

MEETING 1: LAWS AND INSTITUTIONS

Working Group Members

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I. EBM IMPLEMENTATION CHALLENGES

Working group members and meeting participants were asked to provide initial comments on the legal, policy and institutional challenges facing EBM implementation, both generally and in their respective regions. The group identified the following **implementation challenges and needs**:

Institutionalization

- In the Gulf of Mexico, there is sharing of information, resources and work, but there is no effective institutional authority to create long-term binding agreements to implement goals.
- Many plans come and go but few see implementation.
- Need to keep interest and ensure meaningful participation over time.

Legal Frameworks

- Need to take existing law and translate to EBM-related actions on the ground.
- Many different mandates could serve as EBM drivers – need to identify existing mandates or ones that need to be modified to move the process forward.

Collaboration

- Four important components of effective collaboration are:
 - context-sensitive approaches based on governance and geography (e.g., management of the Western Gap in the Gulf of Mexico requires a multi-lateral approach, whereas the recreational tarpon fishery is largely a state or multi-state issue rather than a national or multi-lateral issue).

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- focus on concrete problems that cannot be solved without collaboration (do not need collaboration for collaboration's sake).
- collaboration should be a means to an end.
- sustainable and durable outcomes with institutionalization of approaches.

Science

- Science must address how to analyze cumulative impacts.
- Challenge of facilitating interdisciplinary interactions.
- Need to merge stakeholder input with scientific input.
- Need to know how/where to feed science into management process.
- Need to effectively share and communicate research.
- Be aware of the pitfalls of science-based approaches – e.g., could create the need for more and more science, and the need for additional science can be used as an excuse for inaction.
- Need to figure out how much science is needed to make a decision – can end up with a lot of scientific information but no action.
- Managers often lack information. There is plenty of data but it is not distilled in a way that allows managers to make decisions.
- Need for scientists to (a) undertake research that supports decision-making needs, and (b) translate data into useful information for managers.
- Need to remember that in some instances, explicit control requirements even in the absence of volumes of supporting data may be best – e.g., technology-based standards for point source regulation under the Clean Water Act.

Compromise

- Challenges with making trade-offs among siloed sectors.
- **Valuing Resources:**
 - Need mechanism to value different interactions to allow decision-makers to make appropriate trade-offs.
 - Economic valuation is challenging because some services are not easily valued.
 - Economic valuation is data intensive.
 - Mapping flows of services is important – e.g., site of ecological service may not be same site as impact.
- Mandates need to change to allow EBM approaches – for many institutions there is no way to explicitly consider trade-offs among sectors
- People do not like giving up rights that they have had before (e.g., in Florida, convincing people to slow down boats to protect manatees is difficult because the requirement comes after fast boats were allowed).

Communication

- Determine ways to communicate EBM broadly.
- In Puget Sound, there is a lack of public awareness about environmental problems facing the Sound. Therefore, awareness-raising is a priority first step to EBM implementation in this region.
- What are the creative ways to communicate?
- EBM and “ecosystem services” are terms that do not evoke public engagement. Need ways to express EBM and the importance of ecosystem services in a way that is meaningful (e.g., thankyouoceans.org campaign).
- Different levels of communication needed depending on audience.

Participatory Governance

- Need to be sure to include stakeholders in development of EBM programs. The Gulf of Mexico Alliance process was criticized for a lack of stakeholder involvement.
- Tension between bringing many people to the table to encourage participation and having a small enough group to allow meaningful engagement and action
- Challenge in getting municipalities meaningfully involved

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Goal-Setting

- Political reality of region and cooperating institutions must be considered.
- Need to be sure that the number of commitments is not unrealistic. For example, for the Chesapeake Bay Program there are more than 100 commitments, which is too many.
- Need to be flexible in approach. Participants need to acknowledge that goals may have to be readjusted if unreasonable. At the same time, goals need to motivate cooperating institutions to achieve results.

Financing

- Need to link financing to technical assistance. Cannot just throw money at the problem, but need to provide the necessary training to enable implementation.

