical mandates

represent a window of opportunity that will make or break the legitimacy of the State’s commitment in the eyes of stakeholders.

In summary, participants’ discussions identified three essential elements without which the EBM initiative will not succeed: 1) the State’s commitment to EBM must transcend administration transitions; 2) the State must combine the pursuit of EBM with an adequate commitment of resources; 3) the executive and legislative branches must provide the Council’s agency members with the political will, skills, and resources to support the necessary collaborative partnerships.

Therefore, strong political will to support EBM emerged as one of the strongest incentives for its effective implementation. Without the continued, consistent, demonstrated State commitment to EBM, this initiative will disappoint at the expense of ecological, economic, and community vitality. Organizations, agency personnel, communities, interest groups, industry, and other partners need to hold the State accountable to its commitment, and so the relationship is mutually reinforcing between the State and the grassroots.

Accountability. Building accountability measures into program implementation holds many benefits and is often required. Because EBM is an emerging approach and New York is co-creating knowledge about it with its partners, participants had a strong desire for accountability. Participants offered a number of suggestions for “holding the State’s feet to the fire” and also for the State to provide incentives for grassroots involvement and accountability. One is to press for internal accountability for the Council and its nine agency members.

Another is to press for a funding source in the State’s budget that will provide predictable and consistent funding for research, collaborative process support, and program implementation. Another is to provide for local economic incentives to embrace EBM, for example, to work out trade-offs and compensatory support to impacted users and local economies. Such agreements should be subject to monitoring and appropriate mid-stream corrections if indicated. Another is to provide support for municipalities to blur their political boundaries and work together to use home rule on a regional, ecosystem basis.

Another incentive is involving local communities, perhaps on a regional level, to provide demonstration cases of how resources can be productively leveraged, to achieve short-term successes and to reinforce the practice of EBM for the long term. Perhaps there could be incentives to communities to do EBM planning, and they could be granted priority access to implementation assistance.

“ . . . the legislative approach is already in place—the strength of EBM is going to be in our partnerships.”

~Participant

Participants were intrigued by the demonstration projects at Tug Hill’s Sandy Creek and Long Island’s South Shore. Some participants wondered about how non-traditional and innovative the two demonstration projects are initially structured. However, the larger sense was that EBM is evolving, and is not guided by a set, predictable formula. Therefore, the demonstration projects needed to begin somewhere, even at a more traditional approach. Their strength for EBM will be how adaptable the projects become in terms of collaborative governance and how open they are to

adapting and changing as new information becomes known. Participants urged the Council to find ways to allow the progress of the demonstration projects to be publicly followed, discussed, and used as one participant said, as “a sort of EBM reality show.” Some participants felt this kind of constructive observation would be valuable teaching opportunities as well as providing another measure of accountability.

“Incentives and programmatic funding across agencies need to support collaborative efforts. Legislation and regulations should reward “good” behavior, not just penalize “bad” behavior.”

~Participant

IV. Final Comments

This report was prepared by the State University of New York members of the EBM dialogues Planning Team. It is presented to the New York Ocean and Great Lakes Ecosystem Conservation Council as it determines the next steps to take to implement EBM in New York.

Although this report is not an official document in a legal process, it does represent the good faith investments of over 500 stakeholders in five short dialogues across the State and is witness to the aspirations and expectations of this broad diversity of interests to proactively and collaboratively pursue ecosystem-based management in New York State as part of New York State's ocean and Great Lakes initiative.

The Council's efforts to implement EBM in New York will take familiar and unfamiliar forms, build on the good work already done and in progress, and no doubt make mistakes and have several miscues as it creates and adapts forms of collaborative governance. Participants strongly expressed the positive potential of EBM, and reminded each other that EBM will require patience, hard work, and good faith.

“Whatever is done in New York State is going to affect the entire eastern seaboard. It must include others and be aware.”

~Participant

New York State is demonstrating visionary boldness by expressing its commitment to EBM through bipartisan, unanimous legislative support for the New York Ocean and Great Lakes Ecosystem Conservation Act and the creation of the Council. New York State has also expressed a commitment to be proactive about implementing ecosystem-based management and recognizes that this is a necessary commitment and investment for long term sustainability.

The competition among diverse ocean and Great Lakes interests does not end with this commitment, nor do the strongly felt philosophies that support them. The ecosystem challenges do not become easier, nor do the economic and quality of life issues for communities decrease. It is not predictable what the dynamics of New York's visionary commitment to ecosystem-based management will look like next year, decades, and a century into the future. As this complex initiative begins, the Council is joined by eager, talented, and experienced partners.

Appendix A

The New York State Ocean and Great Lakes Ecosystem Conservation Act



Environmental Conservation Law

Article 14 - NEW YORK OCEAN AND GREAT LAKES ECOSYSTEM CONSERVATION ACT

14-0101 - Short title.

14-0103 - Legislative findings and declarations.

14-0105 - Definitions.

14-0107 - New York ocean and Great Lakes ecosystem conservation council.

14-0109 - Responsibilities of the council.

14-0111 - Report to the governor and legislature.

14-0113 - State agency assistance.

§ 14-0101. Short title.

This article shall be known and may be cited as the "New York ocean and Great Lakes ecosystem conservation act".

§ 14-0103. Legislative findings and declarations.

The legislature finds and declares that:

1. New York's coastal ecosystems are critical to the state's environmental and economic security, and integral to the state's high quality of life and culture. Healthy coastal ecosystems are part of the state's legacy, and are necessary to support the state's human and wildlife populations;
2. The policy of the state of New York shall be to conserve, maintain and restore coastal ecosystems so that they are healthy, productive and resilient and able to deliver the resources people want and need;
3. The governance of coastal ecosystems shall be guided by the following principles:
 - a. activities in and uses of the coastal ecosystem are sustainable;
 - b. ecological health and integrity is maintained;
 - c. ecosystems' interconnections among land, air and water are recognized;
 - d. understanding of coastal ecosystems is enhanced;
 - e. decisions are informed by good science;
 - f. when risks are uncertain, caution is applied; and
 - g. broad public participation occurs in planning and decision making.

