



# Virginia Coastal Zone Management

Spring 2016



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Protecting, restoring, and strengthening  
our coastal ecosystems and economy

# Virginia Coastal Zone Management Program

The Virginia CZM Program is a network of state and local government agencies working to create more vital and sustainable coastal communities and ecosystems. Virginia's coastal zone includes the 29 counties and 17 cities of Tidewater Virginia and all tidal waters to the three-mile territorial sea boundary.

The Virginia CZM Program includes state and local laws and policies to protect and manage Virginia's coastal resources that are implemented by:

Virginia Department of Environmental Quality—lead agency  
Virginia Department of Conservation and Recreation  
Virginia Department of Game and Inland Fisheries  
Virginia Department of Health  
Virginia Marine Resources Commission  
Tidewater local governments

The program is guided by the Coastal Policy Team which provides a forum for managing cross-cutting coastal resource issues. The Coastal Policy Team is comprised of the partner agencies listed above as well as:

Virginia Department of Agriculture and Consumer Services  
Virginia Department of Emergency Management  
Virginia Department of Forestry  
Virginia Department of Historic Resources  
Virginia Department of Mines, Minerals and Energy  
Virginia Department of Transportation  
Virginia Economic Development Partnership  
Virginia Institute of Marine Science  
Virginia Planning District Commissions (8 Tidewater regions)  
William & Mary Coastal Policy Center

The Virginia CZM Program is part of the national coastal zone management program, a voluntary partnership between the National Oceanic and Atmospheric Administration and U.S. coastal states and territories authorized by the Coastal Zone Management Act of 1972, as amended.

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*Virginia Coastal Zone Management* highlights coastal resource management issues in the Commonwealth, with a focus on initiatives and projects coordinated and funded through the Virginia CZM Program. Please direct comments, ideas for future issues or subscription requests to Virginia Witmer, editor/graphic designer, [Virginia.Witmer@deq.virginia.gov](mailto:Virginia.Witmer@deq.virginia.gov).



*Cover image: An old oak clings to the edge of an ancient dune at "Beautiful Woods," recently acquired with Virginia CZM funds as an addition to DCR's Pickett's Harbor Natural Area Preserve in Northampton County. Photo by Virginia Witmer, Virginia CZM Program.*



# Message from the Manager



*Ocean planners and managers were awestruck by the roar of Navy jets practicing take-offs and landings on the carrier deck 70 miles off the coast of Virginia. Photo courtesy of U.S. Navy.*

We're celebrating our 30th anniversary! Hard to believe so much time has passed. There are quite a few of us, staff and network members, who have worked together almost since the beginning. The longevity and depth of our relationships and the trust built over the years is surely one of the key ingredients to successful partnerships. In fact NOAA noted that strength in our recent program evaluation (see page 21). Through these partnerships we've made

good strides in eelgrass and bay scallop restoration, land acquisition, providing public access, preparing for climate change, and ocean planning.

Experiencing an arrested landing and a catapult off the aircraft carrier USS Eisenhower in a cargo plane was an unexpected thrill of a lifetime last November for me. Understanding all ocean stakeholders' spatial needs is a critical element of ocean planning and was my huge pleasure to learn!

Much work remains. We are faced with more and more challenges, not only to our coastal lands and waters, but also our increasingly busy ocean. In addition to our constant struggles with coastal habitat loss and nutrient pollution, we face the daunting impacts of sea level rise, shifts in species locations, use conflicts, ocean acidification and a mounting volume of plastics that end up in our ocean. As always, we trust you'll be there to help and hope this magazine provides useful information in addressing these issues.

## Virginia Coastal Zone Management

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Visit us on the Web at [www.deq.virginia.gov/Programs/CoastalZoneManagement.aspx](http://www.deq.virginia.gov/Programs/CoastalZoneManagement.aspx)

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*Julia Wellman, DEQ*

# LAND CONSERVATION

## *Chickahominy Watershed: Striving for Economic and Ecological Gains*

*By Beth Polak, Virginia CZM Program*

**Forested areas in the Chickahominy River corridor reveal what Captain John Smith likely encountered four centuries ago. Rare communities featuring iconic Bald Cypress and Water Tupelo grace the landscape summoning a wildness and tranquility unfamiliar to 21st century living.**



*David Garst, DGIF*

Rich in biological diversity, the Chickahominy River is one of Virginia's more notable, yet less frequently recognized, attractions. Thousands of people fish, hunt, and paddle the Chickahominy, but the ecotourism market remains largely untapped. Ecotourism travel to destinations where flora, fauna, and cultural heritage are the primary attractions minimizes impacts of tourism, builds environmental knowledge, and increases cultural awareness. Ecotourism can also produce significant economic benefits for communities in rural areas. Similarly, sustainable tourism seeks a low impact on the environment and local culture, while generating income, employment, and ensuring conservation of local ecosystems.

