

PARTNERING *for* COASTAL HABITATS

Annual Report of the

MASSACHUSETTS BAYS NATIONAL ESTUARY PROGRAM



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This information is available in alternate formats upon request.

The Massachusetts Bays National Estuary Program (MassBays) is one of 28 National Estuary Programs around the United States focused on coastal habitat protection and restoration. Across two bays, more than 1500 miles of coastline, and 50 communities, we seek to contribute in strategic and practical ways to broad-based efforts to protect, restore, and enhance coastal ecosystems.

This Annual Report surveys MassBays' work in the past year and highlights the significant progress we have made in collaboration with numerous invaluable partners.

Thank you for your interest in MassBays. We look forward to working with you into the future for the benefit of Massachusetts Bay and Cape Cod Bay.

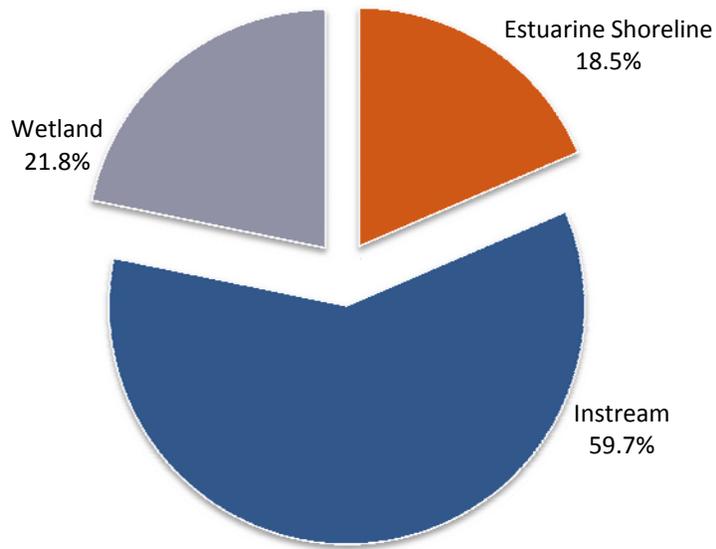


2013 At a Glance

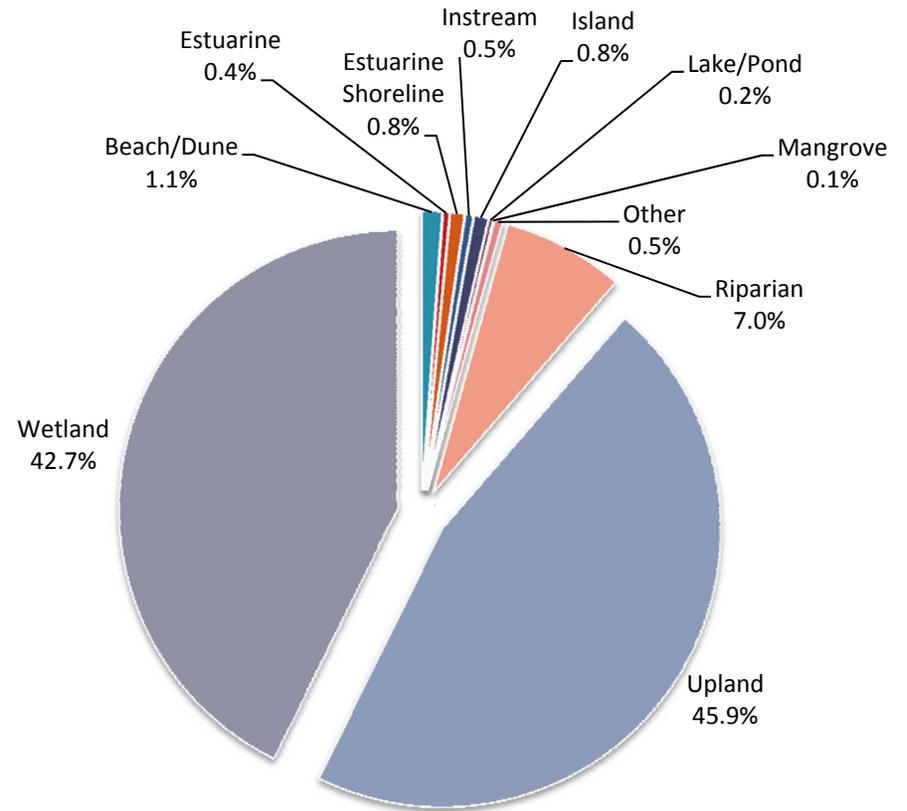
- ☞ MassBays Regional Coordinators provided critical interagency coordination and recruited hundreds of volunteers to conduct surveys, monitoring, stormwater management, outreach, and education, leading to restoration and enhancement of more than 600 acres of estuarine habitat. *See Program Impact, page 2.*
- ☞ MassBays launched a 2-year process to revise our Comprehensive Conservation and Management Plan, the driving force behind every National Estuary Program's work. *See Convening Stakeholders, page 3.*
- ☞ MassBays provided \$84,000 in cash awards as well as technical assistance for research and planning programs that advance our strategic goals. *See Research and Planning Grants, page 7.*
- ☞ Building on our baseline of \$513,000 Federal funding from EPA in Federal Fiscal Year 2014, MassBays gained \$576,000 in matching resources and leveraged more than \$1 million in additional resources. *See Financial Data, page 11.*
- ☞ MassBays' Management Committee membership now includes representation from industry and business. *See Administration, page 12.*

