CZ-Mail Year in Review - 2015

Published January 2016

Welcome to the year-in-review edition of CZ-Mail, which highlights many of the **Massachusetts Office of Coastal Zone Management (CZM)** (/orgs/massachusetts-office-of-coastal-zone-management) accomplishments in 2016, provides news and information about our programs and regions, and discusses the notable achievements of our partners. CZM would like to thank all of the people and organizations that contribute their time, effort, and passion to working on issues important to the Massachusetts coast. It has been a pleasure to work with you over the past year, and we look forward to a positive and productive 2016.

The next regular edition of CZ-Mail will be in February. Additional information about CZM's programs, publications, and other coastal topics can be found on the **CZM website** (/orgs/massachusetts-office-of-coastal-zone-management), and daily CZM updates are posted on **Twitter** (http://twitter.com/MassCZM). To subscribe, send a blank email (please be sure that the email is completely blank, with no signature line) to **join-env-czmail@listserv.state.ma.us** (mailto:join-env-czmail@listserv.state.ma.us). Please feel free to share CZ-Mail with colleagues and friends —and if you have any suggestions for future editions, would like your name added to the mailing list, or would like your name removed, please email your request to **CZ-Mail@mass.gov** (mailto:CZ-Mail@mass.gov?subject=CZ-Mail%20Request).

All links on this web page were current and working on the date of publication.

Overview of 2015 at CZM

From finalizing the Massachusetts Coastal Erosion Commission Report, to releasing the 2015 Massachusetts Ocean Management Plan and participating in regional ocean planning initiatives, to providing grants to address coastal flooding, erosion, and stormwater issues at the local level, to managing a very successful project to dredge New Bedford Harbor, and more—CZM had a busy and productive year in 2015. CZM took the lead on behalf of the Executive Office of Energy and Environmental Affairs (EEA) as the chair of the Coastal Erosion Commission, which drafted, reviewed, and revised the **Coastal Erosion Commission Report** (/service-details/massachusetts-coastal-erosion-commission) released on December 3. On the ocean planning front, CZM led the first update to the **Massachusetts Ocean Management Plan** (/service-details/massachusetts-ocean-management-plan) that was originally released in 2009. On January 6, EEA released the revised ocean plan, which continues to serve as a landmark blueprint for the protection and sustainable use of state ocean waters. CZM also played important roles with the Northeast Regional Ocean Planning Body in developing foundational elements of a regional ocean planning framework that advances the mandate of the National Ocean Policy and with the Northeast Regional Ocean Council, which celebrated its 10-year anniversary as a forum for regional coordination and collaboration on coastal and ocean management issues. CZM also continued working with the federal Bureau of Ocean Energy Management and the three leaseholders on renewable wind energy development on the outer continental shelf offshore of Massachusetts. When Massachusetts was hit by two major coastal storms this year—a January blizzard and a February northeaster—CZM's Storm Team members surveyed coastal communities and submitted important damage assessment reports. In April, a federal disaster was declared for the January storm, so federal aid was made available to assist the recovery effort. Through the New Bedford Harbor Interim Federal Channel Dredging Project completed in June, CZM worked closely with the New Bedford Harbor Development Commission to successfully increase federal channel navigational depths by as much as 5.5 feet, which significantly increases economic opportunities for cargo transportation. In August, CZM awarded $2.2 million for 16 **Coastal Community Resilience and Green Infrastructure for Coastal Resilience grants** (/service-details/coastal-resilience-grant-program)—two grant programs that provide funding to reduce or eliminate risks associated with coastal storms, erosion, and sea level rise. In September, CZM received an EPA grant to develop a program to monitor and assess climate change impacts to tidal marshes, building on work by CZM and partners that includes modeling coastal wetland response to sea level rise and developing a network of sentinel sites to track changes in marshes. In November, Massachusetts received a grade of "A" on the **States at Risk: America's Preparedness Report Card** (http://climatecentral.cmail19.com/t/y-l-djkdst-jhiiklstr-r/), which specifically recognized CZM efforts to help the Commonwealth prepare for a changing climate. In December, through the **Coastal Pollutant Remediation Grants Program**

(/service-details/coastal-pollutant-remediation-cpr-grant-program), CZM provided almost $400,000 to coastal communities for on-the-ground projects that reduce coastal water pollution and improve the health of coastal resources, such as shellfish beds. These and other highlights and accomplishments for CZM and its hosted programs in 2015 are summarized below.

CZM Program Accomplishments

CZM's mission is to balance the impact of human activities with the protection of coastal and marine resources through planning, public involvement, education, research, and sound resource management. To achieve these goals, as well as to meet the needs of municipal officials, property owners, educators, and others in the coastal community, CZM maintains a range of programs. The accomplishments for each CZM program area are listed below.

Ocean Management

Massachusetts Ocean Management Plan Released - On January 6, EEA released the first update to the **Massachusetts Ocean Management Plan** (/service-details/massachusetts-ocean-management-plan), which was originally released in 2009 as a landmark blueprint for the protection and sustainable use of state ocean waters. The two-year review and update process was led by CZM and involved a comprehensive assessment of ocean plan progress to date, as well as extensive public, stakeholder, and expert participation efforts. The updated plan includes new data and trends on ocean habitats and ecosystems, human uses, economics, cultural and archeological aspects, and climate change; preliminary offshore wind transmission corridor routes for further investigation; initial planning and analysis for appropriate potential locations for offshore sand areas for beach nourishment; and a fee structure and guidance for required mitigation fees for ocean development projects.

Ocean Planning in the Northeast - Significant work was completed this year on the development of the first-ever regional ocean plan pursuant to the National Ocean Policy. In April, the **Northeast Regional Planning Body** (http://neoceanplanning.org/) (RPB) held a workshop on ecosystem based management to help establish a framework and context for the regional ocean planning initiative underway, and based on recommendations from the workshop, an Ecosystem Based Management Working Group was established. At its inaugural meeting on September 30, the Working Group provided feedback on progress in developing marine life and habitat mapping products and on methodologies for developing decision-making tools using these integrated products. In November, the RPB held its seventh meeting and previewed and discussed elements

of a draft regional ocean plan, including a detailed plan outline, progress on data and data products being developed, federal agency guidance and management actions, monitoring and evaluation of plan performance and for ecosystem health, and science and research priorities. Much of the meeting's agenda was informed by the input and discussions from the October 20 Stakeholder Forum.

Seafloor Mapping Initiative - CZM and the U.S. Geological Survey (USGS) published two new seafloor mapping reports in 2015. ***Geological Sampling Data and Benthic Biota Classification—Buzzards Bay and Vineyard Sound, Massachusetts*** (http://dx.doi.org/10.3133/ofr20141221) includes analyses of surficial-sediment grab samples, locations and images of seafloor photography, survey lines along which seafloor video was collected, and a classification of benthic biota observed in seafloor photographs. ***Shallow Geology, Sea-Floor Texture, and Physiographic Zones of Buzzards Bay, Massachusetts*** (http://dx.doi.org/10.3133/ofr20141220) contains geologic, sediment texture, and physiographic zone maps that characterize the seafloor of Buzzards Bay, Massachusetts. Both reports were prepared as part of the 12-year, cooperative mapping program between CZM and USGS. Additionally, 180 square kilometers of geological data collected south of Martha's Vineyard and north of Nantucket in 2013 are currently in review and will be published in 2016. Further north, CZM worked with the **Center for Ocean Mapping/Joint Hydrographic Survey** (http://ccom.unh.edu/) to map the seafloor off Salisbury Beach State Reservation. To date, more than 5,000 square kilometers of Massachusetts seafloor have been mapped. For more information on CZM's role in mapping Massachusetts waters, see CZM's **Seafloor Mapping Program website** (/seafloor-and-habitat-mapping-program).

Offshore Wind Project Development - In January, the Bureau of Ocean Energy Management (BOEM) held a competitive lease sale for more than 742,000 acres within the Massachusetts Wind Energy Area, located approximately 12 miles offshore Massachusetts, for development of commercial wind. Two of the four lease areas were assigned to two bidders. In April, BOEM convened a Massachusetts Intergovernmental Renewable Energy Task Force meeting in Falmouth to explain next steps for the commercial leases, including environmental reviews and receive public comment. For more information on the commercial wind leasing process offshore Massachusetts see the **BOEM website** (http://www.boem.gov/Commercial-Wind-Leasing-Offshore-Massachusetts/).

Regional Ocean Partnership - In February, CZM participated in the Northeast Regional Ocean Council (NROC) winter meeting, which addressed progress and work underway on the regional ocean plan, development of the Integrated Sentinel Monitoring Network for Climate Change in Northeastern Coastal Ecosystems to identify key indicators and sentinel sites around the region to

measure changes in marine and estuarine ecosystems, and regional opportunities for NROC to advance the recommendations of the President's Task Force on Climate Preparedness and Resilience. At its fall meeting in November, NROC members and partners celebrated its 10th anniversary, reflecting on the partnership's history, significant accomplishments, and looking forward to addressing new challenges and shared priorities. This year, NROC also awarded grants for the advancement of shared Northeast priorities for resilient shorelines and launched a Living Shorelines Group to facilitate regional knowledge sharing around living shorelines and coastal green or natural infrastructure.

Coastal and Marine Recreational Characterization Study for the Northeast - The RPB, in coordination with Point 97, SeaPlan, and the Surfrider Foundation, conducted a study to characterize recreational activities in the Northeast. With input from industry representatives, stakeholder groups, and an RPB steering committee, information was collected on whale watching activities, SCUBA diving activities, marine events (including sailing regattas, saltwater sportfishing tournaments, and competitive board and paddle events), and individual recreational uses (including sea kayaking, surfing, and general beach uses). These activities were characterized based on information compiled through in-person meetings, participatory mapping exercises, online surveys, and supplemental research.