Operationalizing

- One of the biggest hurdles is operationalizing EBM plans.
- Need to be sure that the result is not merely a planning exercise.
- Need more than process, and need some kind of mandate(s).

II. COMMUNICATION STRATEGIES FOR THIS EBM PROJECT

Participants recommended the following approaches to communicating project results:

Products

- Visual map- visual thesaurus
- Area-specific tools
- Training seminar for managers
- Academic journal
- Report on lands and institutions
- 1 -2 pagers → managers, legislators, public
- Seminar- 1 day workshop
- FAQ sheets
- Roadmaps or webpage for resource managers
- Case examples- quick summary

Audience

- Law and policy community
- Managers (e.g., CZM managers)
- Legislators
- Public
- Stakeholder community
- Scientific community

Approaches

- Create a compelling story to communicate
- Use a keystone issue or species to communicate challenges (region-specific)
- Develop similar product or connect governance issues to Food Web – Chesapeake Bay Ecosystem Explorer as a way to visualize the connection between governance and the ecosystem
- Create menus or recipes to achieve EBM results

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III. FRAMEWORKS AND AUTHORITIES

The Working Group discussed whether an overarching mandate is needed to enable EBM implementation. One major challenge to EBM implementation in the absence of a mandate is that there is no mechanism to achieve cooperative management among regulatory agencies that manage different sectors. This means that there is no incentive for managers to incorporate EBM actions into existing management structure or to cooperate with other programs. Participants also noted drawbacks to EBM mandates, including whether an overarching mandate was a possibility given the current political reality. Also, some regions are adamantly opposed to the notion of federally mandated EBM or even regionally devised mandates (e.g., Gulf of Mexico and Puget Sound), and would prefer to operate in a flexible manner without a binding mandate.

One participant asked: what are the incremental steps that will shift current management regimes towards EBM? One potential way to address this question is to examine the potential use of existing authorities to implement EBM. Another question raised was: what revolutionary changes could be made to achieve EBM implementation?

The Working Group considered existing authorities. The National Environmental Policy Act (NEPA) is one law that requires consultation, but it does not require compromise. Also, NEPA is seen by many as a procedural requirement to satisfy, but is not viewed as a mechanism for action. Another potentially useful law is the Coastal Zone Management Act (CZMA), which requires that federal actions are consistent with the state's coastal zone management. Also, the CZMA has dispute resolution provisions to resolve interstate conflicts. This is an under-utilized law that could be applied in EBM programs to address issues. One of the limits of the CZMA is that it gives states the authority to say no to federal activities or to addressing interstate conflict, but no mechanisms to encourage positive cooperative action. Given the Act's pending reauthorization, it also is a potential law that could be expanded and strengthened to achieve EBM on a broader basis.

IV. SCIENCE AND GOVERNANCE

In the Science and Governance session, the working group discussed the challenges of incorporating scientific information into the governance process. Several participants noted the difficulty with getting information from academic scientists in a timely fashion so that it can inform policy decisions. Reasons for this delay include the need to ensure accurate and high quality information, the current academic institutional environment that requires peer-reviewed publication as the main measure of success, and pursuit of intellectual property rights. For example, in the Chesapeake Bay, non-native oyster risk-assessment research has been underway for a long period of time. Quarterly research reviews do not provide answers, but give direction for where research is headed and an understanding of what information is being produced.

The Working Group discussed how data is collected and used to inform management decisions in EBM programs. In some instances, existing information is pulled together from different fields to answer EBM questions. In other instances, interdisciplinary research programs are attempting to answer EBM questions in an integrated fashion.

The Working Group identified several potential models that may be good examples of how science feeds into an EBM-type program. These include the Chesapeake Bay Program, SCORP, and work undertaken for the California Marine Life Protection Act Initiative. The MLPA initiative, for example, pulled together existing data and identified research gaps. The approach was to use the best science available, so no new research was conducted.

Some participants noted that scientists can best inform management decisions when they have a clear understanding of what information is needed and how it will be used. Scientists and managers need to

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work together from the start to have an informed process. The SLOSEA program may be a model for this approach.