Program impact

EPA, which funds the National Estuary Program, requires annual reporting on acres of habitat restored in all planning areas. The pie chart on the left reports acres restored with our help; the right-hand pie chart incorporates reporting from all NEPs.



Habitat restored (MassBays)
647 total acres



Habitat restored (All NEPs)
127,594 total acres

Mission and vision

This past year MassBays' Management Committee approved new Vision and Mission statements that provide important context and direction for our work.



Vision

We envision a network of healthy and resilient estuaries – sustainable ecosystems that support the life and communities dependent upon them.



Mission

The Massachusetts Bays National Estuary Program is dedicated to protecting, restoring, and enhancing the estuarine ecosystems of Massachusetts Bay and Cape Cod Bay. We facilitate partnerships to prompt local, state, and federal action and stewardship by ***convening stakeholders*** on the local and regional level, ***providing scientific basis for management decisions***, and ***informing decisionmakers*** about problems and solutions.



Look for these themes – **convening stakeholders**, **providing scientific information**, and **informing decisionmakers** – in the follow sections.

Convening Stakeholders

Comprehensive Conservation and Management Plan

MassBays completed its first CCMP in 1996, the result of wide-reaching and extensive process involving 300 participants in multiple committees and working groups. Their task, to gather and assess information about the condition of the region and the entities responsible for each aspect of their restoration, contributed to the body of knowledge that supported water quality restoration in Boston Harbor, Massachusetts Bay, and Cape Cod Bay.

After a progress report in 2000 to assess progress on the 15 action plans set out in 1996, the CCMP was amended in 2003 with five additional action plans. In 2014, we will present a new plan for approval by EPA that: (1) identifies achievable goals and ways to measure progress, (2) lists strategic actions to be within a 5 to 8 year window, (3) provides a framework for education and outreach to multiple audiences, and (4) defines MassBays' contribution to larger, regional efforts.

In 2013, we solicited input from stakeholders across our region via meetings and surveys; outcomes are summarized below.



Cross-region themes

- MassBays' strength lies in convening stakeholders and facilitating partnerships. That work should continue.
- Estuarine natural resources – salt marshes, beaches, sea grass – are variably and often inconsistently managed on the local level.
- Education and outreach about the role of estuarine resources in resilient coastal systems – their ecosystem values – are still needed for multiple audiences.
- Coastal communities need concrete advice for practical, ready-to-implement adaptations to climate change and sea level rise.



Cross-cutting needs

MassBays asked partners and stakeholders to highlight their primary concerns for their region, drawing from a list of past CCMP priorities, everything from expanding coastal monitoring to restoring benthic habitat. The interconnected nature of these issues was evident as stakeholders expressed difficulty in choosing just one topic as their primary concern. Suggestions for action that will have cascading benefits to estuarine systems, applicable across the MassBays planning area, include:

- Implement improved stormwater management – especially through municipal utilities and MS4 plans – that will reduce impervious surface and prevent nutrient and bacterial loading at the source. Reduced inputs will enhance and restore marshes, benthic habitat, eelgrass beds, and shellfish beds, and support diadromous and anadromous fish runs.
- Encourage regional collaboration for planning and implementing climate change adaptation responses, for example providing practical guidance and technical support to plan for sea level rise with regard to stormwater infrastructure.
- Encourage cross-agency cooperation and planning for restoration projects, tying individual projects to the larger ecosystem's health and facilitating early input to project plans from local stakeholders.
- Determine/compile the state-of-knowledge of the benefits provided by coastal habitats – e.g., shellfish for nutrient and bacteria removal, salt marshes for flood mitigation – and make the case to local decisionmakers for protecting, restoring, and enhancing those resources.