Gulf of Maine Council Awards - In June, the **Gulf of Maine Council on the Marine Environment** (http://www.gulfofmaine.org/) presented its **annual awards** (http://www.gulfofmaine.org/2/gomc-home/awards/). The Stony Brook Herring Monitors received the prestigious Longard Volunteer Award for their work monitoring the Stony Brook herring run in Brewster each spring, which restored nearly 400 acres of spawning, nursery, and feeding habitat for river herring, increasing herring numbers by a factor of 10 since the project's completion in 2013. Neptune's Harvest in Gloucester was awarded the Sustainable Industry Award for its innovative process that turns fish remains into fertilizer, allowing 100% beneficial use of the fish processed. The Jones River Watershed Association (JRWA) in Kingston received a Visionary Award for their work to remove the Wapping Road Dam in 2011 and their continued efforts to protect health of the Jones River as well as neighboring watersheds. Todd Callaghan of CZM was awarded a Visionary Award for his work to develop the strategy for achieving a Massachusetts statewide No Discharge Zone designation that resulted in the protection of 2,530 square miles of state waters from the harmful effects of vessel discharges on water quality and public health. He has also secured the funding for, and managed the design of eight commercial pumpout facilities, totaling more than $100,000. His work has resulted in a program that serves as a national model.

StormSmart Coasts

Coastal Erosion Commission Final Report - In December, the **Massachusetts Coastal Erosion Commission** (/service-details/massachusetts-coastal-erosion-commission) released its final report, which provides eight overarching strategies that seek to:

1. Advance science, data, and information for better decision making;
2. Enhance the legal, regulatory, and policy framework; and
3. Enhance shoreline management practices and approaches, technical and financial assistance to communities, and outreach and communication efforts.

The Commission was established by the Massachusetts Legislature to investigate and document levels and impacts of coastal erosion in the Commonwealth and develop strategies and recommendations to reduce, minimize, or eliminate the magnitude and frequency of coastal erosion and its adverse impacts on property, infrastructure, public safety, and beaches and dunes. On behalf of EEA, CZM chaired and staffed the Commission. Since work began in March 2014, the Commission held eight meetings, reviewed the work and findings of similar state- and national-level commissions on coastal shoreline and floodplain management, convened five regional public workshops, created three working groups, and held five regional public hearings and a 90-day public period on its draft report. The final report presents the work, findings, and recommendations of the Commission. Volume 1 contains the body of the report and Volume 2 contains the Working Group technical reports (Science and Technology, Legal and Regulatory, and Erosion Impacts).

CZM Coastal Resilience Grant Awards - In August, CZM awarded more than $2.2 million in funding through the **Coastal Community Resilience and Green Infrastructure for Coastal Resilience grant programs** (/service-details/coastal-resilience-grant-program) to advance local efforts to reduce risks associated with coastal storms, flooding, erosion, and sea level rise. The Fiscal Year 2016 grants were awarded to:

- Barnstable - $148,500 to study wind and wave forces affecting the Sandy Neck shoreline and evaluate long-term management options for protecting a public beach facility from storm and flood damages.
- Boston - $350,000 to review and develop consensus on local climate change projections and impacts and identify vulnerabilities and develop an initial portfolio of actions to strengthen the resiliency of buildings, neighborhoods, and infrastructure.

- Brewster - $159,474 to provide information to the public on the vulnerability of infrastructure and natural resources to flooding and erosion, gather input on community priorities, and build consensus on local strategies to respond and adapt to changing climate conditions.
- Chelsea - $90,000 to evaluate the vulnerability of municipal infrastructure to coastal flooding and sea level rise and identify local and regional strategies to reduce future flood risks, including building retrofits and natural shoreline stabilization methods.
- Dennis - $73,125 to evaluate and design a natural and/or non-structural approach to reduce erosion and provide storm damage protection and flood control for Dr. Bottero Road while enhancing the resilience and natural function of the barrier beach.
- Edgartown - $62,250 to complete permitting activities for a beach nourishment and dune restoration design for Fuller Street Beach that would restore habitat, improve the natural function of the barrier beach, and provide recreational benefits to the town.
- Essex - $62,943 to develop informational packets and risk maps and conduct a regional workshop to expand public awareness of coastal vulnerabilities in Essex, Salisbury, Newbury, Newburyport, Rowley, and Ipswich.
- Falmouth - $120,000 to design and permit a beach restoration project for a critically eroded section of Chapoquoit Beach and coordinate with the U.S. Army Corps of Engineers to receive sand dredged from the Cape Cod Canal for future beach restoration projects.
- Lynn - $73,000 to assess public infrastructure and natural resources at risk of flooding and sea level rise inundation and develop potential short, mid-, and long-term adaptation strategies to address high risk areas. The city will develop public outreach materials, including a web-based platform, to communicate vulnerability assessment results.
- New Bedford - $255,000 to evaluate flood proofing needs for nine of the most vulnerable sewer pump stations and design and permit the highest priority, least complex improvements to provide uninterrupted service during flood events.
- Plymouth - $73,350 to complete final designs and permitting activities for adding sand, gravel, and cobble along 900 feet of an eroded barrier beach to reduce damages to public infrastructure and restore natural coastal resources and habitat.
- Quincy - $75,000 to complete a coastal flooding and sea level rise vulnerability assessment and implement a community education program to inform and engage community members on coastal impacts and adaptation strategies.
- Sandwich/Barnstable - $157,930 to study the volume, rate, and direction of sand moving along the shoreline from the Cape Cod Canal to the easterly side of Barnstable Harbor. This

data will help inform the design, evaluation, and implementation of regional shoreline management efforts.

- Scituate - $180,000 to study the effect of waves and the movement of sand and other sediment along the shoreline as a basis for identifying and prioritizing viable shoreline protection strategies.
- Winthrop - $317,625 to rehabilitate the existing tide gate at Lewis Lake to control flow and allow tidal exchange between Lewis Lake and Winthrop Harbor, helping to maximize available flood storage in the lake and reduce the extent of flooding.
- Winthrop - $75,000 to evaluate natural and non-structural shoreline protection approaches and develop conceptual plans for a preferred alternative that provides the most erosion control and improved wildlife habitat along the Coughlin Park shoreline.

For more information, see the **EEA Press Release** (/news/baker-polito-administration-announces-grants-for-coastal-communities-to-combat-effects-of).

Coastal Community Resilience Projects Completed - In 2015, 10 projects were completed with Coastal Community Resilience Grants for local efforts to increase awareness of climate impacts, identify vulnerabilities, and implement measures to increase community resilience:

- Barnstable prepared an application for the National Flood Insurance Program Community Rating System and created an application template to assist other communities in applying.
- Boston hosted a design competition to generate innovative and resilient strategies for adapting buildings, neighborhoods, and infrastructure to sea level rise and extreme storm events.
- Brewster studied sand volumes and movement along the shoreline and prepared and permitted design plans for relocating vulnerable infrastructure at Breakwater Beach.
- Gloucester conducted a climate change vulnerability assessment and developed strategies to reduce risks from flooding and increased storm intensity.
- Hingham assessed the vulnerability of critical facilities, infrastructure, and natural resources to sea level rise and recommended strategies to manage future impacts.
- Oak Bluffs retrofitted three wastewater pump stations to mitigate existing flooding hazards and address future sea level rise impacts.
- Provincetown analyzed sand volumes and transport along the shoreline and developed a management plan for Provincetown Harbor that identifies potential areas for dune and beach

restoration.

- Salem redesigned a flood control project for the Rosies Pond neighborhood to account for climate projections and adapt to future storm and sea level impacts.
- Weymouth developed design plans for seawall reconstruction projects at Fore River Avenue and Fort Point Road.

Green Infrastructure for Coastal Resilience Projects Completed - In 2015, eight projects were completed with Green Infrastructure for Coastal Resilience Grants that advance the understanding and implementation of natural or nonstructural approaches to mitigating coastal erosion and flooding problems:

- Barnstable stabilized Blish Point-Millway Beach and protected public access infrastructure using sand-filled coir bags, native plantings, and send fencing.
- Chilmark completed preliminary design plans for expanding and restoring Squibnocket Town Beach.
- Duxbury Beach Reservation, Inc., restored an eroded cobble berm along a critical access road and constructed two beach grass nurseries to provide a dedicated local source of native vegetation.
- Gosnold evaluated green infrastructure alternatives for improving coastal resilience on Barges Beach and developed engineering plans for the preferred beach nourishment and dune restoration option.
- Martha's Vineyard Shellfish Group, Inc., conducted preliminary investigations into the hatchery production of ribbed mussels and tested living shoreline techniques at four pilot sites in embayments on Martha's Vineyard.
- Newbury restored dunes and public access paths using beach grass, fencing, and invasive species removal.
- Plymouth evaluated green infrastructure alternatives for improving the coastal resilience of Long Beach and developed conceptual designs for a mixed-sediment beach nourishment project.
- Scituate conducted planning and preliminary design work for a mixed-sediment beach nourishment project along Glades and Surfside Roads.

National Recognition for Progress in Adaptation - At the 2015 National Adaptation Forum in May, the American Society of Adaptation Professionals recognized CZM's **StormSmart Coasts**

program (/czm-stormsmart-coasts-program) as one of four finalists for the 2015 **Prize for Progress** (https://adaptationprofessionals.org/asap-voices/) in adaptation. CZM leads adaptation efforts nationally through technical and financial assistance with local adaptation planning and green infrastructure projects. Two examples of projects funded through these grant programs are Boston's **Living with Water design competition** (http://www.bostonlivingwithwater.org/) that solicited sea level rise adaptation solutions at the building, neighborhood, and infrastructure scale at three sites along the Boston waterfront and the Martha's Vineyard Shellfish Group's innovative green infrastructure approach to coastal resilience as highlighted in the group's short documentary, ***Living Shoreline*** (https://vimeo.com/133983022). For more information, see the **American Society of Adaptation Professionals Snapshot** (https://adaptationprofessionals.org/wp-content/uploads/2020/01/Snapshot-StormSmart-Climate-Adaptation.pdf) (PDF, 1 MB) on CZM's coastal resilience grant programs. And in November, in its **States at Risk: America's Preparedness Report Card** (http://statesatrisk.org/)—Climate Central's first-ever assessment of key threats linked to climate change and the corresponding levels of preparedness for related risks in each of the 50 states—Massachusetts was one of five states that received a grade of "A." CZM's work through its StormSmart Coasts program, information on its Massachusetts Ocean Resource Information System (MORIS) tool, projects supported by the Coastal Community Resilience Grants Program (which provides municipalities with financial and technical resources), and the *Sea Level Rise: Understanding and Applying Trends and Future Scenarios for Analysis and Planning* guidance were all identified as key actions taken by the Commonwealth to prepare for a changing climate.