§ 14-0105. Definitions.

As used in this article:

1. "Coastal waters" means lakes Erie and Ontario, the St. Lawrence and Niagara rivers, the Hudson river south of the federal dam at Troy, the East river, the Harlem river, the Kill von Kull, and Arthur Kill, Long Island sound, and the Atlantic ocean, and their connecting water bodies, bays, harbors, shallows, and marshes.
2. "Coastal ecosystems" mean the resources of coastal waters and their watersheds.
3. "Council" means the New York ocean and Great Lakes ecosystem conservation council created by section 14-0107 of this article.
4. "Submerged aquatic vegetation" means native underwater plants found in coastal waters, including but not limited to, eelgrass (*Zostera marina*), widgeon grass (*Ruppia maritima*), wild celery (*Vallisneria Americana*), and pondweed (*Potamogeton crispus*).
5. "Submerged aquatic vegetation meadows" means those habitats in coastal waters vegetated with one or more species of submerged aquatic vegetation.

§ 14-0107. New York ocean and Great Lakes ecosystem conservation council.

1. There is hereby created the New York ocean and Great Lakes ecosystem conservation council. The council shall consist of the following nine members: the commissioners of agriculture and markets, economic development, environmental conservation, general services, parks, recreation and historic preservation, and transportation; the secretary of state; the president of the energy research and development authority; and the chancellor of the state university of New York; or their respective designees.
2. The commissioner shall serve as chair of the council, and the deputy secretary of state for coastal resources shall serve as such council's executive director.
3. Members of the council shall receive no compensation but shall be entitled to reimbursement for any necessary expenses incurred in connection with the performance of their duties.
4. The council shall meet at least quarterly.

§ 14-0109. Responsibilities of the council.

The New York ocean and Great Lakes ecosystem conservation council shall:

1. Promote the understanding, protection, restoration and enhancement of New York's ocean and Great Lakes ecosystems while promoting sustainable and competitive economic development and job creation;
2. Ensure that community needs and aspirations are accommodated, recognizing the interdependent goals of community well-being, environmental quality and economic viability;
3. Define and implement an adaptive approach building upon existing laws and programs to advance activities that affect coastal ecosystems in order to ensure the coexistence of healthy ecosystems with human activities;
4. Integrate and coordinate ecosystem-based management with existing laws and programs;
5. Develop guidelines for agency programs and activities that affect coastal ecosystems to advance the policy and principles delineated in section 14-0103 of this article;
6. Encourage scientific research and information sharing that will inform ecosystem-based management decisions and enhance ecosystem management capabilities;

7. Use New York's private and public academic, research and non-profit institutions more effectively in developing and advancing coastal ecosystem-based management;
8. Facilitate regional coordination and cooperation to address complex coastal resource issues which cross political and jurisdictional boundaries.

§ 14-0111. Report to the governor and legislature.

The New York ocean and Great Lakes ecosystem conservation council shall deliver a report to the governor and the legislature by November first, two thousand eight which shall:

1. demonstrate improvements that can be accomplished in the eastern Lake Ontario and the Long Island great south bay coastal ecosystems through ecosystem-based management in cooperation with resource managers, local governments, industry, conservation and community-based organizations, and academic and research institutions;
2. define executive and legislative actions necessary to integrate ecosystem-based management with existing programs needed to advance the coastal ecosystem principles;
3. include a plan, schedule, and funding opportunities for implementation of executive actions necessary to advance the policy and principles in section 14-0103 of this article;
4. create an ocean and coastal resources atlas to make information available to the public and decision makers;
5. establish a research agenda that identifies priority issues in need of further research to enhance ecosystem-based management;
6. recommend actions to preserve, restore and protect submerged aquatic vegetation populations and meadows; and
7. identify opportunities for regional ecosystem-based management with neighboring states and the federal government.

§ 14-0113. State agency assistance.

Any state agency, department, public benefit corporation or division, bureau or agency thereof may provide the council with the services of its agents, employees and facilities without charge to the council for the purpose of carrying out this article.

Appendix B

Welcome from The New York State Ocean and Great Lakes Ecosystem Conservation Council



New York Ocean and Great Lakes Ecosystem Conservation Council

New York Ocean
and Great Lakes Ecosystem
Conservation Council
Members:

George E. Pataki
Governor

*Denise M. Sheehan, Chair
Commissioner, Department of
Environmental Conservation*

August 25, 2006

*Patrick H. Brennan
Commissioner
Department of Agriculture &
Markets*

Dear Invitee:

*Charles Gargano
Chairman
Empire State Development*

It is our pleasure to welcome you to today's session to exchange ideas for ecosystem-based management in New York State.

*John J. Spano
Acting Commissioner
Office of General Services*

Your contributions along with other public officials, community leaders, scientists and industry will enable the Council to better understand how to enhance New York's coastal ecosystems for the millions of people who enjoy and depend on them! Today's session is considered the first of many anticipated steps in a collaborative process that will occur over the coming years to further the Council's responsibilities in advancing the New York State Ocean and Great Lakes Ecosystem Conservation Act recently signed by Governor George E. Pataki.

*Bernadette Castro
Commissioner
Office of Parks, Recreation
& Historic Preservation*

*Christopher Jacobs
Secretary of State*

*Thomas J. Madison, Sr.
Commissioner
Department of Transportation*

We thank you for your participation today and look forward to your continued participation as this initiative progresses.