The Working Group discussed sources of scientific information beyond the scientific community. These include the private sector, which has an enormous amount of data but may not release it because of proprietary interests or simply because no one has requested it. A drawback to industry science is its potential bias. Other sources of information include information collected by agencies for purposes other than EBM – e.g., damage assessments related to oil and chemical spills or injuries to national sanctuaries or national parks, and environmental impact statements.

Another major issue discussed by the Working Group was scientific uncertainty. It is difficult to make decisions and to impose costs in the face of uncertainty. One participant noted that probabilities and risk assessments help managers make decisions. One approach is to use scenario analyses like those used in the Inter-Governmental Panel on Climate Change.

Another issue that the Working Group addressed is the role of scientists in the decision-making process. Often managers look to scientists for answers, but scientists will not engage in policy discussions because of concerns regarding the role of scientists. There are some examples of how scientists engage in decision-making processes, including in Maryland where some senior scientists have been involved in policy decisions. Another place where scientists participate is as scientific advisors to help interpret information, but not to make recommendations on the decisions made based on the science. In other places scientists provide data, but no advice. For example, the MLPA initiative removed scientists from the decision-making process.

Participants noted that long-term monitoring is critical to EBM. However, when budgets get tight, support for monitoring often declines.

The Working Group discussed scientists' role in communicating with the public. The participants noted that scientists recognize the importance of communication, but may not be good at it. One option is to partner scientists with others who can communicate science effectively. Traditionally, there was little incentive for scientists to communicate with the public. Now education and outreach are more important to receive grants – e.g., NSF grants.

V. ECOSYSTEM AND GOVERNANCE SCALES (GEOGRAPHIC AND TEMPORAL)

Geographic Scale

The Working Group addressed how governance scales can best be matched with ecosystem scales. One of the challenges is that there may be multiple ecological drivers that have different ecosystem scales and require different cooperating institutions. For example, in the Chesapeake Bay, the CBP manages the watershed and the area throughout the Bay. However, important Chesapeake Bay fish species have ranges beyond the Bay, and must be managed in a broader context.

The Working Group also discussed how governance changes when ecosystem sizes change. For example, SLOSEA is a small watershed program where all cooperating parties can easily interact. As the number of participating parties increases, it may not be practical to have all engaged in all activities due to time constraints and complexity. Another challenge identified with large-scale projects is that as the scale grows it may be harder to convince the public to be concerned and engaged. This challenge is seen in the Chesapeake Bay Program.

The Working Group discussed another issue of scale: ecosystems typically include multiple political jurisdictions. Not only are there local, state and federal government entities, but there are often multiple localities and potentially multiple states and even multiple countries involved. The participants noted that much of the implementation occurs at the level of municipalities. One participant noted that progress is

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made when multiple municipalities work toward the same goals. However, there is typically little coordination at this level.

The Working Group addressed the question of whether regional bodies should be linked, and if so how. Some participants noted that the linkage between regional programs is not a major priority at this time. Others described the need for EBM learning networks.

Temporal Scale

The working group discussed the question of how regional programs tackle slow ecological change. One of the biggest scientific needs to address slow ecological change is monitoring (and the money to do so). Several examples of long-term monitoring data were described:

- SCORP – originally a monitoring plan of sewage treatment that was later changed to address a larger set of questions
- CBP Monitoring Subcommittee – continuous monitoring using new technologies
- Charles Keeling’s Mauna Loa monitoring – initial work demonstrating CO₂ rise in the atmosphere.
- PCB concentrations of edible fish in the Great Lakes
- CALCOFI – long term monitoring of the California Current.

The Working Group also examined how regional programs can react quickly to environmental changes as needed. Examples include:

- *Pfisteria* outbreak in the Chesapeake Bay
- Harmful algal blooms and shellfish closures
- Southern California’s response to introduction of *Caulerpa*, an invasive algae.

Monitoring was noted as a critical component to allow governance bodies to respond to changes that occur rapidly and those that occur incrementally over long periods of time. One of the challenges with monitoring is the lack of long-term funding dedicated to monitoring programs.