Guidance on Interpreting Flood Insurance Rate Maps - CZM has developed ***Interpreting Federal Emergency Management Agency Flood Maps and Studies in the Coastal Zone*** *(/service-details/interpreting-federal-emergency-management-agency-flood-maps-and-studies-in-the)*, which provides guidance on how to use these Federal Emergency Management Agency (FEMA) tools to better understand the potential effects of flooding on buildings, properties, and the underlying natural resource areas. This information can be used by homeowners and consultants to ensure that the safest possible coastal projects are designed, as well as by public officials to successfully evaluate projects to ensure they are designed to minimize storm damage, protect public safety, and reduce the financial burden on individuals and municipalities from losses due to coastal storms.

Dam and Seawall Repair and Removal Awards - CZM assisted EEA with the continued implementation of the Dam and Seawall Repair and Removal Fund, which was established in 2013 by the Massachusetts Legislature to promote public health, public safety, and ecological restoration. A third round of applications was solicited in 2015. CZM assisted EEA in selecting 10

projects, including three coastal structure reconstruction projects in Gloucester, Hull, and Scituate, for more than $10 million in loans and grants. For more on the fund and awards, see the **EEA website** (/dam-and-seawall-repair-or-removal-program).

Assessing Public Beach Characteristics - Geoscientists at the University of Massachusetts (UMass) Amherst and the Massachusetts Geological Survey, in partnership with CZM, have been working to characterize sediment types and document current beach and dune profiles at 19 public beaches along the Massachusetts coast over the last two years. This project is establishing baseline characteristics (i.e., grain size statistics and elevation profiles) and providing data needed for evaluating shoreline management options including beach and dune nourishment. The beaches being assessed are located in Cuttyhunk, Falmouth, Hull, Marshfield, Nahant, Nantucket, Newbury, Newburyport, Oak Bluffs, Plymouth, Revere, Rockport, Salisbury, Scituate, and Westport.

Coastal Habitat

CZM Receives Grant to Monitor and Assess Climate Change Impacts to Tidal Marshes - CZM received an EPA grant to develop a program to monitor and assess climate change impacts to tidal marshes. This project will build on current work by CZM and partners that includes modeling coastal wetland response to sea level rise, with an eye toward identifying barriers to and opportunities for marsh migration and developing a network of sentinel sites to track changes in vegetation communities in the tidal marsh-upland ecotone (a transition zone between two ecosystems). The new project will expand sentinel site monitoring to include a land cover change analysis program that tracks changes in the spatial extents of tidal marsh microhabitats (e.g., vegetation communities, pannes, pools, creeks, and ditches) using automated and/or semi-automated image analysis techniques, high-resolution imagery, and LIDAR. It will also expand on-the-ground efforts to monitor biological and physical changes on the marsh interior and seaward extent at all sentinel sites over time. Together, these projects form a holistic program that will inform development, application, and monitoring of site-specific climate change adaptation strategies. Additionally, this grant provides support for a project to demonstrate a salt marsh assessment approach for Cape Cod and the Islands using the Conservation Assessment and Prioritization System (CAPS) framework developed by UMass Amherst, Massachusetts Department of Environmental Protection (MassDEP), and CZM. Visit CZM's **Conservation Assessment and Prioritization System for Coastal Wetlands web page** (/service-details/conservation-assessment-and-prioritization-system-for-coastal-wetlands) for more information on CAPS. The new climate change and CAPS projects will begin in January 2016 and run through 2017 and September 2018, respectively.

Identifying Coastal Wetlands Vulnerable to Sea Level Rise - CZM has been working with partners, including the Marine Biological Laboratory, Plum Island Ecosystems Long Term Ecological Research project, and Woods Hole Group, among others, to model coastal wetland response to different sea level rise scenarios, integrating models that incorporate coastal and estuarine processes with long-term, local data. Site-specific information and maps are being generated to identify and communicate vulnerability, risk, and impacts to Massachusetts coastal wetlands, as well as opportunities for salt marshes to migrate landward. These products will inform an effort to work with stakeholders in summer and fall 2016 to identify areas of high risk and possible adaptation strategies to better conserve and manage wetlands as sea levels rise. As part of this project, investigators will also work with regional and local groups to establish a network of long-term monitoring stations, or sentinel sites, to track the movement of plant community structure and other changes (e.g., length of time that the soils are saturated) in the salt marsh-upland transition zone. This effort will create a high resolution baseline to measure future sea level rise impacts to salt marshes. Over time, the field data will have the potential to help calibrate and verify the marsh migration models used in this project.

Wetlands Monitoring and Assessment - Data on vegetation, macroinvertebrates, and habitat characteristics were collected at 12 salt marsh sites during the summer field season. The data will be analyzed in an effort to further CAPS, a landscape-level, spatial model developed by researchers at UMass Amherst to predict ecological integrity. CZM has worked with MassDEP and UMass to refine, verify, and calibrate the model with empirical data. The **CAPS website** (http://www.umasscaps.org/) provides more information about that program. Additionally, CZM staff have been analyzing pre- and post-monitoring data for six historically restored salt marshes and will be reporting on those in spring 2016. For general wetland information, see CZM's **Coastal Wetland Monitoring and Assessment website** (/service-details/czm-coastal-habitat-program-coastal-wetland-monitoring-and-assessment).

Marine Invader Monitoring and Information Collaborative - Since 2006, CZM's Marine Invasive Monitoring and Information Collaborative (MIMIC) has served as a marine invasive species early detection and monitoring network for New England, providing not only a critical data source to coastal managers, but also educational experiences to a large public audience. In 2015, MIMIC teams were again on the prowl searching for marine invaders at floating docks and rocky shores at sites from Cape Cod to Maine. Data are collected by trained citizen scientists following protocols detailed in ***Monitoring for Marine Invasive Species: Guidance and Protocols for Volunteer Monitoring Groups*** *(/files/documents/2016/08/ob/mimic-guide-2011-web.pdf)* (PDF, 2 MB) and are available to the public through the **Massachusetts Ocean Resource Information System** (/service-details/massachusetts-ocean-resource-information-system-moris) (MORIS) online data management

and mapping tool. For more information on MIMIC, and to view monitoring protocols, identification resources, and links, see the **Aquatic Invasive Species Program website** (/marine-invasive-species-program). Thanks again to all the hardworking MIMIC volunteers and partners!

Coastal Water Quality

Coastal Pollutant Remediation Grant Awards Announced - In December, CZM awarded $400,000 in funding through the **Coastal Pollution Remediation (CPR) Grant Program** (/service-details/coastal-pollutant-remediation-cpr-grant-program) for projects to protect coastal waters in Massachusetts. The Fiscal Year 2016 winning projects are:

- Fairhaven - $16,995 to develop final design plans for stormwater treatment systems at priority locations along Sconticut Neck Road, with the ultimate goal to improve water quality and open shellfish growing areas in Little Bay and Nasketucket Bay.
- Fall River - $71,750 to purchase a boat pumpout to eliminate discharges of boat sewage into the Taunton River and Mount Hope Bay.
- Kingston - $125,000 to finalize engineering plans, obtain permits, and construct underground systems on Shore Drive to treat bacterial pollution from roadway runoff. This project is the fourth phase of a long-term effort to treat contaminated stormwater discharges, improve water quality, and expand shellfish harvesting in the Jones River Estuary and Kingston Bay.
- Medford - $42,510 to prioritize sites and develop designs for stormwater treatment systems to address roadway-related pollution to the Mystic River, an important habitat for river herring.
- Milton - $19,345 to assess the polluted stormwater runoff problem in Unquity Brook, a major freshwater tributary to Gulliver's Creek, and then prioritize sites causing pollution problems and develop initial designs for stormwater treatment options.
- Salem - $124,400 to construct rain gardens and treatment systems along Commercial Street to remove pollutants from stormwater runoff that is discharging to the North River.

These local water quality improvement projects will help protect wildlife habitat, open shellfish beds to harvesting, and reduce bacteria levels at recreational beaches. The grants are being matched by $144,627 from municipal sources, further extending the power of the grant program. For more information, see the **EEA press release** (/news/baker-polito-administration-announces-six-grants-to-coastal-communities). Since 1996, more than $9.5 million has been awarded through the CPR grant program.

Water Quality Projects Completed in Coastal Communities - In 2015, four projects were completed with **CPR grants** (/service-details/coastal-pollutant-remediation-cpr-grant-program) to protect coastal waters in Massachusetts:

- Duxbury constructed systems to intercept and treat contaminated stormwater runoff at four locations to improve water quality in the "Nook" and Kingston Bay.
- Hingham finalized designs and obtained permits for a stormwater treatment system that uses soils and plants to intercept and filter runoff to reduce sediment and bacterial contamination to Walton's Cove and Hingham Harbor.
- Kingston constructed a system to treat stormwater runoff in the Landing Road area, which is a major source of bacteria and sediment to the Jones River.
- Manchester-by-the-Sea conducted a feasibility study for using Low Impact Development (LID) elements to address runoff pollution to Sawmill Brook/Cat Brook and Manchester Harbor.

Climate Change Impacts on Stormwater Management - CZM and Horsley Witten Group, Inc., in partnership with Woods Hole Group, are wrapping up a project examining climate change impacts on stormwater management in the coastal zone. Funded jointly by CZM and MassDEP, this project examines how climate-mediated changes, such as increased storm frequency, coastal flooding, and sea level rise, will impact the ability to treat stormwater runoff. The final report, targeted for release in spring 2016, will contain a review of climate change impacts on stormwater management practices and include specific recommendations on how to select, design, operate, and maintain treatment systems to increase their resiliency in the face of these impacts—including retrofits to existing structures.

