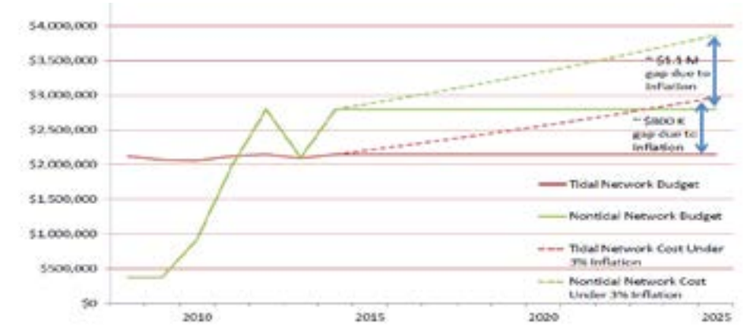
Science and Monitoring will be the foundation of the new Watershed Agreement

The Chesapeake Bay Watershed Agreement is focused on restoring and conserving the Nation's largest estuary and its watershed. There are goals for sustaining fish and wildlife, restoring habitats and water quality, reducing the effects of toxic contaminants, protecting healthy watersheds and lands, and making them all more resilient to climate change. The agreement is striving for a more diverse group of people as stewards of the Bay watershed through increased public access and environmental literacy in schools.

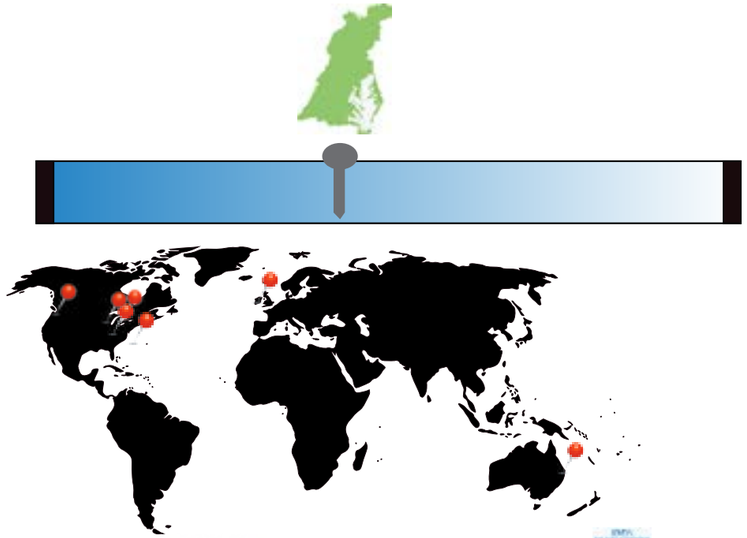
Science and monitoring will be critical to inform decision making to carry out the new Agreement. Science provides the foundation to develop management strategies to achieve the goals in an effective manner. Monitoring will provide the accountability needed to assess progress toward the 31 outcomes and identify if changes are needed using an adaptive management framework.

The challenges to supplying an expanded amount of science and monitoring include unpredictable funding, inflationary pressures, and expanding partnerships. Unpredictable funding is a growing concern given the multiple demands on tax dollars. Inflation can double the cost of monitoring over a decade. The CBP wants to expand partnerships but understands the challenges of aligning resources and gathering comparable information.



Method of Discovery: The Global Seminar Series

The Scientific, Technical Assessment, and Reporting Team invited monitoring programs from around the globe to share their knowledge and experiences with monitoring. As a means to gain insights from monitoring programs old and new, scaling diverse depths, populations, and size, representatives from monitoring programs were asked a series of significant questions. The questions addressed monitoring objectives and network design, operational and funding models, plus innovations, success, and challenges they've faced. Insights gained from the series of monitoring programs are being assessed for their potential and applicability in the Chesapeake.



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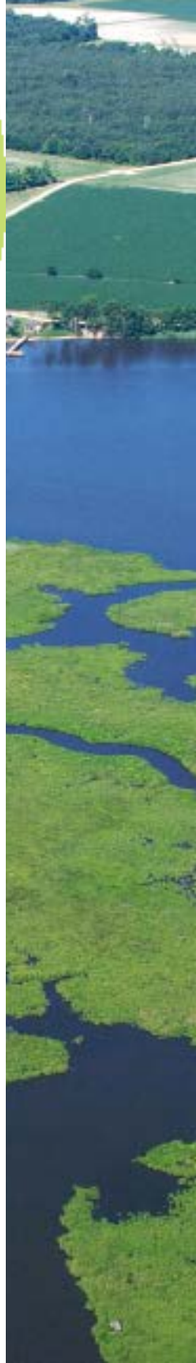
Intelligent Monitoring:

Global examples of citizen science, innovation, and partnerships to inform Chesapeake restoration



Citizen science has tremendous potential but requires coordination, training and continuity.

There is a trend of increasing citizen science activity with varying degrees of data incorporation into monitoring programs. It is evident from the case studies that citizen science data is not free, but requires coordination and training to be sustainable. The state of Wisconsin has highly developed citizen science programs for lakes and streams.