Ecological significance in the watershed is recognized by Virginia natural resource scientists and has been verified by the Virginia CZM Program. In 2011, Virginia CZM synthesized state conservation priorities confirming ecologically significant areas in the coastal zone and created the Coastal Virginia Ecological Value Assessment (Coastal VEVA). In this assessment, the Chickahominy River watershed stood out

as outstanding among coastal areas. This sparked interest among Virginia CZM partners to look at current planning in the Chickahominy watershed. Sandwiched between two high growth metropolitan areas – Richmond and Hampton Roads – the Chickahominy sits vulnerable to potentially rapid development. So Virginia CZM has assembled a stakeholder group including local governments, state natural resource agencies, land trusts, academia, and ecotourism and other business interests to find a collaborative, thoughtful way forward for this unique part of coastal Virginia.

The Chickahominy project was born from a larger strategic planning process at Virginia CZM that occurs every 5 years and is funded through NOAA's Coastal Enhancement Program. The process assesses nine enhancement areas and develops strategies for those areas demonstrating the most need for action. This initiative in the Chickahominy falls under the Cumulative and Secondary Impacts assessment area and will review what is currently happening in the lower watershed and begin to develop policy that can protect and leverage its natural areas for highest, sustainable, economic return.



*Rare Skipper 4, Problema bulenta, on Swamp Milkweed, Asclepias Incarnata, which is found in the Chickahominy Watershed. Photo by Anne Chazal, DCR-NH.*

In the first year of the project, Virginia CZM partners will update existing data and conduct field studies to verify historically documented rare species and expand information about stream health and species of special concern. The project's second year will focus on economic studies designed to quantify the natural wealth and opportunity housed within the lower Chickahominy watershed's boundaries. Localities involved are Charles City, James City and New Kent counties, with project coordination by the Richmond Regional Planning District Commission and participation from the Hampton Roads Planning District Commission. State agencies participating include the Department of Game and Inland Fisheries and the Department of Conservation and Recreation. Land trusts also joining the effort are the Historic Virginia Land Trust, the Capital Land Conservancy, and The Nature Conservancy.

States and local governments throughout the United States are seeing high rates of economic return on the value of protected lands. Natural areas and open space bring significant returns for state and local economies by ensuring longevity of a highly productive resource base. Leading coastal industries like tourism, agriculture, aquaculture, commercial fishing,

forestry, and outdoor recreation emerge from well-protected ecosystems yielding steady income for business and solid revenue for the local treasury. But that's not all. Investing in land conservation can also result in reduced government spending on infrastructure and services like pollution control and storm water management. Economic analyses by The Trust for Public Land in multiple states throughout the United States reveal returns as high as \$11 in natural goods and services for every \$1 invested in land conservation.



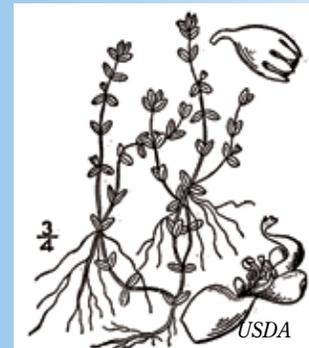
State rare Virginia Least Trillium, *Trillium Pusillum* var. *virginianum*, has been found in the Chickahominy Watershed. Photo by Zach Bradford, DCR-NH.

Virginia CZM will soon contract with a Virginia academic economist to analyze the costs and benefits of land conservation on the Eastern Shore. That study hopefully will lead the way for a similar analysis in the lower Chickahominy. 



This section of the lower Chickahominy as seen from the air reveals an expanse of undeveloped lands in James City and Charles City Counties. The Coastal VEA ranked the area as predominately "outstanding" in ecological significance.