COASTSWEEP 2015 - Each September and October, thousands of volunteers throughout Massachusetts turn out for COASTSWEEP—the statewide coastal cleanup sponsored by CZM. Although final 2015 cleanup results are still pending, preliminary reports show that 2,455 volunteers cleaned more than 142 miles of coastline, river bank, marsh, seafloor, and lakeshore in Massachusetts—collecting approximately 12,522 pounds of debris from 119 sites. CZM sends out heartfelt thanks to the thousands of volunteers who turned out for COASTSWEEP, which is part of an international effort organized by Ocean Conservancy where participants from all over the world collect trash and other marine debris and record their findings. This information is used to help reduce future marine debris problems. For more on the cleanups and to learn how to get involved next year, see the **COASTSWEEP website** (/coastsweep). Also, see these blog postings by CZM: **Seeking Local Beach Cleanup Coordinators for COASTSWEEP 2015** (http://blog.mass.gov/blog/living-in-massachusetts/seeking-local-beach-cleanup-coordinators-for-coastsweep-2015/),

Calling All Treasure Hunters: Join a COASTSWEEP Cleanup This Fall (http://blog.mass.gov/blog/living-in-massachusetts/calling-all-treasure-hunters-join-a-coastsweep-cleanup-this-fall/), and **Removing Plastic from Rockport's Reefs with COASTSWEEP** (http://blog.mass.gov/blog/living-in-massachusetts/removing-plastic-from-rockports-reefs-with-coastsweep/), which features a **video of an underwater cleanup in Rockport** (https://youtu.be/ZFVR8cW_iZo) along with a **video of an October cleanup in Nahant** (https://youtu.be/yOOkW0rN9gw). Stay tuned to marine debris issues year round on COASTSWEEP's **Facebook page** (http://www.facebook.com/COASTSWEEP) or by following the **Twitter** (https://twitter.com/COASTSWEEP) or **Instagram** (https://instagram.com/coastsweep/) feeds.

Other Water Quality Program Activities - In 2015, CZM and MassDEP have been drafting new Ocean Sanctuary regulations in response to the 2008 and 2014 amendments to the Ocean Sanctuaries Act. The updated regulations describe the various activities that are prohibited and allowed in the five Massachusetts ocean sanctuaries. In particular, new language has been drafted regarding the conditions under which a new or modified discharge from a wastewater treatment plant would be allowed in an ocean sanctuary. Also, in 2015, CZM worked with MassDEP and EPA to discuss efforts by MassPort to reduce known sources of bacteria in the stormwater at Logan Airport. The goal is to reduce the bacterial load to Boston Harbor through all of Massport's Logan Airport stormwater discharges, especially those adjacent to shellfishing areas.

Data and Information Management

Massachusetts Shoreline Characterization - CZM developed a GIS layer that documents the occurrence and distribution of coastal landforms (e.g., dune, beach, and bank), wetland and upland habitats (e.g., forest, salt marsh, and rocky intertidal shore), developed lands (e.g., residential, commercial, and industrial), and shore parallel coastal engineering structures (e.g., bulkheads/seawalls and revetments). The data encompass 57 Massachusetts communities and are available through the **MORIS** (/service-details/massachusetts-ocean-resource-information-system-moris) online data management and mapping tool. The results of the characterization provide a baseline from which to monitor and identify landscape-level trends and patterns for evaluating adaptation and hazards mitigation strategies for a particular location or region.

Spatial Data for Volume 2 of 2015 Ocean Plan Now in MORIS - The spatial data presented in the Baseline Assessment Five-Year Update in Volume 2 of the **2015 Massachusetts Ocean Management Plan** (/service-details/2015-massachusetts-ocean-management-plan) are now available in **MORIS** (/service-details/massachusetts-ocean-resource-information-system-moris), CZM's online mapping tool. In MORIS, users can interactively view various data layers over different backdrops (aerial

photographs, political boundaries, bathymetry, or other data including Google basemaps), create and share maps, and download the data for use in GIS. A stand-alone version of MORIS that contains the data in the ocean plan can be viewed on the **MORIS: Massachusetts Ocean Management Plan Data web page** (http://maps.massgis.state.ma.us/map_ol/mass_ocean_plan.php).

Coastal and Marine Geology Videos and Photos - USGS in partnership with CZM has created a **Coastal and Marine Geology Video and Photo Portal** (http://dx.doi.org/10.5066/F7JH3J7N) that allows users to view video and photography of the seafloor off of coastal California and Massachusetts, and aerial imagery of the coastline along segments of the Gulf of Mexico and mid-Atlantic coasts. These data were collected as part of several USGS Coastal and Marine Geology Program Seafloor Mapping projects and Hurricane and Extreme Storm research.

Project/Federal Consistency Review

Salem Port Expansion-Commercial Marina and Dredging - CZM reviewed the city of Salem's proposal to develop a commercial marina for fishing vessels at 10 Blamey Street. The project includes the dredging of 13,565 cubic yards of material on the inside of the embayment to achieve a depth of -9 feet Mean Low Water. In addition, berthing inside the embayment will be provided for ten 40-foot-long fishing vessels. A 6,165-square-foot floating dock system supported by 29 moorings with a 50-foot aluminum access ramp will be constructed. This project plays an important role in the city of Salem's overall port expansion plan. CZM issued a federal consistency concurrence in December 2015.

Dredging and Beach Nourishment Projects - In 2015, CZM reviewed several dredging and/or beach nourishment proposals submitted for the Massachusetts Environmental Policy Act (MEPA) office review. These projects include the town of Edgartown Fuller Street Beach dune and beach restoration project, the Plymouth Long Beach cobble nourishment project in Plymouth, and the Squibnocket Beach restoration project in Chilmark. In addition to state-level project review, CZM performs **federal consistency review** (/federal-consistency-review-program)—the review of federal projects (including those requiring federal permits or receiving federal money) to ensure that they meet state standards. CZM issued federal consistency concurrences on projects including the Menemsha Creek federal navigation and beach nourishment project in Chilmark and Aquinnah, USACE maintenance dredging of the Cape Cod Canal with beach nourishment at Town Neck Beach in Sandwich, the maintenance and repair of the east and west jetties of the Nantucket Harbor federal navigation project, the USACE Bird Island restoration project in Marion, the Nantucket Harbor channel federal navigation dredging project, the town of Mashpee's 10-year comprehensive dredging permit, and the Quincy Shipyard dredging project. CZM also issued a

federal consistency concurrence for the Algonquin Gas Transmission LLC project to construct a new 1.2-mile, 16-inch diameter natural gas pipeline from the existing HubLine pipeline in Beverly Harbor to a new metering and regulating station in support of the Salem Harbor Station, currently under construction. The project included the use of horizontal directional drilling to place the pipeline under Beverly Harbor. CZM concurrence was also issued for the City of Boston Long Island Bridge Demolition and Utility Replacement Project, which included the dredging of an approximately 3,300-foot-long submarine trench to allow for the installation of new utility lines between Moon and Long Islands in Boston Harbor. CZM continues its participation on the technical advisory committee for the USACE Boston Harbor Deep Draft Navigational Improvement Project, which proposes port improvements including access to the Conley Terminal for container ships by deepening the harbor's existing 40-foot channels, turning basin, and anchorage. Massport would also deepen the berths in the Conley Terminal, the 40-foot lane of the Main Ship Channel above the Reserved Channel and below the Ted Williams Tunnel, Massport's Medford Street Terminal on the Mystic River, and the existing 38-foot channel in the Chelsea River.

EPA NPDES Permits - As part of CZM's federal consistency review of National Pollutant Discharge Elimination System (NPDES) permits, concurrences were issued for six permits/renewals/modifications, including the city of Taunton Wastewater Treatment Plant, the town of Salisbury Wastewater Treatment Facility, General Electric Aviation in Lynn, the Sterling Suffolk Racecourse in Boston, the South Essex Sewerage District in Salem, and the Sandwich State Fish hatchery in Sandwich.

Rail Trail Project - CZM worked closely with the Massachusetts Department of Transportation (MassDOT) to review the Cape Cod Rail Trail Extension between Dennis and Yarmouth for consistency with CZM's enforceable policies. This project extended the existing trail head in Dennis to Peter Homer Park in Yarmouth, a total of 3.7 miles. Improvements to the channel and existing tidal restriction were made at the Bass River crossing.

Federal Agency Actions - CZM worked with the United States Coast Guard (USCG) to review and issue concurrence for the Facilities Design and Construction Center located in Wood Hole. This project includes the replacement of the existing 5,000-square-foot Aids to Navigation Team and Patrol Boat building with a new 17,000-square-foot multi-mission building at the USCG station in Woods Hole.

U.S. Army Corps of Engineers General Permit for Massachusetts - In January 2015, CZM issued a federal consistency concurrence for the revised the U.S. Army Corps of Engineers (USACE) Massachusetts General Permit (GP). The concurrence was the culmination of work that began in

2011 to update the GP, last authorized in 2010. The 2015 permit defines 23 activities and specifies eligibility standards under Self Verification, Pre-Construction Notification, and Individual Permit categories. CZM worked closely with the MassDEP, the Massachusetts Division of Marine Fisheries, and the National Marine Fisheries Services in the review of the permit standards. The GP is designed to protect the aquatic environment and the public interest while authorizing activities that have no more than minimal individual and cumulative adverse effects on the aquatic environment.