Habitat-specific actions

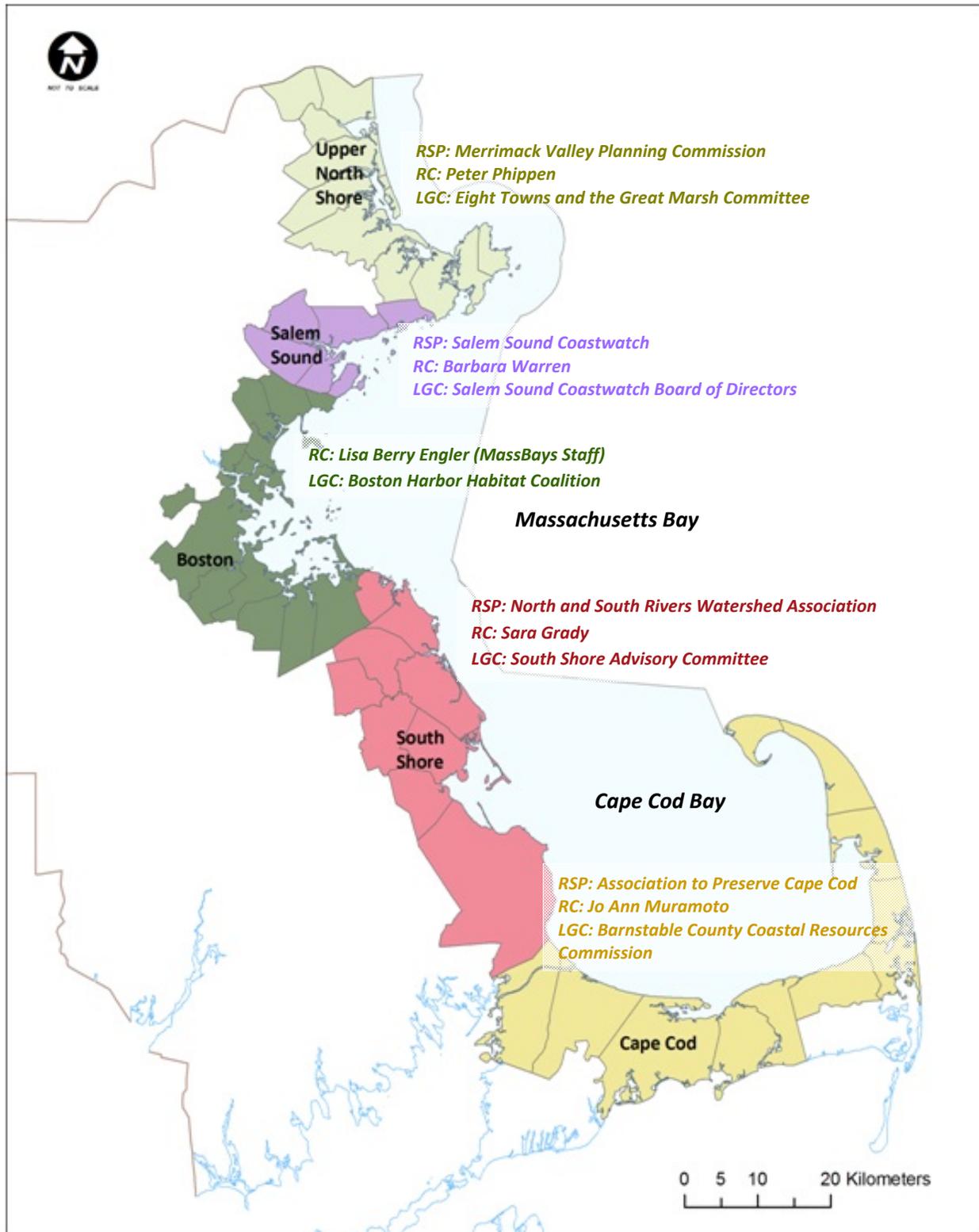
Discussions reinforced the fact that while MassBays' sub-regions have unique characteristics and needs. However, estuarine habitats across the planning area would benefit from specific actions, for example:

- Remove all traditional moorings from eelgrass beds.
- Restore shellfish beds, taking into consideration the impacts of ocean acidification.
- Encourage beach management plans that consider habitat value.
- Model potential for marsh migration in response to sea level rise.