### A Haven of Biodiversity



The Chickahominy watershed has been home to many rare plants. According to the *Flora of Virginia*, Nuttall's *Micranthemum* (*Micranthemum micranthemoides*) illustrated here, was last seen in the wild in 1941 along the Chickahominy River. Further searches beyond Virginia have yet to successfully find it. DCR-Natural Heritage will conduct studies in the Chickahominy next field season to see if this and other historically documented rare species still reside in the lower watershed.

# LAND CONSERVATION

## Coastal VEVA Update

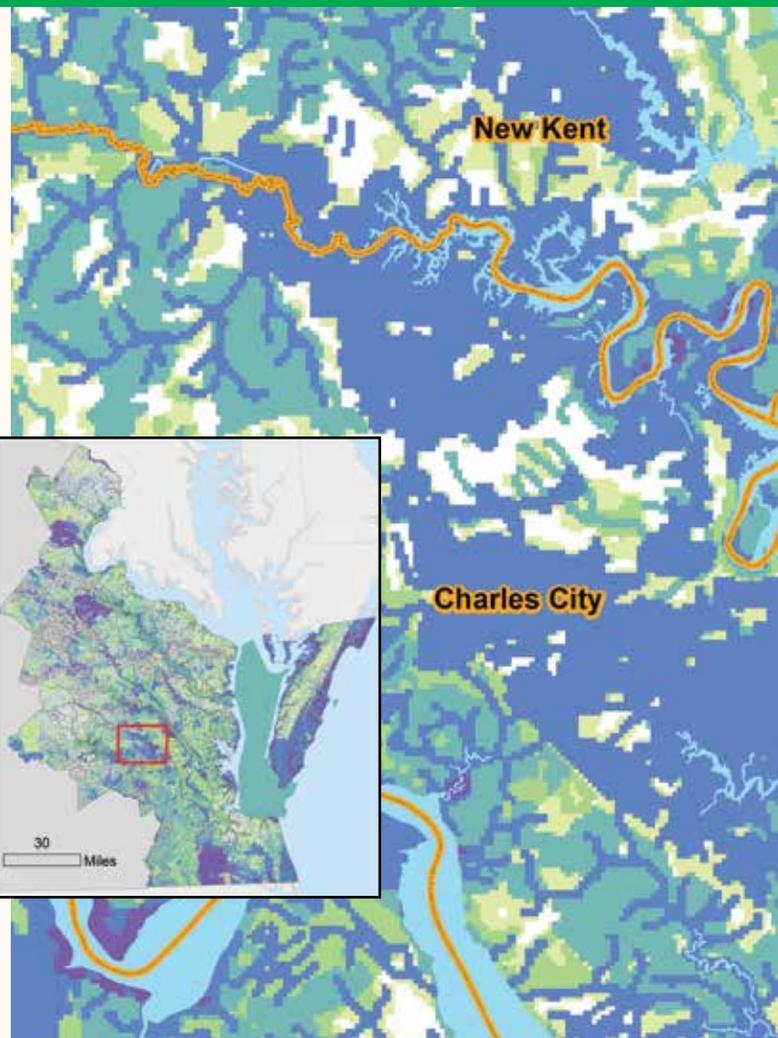
By Nick Meade, Virginia CZM

Several Virginia state agencies and universities independently create datasets, aligned with their specific mission or focus, which identify important natural resources and conservation opportunities. But at the local level where most land conservation happens, limited funding makes it difficult to fully evaluate and incorporate all of these datasets into the planning process.

The Coastal Virginia Ecological Value Assessment (Coastal VEVA), originally developed with Virginia CZM Program funding in 2011, synthesizes geospatial inputs representing the conservation priorities of the Virginia Natural Heritage Program at the Department of Conservation and Recreation and Department of Game and Inland Fisheries (DGIF) as well as aquatic resource spatial data from Virginia Commonwealth University's Center for Environmental Studies (CES) and the Center for Coastal Resources Management at Virginia Institute for Marine Science. Coastal VEVA identifies lands and waters important for conservation of wildlife, plants, and natural communities and is intended to be used by land-use planners as a singular tool to prioritize areas for preservation, protection, or other specific management actions. It's available on the Virginia CZM Program's coastal mapping site at [www.coastalgems.org](http://www.coastalgems.org).