Port and Harbor Planning

New Bedford Harbor Dredging Project - One of CZM highlights in 2015 has been the successful completion of the New Bedford Harbor Interim Federal Channel Dredging Project (project). CZM undertook this project at the request of EEA and worked in close cooperation with the city of New Bedford's Harbor Development Commission to support and improve the existing and potential future cargo shipping opportunities in New Bedford Harbor. The project included the planning, design, implementation, and oversight of navigational dredging activities within the Federal Navigational Channel to a target depth of -29 feet, and in areas adjacent to the New Bedford State Pier to -30 feet. Since most of the dredge material was unsuitable for ocean disposal, the project required disposal of contaminated dredge material into Confined Aquatic Disposal facilities within the harbor. During the course of the project, more than 117,000 cubic yards of material was removed from a dredge area approximately 350 feet wide and well over three miles long, both inside and outside the hurricane barrier. The presence of large quantities of discarded steel cable in the channel made the project particularly challenging. Prior to dredging, the shallowest elevation within the Federal Channel was approximately -23.25 feet. Following project completion the shallowest elevation in the Federal Channel is now approximately -28.9 feet. This dredging project now allows vessels with deeper drafts to utilize the harbor, and significantly increases the economic opportunities for cargo transportation within New Bedford Harbor, one of the Commonwealth's most vibrant Designated Port Areas (DPA).

Chelsea Creek Designated Port Area Boundary Review - At the request of the City of Chelsea, CZM performed a Boundary Review for a portion of the Chelsea Creek DPA. The purpose of the boundary review was to determine whether the DPA boundary should remain as it is currently established or whether it should be modified in accordance with criteria governing the suitability of contiguous lands and waters to accommodate water-dependent industrial use. Under the DPA regulations at **301 CMR 25.00** (/files/documents/2016/08/wl/301-cmr-25.pdf) (PDF, 87 KB), CZM is responsible for mapping, interpreting, and periodic review of DPA boundaries. The *Boundary*

Review of the Chelsea Creek Designated Port Area, Chelsea MA was released for public comment in November. A final Designation Decision and Map is expected in February 2016.

New Seaport Economic Council Announced - In August, Governor Charlie Baker and Lieutenant Governor Karen Polito announced the signing of **Executive Order 564** (/executive-orders/no-564-establishing-the-seaport-economic-council), which transforms the former Seaport Advisory Council into a new Seaport Economic Council to be chaired by the Lieutenant Governor and administered by the Executive Office of Housing and Economic Development with support from EEA. The Council will assist the Administration in prioritizing investments and innovation in creating "blue" or ocean-based jobs, local maritime planning efforts, partnerships with public education institutions, and coastal infrastructure projects that meet standards of resilience and sustainability. The Council is represented by senior officials from EEA—Assistant Secretary for the Environment Dan Sieger and CZM Director Bruce Carlisle—as well as a representative from the Department of Transportation, municipal leaders, representatives from coastal communities, and trade associations for the maritime economy. A competitive grant program will focus on the five priority areas of innovation, public education, economic development planning, maritime sector strategy, and investments in coastal infrastructure. Applications will be accepted on a rolling basis. For more information see the **Seaport Economic Council** (/seaport-economic-council-grant-program) website.

Local Planning Efforts - A number of communities have been working on existing or new harbor plans in 2015. On the North Shore, CZM issued the Designation Decision for the Beverly Harbor Designated Port Area in April, concluding that the Beverly DPA does not meet the suitability requirements for water-dependent industrial use pursuant to **301 CMR 25.00** (/files/documents/2016/08/wl/301-cmr-25.pdf) (PDF, 87 KB). Consequently, the area is no longer subject to the DPA requirements of Chapter 91 specific to the protection and promotion of water-dependent industries. For more on the Beverly decision, see the **designation decision** (/files/documents/2016/08/xk/beverly-dpa-designation-decision-2015.pdf) (PDF, 201 KB). For more information on DPAs, see CZM's **Designated Port Areas website** (/service-details/czm-port-and-harbor-planning-program-designated-port-areas). In Boston Harbor, CZM also continued to provide technical assistance to the cities of Boston and Chelsea on issues relating to harbor planning and DPA planning. In Boston Harbor, the city of Boston continues the process of developing a Municipal Harbor Plan (MHP) for the Downtown Waterfront District from Long Wharf to the Moakley Bridge. A spring 2016 MHP submittal to EEA/CZM is anticipated. On the South Shore, CZM participated in ongoing interagency consultation meetings, including MEPA project filing review, with representatives from the town of Plymouth regarding options for the Water Street waterfront redevelopment project. Issues and options discussed included public and

pedestrian access to the waterfront, vehicle access to the waterfront and parking, shoreside construction alternatives and potential impacts to adjacent resource areas, need for potential mitigation for resource area impacts, and implications for climate change and anticipated sea level rise. CZM also provided preliminary guidance to the town of Plymouth regarding considerations for a potential Harbor Management Plan. In the Cape Cod and Islands Region, Edgartown continues to work on a Municipal Harbor Plan renewal that will amend and update the original 1997 Edgartown MHP. The new MHP will continue to serve as a planning tool to provide guidance to MassDEP with respect to Chapter 91 licensing of waterfront properties, and to help coordinate the efforts and actions of local committees and departments. In the South Coast Region, CZM participated on the New Bedford Waterfront Stakeholders Group, which helped guide efforts to develop a Waterfront Land Use Framework and a Draft Waterfront Redevelopment Plan. CZM also informed both New Bedford and Fairhaven on the status of their existing State-Approved MHP, which is scheduled to expire in June of 2016. CZM anticipates that both municipalities will begin efforts in the coming year to renew their joint MHP. CZM also participated on New Bedford/Fairhaven Route 6 Bridge Study Advisory Group, which will help guide MassDOT future planning and design efforts on the type of bridge that would be most suitable to replace the existing structure and also maximize the harbor development opportunities in the upper portion of New Bedford Harbor. Finally, CZM met with the Mattapoisett Marine Advisory Board to discuss the differences between a state-approved MHP and other types of harbor planning efforts. For more information about CZM's harbor planning efforts, contact **CZM's Regional Coordinators** (/regional-program).

Emergency Management

Storm Team Activations for 2015 - From January 27-28, members of the State Coastal Storm Damage Assessment Team (Storm Team) evaluated damage from the blizzard of 2015 on the east-, north-, and northeast-facing shorelines of the Massachusetts coast. The Storm Team is led by CZM and is comprised of trained personnel from state and federal agencies and local government. CZM staff were stationed in the Massachusetts Emergency Management Agency (MEMA) State Emergency Operations Center throughout the storm to coordinate Storm Team efforts and relay reports directly to emergency management personnel. Storm Team members observed widespread beach, dune, and bank erosion, flooding, and overwash of dunes and seawalls. Erosion from the storm undermined houses, roads, seawalls, revetments, public parking areas, and utilities. Specific reports included extensive flooding of coastal neighborhoods, significant overwash of seawalls and other shoreline stabilization structures, damaged pavement on coastal roads and parking areas, exposed utility lines from erosion beneath damaged

pavement, destroyed decks and beach access stairs, severe overwash of barrier beaches filling in tidal creeks and marshes, and leaning utility poles. Houses appeared to be significantly damaged as a result of coastal erosion and flooding in Hull, Scituate, Marshfield, Duxbury, Sandwich, and Nantucket. More than 175 detailed reports were entered into the StormReporter—an online database that is used by MEMA in storm recovery efforts, by the National Weather Service to fine tune forecasting of future events, and others for floodplain management and planning—which helped inform decisions regarding state and federal resources needed to assist communities. The reports were also used by the National Weather Service to refine their forecasts during the event. On February 15 and 16, 12 members of the Storm Team were activated to assess damage from a coastal storm in communities from Salisbury to Cape Ann and from Hull to Plymouth, and in Sandwich and Nantucket. Widespread beach, dune, and bank erosion, as well as overwash of seawalls and low-lying dunes were observed in those areas. In Hull, Scituate, Marshfield, and Nantucket, overwash of seawalls resulted in water flowing around homes and flooding of coastal streets and parking areas. All observations and photographs were input into StormReporter.

Massachusetts Receives Major Disaster Declaration for Winter Storm Juno - In April, FEMA announced that federal disaster aid had been made available to the Commonwealth of Massachusetts to supplement Commonwealth, tribal, and local recovery efforts in the areas affected by a severe winter storm, snowstorm, and flooding during the period of January 26-28. CZM assisted with the preliminary damage assessments led by FEMA and MEMA that provided the detail necessary for Governor Baker to request the Federal Disaster Declaration.

Communications

CZ-Tips - These CZM web pages help people get to, protect, and enjoy the Commonwealth's coast. Below are summaries of new tips developed in 2015.

- **CZ-Tip: Repurposing with a Purpose** (/service-details/cz-tip-repurposing-with-a-purpose) - This tip has ideas for reusing items that would otherwise be thrown away or recycled.
- **CZ-Tip: Scuba Diving in Massachusetts** (/service-details/cz-tip-scuba-diving-in-massachusetts) - Learn about how to get started with scuba diving and some great dive sites in Massachusetts and with this tip.
- **CZ-Tip: Seven Public Places Steeped in History in Coastal Massachusetts** (/service-details/cz-tip-seven-public-places-steeped-in-history-in-coastal-massachusetts) - Learn about historical sites along the Massachusetts coast.

- **CZ-Tip: Summer Evenings of Sunsets, Sand Sculpting, Sails, and More** (/service-details/cz-tip-summer-evenings-of-sunsets-sand-sculpting-sails-and-more) - See this CZ-Tip for ideas on enjoying the summer seaside as the sun goes down.

Underwater Archaeological Resources

Underwater Archaeology Presentations - In February, the Peabody West Branch Library presented *Underwater Archaeology of Massachusetts,* a talk by Victor Mastone, Director of the **Massachusetts Board of Underwater Archaeological Resources** (/orgs/massachusetts-board-of-underwater-archaeological-resources) (BUAR). This talk covered the diverse submerged heritage of Massachusetts and the state agency that protects it. In September, Director Mastone presented the lecture *Drift Wood, Stone Circles, 3 Canoes, a Lost Lighthouse and a Piano* at Barnstable Senior Center in Hyannis, and in November made several presentations on the latest BUAR efforts, including *Hidden History: Underwater Archaeology of Massachusetts* to the Friends of Dighton Rock Museum at Dighton Rock State Park in Berkley and *Finding the First Minot's Ledge Lighthouse* to the Boston Navigators Club as part of the Club's Annual Fall Meeting and to the Massasoit Chapter of the Massachusetts Archaeological Society at the Robbins Museum in Middleborough.