Participants noted, however, that even when change over the long-term is understood, it is hard to motivate action. The Working Group discussed the need for education and outreach that would motivate action, and how to convey the message about the ultimate impact of incremental change to elicit action. One example is the Chesapeake Bay Report: State of the Chesapeake Forests, which described the loss of forest on the order of 100 acres a day. One participant noted that education and outreach can be used to convey the gravity and certainty of harm. In South Texas, models were developed relating to hurricane inundation. Empirical evidence also demonstrated that flood insurance went up in areas where hurricane inundation was predicted to occur. This generated the support needed for foredune protection.

The Working Group identified issues that motivate people to take action, including disease outbreaks and public safety. In other words, people respond better to issues that relate to human health and well-being. NOAA has a new initiative to connect oceans and human health, because the oceans are a growing health threat. The Working Group discussed how ecosystem service valuation fit into this concept.

Another temporal challenge is the ability to maintain focus and enthusiasm over time and through changing governance regimes. The Working Group focused discussion on the Great Lakes, where action has remained strong over time, and the Chesapeake Bay, where the dedication to the Program has faded over time. One participant credits the efforts of the Great Lakes Commission and the International Joint Commission, which have worked both regionally and have communicated to Congress to drive support. Many interest groups operate in the Great Lakes, and drive outreach and education efforts. Another potential key to success is that the Water Quality Board is composed of high level members, and is mandated by a binational agreement which requires action and raises visibility.

In contrast, the working group discussed the Chesapeake Bay Program, which seems to be fading over time. Fewer senior level officials participate in meetings. One participant noted two needs: (1) the

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Program needs to grow and be responsive to change, and (2) leadership is needed to reinvigorate commitments.

Working group members identified ways to stimulate programs including:

- Public pride and expectation may raise the level of concern among leaders
- Personalities often drive success
- Public involvement and interest groups are key components
- Public awareness of the needs and challenges

VI. SECTORAL CATEGORIES

In this session, the Working Group focused on key categories of sectoral issues that regional programs are tasked with overcoming. The Working Group identified examples of successes and challenges that could provide useful insight for EBM implementation.

a. Water Quality and Quantity

The Working Group identified the following examples of positive ecosystem-based approaches to addressing water quality and quantity:

- Washington Department of Ecology integrates water quality and water quantity in one program.
- Oregon takes the watershed approach to its TMDL program as a way to address overall water quality and stream health, not just standards for receiving basins.
- Section 208 of the Clean Water Act allows watershed planning.
- Section 319 (Clean Water Action Plan) was created to enable integration. California did the watershed assessment and framed how it could or should be done.
- Ocean discharge criteria proposal.
- In Florida, five water management districts have been created based on hydrology of watersheds. As Florida learns more about its hydrology, the boundaries of the districts are changed. The Boards are appointed by the governor and have taxing authority. There are provisions in the law about minimum flows and levels. Because they have taxing authority, the Boards are increasingly responsible for stormwater flows.
- In the San Francisco Bay area, ecosystem management is connecting the Bay and the freshwater environments. Flow regimes have been changed in order to prevent saltwater intrusion and restore the Bay. CalFed is the major implementing body.
- Everglades offer an example of the integration of water quality and quantity and timing of distribution.
- BEACH Act.
- New York protects watershed for human drinking supply because cost/benefit analysis indicated that protecting the watershed was cheaper than treating the water.
- MOU between California EPA and California Resource Agency (2004) to ensure health of California watersheds. There are several EBM concepts in this document.

The Working Group noted that the TMDL program, like the Clean Water Act generally, stops at the ocean. It has huge potential and is an under-utilized program for addressing brackish and saline environments.

Some of the identified legal and institutional challenges to ecosystem approaches to addressing water quality and quantity include the following:

- Water quality monitoring stops where the freshwater stops – e.g., Morro Bay – the Water Quality Board does not monitor nutrients in the bay or open ocean.