Overlaying Coastal VEVA with conserved lands data showed that previous land protection efforts in Virginia's coastal zone were quite well targeted at high value ecological areas, but also highlighted some high value areas still in need of protection. Coastal VEVA was used to guide land conservation efforts on the Southern tip of Virginia's Eastern Shore, including recent additions to Pickett's Harbor Natural Area Preserve, and also made the case for a focused conservation planning effort in the ecologically rich, but relatively unprotected, lower Chickahominy watershed.

Work is now beginning on an update to Coastal VEVA. With Virginia CZM funding, the Natural Heritage Program and DGIF will update their conservation priority datasets. Funding will also enable CES to synthesize this data to update Coastal VEVA. Finally, partners will organize and participate in outreach efforts, including a survey of local governments, planning district commissions, non-profit groups, and other stakeholders to evaluate the use and application of Coastal VEVA. The results of this survey will guide later outreach work by CES including the development of narrative materials, presentations, webinars, and video demonstrations describing Coastal VEVA and how it can be applied to conservation planning. 🐾

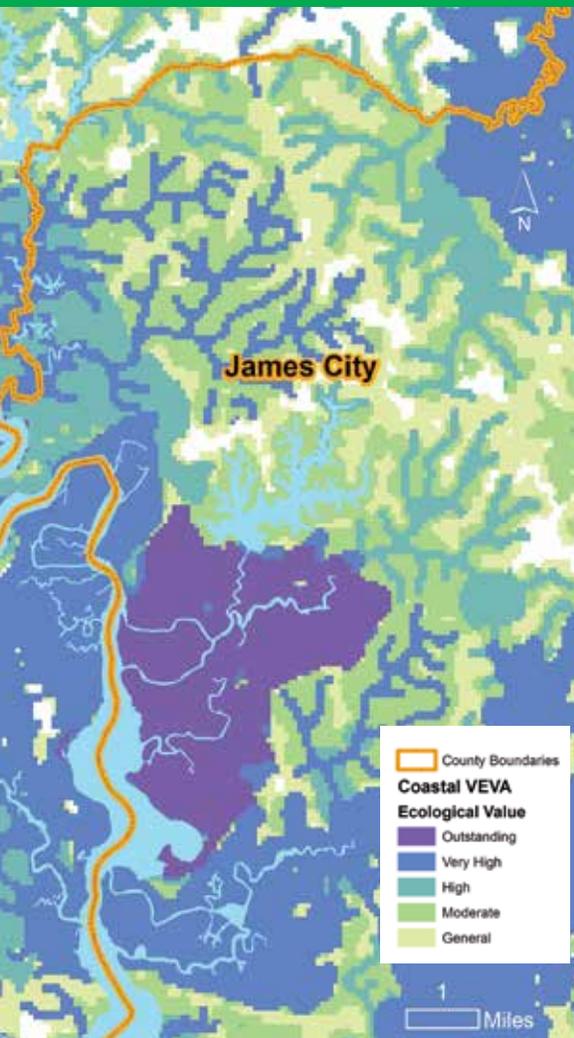


## A "Beautiful Woods" is Preserved

By Laura McKay, Virginia CZM



Virginia Witmer, Virginia CZM



DCIF

## Exhibit at Executive Mansion Highlights Native Plants

By Virginia Witmer, Virginia CZM

In April, Governor Terry McAuliffe and First Lady Dorothy McAuliffe welcomed the 2016 Historic Garden Week with the introduction of a new native plant garden at the Executive Mansion. In collaboration, the Virginia CZM Program, Natural Heritage Program at the Department of Conservation and Recreation, Habitat Partners Program at the Department of Game and Inland Fisheries, the Flora of Virginia and the Virginia Native Plant Society—all members of the Virginia Native Plant Marketing Partnership—collaborated on a native plants exhibit at the Mansion, where they explained the benefits of native plants to visitors.

Selection of the plants for the garden was guided by the Natural Heritage Program. The garden includes the following pollinator-attracting species: *Asclepias tuberosa*, Butterflyweed; *Asclepias incarnata*, Swamp Milkweed; *Baptisia australis*, Wild Blue Indigo; *Liatris spicata*, Blazing Star; and, *Monarda didyma*, Bee Balm.