*Peter R. Smith
President & CEO
NYS Energy Research &
Development Authority*

Sincerely,

*John R. Ryan
Chancellor
State University of New York*

*George R. Stafford
Executive Director
Deputy Secretary of State for
Coastal Resources*

Denise M. Sheehan
Chair

George R. Stafford
Executive Director

Appendix C

Invitation sent to 1800 Identified Ocean and Great Lakes Organizational Stakeholders



New York Ocean and Great Lakes Ecosystem Conservation Council

George E. Pataki
Governor

New York Ocean and Great
Lakes Ecosystem
Conservation
Council Members:

August 25, 2006

*Denise M. Sheehan, Chair
Commissioner, Department of
Environmental Conservation*

*Patrick H. Brennan
Commissioner Department of
Agriculture & Markets*

*Charles Gargano Chairman
Empire State Development*

*John J. Spano Acting
Commissioner Office of
General Services*

*Bernadette Castro
Commissioner Office of
Parks, Recreation
& Historic Preservation*

*Christopher Jacobs Secretary
of State*

*Thomas J. Madison, Sr.
Commissioner Department of
Transportation*

*Peter R. Smith President &
CEO NYS Energy Research &
Development Authority*

*John R. Ryan Chancellor
State University of New York*

*George R. Stafford Executive
Director Deputy Secretary of
State for Coastal Resources*

Dear Invitee:

Governor George E. Pataki recently signed into law the New York Ocean and Great Lakes Ecosystem Conservation Act. The Act creates this Council and charges it with recommending actions needed to maintain ecosystems in a healthy, productive and resilient condition so they can provide the services people want and need.

It is our pleasure to invite you to participate in one of five dialogues on ecosystem-based management being held in September and October to exchange ideas for ecosystem-based management in New York State. These dialogues are the next step in a collaborative process that relies on your involvement and others as this initiative progresses.

We look forward to your participation along with other public officials, community leaders, scientists and industry. Your contributions will enable the Council to better understand how to enhance New York's coastal ecosystems for the millions of people who enjoy and depend on them!

Enclosed are details on registration and locations, a draft agenda, and a registration form.

We look forward to hearing from you at one of the dialogues.

Sincerely,

Denise M. Sheehan
Chair

George R. Stafford
Executive Director

Enclosures

*New York Ocean and Great Lakes Ecosystem Conservation Council;
c/o NYS Department of State; 41 State Street
Albany, NY, 12231 (518) 474-6000 voice; (518) 473-2464 fax*