Massachusetts Archaeology Month - In October, in celebration of Massachusetts Archaeology Month, BUAR participated in the Archaeological Institute of America's Archaeology Fair at the Boston Museum of Science. The fair was directed to school groups on the first day and families/general public on the second day. BUAR activities include participation in a mock "dig" of a shipwreck and exhibits. At the Fair, BUAR Director Vic Mastone was assisted by BUAR member Marcie Bilinski and volunteers Mark Agostini, Catlyn Gibbons, Neil Glickstein, Annika Heinold, and Catie Murphy. Approximately 3,600 visitors participated in the fair.

Training Citizen Scientists - In July, BUAR and the Seafaring Education and Maritime Archaeology Heritage Program co-lead a summer institute (workshop) through Salem State University, which was essentially an intensive one-week archaeological field school. In cooperation with The Trustees of the Reservation's Crane Estate, they investigated the site of the schooner *Ada K. Damon* at Steep Hill Beach. The 15 participants received three undergraduate credit hours from Salem State University and a certificate from the Nautical Archaeology Society. This summer institute is intended to be a starting point for training citizen scientist volunteers.

Field Investigations - In 2015, BUAR Director Vic Mastone undertook preliminary field investigations on several undocumented shoreline shipwreck sites in Hull, Ipswich, Manchester-

by-the-Sea, Newbury, and Salisbury. Some sites were just portions of ship's hull or exposed for only a short time. In Hull, a previously unknown shipwreck appeared on Nantasket Beach in April. Director Mastone and intern Leland Crawford were assisted by Victoria Stevens (Hull Lifesaving Museum) and volunteers (including USCG personnel) and examined the site before it was reburied by storm action. In May, Vic and intern Leland Crawford were assisted by BUAR member Graham McKay (Lowell's Boat Shop) and his apprentices, and BUAR permittee Victor Ricardo documented a hull fragment at Salisbury Beach that was subsequently reburied and then became exposed in the fall. In June, Vic and participants from Phillips (Andover) Academy's Pecos Pathway Program undertook archaeological testing of the site of an unknown shipwreck in Manchester. For students from Pecos, New Mexico, this was their first experience with the ocean. Volunteer archaeological field technicians Annika Heinold, Catie McCarthy, Elizabeth Kruger, Greg Lott, and Neil Glickstein assisted in the continued documentation of the *Ada K. Damon* shipwreck in Ipswich. They also investigated a shipwreck at the Parker River National Wildlife Refuge in Newbury, which confirmed the identity of the wreck to be the remains of the schooner *Ingomar*.

Archaeological Interns - Assistance provided by interns was significant and very helpful to BUAR in 2015. Leland Crawford continued as an unpaid research fellow until September when he left to complete his graduate studies at the University of Southern Denmark. Annika Heinold has been serving as an unpaid research assistant working on developing a site plan. Dr. Naomi Riddiford (Royal Halloway, University of London) began as a new volunteer in the office. She specializes in paleo-environmental archaeology and pollen analysis. Thank you all for your assistance!

CZM Regional Offices

CZM works closely with communities to support local coastal management—an effort led by CZM's **Regional Coordinators** (/regional-program), who serve as liaisons between federal and state programs and municipal authorities, coordinate regional initiatives, perform federal consistency review, and provide technical assistance. CZM's regions are North Shore, Boston Harbor, South Shore, Cape Cod and Islands, and South Coastal. The 2015 accomplishments for each region are provided below.

North Shore (Salisbury to Revere) - CZM continued to provide direct technical assistance to communities on the North Shore on a variety of issues, particularly in the areas of port and resiliency planning. Coastal erosion, coastal redevelopment, and preparation for climate change are particular issues of concern for North Shore communities, and CZM continues to provide technical assistance on sea level rise adaptation issues as these communities advance their

planning for climate change. CZM also coordinated with the communities of Essex, Gloucester, Lynn, Manchester-by-the-Sea, Salem, and Swampscott on six Coastal Community Resilience Grants, and the communities of Gloucester, Newbury, and Salem on three Green Infrastructure for Coastal Resilience Grants. CZM was particularly active in 2015 in working with Great Marsh communities and state and nonprofit partners in the Great Marsh Resiliency Partnership to provide continued support for preparedness planning in this region of the North Shore, with funding from both the Hurricane Sandy Relief grant program and CZM's Coastal Resilience grants. In November, CZM once again coordinated with Great Marsh Coalition partners to present the fourth annual Great Marsh Symposium, *Great Marsh Communities in Action,* at Woodman's of Essex, featuring case studies of ongoing resiliency planning work in the region, and provided an opportunity for participants to engage in this effort. This full-day workshop provided an opportunity for more than 130 citizens and local and state decision makers to discuss the ongoing efforts to understand the impacts of climate change on the Great Marsh. In 2015, CZM also worked with a number of North Shore communities to implement an assortment of projects funded by CZM's Coastal Community Resilience and Green Infrastructure for Coastal Resilience grant programs. CZM regional staff continues to coordinate the popular North Shore Regional Conservation Commission Network and listserv, linking more than 50 local community staff and commission members to one another and providing a direct method of providing relevant information to coastal municipalities.

Boston Harbor (Winthrop to Weymouth) - CZM provided oversight and management for the CZM/MassBays Tide Gate Inventory and Assessment project, which was funded by a National Oceanic and Atmospheric Administration (NOAA) Project of Special Merit grant. The project collected data from existing reports, inventories, operation and management plans, and municipal staff regarding tide gates. The existing data along with that resulting from field assessments will be entered into a web-based information portal. The portal will serve as a resource as state and local partners plan for sea level rise impacts, restoration, and maintenance of these critical structures. The final products will be available in the spring of 2016. CZM has been an active member of the Boston Harbor Dredge Rock Reuse Working Group, which was formed to identify opportunities to reuse the rock that will be taken out of the harbor during the dredging project. CZM coordinated with the cities of Boston, Chelsea, Quincy, Weymouth, and Winthrop on six Coastal Community Resilience Grants, and Winthrop on one Green Infrastructure for Coastal Resilience Grant. CZM also continued to provide technical assistance to the cities of Boston and Chelsea on issues relating to harbor planning and DPA planning, including the development of the city of Boston's Downtown Waterfront Municipal Harbor Plan. CZM continued to provide support for the Fort Point Channel Operations Board, on which CZM represents the Secretary of EEA. The

Operations Board had another successful round of Watersheet Activation Grants in 2015. These grants are funded with monies required by MassDEP in the Chapter 91 License for Atlantic Wharf along the Fort Point Channel. Another grant round is anticipated for 2016. CZM also participated in the city of Boston's Research Advisory Group (BRAG), which is part of the Climate Ready Boston project. The BRAG will inform the development of a vulnerability assessment for the city. This project was partially funded through CZM's Coastal Community Resilience grant program.

South Shore (Hingham to Plymouth) - CZM provided technical, grant writing, monitoring, and coordination assistance to a number of regionally significant wetland restoration, stewardship, and shoreline protection projects on the South Shore. These efforts included: assisting the town of Scituate and project partners with finalizing the consultant contract for the Bound Brook Diadromous Fish Restoration Initiative and participating in project management team meetings to guide the final phase of the design and permitting work; assisting with the completion of CPR-funded stormwater implementation work in Hingham; construction of Phase III stormwater mitigation in the town of Duxbury and Phase III of the Jones River Estuary Design and Implementation project in the town of Kingston; assisting with Climate Change Vulnerability, Risk Assessment, and Adaptation Study in the town of Hingham and the North Scituate Beach Nourishment project in Scituate funded by Coastal Community Resilience and Green Infrastructure for Coastal Resilience grants. CZM coordinated with the communities of Duxbury, Hingham, Hull, and Scituate on four Coastal Community Resilience Grants, and the communities of Plymouth and Scituate on three Green Infrastructure for Coastal Resilience Grants. CZM partnered with educators from the Marshfield Furnace Brook Middle School and the Coastal Advisory Committee to develop and present the second annual innovative Climate Change and Sea Level Rise Symposium for Marshfield 8th grade students that provided an overview of the science of climate change, management options to address potential impacts, and a series of practical exercises to identify and prioritize mitigation, protection, and adaptation options for existing and model communities. CZM continued to partner with the National Weather Service sponsored wave run-up and flooding evaluation initiative by installing high resolution water level data recorders to document wave-associated flooding at a pilot project area in Scituate, which has been used to refine flooding models and will be used to improve forecast abilities. CZM continued ongoing assistance to the Hull Conservation Commission with beach profiling at Nantasket Beach. CZM continued partnering with the Massachusetts Bays National Estuary Program, MassDEP, and Conservation Agents from the towns of Norwell, Hull, and Weymouth to implement and facilitate the South Shore Conservation Commission Network. A major initiative for the Network was to convene a planning group to coordinate the South Shore Climate Change and Sea Level Rise Symposium, which will be held in spring of 2016.

Cape Cod and Islands (Bourne to Provincetown, Martha's Vineyard, Nantucket, and Gosnold) - CZM worked closely with many of the 23 communities within the region, providing direct technical assistance on a variety of coastal issues, including coastal erosion and beach management, water quality monitoring, stormwater management, harbor planning, and dredging. CZM provided technical assistance and resources to help communities understand the impacts from coastal flooding and implement measures to improve their coastal resilience. CZM assisted the towns of Brewster, Chilmark, Dennis, Edgartown, Falmouth, Nantucket, Oak Bluffs, Provincetown, and Sandwich in identifying specific projects and applying for and securing grant funds from CZM's Coastal Community Resilience and Green Infrastructure for Coastal Resilience grant programs. CZM oversaw 12 projects on the Cape and Islands funded through these grants, which will be completed by June 2016. CZM worked closely with Conservation Commissions throughout the region and continued to help coordinate the Cape and Islands Conservation Commission Network. In addition, CZM provided project-specific technical assistance to Conservation Commissions in the towns of Brewster, Dennis, Edgartown, Gosnold, Harwich, Nantucket, Oak Bluffs, Provincetown, and Tisbury. CZM assisted in planning and coordinating the 2015 Cape Coastal Conference in Barnstable. Finally, CZM continues to serve on various boards and committees, including the Barnstable County Dredge Advisory Board, Pleasant Bay Coastal Resource Workgroup, and as co-chair the Barnstable County Coastal Resource Committee.

