



Advisory Report

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Chesapeake Bay Scientific and Technical Advisory Committee 2001 Annual Report to the Chesapeake Executive Council

Since its creation in December 1984, the Scientific and Technical Advisory Committee (STAC) has worked to enhance scientific communication and outreach throughout the Chesapeake Bay watershed and beyond. STAC provides scientific and technical advice in various ways, including technical reports and position papers, discussion groups, assistance in organizing merit reviews of Chesapeake Bay Program programs and projects, technical conferences and workshops and service by STAC members on Bay Program subcommittees and workgroups.



Scientific and Technical Advisory Committee Chair Walden Kerns (right) speaks with STAC member Donald Boesch prior to the Annual Meeting of the Chesapeake Executive Council.

STAC serves as a liaison between the scientific/engineering community and the Bay Program. Through professional and academic contacts and organizational networks of its members, STAC ensures close cooperation among and between the various research institutions and management agencies represented in the Bay watershed. Below is an overview of STAC activities throughout the past year which have included proactive workshops in which STAC selects the topic, responsive workshops in which the topics are proposed to STAC, and external peer reviews.

PROACTIVE WORKSHOPS

Low Impact Development: A New Comprehensive Technological Solution to Urban Stormwater Management and Wet Weather Flow Control

Low Impact Development (LID) is a fundamental change in watershed management technology that is less costly, more effective and more economically and environmentally sustainable than conventional approaches used in protecting local receiving waters and the Chesapeake Bay.

The purpose of conducting this workshop was to provide participants with a thorough overview of the new low impact development objectives, economic and environmental benefits, design principles, and management practices. Attendees were introduced to the innovative LID principles and practices used in protecting and

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restoring watershed hydrology, the biological and physical integrity of receiving waters, and non-point pollution control.

Through the introduction of LID technology and methods, participants of this workshop were shown a new perspective in urban stormwater management and gained a practical understanding of how to apply this powerful new technological solution to watershed and water resource protection objectives. In addition to this overview of LID principles, participants were told where they could obtain more specific information about LID planning and design criteria.

Exploring Alternative Management Strategies for Chesapeake Bay Fisheries

In recent years in domestic and international fisheries, innovative management practices have been employed that seek to improve the efficiency of the fishery while protecting the resource stock and resulting in higher net benefits from fishing to society.

This workshop brought together experts involved in the development, design, and application of alternative management strategies in a variety of fisheries to meet with their counterparts involved in Chesapeake Bay fisheries management and address benefits and concerns surrounding these alternative management techniques. These methods, such as rights-based and other privilege-access approaches, are being implemented across the globe and may be applicable in the Chesapeake Bay.

Workshop participants learned about the advantages, disadvantages, successes, and failures of alternative management options, as well as whether these techniques support the principles of multi-species and ecosystem management that are planned for Chesapeake Bay fisheries. The workshop worked through a series of breakout groups on issues such as providing a link between

watermen and managers, and bringing more local people into the process at the state level.

A report was issued summarizing the presentations and providing the recommendations made by the workgroups. It was also recommended that STAC would work with the Living Resources Subcommittee to incorporate a process to explore alternative management techniques into Chesapeake Bay Fisheries Management Plans.

RESPONSIVE WORKSHOPS

The Impact of Susquehanna Sedimentation in the Chesapeake Bay

Dams, such as the Conowingo Dam on the Susquehanna River, have historically acted as sediment traps, thus reducing the amount of sediments and nutrients that reach the Chesapeake Bay.

As dams reach their maximum sediment storage capacity, they no longer influence the ultimate fate of sediments and nutrients transported by rivers. The Conowingo Dam, for example, is now approaching its steady state and this will lead to a net effect of increased loads of sediments and nutrients that will be transported into the Chesapeake Bay.

The workshop addressed the issue of sediment build-up behind the lower Susquehanna River dams and its implications for Bay restoration efforts. Participants developed and assessment of the potential impacts of increased sediment delivery to the Chesapeake Bay and evaluated the possible effects of these sediments on the chemistry, physics, and ecology of the Chesapeake Bay. Scientists throughout the watershed addressed topics such as sediment impacts on submerged aquatic vegetation, benthic organisms, and the chemistry and physics of the maximum turbidity zone in the Chesapeake Bay.

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This workshop was in support of the Susquehanna River Basin Commission's Symposium, which was held in December 2000, that determined possible management actions for the reduction or limitation of increased sediment loads from the Conowingo Dam.

The Optimization of Benefits from Wetlands Restoration

The purpose of this workshop was to provide scientifically based advice aimed at improving state and federal efforts to restore 25,000 acres of wetlands in the Chesapeake Bay watershed by the year 2010.

The participants worked to achieve two primary objectives during the workshop were to review and summarize the current state of the science supporting wetland restoration in a landscape context, emphasizing in particular siting, design, and monitoring criteria appropriate to the physiographic regions of the Chesapeake Bay watershed; and, review and summarize the current state of the science supporting meaningful monitoring of wetland restorations for purposes of determining ecological benefits in the landscape context.

The participants discussed possible solutions to gaps in technology and resources currently being used in wetland restoration, reviewed existing programs, and commented on what other technologies are both available and applicable to the Chesapeake Bay watershed.

The product of this workshop was a report that included a compilation of information from contributing scientists, a summary of the current state of the science, and most importantly, a set of siting, design, and monitoring guidelines appropriate for use in the Chesapeake Bay watershed.