Appendix D

Dialogue Participant List

Dialogue Participant List

<p>Lynn Abramson - SUNY Stony Brook David Adams - NYS Dept. of Environmental Conservation Vincent Agnello - Residents for Responsible Government Inc. Fred Anders - NYS Department of State Patrick H. Augustine - Governor's Appointee to ASMFC Dale Baker - New York Sea Grant Sally Ball - NYS Department of State Marion E. Balyszak - Finger Lakes Institute, Hobart and William Smith Colleges Rosalyn Bandy - SUNY ESF Joel Banslaben - Coastal Marine Resource Center of New York Gerry Barnhart - NYS Dept. of Environmental Conservation Kathleen Barnhill - SUNY ESF John K. Bartow, Jr. - NYS Tug Hill Commission Alan C. Bauder - NYS Office of General Services Thomas A. Bell, Jr. - NYS Dept. of Environmental Conservation Michael Bileki - Fire Island National Seashore, National Park Services Peter E Black - SUNY ESF Betsy Blair - NYS Dept. of Environmental Conservation - Hudson River NERR Marci Bortman - The Nature Conservancy Gregory L Boyer - State University of New York Erik Braun - NOAA Fisheries David Braun - The Nature Conservancy - Eastern NY Chapter Lisa Breslof - American Museum of Natural History Barbara Brown - EQA Donald Burton - New York State Lawn Care Association Kristen Cady-Sawyer - NYS Parks Recreation & Historic Preservation Monika Calef – SUNY Albany James Cantrill - Northern Michigan University Gregory Capobianco - NYS Department of State Jennifer Caron – SUNY ESF David Carr - IAGT Mark Casell - Alden Environmental Conservation Commission Gail Cashen - Hudson River Water Trail Association Robert M. Cerrato – SUNY Stony Brook Alison Chase - NRDC Sarah Chasis - NRDC Neil J. Cheney - USDA-NRCS Benson Chiles - Blue Line Joanne Choboy - Residents for Responsible Government Inc. William Choboy - Residents for Responsible Government Inc. Karen Chytalo - NYS Dept. of Environmental Conservation Antoinette Clemetson - New York Sea Grant Gordon C. Colvin - NYS Dept. of Environmental Conservation David Conover – SUNY Stony Brook William Cooke - Citizens Campaign for the Environment Matt Corcoran - Long Island Lobstermen Association Larry Crowder - Nicholas School of the Environment and Earth Sciences, Duke University Brian Culhane - NYS Senate Ray Curran - Adirondack Sustainable Communities Franklin D. Cean - Great Lakes Basin Advisory Council/Lake Ontario Fisheries Coalition Joe Dadey - SUNY ESF Anthony L. D'Ambrosi - Hudson River Greenway Communities Council Robert A. Daniels - Biodiversity Research Institute Curator of Ichthyology New York State Museum DeWitt S. Davies - Suffolk County Dept. of Planning Ed Davis - Great South Bay Audubon Kerry Dawson - Hudson River Park Trust Melissa Dearborn - NYFTTA Bob DeBona - Mastic Beach Property Owners Association David Decker - Lake George Watershed Conference John DeHollander - Oswego County SWCD</p>	<p>Susana Del Granado - SUNY ESF Tara DePorte - Lower East Side Ecology Center Bruce DeVinney - Metro Water Board- Onondaga County Mara Dias - Surfrider Foundation Rob DiGiovanni - Riverhead Foundation for Marine Research and Preservation Khris Dodson - SUNY ESF Maureen Dolan Murphy - Citizens Campaign for the Environment Helen Domske - SUNY Buffalo/ New York Sea Grant- Great Lakes Program Patrick Dooley - New York Sea Grant Noreen Doyle - Hudson River Park Trust Cathy Drew - River Project Alinda Drury - City of Rochester Fran Dunwell - NYS Dept. of Environmental Conservation Kimberly Durham - Riverhead Foundation for Marine Research and Preservation Robert Ellis - Suffolk County Senior Citizens Fishing Club Adrienne Esposito - Citizens Campaign for the Environment DJ Evans - New York Natural Heritage Program Bob Ewald - Orange County Fish & Wildlife Management Board Kim Farrell - SUNY ESF Mike Feller - City of New York Parks and Recreation John Ferguson - NYS Dept. of Environmental Conservation Christina T. Ficicchia - Bronx Overall Economic Development Corporation Lauretta R. Fischer - Suffolk County Department of Planning David E. Fitch - Metropolitan Water Board Kate Fitzgerald - New York Aquarium Eugenia M. Flatow - NYC Soil and Water Conservation District Roger D. Flood - SUNY Stony Brook Cynthia Fowx - Beczak Environmental Education Center Ed Frantz - NYS Department of Transportation Gordon S. Fraser - Great Lakes Center, Buffalo State College Sima Freierman - Montauk Inlet Seafood Inc. Linda Garrett - Tug Hill Tomorrow Land Trust Lois J. Geiss - City of Rochester Dave Genaway - Town of Islip Nick Gibbons - Suffolk County Parks Linda Gibbs - NYS Tug Hill Commission Dereth Glance - Citizens Campaign for the Environment Art Glowka Kristen Goodrich - Environmental Defense Liz Gordon - Office of Assemblyman D'Napoli Anthony Graves - Town of Brookhaven David R. Graves - NYS Department of Transportation Brandon F. Greco - NYS Department of Transportation Manna Jo Greene - Hudson River Sloop Clearwater Carolyn Hall - SUNY Stony Brook Susan Harder - Dark Sky Society Jason Haremza - Genesee Finger Lakes Regional Planning Council Jenn Hartnagel - SUNY ESF Louise Hartshron - Monroe County EMC Emerson Hasbrouck - Cornell Cooperative Extension Christopher A. Hawver - Albany Pine Bush Preserve Commission David Healy - PSG/Stone Environmental Inc. Kevin Heatley - Biohabitats ISM Inc. Erica Heintz - NYS Assembly Jeff Herter - NYS Department of State Daniel Hill - Cayuga Nation HETF Robin Holerinski - NYS Dept. of Environmental Conservation Lisa Holst - NYS Dept. of Environmental Conservation Deanna Hornyak - SUNY ESF Tara Hotis - SUNY ESF Anne Hoyt - SUNY ESF</p>
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William L. Hudson - Buffalo Audubon Society, Inc.
 Courtney Hull - The Ward Melville Heritage Org
 Scott Ingmire - Madison County Planning Department
 Christopher Jacobs - Secretary of State
 Willie Janeway - The Nature Conservancy
 Mark R Johns - Bergmann Associates
 Elizabeth Johnson - American Museum of Natural History
 Sarah Johnston - Northeast Organic Farming Association of NY
 Ken Jones - Green Mtn. Institute
 Jeff Jones - Natural Resources Defense Council
 Janet Joseph - Environmental Research, NYSERDA
 Merryl Kafka - New York Aquarium
 Ilana M. Kanfer - Syracuse-Onondaga County Planning Agency
 Ron Kaplewicz - NYS Soil and Water Conservation Committee/NYS
 Department of Agriculture and Markets
 Margaret Kastler - Town of Sandy Creek
 Nancy A. Kearney - Town of Oyster Bay
 Janet Kennedy - Lakes to Locks Passage, Inc.
 Gary S. Kleppel - SUNY Albany
 Kim Knoll - SUNY Stony Brook
 Jake Kritzer - Environmental Defense - Oceans Program
 Jake Kritzer - Environmental Defense - Oceans Program
 Sarah Kulpa - Devine Tarbell & Associates, Inc.
 Nancy Kunz - NYS Department of State
 Charles Lamb - Sierra Club
 Thomas Landbury - NYS Department of Agriculture & Markets
 Betsy Landre - Finger Lakes - Lake Ontario Watershed Protection
 Alliance
 Jenny Landry - NYS Dept. of Environmental Conservation
 Kathleen Lavoie - SUNY Plattsburgh
 R. Lawrence Swanson - SUNY Stony Brook
 Tom Limbus - State University of New York
 Carl LoBue - The Nature Conservancy
 Linda Logan - Tonawanda Seneca Nation
 Amanda Long - NYS Office Parks and Recreation
 Gerald Ludwig - Mastic Beach Property Owners Association
 Deborah Lynn - Aide for Senator Kenneth LaValle
 Tom Lyons - Office of Parks, Recreation & Historic Preservation
 Lee Macbeth - City of Syracuse Department of Water
 Amy Mahar - NYS Dept. of Environmental Conservation
 Sean Mahar - Audubon New York
 Joseph Makarewicz - SUNY Brockport
 Katie Malinowski - NYS Tug Hill Commission
 Jack Manno - SUNY ESF
 Langdon Marsh - National Policy Consensus Center at Portland State
 University
 Ed Marx - Tompkins County
 Ronald Masters - Town of Hampstead, Department of Conservation
 and Waterways
 Jay M. Matteson - Jefferson County Agricultural Development Corp.
 Jack Mattice - New York Sea Grant
 Paul C. Matthews - Long Islanders for Environment
 Charles McCaffrey - PSG
 Anne McElroy - Marine Sciences Research Center
 Patrick McGlew - The Nature Conservancy
 Jim McKenna - US Geological Survey
 John McNally - Rauch Foundation
 Sean Meegan - Ecology and Environment, Inc.
 Richard Mendelman - Seacoast Enterprises Associates, Inc.
 Fredda Merzon - The Public Strategies Group
 Richard Metzger - Monroe County Water Authority
 Amanda Meyer - SUNY ESF
 Sarah Meyland - Nassau County Planning Federation
 Timothy Mihuc - SUNY Plattsburgh
 David Miller - Audubon New York
 Myron J. Mitchell - SUNY ESF
 Teresa Mitchell - Seaway Trail Corporation
 Judith Mokhiber - Residents for Responsible Government
 Dick Smith - Lucky 7 Sportfishing Charters
 Lane Smith - NYS Sea Grant