South Coastal (Wareham to Seekonk) - CZM worked closely with both the Buzzards Bay and Narragansett Bay National Estuary Programs (NEP), participating on review and selection committees for multiple small grant programs for both NEPs, on management committees, in the selection process of new program staff, and with coordination on broad NEP priorities and projects. CZM worked closely with the Department of Conservation and Recreation (DCR) and the Massachusetts Division of Fisheries and Wildlife to complete the final designs and bid documents of the Bird Island Roseate Tern Restoration Project, assisting with obtaining final approvals for the project from the town of Marion at their annual town meeting. CZM is currently working with Mattapoisett on management strategies for small private piers, which included a survey of existing piers and selected coastal structures in the town. CZM provided assistance to the communities of Mattapoisett, New Bedford, Wareham, and Westport for grants awarded through CZM's Coastal Community Resilience grant program. CZM provided technical assistance to Westport officials and the Buzzards Bay Coalition on coastal erosion along East Beach and its potential relationship to the Gooseberry Island Causeway. CZM provided technical assistance to Mass Clean Energy Center on their Power Plant Reuse Study for the town of Somerset. Finally, CZM provided technical assistance to towns, groups, and individuals on a range of projects and issues including federal

consistency permitting, hazard mitigation planning, public access, marina management, barrier beach identification and management, and other coastal issues.

National Estuary Programs

CZM hosts and administers two National Estuary Programs—the **Buzzards Bay National Estuary Program** (http://www.buzzardsbay.org/) and the **Massachusetts Bays National Estuary Program** (/orgs/massbays-national-estuary-program) (MassBays). The Buzzards Bay NEP works to protect and restore water quality and living resources in Buzzards Bay and its watershed. MassBays works to protect and enhance the coastal health and heritage of Massachusetts and Cape Cod Bays. Each program's highlights from 2015 are included below.

Buzzards Bay National Estuary Program

Buzzards Bay Municipal Grant Funding - On November 20, the Buzzards Bay NEP awarded $147,000 to four towns for land and habitat protection through its municipal grant program. These grants, which are funded by EPA and administered by CZM through the Buzzards Bay NEP, will help the towns protect important habitat and drinking water resources.

- Town of Dartmouth - $10,000 to work with the Dartmouth Natural Resources Trust and the Buzzards Bay Coalition to conduct a site survey, prepare a plan, and complete an appraisal on a 107-acre property owned by the Paskamansett Beagle Club in Dartmouth.
- Town of Mattapoisett - $45,000 to acquire and permanently protect a 25.8-acre property in the Mattapoisett River Valley known as Tinkham Bog Woods. The town is collaborating with the Buzzards Bay Coalition on this project.
- Town of Mattapoisett - $5,000 to perform a real estate appraisal on properties totaling 143-acres in Rochester, Mattapoisett, and Acushnet that are mostly in the Mattapoisett River aquifer. The town will use the real estate appraisal, and with its partner the Buzzards Bay Coalition, will work with the landowner to permanently protect the property.
- Town of Rochester - $42,000 for the Haskell Woods Land Preservation Project. In partnership with the Rochester Land Trust (RLT), the town will purchase and permanently protect land that will serve as a critical link to existing trails located on adjacent RLT and town-owned lands.
- Town of Wareham - $45,000 to work with the Buzzards Bay Coalition to acquire and permanently protect 51 acres of highly developable forestland in Wareham, west of the Fearing

Hill conservation area.

For additional information, see the **EEA press release** (/news/state-awards-land-and-habitat-protection-grants-to-south-coast-communities).

Land Protection Grant to Mattapoisett - In July, the Buzzards Bay NEP awarded $40,000 to the town of Mattapoisett to help the water department purchase and protect nearly 22 acres of land near one of the town's drinking water supply wells. The grant, which is funded by EPA and administered by CZM through the Buzzards Bay NEP, will help the town protect its drinking water supply and conserve open space. The property also contains Natural Heritage and Endangered Species Program critical natural landscapes and habitat for rare and endangered species, as well as 3,710 feet of direct frontage on the Mattapoisett River that includes important wetland and forest habitat. The Mattapoisett River has the second largest river herring population in Buzzards Bay. For details, see the **EEA press release** (/news/baker-polito-administration-announces-40000-for-land-protection-in-mattapoisett).

Joe Costa Receives Awards - On April 22, the New England Office of EPA presented its **2015 Environmental Merit Awards** (https://www.epa.gov/environmental-merit-awards-new-england/2015-environmental-merit-award-recipients). Along with dozens of other awardees, Joe Costa, Executive Director of the Buzzards Bay NEP, Tom Borden (Program Director of the Narragansett Bay Estuary Program), and Heather Radcliffe (Project Officer for the New England Interstate Water Pollution Control Commission) were recognized for their dedicated and efficient collaboration to launch EPA's Southeast New England Coastal Watershed Restoration Program. The program's goal is to facilitate the collaboration of public and private groups to protect, enhance, and restore southeast New England watersheds. Part of a broader EPA effort to address common water quality problems in the region, the program has resulted in the funding of 12 projects at $1.5 million. These projects will reduce nutrient pollution from fertilizers, septic systems, and other sources to both fresh and saltwater systems. That same month, Joe received the Buzzards Bay Coalition's Guardian Award at their 27th Annual Meeting. The honor was for both establishing the Coalition's award-winning Baywatchers water quality program, which has tracked the Bay's health for the past 24 years, and for his work the past year in helping the Coalition reorganize and consolidate the data into a unified, structured database for use by managers and researchers studying water quality trends in Buzzards Bay embayments.

SNEP Grants to Restore Water Quality in Southern New England - In the fall of 2015, the Buzzards Bay NEP announced the availability of up to $900,000 in grants to help improve water

quality in Buzzards Bay and its watershed as part of a broader EPA effort to address common water quality problems in the region under the Southern New England Program (SNEP) for coastal watershed restoration. This was the second year of funding and follows last year's award of $730,000 in grants to municipalities, nonprofits, and other groups. These grants are administered through the Buzzards Bay NEP, who assisted EPA in administering and disbursing this year's funds for projects within the Buzzards Bay watershed. This year's grants are expected to be announced in January.

Massachusetts Estuaries Project - The Buzzards Bay NEP continues to provide technical support to MassDEP in the review of Massachusetts Estuaries Project Total Maximum Daily Load reports and the data used in these reports.

Technical Assistance - The Buzzards Bay NEP continued to assist municipalities and other partners with development of local regulatory protection strategies, review of local projects, and design of stormwater treatment systems. The NEP provided hundreds of map products and other technical support to the Buzzards Bay Coalition and area land trusts in their efforts to protect important habitat and open space in Buzzards Bay, including help with the preparation of grant applications and materials for education and outreach. The Buzzards Bay NEP has also been working with area scientists to consolidate and summarize water quality, climate, and shellfish closure and catch statistics to be used in water quality and climate studies.

Stormwater Collaborative - During the summer, the Buzzards Bay NEP worked with the Buzzards Bay Action Committee and five Buzzards Bay municipalities to develop a grant proposal that was successfully funded with a $200,000 EPA Healthy Communities grant this fall. The Stormwater Collaborative communities (Dartmouth, Fairhaven, Acushnet, Mattapoisett, and Wareham) will map stormwater networks and monitor stormwater discharges contributing to shellfish bed closures and nutrient impairments in receiving waters. The work will involve converting plans and field surveys to a GIS stormwater database and collecting stormwater samples. The Buzzards Bay NEP is managing the GIS and water quality data and providing other technical services to the communities. The data will be used to identify potential illicit discharges to stormwater networks and to prioritize stormwater discharges for the design and construction of stormwater treatment systems. There will also be a citizen-science component using a smart phone application to help document and report stormwater collection system problems.

Massachusetts Bays National Estuary Program

Comprehensive Management Plan - In April, MassBays released a public review draft of its **Comprehensive Conservation and Management Plan** (/service-details/massbays-comprehensive-conservation-and-management-plan) (CCMP), developed in accordance with the Clean Water Act, Section 320. The goals, strategies, actions, and implementation timelines articulated in the final CCMP (due in 2016) will guide MassBays' contribution to and support of a region-wide, multi-jurisdictional effort to improve conditions and monitoring in Massachusetts Bay and Cape Cod Bay.

2015 State of the Bays Symposium - In April, MassBays hosted 100 attendees at the **2015 State of the Bays Symposium** (/service-details/massbays-state-of-the-bays), which featured expert panels describing conditions and trends in human use, weather and climate, habitat, wildlife, and water quality in Massachusetts and Cape Cod Bays. The Symposium Proceedings, available in two formats, present graphics and summaries from the presentations and identify future data needs.

2014 MassBays Annual Report - In October, the MassBays released the ***2014 MassBays Annual Report*** (/files/documents/2016/09/np/massbays-annual-report-2014.pdf) (PDF, 2 MB), which highlights accomplishments in the regions and new habitat assessment and protection tools for resource managers, including ***Coastal Stormwater Management Through Green Infrastructure: A Handbook for Municipalities*** (/files/documents/2016/08/tq/massbays-green-infrastructure-handbook.pdf) (PDF, 12 MB), a map-based **Inventory of Plans and Assessments** (/service-details/massbays-inventory-of-plans-and-assessments), and the **Estuary Delineation and Assessment Viewer** (/service-details/massbays-estuary-delineation-and-assessment). MassBays Regional Coordinators continued to provide critical interagency coordination and recruited hundreds of volunteers to conduct surveys and monitoring, manage stormwater, and provide outreach and education—leading to restoration and enhancement of nearly 500 acres of estuarine habitat.