Each of these actions require groundwork to determine which agencies have existing authority and policies, compile maps, collect and compile monitoring data, and coordinated planning and implementation that take into account the cross-cutting needs identified above. Mass Bays' role going forward will be informed by our mission, with fluid prioritization of efforts that reflect current scientific understanding, political readiness, and availability of resources.

Regional coordination

MassBays' regions are served by Regional Coordinators (RCs) hosted by Regional Service Providers (RSPs). They in turn convene local advisors to their work via local governance committees (LGCs).



Cross-boundary projects

MassBays Regional Coordinators play a significant role in convening stakeholders to support coastal natural resource restoration. Alongside state and federal agencies who carry out the construction efforts, we facilitate the human side of planning and restoration efforts across town lines. For example:

- **Tack Factory Dam assessment, Third Herring Brook:** The South Shore Regional Coordinator convened stakeholders, who have agreed that stream restoration and dam removal will improve habitat and water quality and quantity in the Third Herring Brook.
- **Merrimack River estuary hydrodynamic modeling:** The Upper North Shore Regional Coordinator convened the Great Marsh Revitalization Task Force to develop a proposed research and restoration project to improve the marsh's health.
- **Stony Brook and Herring Rivers salt marsh and fish passage restoration:** The Cape Cod Regional Coordinator worked with local stakeholders from multiple towns and agencies to make significant progress in efforts to restore these critical salt marshes and herring runs in Cape Cod Bay.
- **Responding to North River flooding:** The Salem Sound Regional Coordinator worked with Peabody and Salem to revise plans for development and flood controls based on watershed analysis, stormwater retention, and projected sea level rise and increased precipitation due to climate change.
- **Boston Harbor habitat atlas:** With this online mapping tool and website as a central focus for collaboration, the Metro Boston Regional Coordinator convened 40 organizations working on estuarine issues.



Stony Brook (Brewster) Salt Marsh Restoration

In December 2013, MassBays' Regional Coordinator in Cape Cod submitted the final monitoring report for a major salt marsh and fish passage restoration project in Brewster. The project began in 2007 with a feasibility study funded by the Gulf of Maine Council and the National Oceanic and Atmospheric Administration's (NOAA's) Restoration Center. MassBays funding to the Association to Preserve Cape Cod supported our Regional Coordinator's work as assistant project manager for the effort, alongside staff from the Division of Ecological Restoration (DER). DER successfully requested \$1.3 million through the American Recovery and Reinvestment Act of 2009 and provided design funding, technical expertise and project management.

Over the course of 6 years and 30 assessments and reports later, more than two dozen partners report that more than 41 acres of salt marsh are reconnected to the tides, and 3000 linear feet of migratory fish passage are restored, allowing diadromous fish access to 386 acres of spawning ground and nursery habitat. In the third year following restoration, we are seeing improvements in vegetation within and along the perimeter of the marsh, including reduction of invasive *Phragmites*.

Providing Scientific Basis for Management Decisions

Estuary Delineation and Assessment

In 2013, MassBays completed (via contract to Geosyntec Consultants) an effort to define the landward and seaward boundaries of the MassBays planning area, and identify individual estuaries, or embayments, in the region. Geosyntec then assessed the ecological condition of these 47 embayments, compiling data relevant to ecological stress (i.e., factors that cause or indicate impairment) and resources (i.e., presence of important natural components). The indicators, listed below, were selected based on data quality and reliability, current and future availability of data for all embayments, and cost effectiveness. Embayments are depicted on page 8; find the full report at massbays.org.

ECOLOGICAL STRESSORS	ESTUARINE RESOURCES
High-Intensity Land Use Annual Stormwater Discharge Impervious Area Population Wastewater 303(d) Impairments Designated Shellfish Growing Area Impoundments/Fish Passage Barriers Stream Crossings	Salt Marsh Tidal Flat Seagrass Shellfish Habitat Shorebird Habitat/Nesting Sites Anadromous Fish Runs

Research and Planning Grants

Although there are several sources of funding for implementing restoration activities, funding for planning is not always easy to find. MassBays' Research and Planning Grant Program supports planning and research initiatives in our region that have direct impact on management.

Since 2011, MassBays has awarded more \$400,000 toward 22 projects investigating everything from specific local causes of coastal habitat degradation, to funding options for stormwater management, to testing new habitat restoration approaches. In 2013, we funded five projects; final reports are posted on our website.

Cohasset Center for Student Central Research: \$10,600 to conduct a survey of river herring populations and perform water quality monitoring in the Gulf River estuary.