Les Monostory - Izaak Walton League of America, New York Division
 Ruth A. Moore - NYS Dept. of Environmental Conservation
 Rick Mosse - NYS Assembly
 Wendy Mueblach - SS Audubon Society
 Thomas Muse - Surfrider Foundation- Eastern Long Island Chapter
 Jeff Myers - NYS Dept. of Environmental Conservation
 Michael N'Dolo - Camoin Associates
 Bruce Natale - Cayuga County Water Quality Management Agency
 Debra Nelson - NYS Department of Transportation
 Sarah Newkirk - The Nature Conservancy
 Paul Novak - NYS Dept. of Environmental Conservation
 Robert M. Nyman - New York - New Jersey Harbor Estuary Program
 Office U.S. EPA
 Christine O'Connell - SUNY Stony Brook
 Laurie Ohmann - Public Strategies Group
 John Osinski - NY Power Authority
 Jessica Ottney - Adirondack Council
 Michelle Peach - The Nature Conservancy
 Emmett Pepper - Citizens Campaign for the Environment
 Susan M. Petersen - Advion BioServices, Inc.
 Ellen K. Pikitch - PEW Institute for Ocean Science
 Rick Pilarski - SUNY ESF/GOER
 Michelle Pluzynski - Long Island South Shore Estuary Resource Office
 Patricia Podrazil - Friends of the Salmon River
 Lauren Prezorski - NYS Soil and Water Conservation Committee/NYS
 Department of Agriculture and Markets
 George Proios - NYS Soil and Water Conservation Committee
 Michael Raab - Erie County
 Bill Raab - Coastal Conservation Association of New York
 Kyle Rabin - Friends of the Bay
 Kimberly Rancourt - Long Island South Shore Estuary Reserve Office
 Paul A. Ray - U.S. Department of Agriculture - Natural Resources
 Conservation Service
 Robert Reinhardt - NY State Office of Parks and Recreation
 Shirley Rice - Town of Sandy Creek
 Steve Ridler - NYS Department of State
 Joel Rinebold - Broadwater Energy
 Paul Risi - United Boatmen
 Kathy Risi - United Boatmen
 Karen Rivara - Long Island Farm Bureau/ East End Marine Farmers
 Association
 Brad Rogers - New York Association of Conservation District
 Jamie Romeo - Monroe County Department of Environmental Services
 Mary Rossi - County of Erie DEP
 Anne Saltman - CNY Regional Planning and Development Board
 Christine Santora - PEW Institute for Ocean Science
 Dominic Scarzafava - Conservation Alliance of NY
 David Schaper - NY Seafood Council
 Cornelia Schlenk - New York Sea Grant
 Dean Schneller - UB Environmental Law Clinic
 Amy Schoch - Empire State Development
 John S. Schoenig - Imperial Sportmen & Suffolk County Senior
 Citizens Fishing Club
 Richard Schrader - Natural Resources Defense Council
 Joan Schumaker - Friends of the Genesee Valley Greenway
 Nancy Seligson - Long Island Sound Study Citizens Advisory
 Committee
 Sue Senecah - SUNY ESF
 Kim Shaw - Suffolk County Department of Health Services
 Denise M. Sheehan - NYS Dept. of Environmental Conservation
 Kim Sherwood - Chautauqua County EMC
 Skip Shoemaker - NYS Dept. of Environmental Conservation
 Ben Shom - SS Bay House Owner's Association
 Lou Siegel - South Shore Estuary Reserve/ SUNY Farmingdale,
 Dowling College
 Janine R. Simonsis - NYS Department of Transportation
 Brian Smith - Citizens Campaign for the Environment

Nancy Solomon - Long Island Traditions
Richard Southard - Great Lakes Basin Advisory Council, NYS Dept. of Environmental Conservation
Cindy M. Stachowski - Center for Environmental Information
George R. Stafford - Deputy Secretary of State for Coastal Resources
Amanda J. Stein - NYS Dept. of Environmental Conservation
John Stouffer - Sierra Club - Atlantic Chapter
Lisa Suatoni - Natural Resources Defense Council
Alan Svoboda - Town of Brookhaven
Dennis Svszkowski - Hudson River Foundation
Timothy Sweeney - Environmental Advocates of New York
Bill Tai - Natural Resources Group
Cliff A. Thomas - NYS Department of Transportation
Dave Thompson - Trout Unlimited
Roger C. Tollefsen - New York Seafood Council
Les Travis - NYS Soil and Water Conservation Committee/NYS Department of Agriculture and Markets
Roberta Vallone - SUNY at Buffalo Law School
Jaime Van Dyke Doran - Town of Oyster Bay
David VanLuren - The Nature Conservancy
Anthony Vodacek - Center for Imaging Science, Rochester Institute of Technology
Linda P. Wagenet - Cornell University, Department of Development Sociology
Katy Wallace - SUNY ESF
Peter Walsh - NYS Department of State
Joe Warren - SUNY Stony Brook
Mark Watson - Environmental Research, NYSERDA
Robert C. Weltner - Operation SPLASH
Bob Wenegenofsky - Town of Hampstead, Department of Conservation and Waterways
David G. White - New York Sea Grant
Michael E. White - NYS SG/ NY League of Conservation Voters
Anne Wibiralske - Hobart and William Smith Colleges
Jeff Williams - New York Farm Bureau
Lloyd Wilson - NYS Department of Health
Jennifer Wilson-Pines - Manhasset Bay Protection Committee
Stephen O. Wilson - Hudson River Environmental Society
William Wise - SUNY Stony Brook
Charles A. Witek, III - Coastal Conservation Association New York
Amy Witryol - Niagara Health-Science Report, Inc.
Sharon Wohlgemuth - Town of Brookhaven Division of Land Management
Don Zelazny - NYS Dept. of Environmental Conservation
Weixing Zhu - SUNY - Binghamton
Joel D. Ziev - Town of N Hempstead/LISS CAC
Kimberly Zimmer Graff - New York Sea Grant