Low Impact Development: Planning, Design, and Implementation Workshop

During the previous fiscal year, several proactive Low Impact Development (LID) workshops were conducted throughout the Bay Region to give participants an overview of the technology and its potential value for helping preserve and restore natural resources in the Bay Region. Due to the success of this series of workshops, there was an apparent need for additional series of LID workshops, which would target specific audiences.

This new series of workshops was designed to provide a technical approach to Low Impact Development smart design activities, economic and environmental benefits, design principals, and management practices. It addressed the design aspect of LID for storm water management paradigms for both new development and urban retrofit to protect and restore watershed hydrology, receiving waters, living resources, and to meet NPDES and TMDL goals. The workshop also incorporated many of the Chesapeake Bay Program's goals and those *Chesapeake 2000* agreement commitments that focus on managing urban storm water.

For this series of workshops, the instructors coordinated with the various jurisdictions to tailor the content of the individual workshops to each jurisdiction's desired focus. Due to the continuing success of these workshops, several more workshop topics have been designated for the future such as incorporation of the LID approach into local government storm water programs, and design and implementation of the LID approach.

Non-nutritive Feed Issues in Chicken Production

This workshop surveyed the potential impact of current feeding practices on the ecosystems of the Chesapeake Basin emphasizing the possible effects of pharmaceuticals, hormones, and other additives used in feeds and excreted in animal

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manures. The workshop is in response to Chesapeake Bay stakeholder recommendations from the Toxics Non-point Source Forum where stakeholders identified animal feed and manure, and its potential for toxic impacts, as an emerging issue.

The workshop focused on agricultural issues with emphasis on water quality and aquatic biota: human health issues will not be addressed. Specific topics included chicken feed additives, potential environmental impacts of pharmaceuticals and metals, and microbial resistance. These issues need to be addressed within the Chesapeake Bay Basin for the likelihood of occurrence and the potential ramifications.

Migratory Fish Monitoring and Target-Setting Workshop: Alosid Monitoring Workshop II

In November of 1997, the Chesapeake Bay Stock Assessment Committee (CBSAC) held a workshop which focused on the monitoring of alosids. The participants of this workshop concluded that current monitoring was providing useful information on restoration activities being conducted, however, there are monitoring and information gaps concerning stock assessments and tributary specific needs such as population sizes and habitats.

Currently STAC is planning a follow up workshop to continue cross-jurisdictional discussions relative to the management of the American Shad. The *Chesapeake 2000* agreement calls for the assessment of trends in priority migratory species as well as for the development of tributary specific population targets by 2002.

This workshop will gather experts involved in alosid and other migratory species research and monitoring to evaluate the current monitoring approach as it relates to the recovery of American Shad, and these experts will discuss the methods by which target population sizes for priority species can be established. Emphasis will be placed on identifying and evaluating methods that could be

used to develop tributary-specific targets for the restoration of alosid fishes in the Chesapeake Bay. This workshop is scheduled to be held on December 12-13, 2001 in the region surrounding BWI airport.

Filter Feeders:

A workshop to assess what we know, don't know, but need to know to meet the *Chesapeake 2000* agreement

The *Chesapeake 2000* agreement establishes a clear management objective "*By 2004 assess the effects of different population levels of filter feeders such as menhaden, oysters and clams on Bay water quality and habitat.*"

The overall purpose of the workshop will be to better determine if the Bay community can fully address this commitment by the desired date. A two-day workshop will bring together resource managers and scientists to fully explore the feasibility of using existing ecosystem process (EPM) and/or individually based models (IBM) to address this and other commitments related to filter feeders.

The principal topic of this workshop will be to characterize the primary filter feeders of the Bay both past and present. The meeting objective will be to identify the existing models available to assess the impacts of those primary filter feeds on the Bay's water quality and habitat. Particular attention will be focused on oysters, menhaden, and clams as potential management options for nutrient/sediment removal; however, other filter feeders such as zooplankton and epibenthic fauna will also be explored. In order to address the commitments, a modeling framework will be developed that includes both water quality and ecosystem processes for assessing ecosystems that contain primary filter feeders.

This workshop is currently in the early planning stages and is scheduled to be held by the end of 2001, beginning of 2002.

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EXTERNAL PEER REVIEW

External Peer Review of the Draft Basin-wide Monitoring Strategy

The goal of the Chesapeake Bay Program's Basin Wide Monitoring Strategy is to create a comprehensive monitoring program that will respond to the informational needs of environmental managers.

Bay Program managers and scientists are now recommending a whole ecosystem management approach, which considers individual species, their habitats, trophic relationships, and their response to anthropogenic and natural changes. This places additional demands on monitoring programs throughout the Chesapeake Bay basin.

The objectives of this discussion were to obtain an external peer review of the draft monitoring strategy and the priorities identified for future monitoring, and to provide a forum to exchange new ideas and perspectives for monitoring the Chesapeake Bay and its watershed.

The monitoring strategy has been refocused on the *Chesapeake 2000* agreement and now outlines the monitoring needs required to meet the commitments outlined in this new agreement.

The panel concluded at the end of this discussion that the continuity of the data needs to be guarded while introducing improvements and efficiencies, and that there is need for the Bay Program to play a larger role in coordinating many contributing monitoring programs.

The panel presented the results of this review to the Implementation Committee at their January 24, 2001 meeting.