Friends of Herring River, Wellfleet/Truro: \$20,000 to evaluate the effectiveness of proposed tidal control structures designed to restore salt marsh conditions to the Herring River floodplain in Wellfleet.

Neponset River Watershed Association: \$7,500 to address water quality concerns in the Neponset River Area of Critical Environmental Concern.

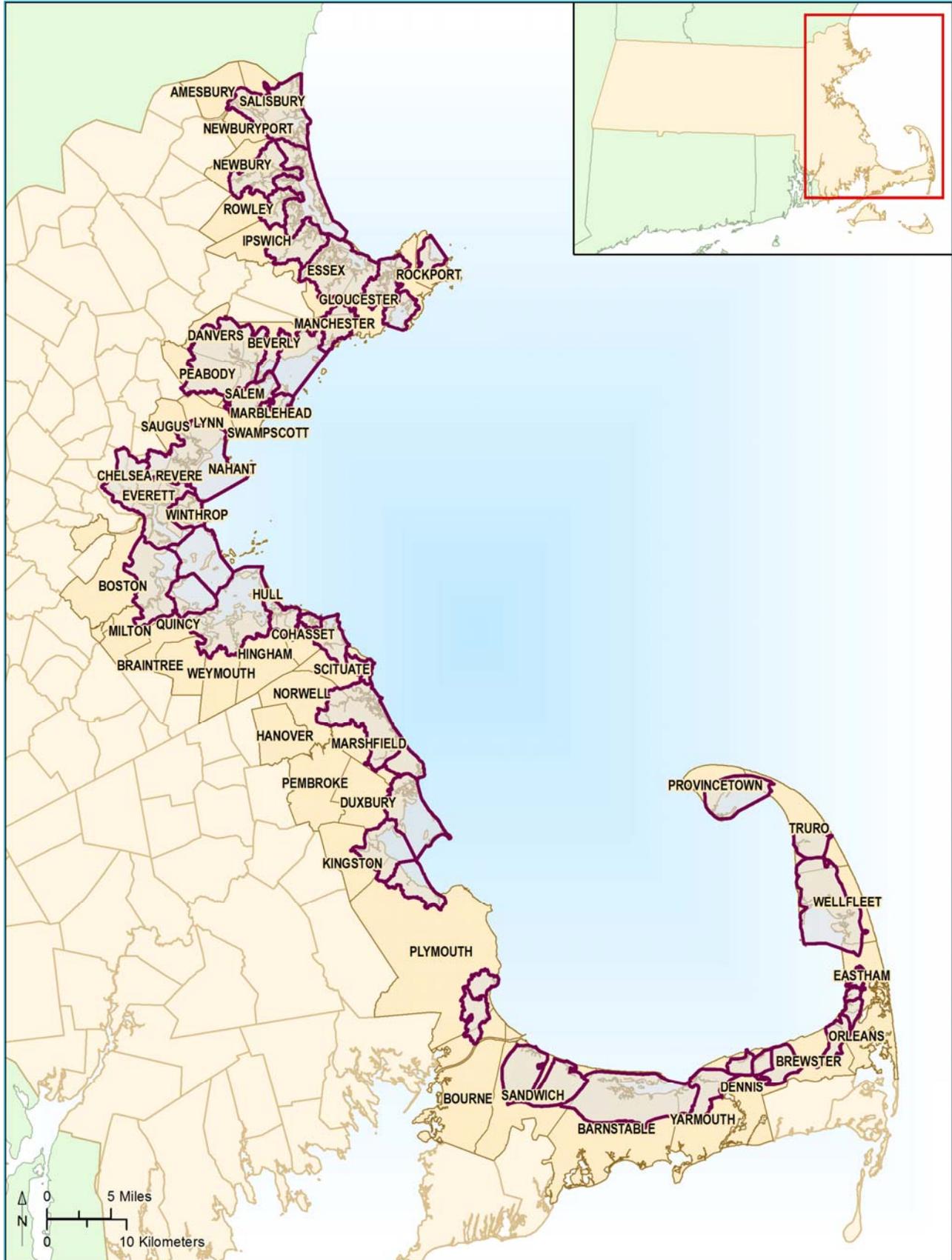
Massachusetts Division of Marine Fisheries: \$8,120 to study the impacts of small docks and piers on salt marsh vegetation in Massachusetts estuaries (photo below).



University of New Hampshire: \$20,000 to test the viability of transplanting eelgrass into Plum Island Sound where it was once abundant.

Provincetown Center for Coastal Studies: \$18,323 to conduct an assessment of shoreline change along the coast from Beach Point in Truro to Jeremy Point in Wellfleet.