Wisconsin Citizen-based Monitroing

Wisconsin citizen-based monitoring networks maintain a rigorous training program with different competency tiers of citizen scientists and their waiting list of volunteers is limited by funding of coordinators. There are various active citizen science groups in the Chesapeake region that currently lack the degree of coordination, training and continuity that Wisconsin has developed. It was generally felt that expanding the use of citizen scientists has multiple benefits; allowing for more frequent data collection at more sites, providing more trained eyes observing the ecosystem, and enhancing community engagement. The need to integrate the citizen science data with that collected by trained personnel was important as well.

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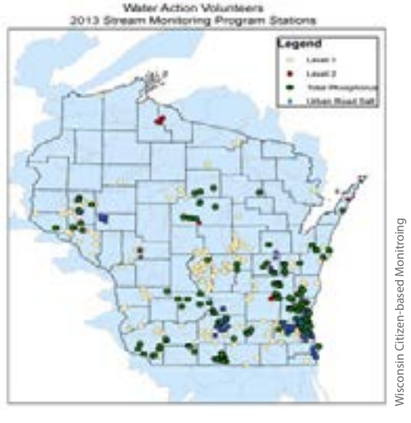
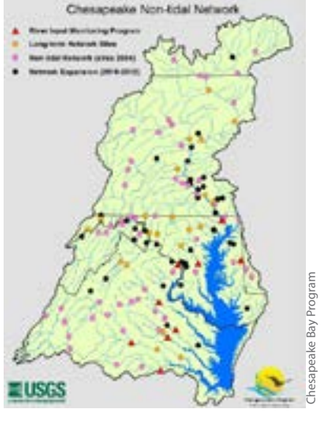


Wisconsin Citizen-based Monitroing



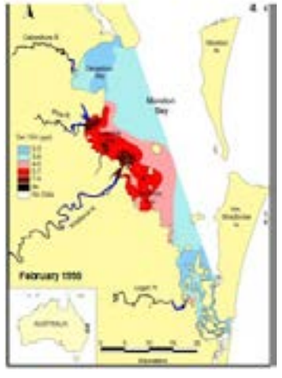
Chesapeake Bay Program

Innovation enables new insights, gains efficiencies but can be resource intensive.

There are several global examples where innovations have provided novel approaches on monitoring and assessment. However, innovation comes with a price, they can be resource intensive and time consuming to develop and implement.

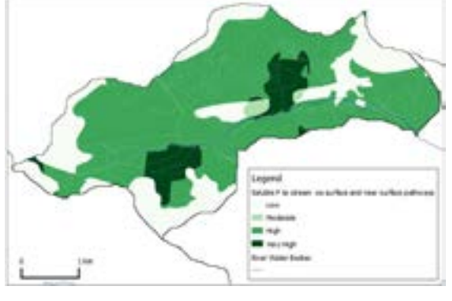
Moreton Bay Australia

The Moreton Bay (Australia) partnership developed an extensive assessment framework for looking at the pressure, condition, and response of their ecosystem. They used a combination of freshwater, estuarine, and marine, and event monitoring to develop indicators of ecosystem conditions. The monitoring results are used in tools for targeting restoration actions and showing progress in actions and improvements in ecosystem conditions. . The effort to expand the partnerships for the integrated assessment took over 15 years to develop and requires a high degree of coordination.



Ireland

The European Union has two directors to have to monitor and improve the quality of waters across the continent: the Watershed Framework and Marine Framework. Ireland has to integrated its inland and coastal waters programs by having three main monitoring components: surveillance, operational, and investigative. The monitoring is integrated into an innovative risk-assessment system to identify susceptible areas and significant pressures to water bodies. The risk assessment provides a tiered assessment of (1) waters at risk, (2) sources of the pollution, and (3) where more detailed investigations are needed. The effort is supported by government funding and fees on plastic bags and land-filling of waste.



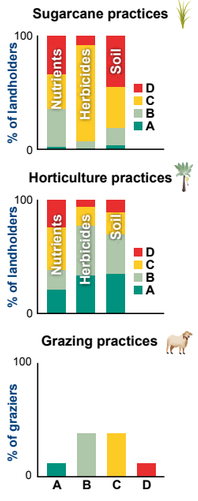
For these and other efforts, there are usually increased costs to develop, test, and implement new innovations, technologies, and partnerships. Depending on the innovation, some technologies require a high degree of maintain (and higher costs) while others provided long-term savings.

Partnerships can expand capacity, diversify funding but institutional obstacles require effort.

Funding for monitoring is typically managed by individual agencies and designed to meet specific program mandates. Pooling funding resources provides opportunities for efficiencies and integration of priorities.

The Puget Sound Partnership has implemented a regional monitoring program funded through contributions by individual municipal storm-water permittees. By creating a common fund, individual costs are reduced and more robust monitoring program was designed. Similarly, sugar cane growers contribute to fund a monitoring program for the Great Barrier Reef in Australia.

Puget Sound Partnership



Leveraging monitoring data for multiple purposes can also provide partnership opportunities. MARACOOS utilizes a network of stakeholder liaisons to broaden individual user's needs into a regional theme. Partners in the regional network see benefits beyond their individual contributions through leveraging.

These types of partnership can result in more robust monitoring, but typically require increased management. They also require that government entities think beyond their individual programs and what is required to support them. The benefit is an integrated monitoring program, but care must be given that the initial monitoring objectives of the funding are met and communicated.

For more information visit

www.chesapeakebay.net/basin