Appendix E

Biographies of the Guest Presenters at the Dialogues

Guest Speakers for Syracuse and Buffalo



James Cantrill is a professor at Northern Michigan University specializing in environmental communication. Dr. Cantrill also consults for a broad range of agencies and organizations in the United States and Canada and served from 1997-2006 as the U.S. Chair of the Sustainability Initiative of the Lake Superior Bi-national Program. His work has contributed to the development and implementation of ecosystem-based approaches to the lakewide planning efforts on Lake Superior. Dr. Cantrill has worked extensively on sustainable forestry issues with an emphasis on communication among stakeholders, socio-economic aspects of stewardship, and program design for conservation projects. He founded and is the current President of the Central Lake Superior Land Conservancy. Dr. Cantrill also sits on a variety of boards including the Marquette/Alger Cooperative Resource Management Program, the Northern Options Renewable Energy Advisory Council, and the Central Lake Superior Watershed Partnership.



Langdon Marsh is currently a Fellow with the National Policy Consensus Center at Portland State University, where he works with state governments and others on collaborative problem solving for various regional and local issues like watersheds, finance and sustainability. In 2001 he worked for then Oregon Governor John Kitzhaber assisting in projects which demonstrate sustainability by meeting environmental, economic and community objectives simultaneously, using broad partnerships with business, nonprofits and government. From 1995 until 2000, Mr. Marsh was Director of the Oregon Department of Environmental Quality, managing over 700 environmental professionals and deeply involved in watershed-based environmental protection, sustainability, enforcement, environmental justice, collaborative problem-solving, pollution prevention and toxics reduction. He served as Commissioner of the New York State Department of Environmental Conservation in 1994 and 1995, preceded by a number of positions in that agency since 1973. Mr. Marsh is Vice President of the Board of Sustainable Seattle, a small not-for-profit organization that advocates for urban sustainability.

Guest Speakers for New York City and Stony Brook



Ellen Pikitch is an international expert in fisheries science and management, with particular expertise in the areas of bycatch and quantitative fisheries assessment. She is Executive Director of the Pew Institute for Ocean Science and Professor in Marine Biology and Fisheries at the University of Miami's Rosenstiel School of Marine and Atmospheric Science. Dr. Pikitch's scientific work has informed policy decisions such as passage of the U.S. Shark Finning Prohibition Act of 2000, the listing of beluga sturgeon as threatened with extinction under the U.S. Endangered Species Act, and control of the international trade in great white sharks under the Convention on International Trade in Endangered Species. While at the Wildlife Conservation Society (WCS), she founded and directed both the Marine Conservation Program, which has active field-based programs in 19 countries spanning four oceans, and the Ocean Strategy Program, with a focus on ecosystem-based fisheries management. Prior to joining WCS, Dr. Pikitch was on the faculty of the University of Washington for nine years and directed its Fisheries Research Institute from 1992 to 1996.



Larry Crowder's research centers on predation and food web interactions, mechanisms underlying recruitment variation in fishes, and on population and food web modeling in conservation biology. Dr. Crowder has studied food web processes in estuaries and lakes, and has used observational, experimental and modeling approaches to understand these interactions in an effort to improve fisheries management. He co-directed the South Atlantic Bight Recruitment Experiment (SABRE) and continues to conduct research on the life histories of estuarine-dependent fishes. He continues to conduct model and statistical analyses to assist in endangered species management for both aquatic (sea turtles) and terrestrial species (red-cockaded woodpeckers). Recently, Dr. Crowder has begun developing more extensive programs in marine conservation, including research on bycatch, spatial analysis, nutrients and low oxygen, marine invasive species and integrated ecosystem management. +

Appendix F

Dialogue Contribution Sheet 1

Appendix G

Dialogue Contribution Sheet 2

Appendix H

Sources of Information about Ecosystem-based Management

**Ecosystem-based Management (EBM) of
Marine and Freshwater Ecosystems
Sources of Background Information
September 2006**

The recent benchmarks of ecosystem-based management are good sources for learning more about it.

May, 2003 The Pew Oceans Commission released its report, *American's Living Oceans: Charting a Course for Sea Change: A Report to the Nation*. The bipartisan, independent Commission led two years of inclusive public involvement to chart a new course for the nation's ocean policy. Its report declared that new environmental, economic, and policy challenges exceeded the capacity of traditional governance frameworks and management regimes. It called on the U.S. Congress and the nation to implement recommendations to change perspectives and governance structures for managing marine ecosystems. www.pewoceans.org

September, 2004 The U.S. Commission on Ocean Policy report, *An Ocean Blueprint for the 21st Century* fulfilled its mandate to submit recommendations for a coordinated and comprehensive national ocean policy to the President and Congress. The Commission's report called on the President and Congress to take decisive, immediate action to carry out these recommendations to halt the steady decline of the nation's oceans and coasts. www.oceancommission.gov