MassBays Embayment Delineation (Geosyntec, 2013)



Monitoring programs

MassBays provides data to partners in Massachusetts state agencies and across the eastern United States. MassBays Regional Coordinators lead multiple monitoring efforts, recruiting and training local volunteers for:

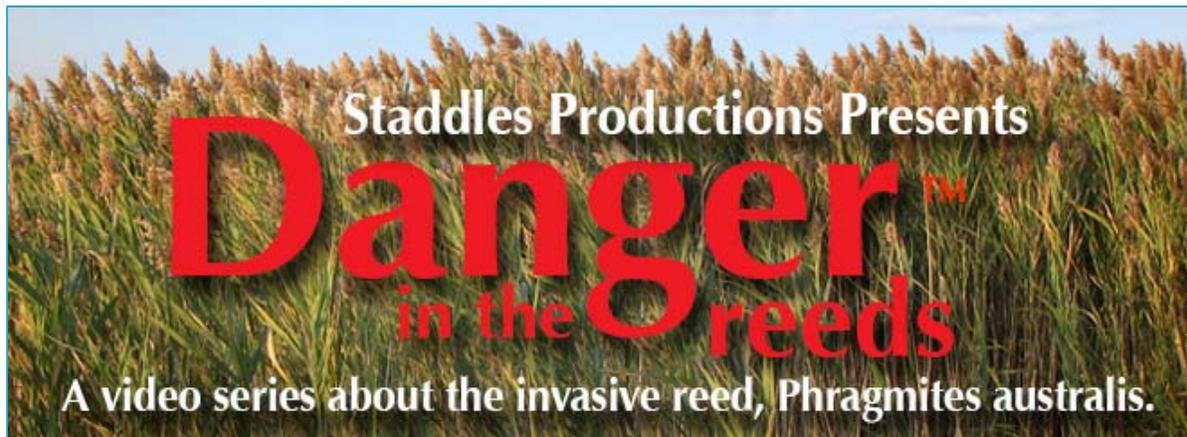
- *Water quality monitoring:* investigating the potential for restoring habitat for shellfish, eelgrass, and other important indicators of improved water quality.
- *Marine invasive species monitoring:* providing evidence of invasive species occurrence in the Bays.
- *Pepperweed mapping and removal:* contributing to a larger effort throughout the East Coast.
- *Anadromous fish monitoring:* providing data to the Division of Marine Fisheries about seasonal herring migrations.
- *Horseshoe crab spawning surveys:* informing the Division of Marine Fisheries and the Atlantic States Marine Fisheries Commission for stock assessments.
- *Salt marsh restoration monitoring:* measuring ecological impacts of Division of Ecological Restoration dam removal and culvert replacement projects.



Phragmites Study and Treatment in the Great Marsh

MassBays is protecting and restoring the natural vegetative community of the Great Marsh, in the Upper North Shore region of MassBays. An exotic invasive plant, *Phragmites australis*, threatens the integrity of the Great Marsh by spreading rapidly, displacing native plants, and impacting the ecosystem services provided by salt marshes.

In 2013, the Great Marsh Restoration Task Force, with support from MassBays and a successful Kickstarter campaign, produced a series of documentaries about the impact of *Phragmites* on salt marsh health. To watch these videos, visit: <http://goo.gl/P9DAxi>



Informing Decisionmakers

Restoration and protection of Massachusetts Bay and Cape Cod Bay habitats depend on well-informed decisionmakers. MassBays Regional Coordinators' local efforts, and publications from our Boston-based communications work, MassBays provides timely information to multiple audiences.

- *MassBays' website* hosts the Boston Harbor Habitat Atlas, MassBays publications, and connections to our regional partners. This year the site was updated to include final reports from all funded Research and Planning Grants. Visit www.massbays.org.
- *Greenscapes Program* teams up with municipalities to educate residential property owners about the impacts of stormwater on the marine environment, and promotes best practices such as infiltration and environmentally friendly landscaping. Visit www.greenscapes.org.
- *Municipal technical and grant writing support* to municipalities and other partners to advance shared goals.
- *Boston Harbor Habitat Atlas*, a first-of-its-kind inventory and web-based viewer illustrates the locations and diversity of marine habitats in Boston Harbor. Ground-truthed data and documentation support planning for restoration and protection. Visit www.mass.gov/massbays/bhha.
- *Climate change lecture series and workshops*, hosted by our Regional Service Providers and their partners, expose citizens across the MassBays region to information about climate change impacts and potential responses.