MassBays Metro Boston Regional Coordinator - A new Regional Service Provider for **Metropolitan Boston** (/service-details/massbays-metro-boston-region) was selected through a competitive request for responses, and Northeastern University's **Marine Science Center** (http://www.northeastern.edu/cos/marinescience/) was selected to serve communities from Saugus to Hull. An early activity was re-convening the Boston Harbor Habitat Coalition.

Healthy Estuaries Grant Program - In November, MassBays re-launched its small-grant program as the **Healthy Estuaries Grant Program** (/massbays-healthy-estuaries-grants), focusing on local efforts to assess, restore, and protect habitat and improve water quality in the **47 embayments** (/service-details/massbays-estuary-delineation-and-assessment) of Massachusetts Bay and Cape Cod Bay.

Formerly the Research and Planning Grants, Healthy Estuaries Program-funded projects will build on previous efforts (compiled in a searchable **inventory of plans and assessments** (/service-details/massbays-reports-and-publications)).

Estuary Viewer - In April, MassBays launched an online **Estuary Delineation and Assessment Viewer** (/service-details/massbays-estuary-delineation-and-assessment). Each of the 47 embayments in the MassBays planning area, from the Merrimack River estuary to Provincetown Harbor, are depicted in interactive maps that locate resources—tidal flats/shellfish habitat, shorebird habitat/nesting sites, anadromous fish runs, salt marsh, and eelgrass beds—and stressors—impervious area, stormwater discharge, land use change, population density, 303(d) impairments, fish barriers/impoundments, wastewater discharge, shellfish area classifications, and stream crossings.

National Coastal Condition Assessment - MassBays managed the Massachusetts portion of EPA's 2015 **National Coastal Condition Assessment** (http://www.epa.gov/national-aquatic-resource-surveys/national-coastal-condition-assessment), a nationwide monitoring effort that takes place every five years. MassBays supervised collection of water column and benthic grab samples from 52 stations along the Massachusetts coast during the summer of 2015.

Gulf of Maine King Tides Photo Contest - MassBays was the Massachusetts lead on the second annual Gulf of Maine King Tides Photo Contest held October 28-29. The effort generated more than 100 entries of images of the exceptionally high tide on those days at locations from Cape Cod Bay to Nova Scotia. King tides are the highest predicted tides that occur over the course of a year when the gravitational pull of the sun and moon reinforce each other.

New England Aquarium Special Lecture - In June, MassBays Director Pam DiBona and Samantha Woods, Executive Director of the North and South Rivers Watershed Association, presented *Notes from the Field: Conditions and Trends in Massachusetts Bay and Cape Cod Bay* at the New England Aquarium. A **video of their presentation** (https://youtu.be/9MUkxoPB844) is now available on YouTube. The program centered on the importance of volunteer efforts to monitoring the health of local estuaries.

Staff & People

In looking back over the year, CZM welcomes new staff (and existing staff in new roles) and thanks our dedicated interns.

Coastal Habitat and Water Quality Manager - In January, Adrienne Pappal, who had served at CZM's Coastal Habitat and Water Quality Specialist and Aquatic Invasive Species Program Coordinator since 2007, was selected as the new Coastal Habitat and Water Quality Manager. Adrienne has extensive experience in a wide variety of coastal ecology and water quality issues, including the lead roles she has played for CZM in the Coastal Pollutant Remediation grant program, the Marine Invader Monitoring and Information Collaborative, rapid assessment surveys for marine invasive species, wetland assessment, and seafloor mapping. Her enthusiasm for marine science extends from the mud of the marsh and the muck on the docks to hours spent sorting invertebrate samples and classifying seabed photographs. She has developed numerous science communications products and has demonstrated experience working with the public to communicate technical information. Congratulations Adrienne!

Boston Harbor Regional Coordinator - In March, CZM selected Lisa Engler as the new Boston Harbor Regional Coordinator. Lisa has hit the ground running in this new position, bringing a range and depth of experience and skills on many coastal issues. Lisa worked the previous four years as the outreach and Boston Metro Regional Coordinator for MassBays, where she led the Boston Harbor Habitat Coalition on a comprehensive effort to identify, map, and implement resource protection and restoration opportunities, managed outreach and communications, and worked with the other MassBays regional coordinators on bays-wide projects and priorities. Prior to MassBays, Lisa spent two years in MassDOT's Environmental Services Division and four years at DCR serving as the Coastal Coordinator for the Areas of Critical Environmental Concern Program, implementing coastal resource area preservation and restoration activities with many agency and nonprofit partners. Congratulations and welcome aboard Lisa!

NOAA Coastal Fellow - In July, CZM welcomed Ashley Green as CZM's 9th Coastal Management Fellow from NOAA. Nominated by North Carolina Sea Grant, Ashley was matched with CZM through a rigorous selection and interview process. During her two-year fellowship, Ashley will focus on developing tools to provide Massachusetts coastal cities and towns with the information they need to manage stormwater effectively.

Coastal Hazards Analyst - In September, Margot Mansfield completed her 2013-2015 NOAA Coastal Management Fellowship and was brought on as CZM's new Coastal Hazards Analyst. In her new role, she is identifying coastal bank erosion hazards in cooperation with the MassDEP. While at CZM, Margot will conduct data and GIS analyses to delineate coastal bank features and assess changes coast-wide.

Coastal Habitat and Water Quality Specialist - In October, CZM welcomed Cristina Kennedy as the new Coastal Habitat and Water Quality Specialist. Cristina provides technical support for Coastal Habitat and Water Quality Program initiatives, including the Coastal Pollutant Remediation Grant Program, long-term monitoring and mapping of native and non-native species, wetland condition assessment, coordination of citizen science monitoring networks, climate change adaptation planning, and coastal science related synthesis products to strengthen outreach to coastal communities. Welcome Cristina!

Buzzards Bay Stormwater Specialists - In October, the Buzzards Bay NEP welcomed Bernadette Taber and Kevin Bartsch as Stormwater Specialists. They are working closely with five municipalities and the Buzzards Bay Action Committee to create a comprehensive GIS and management program. This program will support an intermunicipal initiative to map stormwater networks and monitor discharges contributing to shellfish bed and bathing beach closures and other water quality issues. Bernadette, aka Bernie, was a long-time former employee of the U.S. Department of Agriculture's Natural Resource Conservation Service detailed to the BBNEP since 1991. Bernie evaluates and develops engineering solutions for stormwater remediation in both agricultural and urban environments. She has reviewed many engineering plans at the request of Buzzards Bay municipalities, and has also developed preliminary stormwater and habitat restoration designs in collaboration with municipalities and their contractors. Kevin has a Master's Degree in watershed science and more than 20 years of experience in GIS data development and modeling. He possesses a wealth of knowledge in utility infrastructure (water, wastewater, electric), asset management, soil erosion, natural resource management, and open space protection. Kevin also volunteers as the director and current president of the Wareham Land Trust. Welcome Bernie and Kevin!

Internships - CZM welcomed the following interns to help with various projects through the summer and fall:

- ***COASTSWEEP Intern*** - In June, CZM is welcomed Claudia Geib as the 2015 **COASTSWEEP** (/coastsweep) Intern. While with CZM, Claudia Geib helped to contribute to this year's successful cleanup campaign through media posts, blogs, volunteer outreach, sponsor solicitation, as well as by organizing CZM's very first underwater cleanup dive in Rockport! Claudia came to us from Northeastern University after graduating with degrees in Journalism and Environmental Science. She is currently getting her Masters in Science Journalism at Massachusetts Institute of Technology. To learn more about COASTSWEEP and Claudia's experiences, check out her **Mass.gov guest blogs** (http://blog.mass.gov/?s=claudia), which include a detailed account and brief

video of her **underwater dive** (http://blog.mass.gov/blog/living-in-massachusetts/removing-plastic-from-rockports-reefs-with-coastsweep/).

- ***Coastal Wetlands Intern*** - In July, CZM welcomed Melanie Kenney as the Coastal Wetlands Intern. Throughout the summer, Melanie assisted in the collection and processing of biological samples for use in **condition assessment of salt marshes** (/service-details/czm-coastal-habitat-program-coastal-wetland-monitoring-and-assessment) on the North Shore of Massachusetts. In addition to her work in the field and lab, she conducted a study on floristic quality assessment and analyses of salt marsh species diversity. Thanks for all your help this summer Melanie!
- ***GIS Intern*** - CZM had the good fortune to bring on Smith College rising senior Bryn Gingrich as a summer intern. Bryn worked on updating an online mapping tool of coastal sites in Massachusetts open to the public for swimming, walking, hiking, boating, fishing, and other outdoor activities. Now in her senior year at Smith College, Bryn continues to work with mapping technologies in pursuit of her bachelor's degree in environmental science and anthropology. Thank you Bryn!
- ***Blue Carbon Interns*** - MassBays hosted two paid interns in 2015 with funding from EPA's Climate Ready Estuaries Program for a multi-partner investigation to quantify the carbon storage potential of eelgrass in near-shore habitats in Massachusetts. John Deane is a student at McGill University in Montreal. Over the summer he conducted a review of literature documenting carbon storage by *Zostera marina* (eelgrass), collected historical records about extent of eelgrass in Massachusetts estuaries, participated in field sampling, and weighed many samples for laboratory analysis. Sarah Stanley recently completed her Master's in Environmental Science and Policy from Clark University and supported the project team in pulling together the literature review, methods, and results into materials for a day-long workshop. She was instrumental in convening regional experts on eelgrass, salt marsh, and estuarine habitat mapping to solicit input on next phases of the project, including outreach and future sampling efforts.

RELATED

CZM Years in Review Index (/service-details/czm-years-in-review)

CZM Home (/orgs/massachusetts-office-of-coastal-zone-management)

CZM Site Map (/service-details/czm-site-map)

CZM Website Help (/service-details/czm-website-help)

Contact CZM (/service-details/contact-czm)