October, 2004 The U.S. Environmental Protection Agency and Environment Canada held the sixth State of the Lakes Ecosystem Conference in Toronto. The conference built on past efforts and reported on 56 indicators of the status of ecosystem health. It reinforced the bi-national commitment to developing and implementing an ecosystem-based approach to Great lakes management. www.epa.gov/glnpo/solec

March, 2005 The U.S. Commission on Ocean Policy and the Pew Oceans Commission both called for "ecosystem-based management" as a cornerstone of new U.S. ocean policies, but an agreed-upon definition needed refinement. In December, 2005, over 200 academic scientists and policy experts gathered for two days to build consensus on a definition and the key elements of EBM. They signed a *Scientific Consensus Statement on Marine Ecosystem-Based Management*. <http://compassonline.org/?q=EBM>

December, 2005 This report summarizes the discussion that occurred at the New York State Ocean and Great Lakes Symposium held in New York City on October 24, 2005. The symposium brought together a broad range of 120 experts and representatives of key constituencies from around the state to identify potential policy actions for New York to enhance stewardship of its marine and freshwater resources. <http://www.nyswaterfronts.com/oceanandgreatlakes/SymposiumSummaryReport.pdf>

December, 2005 The Great Lakes Regional Collaboration was established in response to an Executive Order from President George W. Bush. Its 2004 report noted the increasingly complex nature of the environmental problems facing the Great Lakes ecosystem and called for collaborative efforts to achieve the goals of the Great Lakes Water Quality Agreement. <http://www.glrc.us/strategy.html>

August, 2006 New York State Governor George E. Pataki signed bipartisan, unanimously approved legislation to create the New York State Ocean and Great Lakes Ecosystem Conservation Council to coordinate state efforts to engage in ecosystem-based management of New York's ocean and Great Lakes. www.ny.gov/governor/press/06/0809061.html

Appendix I

Ecosystem-based management Demonstration Project Overview: The Long Island South Shore

Great South Bay Ecosystem-based Management Demonstration Project

The Great South Bay demonstration area, located on Long Island's South Shore is a dynamic system of salt marshes, seagrass meadows, tidal creeks, open water, bluffs, dunes, beaches, and connecting ocean waters. Great South Bay's rich maritime heritage and recreational economies are heavily dependent on the area's natural resource base. Demonstrating the connections between natural resources and economy, and balancing human well-being with the protection and management of a restored, sustainable ecosystem is a central goal for this project. The first step toward that goal will be development of a draft ecosystem-based management plan that characterizes the watershed both ecologically and economically, and identifies opportunities for collaborative planning, identification of conservation targets, and development of methods to maintain ecological integrity and economic sustainability. The elements of the demonstration project described below will restore key attributes of the Great South Bay ecosystem. In recent years hard clams harvests have plummeted and seagrass meadows have suffered from mechanical harvesting of clams. With help, Great South Bay hard clam populations and seagrass meadows have the potential to rebound. Project partners include the Nature Conservancy and the South Shore Estuary Reserve Council.

Hard Clam Restoration

Although the economic and social importance of hard clams to the communities surrounding Great South Bay has long been recognized, their ecological importance has recently been highlighted in several important scientific findings.



The Nature Conservancy on Long Island has utilized its recent acquisition of 13,000 acres of Great South Bay bottomlands to pull together 15 diverse groups of managers, scientists, and stakeholders to develop a long-term, multi-strategy plan to: **“Reestablish the hard clam population in Great South Bay to an average density of 6 clams/m² by 2020 for the purposes of ecosystem health/enhancement and sustainable harvest.”** Restoring hard clams will improve water quality and enhance ecosystem stability. Five spawner sanctuaries will be established with approximately 190,000 adult clams transplanted from nearby estuaries. In addition, 200,000 seed clams spawned from native brood stock will

be grown in rafts until they are large enough to release on the sanctuaries.

Seagrass Restoration

Seagrass, a type of submerged aquatic vegetation, is essential habitat for a whole host of commercially, recreationally, and ecologically important species in Great South Bay and surrounding waters.



The dominant form of seagrass in most parts of Great South Bay is eelgrass. Approximately 35,000 eelgrass seeds were harvested from nearby beds and will be planted using proven methods at sites that appear ecologically suitable for the growth and survival of the grass based on sediment characteristics, bathymetry, and hydrography. Natural recovery is limited by the amount of seed dispersed by floating eelgrass mats that develop in other areas of the bay. Recently developed methods of eelgrass seed transplant can be used to accelerate the natural recovery of eelgrass to Great South Bay.

Appendix J

Ecosystem-based management Demonstration Project Overview: The Tug Hill Sandy Creek

Sandy Creeks Ecosystem-based Management Demonstration Project

The Sandy Creeks demonstration area is comprised of four stream corridors, the eastern Lake Ontario dune and bays complex and the nearshore areas of the Lake. Located in both Jefferson and Oswego Counties, the project area is primarily rural. Forestry, agricultural, and recreational economies are heavily dependent on the area's natural resource base ranging from the headwater forests to large lakeside wetland complexes. Demonstrating the links between natural resources and economy, and balancing the quality of human well-being with the protection of a restored, sustainable ecosystem is the goal of this project. The first step toward that goal will be development of a framework that characterizes the watershed both ecologically and economically. The framework will identify the steps necessary to do a comprehensive ecosystem-based management plan that would include collaborative planning with communities, identification of conservation targets, and development of methods to maintain ecological integrity and economic sustainability. The project components described below will restore key attributes of the Sandy Creeks ecosystem. Project partners include the Nature Conservancy and the Tug Hill Commission.

Invasive Species Control

Swallowwort and purple loosestrife are invasive species in the Sandy Creeks demonstration area that are modifying the habitat of both near shore wetlands and upland areas. Swallowwort is an aggressive non-native plant that interferes with forest regeneration, changes the habitat structure used by wildlife, and is not eaten by deer or other grazing animals. During the 2006 summer season over 400 acres of swallowwort were treated and 25 landowners were contacted to build awareness of swallowwort issues, including its identification and control.