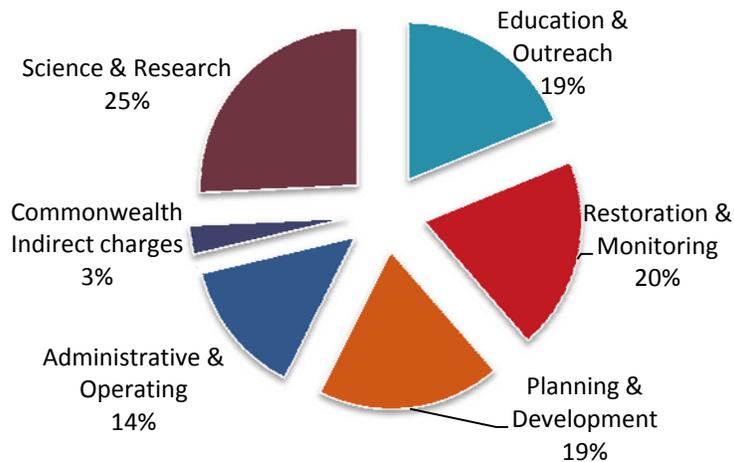
Protecting and Restoring Eelgrass

MassBays' region once supported an abundance of eelgrass, a native sea grass. Submerged aquatic vegetation like eelgrass is important for stabilizing sediment and providing habitat, nursery, and feeding grounds for many fish and other marine organisms. Since 1995, the Department of Environmental Protection has measured a 90% decline in eelgrass extent – primarily due to poor water quality, dredging and filling, dock and pier construction, and boat propellers and moorings

In 2013, MassBays partnered with The Nature Conservancy to fund a study by the Urban Harbors Institute (UHI) at UMass Boston. The study surveyed the ecology, economics, and regulatory factors related to switching to “conservation moorings” – sea-grass friendly boat moorings. MassBays and our partners at the Division of Marine Fisheries are promoting the switch with a fact sheet available at massbays.org.

Financial Data, 2013

MassBays' yearly budget and workplan are reviewed and approved by our Management Committee, and submitted to the Environmental Protection Agency for funding under Section 320 of the Clean Water Act. Non-federal funds provided as match from our grantees, dollars leveraged via on-the-ground projects, and in-kind support from CZM allow us to carry out our work.



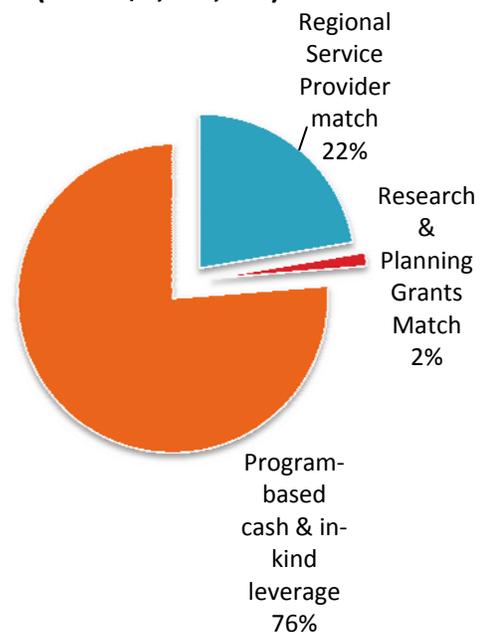
Budgeted Expenses
(Total: \$617,071)

Leveraging a jump start for Kingston Bay water quality

For years the Town of Kingston, in MassBays' South Shore region, had been looking for ways to improve Kingston Bay water quality with the goal of lifting prohibitions on shellfish harvesting there. With funding from a 2011 MassBays Research and Planning Grant, the Town assessed, evaluated, and chose candidate sites for stormwater infrastructure improvements, then developed conceptual designs for ten sites and detailed designs for the two most promising sites.

Based on these designs, Kingston successfully sought funding from the 2012 604b Water Quality Management Planning program and Massachusetts Office of Coastal Zone Management's 2012 Coastal Pollutant Remediation grant program to implement stormwater improvements at two sites. With portions of the project implemented in 2013, stormwater is now redirected away from the estuary, eliminating pollutants from the Bay and improving chances of reopening the shellfish beds.