Virginia CZM provided markers identifying the plants as Virginia natives. The markers are like those used in demonstration gardens as part of regional native plant marketing campaigns being funded by the program. 🐝



In September 2016 the Virginia CZM Program provided funds to the Department of Conservation and Recreation (DCR) to acquire two, one-acre lot additions to Pickett's Harbor Natural Area Preserve in Northampton County. The project involved intense collaboration among the Southern Tip Partnership and NOAA. Among the Southern Tip partners instrumental in this complex acquisition were: The Nature Conservancy, who first purchased and held the land in spring 2015, and then DCR, CZM and NOAA staff who coordinated all the complicated grant funds and shepherded approvals of all the project details for final ownership by DCR.

These two acres contain exemplary maritime forest and secondary dune bluffs which provide excellent habitat for migratory birds. The lots provide an additional 218 feet of waterfront to the preserve and extend inland about 400 feet. The eight additional lots to the south could be developed. 🐝



Julie Buchanan/DCR

## *Building Coastal Resiliency: Virginia CZM Coastal Hazards Strategy*

*By Shep Moon, Virginia CZM*

The Virginia CZM Program has developed a new plan to help improve coastal resiliency through a series of projects starting in 2016 and lasting through 2020. Coastal resiliency is the ability of coastal communities and natural resources to withstand the impacts of coastal storms and flooding. The plan, called the Coastal Hazards Strategy, is one component of the CZM Program's Coastal Enhancement Strategy. The federal Coastal Zone Management Act requires states to assess a range of coastal issues every five years and to address priority issues identified through this process. The document was drafted with significant stakeholder input, and builds on past successful resiliency-related strategies and initiatives.

A key consideration of this planning process, as recommended in comments from NOAA during Virginia's recent program evaluation, was to identify an appropriate niche for the Virginia CZM Program with regard to coastal resiliency. In response, the goals of the hazards strategy are targeted at: 1) developing state and local plans to enhance coastal resiliency for Virginia's natural and built environments in the face of the anticipated impacts of climate change, and 2) providing data and decision support tools to promote more informed decisions and better coordination at all levels of government and among all stakeholders.

The Coastal Hazards Strategy focuses on two important issues: 1) community resiliency, and 2) shoreline resiliency. It is scheduled to provide \$825,000 in grant funds over the five-year period, and should result in development of new local plans and state policy to enhance community and natural resiliency.

Coastal community hazards planning efforts will be strengthened as a result of initiatives recommended in the community resiliency portion of the strategy, as localities will be better able to analyze and communicate the potential impacts of hazards such as coastal storms and sea level rise. Strategy initiatives to promote greater local participation in the National Flood Insurance Program's Community Rating System (NFIP-CRS) will also increase community resiliency through a wide range of local actions, and result in lower flood insurance rates for citizens of the localities.



*Protecting open land in the floodplain, like the Virginia CZM-funded Magothy Bay Natural Area Preserve in Northampton County, can provide a community with Community Rating System credit and help reduce flood insurance rates for local landowners. The Virginia CZM Coastal Hazards Strategy calls for promoting local CRS participation and integrating CRS efforts into hazard mitigation plans and local comprehensive plans. Photo by Virginia Witmer, Virginia CZM.*

Localities will also be better able to preserve and create the shoreline features that are critical for adapting to climate change. Their comprehensive plans will clearly state policy on shoreline management and contain links to specific recommendations for management of each reach of their shoreline. They will also receive additional support in the form of training, outreach and strengthened guidance on shoreline management.

Projects undertaken in both the community and shoreline resilience components of the strategy are likely to identify additional data needs. While completely addressing these needs is beyond the scope of available Virginia CZM resources, documenting the need and refining the objectives for data acquisition projects will help to better position the Commonwealth to apply for other funds, such as NOAA's nationally competitive Projects of Special Merit.

### *Building Coastal Community Resiliency*

Since 2008 the Virginia CZM program has worked to promote community resiliency in four of the eight coastal planning district commissions (Accomack-Northampton, Hampton Roads, Middle Peninsula and Northern Virginia). These projects provided initial spatial and economic analysis of the potential impacts of sea level rise, as well as options for addressing these impacts. They served as important starting points for discussion among community leaders and citizens. Stakeholder input for developing the current Virginia CZM Coastal Hazards Strategy focused on the need to continue and broaden this discussion, recognizing that in order to build



community resiliency all sectors of the community must be involved. Elected officials, local and state staff, business leaders, academia, and individual citizens will all need to make informed, and coordinated, decisions in order to adapt to a changing climate.