Swallowwort infestation.

Purple loosestrife, native to Eurasia, outcompetes and replaces native grasses and sedges that provide a higher quality source of nutrition for wildlife. During the 2006 summer 45,000 *Galarucella* beetles were released in nine wetlands with 1,800 root weevils (*Hylobius transversovittatus*) planned for release

in spring 2007 to initiate effective bio-control of this invasive species.

Forestry Best Management Practices Workshops

A workshop was held in July for loggers, and included both classroom and field components to explain the importance, identification, and regulations for wetlands and streams in relation to forestry management practices. In a second workshop, to be held in October 2006, forest workers will construct portable wooden bridges they can use to cross streams during logging operations.

Agricultural Riparian Corridor Restoration

Fencing and stream corridor plantings will be installed during the 2007 field season along priority stream corridors that have experienced loss of natural vegetative buffer. Materials and installation will be provided at no cost to farmers or other landowners.

Fishery Habitat Improvements

Monitor Mills dam, located in South Sandy Creek in the Town of Ellisburg, is a barrier to fish migration from Lake Ontario. Work is underway to investigate options for providing fish passage to 21 stream miles of spawning habitat for migratory fish.



Monitor Mills dam.

Appendix K

Frequently Asked Questions About Ecosystem-based Management

Ecosystem-based Management of Marine and Freshwater Ecosystems

Frequently Asked Questions

September 2006

The following information is meant to provide a brief, general orientation to ecosystem-based management. It is based on the March 2005 *Scientific Consensus Statement on Marine Ecosystem-based Management*.

1. What is ecosystem-based management?

Ecosystem-based management (EBM) is an emerging, integrated approach to resource management that considers the entire ecosystem, including humans. The goal of ecosystem-based management is to maintain an ecosystem in a healthy, productive and resilient condition so that it can provide the services humans want and need. EBM differs from more traditional approaches that usually focus on a single species, sector, activity or concern.

2. What are some of the general characteristics of ecosystem-based management?

- EBM emphasizes the *protection* of ecosystem structure, function, and key processes based on science;
- EBM explicitly accounts for the *interconnectedness within systems*, recognizing the importance of interactions among many target species or key services and other non-target species;
- EBM acknowledges the *interconnectedness among systems*, such as between air, land and water;
- EBM *integrates* ecological, social, economic, and institutional perspectives, recognizing their strong interdependencies and mutual influences;
- EBM ensures that planning and management is *collaborative*. Active public participation involving all stakeholders is central to effective EBM. The processes are often as unique as the situation, but the common theme is the ongoing, active participation of partners.

3. How is “ecosystem-based management” different from “ecosystem management?”

Ecosystem management implies that it is possible to control and manage an entire ecosystem, and is increasingly recognized as an unrealistic and infeasible way to address marine and freshwater ecosystem challenges. Ecosystem-based management recognizes that 1) humans cannot control or manipulate entire ecosystems and 2) because humans are a significant part of ecosystems, policy, regulations, and management must take a long term view to address the ways by which human activities and ecosystems synergistically impact each other.

EBM is as much about managing ourselves as it is about managing the ecosystems. Achieving sustainability in economies, communities, and the natural environment requires rethinking traditional, fragmented approaches to managing complex and interrelated challenges. To do this, EBM seeks to build ongoing partnerships with stakeholders.

4. What has influenced the development of ecosystem-based management for marine and freshwater ecosystems?

Scientific understanding of marine and freshwater ecosystems has advanced over recent years. The Pew Oceans Commission, the U.S. Commission on Ocean Policy, several State of the Lakes Ecosystem Conferences on the Great Lakes, the Great Lakes Regional Collaborative, and subsequent deliberations among policy-makers, scientists, non-governmental organizations, and others have agreed that a combination of human activities on land, along coasts, and in coastal waters, unintentionally but seriously affect marine and freshwater ecosystems. These effects can include:

- altering food webs
- changing climate
- damaging habitat
- eroding coastline
- introducing invasive species
- polluting coastal waters

Although these problems have been previously identified and programs initiated to address them, the health of the nation's marine and freshwater resources continue to deteriorate, and the demands on them continue to increase and are often conflicting. EBM has emerged nationally as an approach which builds on the strengths of existing programs and integrates those programs with gap filling measures to protect and restore the nation's marine and freshwater ecosystems.

5. What are examples of ecosystem-based management?

EBM is an emerging resource management approach that continues to evolve. EBM is often incorporated into processes known, for example, as collaborative governance, cooperative conservation, and community-based collaboration. Here are a few sources for projects that incorporate an EBM approach:

The Great Bear Rain Forest project in British Columbia www.citbc.org

The Chesapeake Bay Program <http://www.chesapeakebay.net>

The Puget Sound Restoration Fund www.restorationfund.org

The U.S. government website www.cooperativeconservation.gov hosts over 800 small to large scale case studies on integrated management strategies to address environmental restoration and protection, many of which apply an ecosystem-based management approach. Find northeast regional examples at <http://cooperativeconservation.gov/team/FacesPlacesChapterOne.pdf> for cases such as The Maine Downeast Initiative. The information was compiled in conjunction with the 2005 White House Conference on Cooperative Conservation and is regularly updated and expanded.

6. What does ecosystem-based management need to be effective?

EBM is based on understanding of how marine and freshwater ecosystems function across a wide continuum of scale and time, and recognizes the need for information and scientific understanding continues and increases. Public support is also needed to encourage and remove barriers to EBM. The most critical factor for EBM success is the commitment and participation of partners contributing their energy, knowledge, and creativity. Over time, there is simply no way to sustain humans without sustaining ecosystems.