Match and Leverage
(Total: \$1,496,145)



Administration

Staff

Pam DiBona, Executive Director
Lisa Berry Engler, Outreach and Communications
Prassede Vella, Staff Scientist

Regional Coordinators, 2013

Peter Phippen, Upper North Shore
Barbara Warren, Salem Sound
Lisa Berry Engler, Metro Boston
Sara Grady, South Shore
Jo Ann Muramoto, Cape Cod

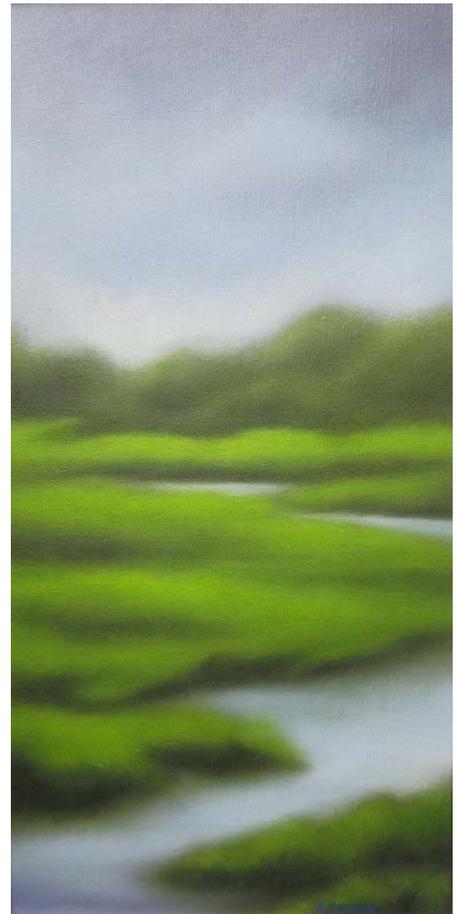


Management Committee

All National Estuary Programs are governed by a volunteer board, charged with setting priorities for the region. MassBays is fortunate to have an active and engaged Management Committee representing multiple stakeholders and partners.

Samantha Woods (Chair), North and South Rivers Watershed Association
Jon Kachmar (Vice Chair), The Nature Conservancy
Wendy Leo (Past Chair), Massachusetts Water Resources Authority

Julia Blatt, Massachusetts Rivers Alliance
John Brawley, The Woods Hole Group
Robert Buchsbaum, Salem Sound Coastwatch
Bruce Carlisle, Massachusetts Office of Coastal Zone Management
Sam Cleaves, Metropolitan Area Planning Council
Mel Cote, Environmental Protection Agency Region 1; Regina Lyons/Alternate
Ed DeWitt, Association to Preserve Cape Cod
Kathryn Ford, Massachusetts Department of Fish & Game/Division of Marine Fisheries; Mark Rousseau/Alternate
Alan Macintosh, Merrimack Valley Planning Commission
Judith Pederson, MIT Sea Grant; Juliet Simpson/Alternate
Tim Purinton, Massachusetts Department of Fish & Game/Division of Ecological Restoration; Hunt Durey/Alternate
Vandana Rao, Executive Office of Energy and Environmental Affairs
Maureen Thomas, Town of Kingston
Kristin Uiterwyk, Urban Harbors Institute; Jack Wiggin/Alternate
Cathy Vakalopoulos, Massachusetts Department of Environmental Protection; Jane Peirce/Alternate
Colin Van Dyke, Mintz, Levin, Cohn, Ferris, Glovsky and Popeo



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MASSBAYS' RESPONSIBILITIES UNDER THE CLEAN WATER ACT

One of 28 National Estuary Programs around the country, MassBays was established in the 1988 Amendments to the Federal Clean Water Act (CWA). With the guidance of our Management Committee and Local Governance Committees, we seek to meet this federal mandate.

CWA §320(B) DIRECTIVES

- Assess trends in water quality, natural resources, and uses of the estuary.
- Collect, characterize, and assess data on toxics, nutrients, and natural resources within the estuarine zone to identify the causes of environmental problems.
- Develop the relationship between the in-place loads and point and nonpoint loadings of pollutants to the estuarine zone and the potential uses of the zone, water quality, and natural resources.
- Develop a comprehensive conservation and management plan that recommends priority corrective actions and compliance schedules addressing point and nonpoint sources of pollution to restore and maintain the chemical, physical, and biological integrity of the estuary, including restoration and maintenance of water quality, a balanced indigenous population of shellfish, fish, and wildlife, and recreational activities in the estuary, and assure that the designated uses of the estuary are protected.
- Develop plans for the coordinated implementation of the plan by the States as well as federal and local agencies participating in the conference.
- Monitor the effectiveness of actions taken pursuant to the plan.





For more information, please visit

WWW.MASSBAYS.ORG