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- Public health departments or county governments monitor beaches, not water quality—leads to disconnect between fresh and saltwater environments.
- There is a lag time between monitoring and when beaches are closed due to contamination (WI SeaGrant is funding research to try to address this now). A potential successful approach is that of Delaware (uses rainfall-derived standard rather than measure for actual bacterial load).
- Many contaminants are not covered in existing standards – e.g., caffeine, endocrine disruptors.
- Lack of ability to manage for synergistic effects of compounds if standards are only set for individual compounds.
- Many coastal developments use septic systems rather than sewage. There is a need to replace septic systems with sewage systems. However, there is resistance from some environmentalists who view the introduction of sewage systems as a mechanism to enable further development.
- Water quality governance is stove-piped. For example, dredging and its impacts is treated separately from other water quality management activities.

b. Land Use

The Working Group noted that land-use planning is mainly a community-based or local activity. Therefore, it is important to assess obstacles and opportunities at the state and local levels. The Working Group examined land-use laws and institutions as they relate to EBM, and identified the following examples that may be useful to consider when implementing EBM:

- Oregon's state comprehensive land-use plan includes language about ecosystem health and consideration of multiple uses. However, the ecological principles may not be as well represented as they should be. Also, the new takings amendment has restricted Oregon's ability to plan effectively.
- Oregon has fairly rigorous coastal development restrictions, placing beaches in public trust, requiring public beachfront access, and extending its CZMA planning activities upstream to include whole coastal watersheds rather than just coastal counties.
- Federal statutes, including ESA and Section 404 of the Clean Water Act, are important for land-use regulation (see living resources and habitat sections for more information)
- In Maryland, some counties protect agricultural lands from development.
- A Maryland task force examined the use of tax incentives to preserve agricultural lands
- Critical Area Commission in the Chesapeake Bay was created to respond to Bay issues in 1984. It was designed to protect ecological values by restricting development within 1000 feet of the Bay to head of tide. The rule of thumb (1000 feet) will over-regulate in some situations and under-regulate in others, but its simplicity and clarity makes it easy to enforce.
- Smart Growth legislation in Maryland identifies growth areas, rural preservation zones, and directs state investment away from rural areas into growth areas. Money is invested in protecting rural legacy areas.
- Chesapeake Bay Preservation Act – specific purpose towards Chesapeake Bay protection.
- Maryland Real Estate Transfer Taxes – a fee is assessed for transfer of property that is used for open-space preservation.
- In Florida, each county is required to have a comprehensive zoning plan. It could be used as a hammer (for example, state imposed a moratorium on construction in Monroe County (the Keys) until the plan was created, but mostly it is a rubber-stamp process that does not control growth. A Florida ballot measure is trying to make the plans more meaningful by requiring a vote of the electorate to make changes to the plans.
- Another approach for land preservation is to buy it. In Florida, for example, doc stamps (real estate transfer tax) are used to acquire land for conservation. The state has purchased over one million acres of land. The state issues a plan every 5 years with priority parcels in plan.
- In Washington, watershed plans are forming with strong local support.
- Coastal and Estuarine Land Conservation Program
- Development community success stories:

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- Turner development in Baltimore Harbor. Developer is responding to desire of urban buyers and creating an urban coastal community with restored marshes, walking and biking trails and open space.
- In Washington, there are urban villages (small urban centers with low-impact development).
- Another market-based approach is the conservation real estate investment fund. The Beartooth Capital fund focuses on ranching. It works with conservation organizations, local land trusts and ranchers. The company sets up easements to conserve most of the property with the rest of the property committed to development.
- Note that many of the positive examples in this sector are economically based and not based on regulatory approaches.

The Working Group identified the following coastal land-use challenges:

- Chesapeake Bay lacks adequate public facilities.
- In most Gulf states, land-use planning is challenging, with local jurisdictions having almost exclusive authority. In some states, unincorporated areas not only do not need plans but are not allowed to create plans (e.g., the county cannot do plans for unincorporated areas).
- Need to educate municipal officials to provide compelling evidence about the need for ecosystem protections. This must be coupled with resources, because many municipalities do not have the resources to make the needed changes.
- Farm Bill and farm policy is one of the largest sources of ecosystem impairment. However, conservation-based subsidies can be useful tools.
- Need to develop a model EBM-based ordinance for municipalities and provide practical advice on EBM implementation considering potential legal pitfalls (e.g., takings claims).

c. Habitat

The Working Group examined laws and institutions that are or could be used to protect important coastal habitat, including the following:

- Essential Fish Habitat under the Magnuson-Stevens Act
 - Alaska has designated Habitat Areas of Particular Concern under this provision.
 - Frustration with management as to how to implement EFH. Huge science gaps in identifying the importance of habitats for fisheries.
 - It is a consulting tool, but does not have regulatory teeth.
- Chesapeake Bay Program is examining submerged aquatic vegetation and working to integrate information. Mapping benthic habitat resources.
- Endangered Species Act
 - Few examples where critical habitat has been designated for endangered marine species. For example, no designation has been made for the white abalone. On the other hand, all of Puget Sound has been designated for orcas.
- Submerged lands leases
 - TNC is leasing submerged lands.
 - Challenge – if the lease isn't used, it is lost.
- Estuary Restoration Act
- Development of the Tortugas Ecological Reserve is a success story. Stakeholders were involved in the designation process and all trusted the process, which resulted in unanimous approval.
- Marine Protected Areas
 - Laws: MPA Executive Order, National Marine Sanctuary Act, Northwest Hawaiian Islands Monument designation, California Marine Life Protection Act
 - Florida has a system of aquatic reserves.
 - Guam has protected approximately 20% of its coral reefs.
 - Draft Framework for National System of MPAs is out for comment now.

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- Need to connect marine protection to land-based activities. For example, in Florida, state-based MPA system is managed by the Department of the Environment. Management plans were in place, but there is no mechanism to reach up the watershed to address land-based impacts. Examples of connections include:
 - MPA sited at the same location as the Big Creek Ecological Reserve to create a continuum of protection from land to sea. Other places where land and sea are protected include the Channel Islands, where the Park Service owns the land. Also some National Wildlife Areas have land-sea protections.
 - Extensive efforts are being made in Monterey Bay to connect land to Sanctuary.
 - Military sites may offer land-sea protections because of the nature of some military bases.
 - National Estuarine Research Reserves include land and submerged lands within their boundaries.
 - May be a connection with Olympic National Park and the Sanctuary

d. Aquatic Living Resources

The Working Group addressed aquatic living resources, focusing mainly on fisheries management. Resistance to ecosystem-based approaches include political will to make changes, limitations of science and analysis to support the approach, and the resistance to change from traditional to newer approaches. In many cases, invertebrates are not managed at all. The working group also noted the need to bring water quality managers and fisheries managers together and integrate the science. The participants identified the following example programs and activities for ecosystem approaches to aquatic living resource management:

- Chesapeake Bay Fisheries Ecosystem Plan strives for ecosystem-based fisheries management (EBFM). There are also efforts in the Chesapeake Bay to integrate water quality models with fisheries models.
- Pilot program in California with an ecosystem goal team. They are evaluating food web approaches to management.
- In the Great Lakes, the Great Lakes Fisheries Commission must consider the Great Lakes Water Quality Agreement in its planning process.
- Bering Sea is a good example for food web model development that supports EBFM.

e. Maritime Activities

The Working Group discussed maritime activities and the potential impact and influence these sectors have and will have in the future on EBM. Some challenges include:

- Existing efforts to zone submerged lands in Texas, for example, are for the benefit of the oil and gas industry. Also much of the environmental assessment work in the Gulf of Mexico is a result of oil and gas exploration and development.
- New and different challenges exist for the Bering Sea, as receding ice and demand for resources increase. Shipping will increase, as will oil and gas development.

The Working Group identified the following laws and institutions that affect maritime activities:

- Energy Policy Act of 2005 gives MMS the authority to lease for alternative energy and activities on the Outer Continental Shelf. OCS expansion could be a driver for smarter management of the ocean and its resources.
- Ballast-water treatment laws in the Great Lakes attempt to protect against invasive species introductions. Also Great Lakes states legislative committee is working to homogenize Great Lakes legislation regarding aquatic invaders.