The process of developing local plans is one of the most effective ways to involve these stakeholders in the community resilience decision-making process, and to improve communication and coordination on coastal resiliency issues. But while local hazard mitigation

plans are required for participation in the Federal Emergency Management Agency's National Flood Insurance Program, undertaking the required vulnerability assessments for these plans is sometimes hampered by a lack of adequate, localized data. Without reliable data, local plans are not as useful for decision making and are less likely to be implemented. These plans are also not always well coordinated with local comprehensive plans and land management ordinances. Stakeholders identified the need for more accurate vulnerability assessments and better planning coordination as important goals for Virginia.

Participation in the NFIP-CRS provides an excellent opportunity for localities to receive credit for resiliency initiatives already in place and incentives for additional efforts. These credits translate into flood insurance cost savings for property owners. Relatively few coastal Virginia localities, however, currently participate in the CRS. This is due in part to the resources necessary to enter and maintain a program, and also to some possible misperceptions about the value of the program. Promoting participation in the CRS by conducting cost-benefit analyses and better coordination with other planning initiatives will be an important part of the Strategy. Virginia CZM staff are coordinating with the Coastal Virginia NFIP-CRS Workgroup to make sure that this analysis will meet the needs of localities.

Inclusion of local hazard mitigation plans in local comprehensive plans and NFIP-CRS participation are both encouraged in legislation passed by the 2015 Virginia General Assembly. The legislation (SB 1443) requires the 17 localities of the Hampton Roads Planning District to incorporate strategies

*Cont'd on page 8*

## *CBNERR Climate Education for a Changing Bay*

*By Sarah McGuire Nuss, CBNERRVA*

The Chesapeake 2014 Agreement states that all students must have at least one meaningful Chesapeake Bay watershed experience in elementary, middle, and high school. The Chesapeake Bay National Estuarine Research Reserve in Virginia (CBNERRVA), a sister program to Virginia CZM, is working to achieve this standard by implementing a program entitled Climate Education for a Changing Bay (CECB). This program provides meaningful watershed educational experiences that are fully integrated and systemic into the classroom curriculum for 9th grade Earth Science students in Gloucester and Mathews counties, Virginia. The overall objective of CECB is to improve climate literacy within local high schools by advancing the use of locally relevant environmental data and information in classroom curriculum, field experiences and professional teacher training.

Understanding changes in sea level and inundation, and the associated responses of critical habitats and coastal communities are key to the Chesapeake Bay region. Throughout the school year, each high school receives classroom lessons given by CBNERRVA education staff and a field experience at the CBNERRVA educational facilities for each Earth Science student. Students involved in this program are gaining real world skills and knowledge to understand the local impacts of climate change. The Climate Education for a Changing Bay program is funded by a National Oceanic and Atmospheric Administration Bay Watershed Education and Training (B-WET) grant. For more information about the CECB program visit [www.vims.edu/cbnerr/education/school\\_programs/ghs/index.php](http://www.vims.edu/cbnerr/education/school_programs/ghs/index.php) 



*Students from Gloucester High School get their feet wet while using survey equipment to map the zonation of salt-tolerant plants along transect lines in the VIMS Teaching Marsh. Photo by Erin Kelly.*

# COASTAL HAZARDS

*Building Resiliency...cont'd from page 7*

to combat sea level rise and recurrent flooding into their next comprehensive plan updates. Although not yet required for other coastal zone localities, considering these issues in plan and ordinance updates were recognized by stakeholders as priority needs.

## **Building Resiliency Along Virginia's Shorelines**

Coastal resources such as wetlands, dunes and beaches can provide critical protection against storms as well as key natural functions. The importance of these "natural and nature-based features," as they have come to be known, were highlighted when the impacts of Superstorm Sandy were evaluated. But many of these features, especially tidal wetlands, are threatened. As a result of sea level rise, subsidence, and shoreline erosion control practices, Virginia has lost and is continuing to lose tidal wetlands and other shoreline features that are critical for natural resilience. Fringe marshes, the narrow bands of wetlands along the shoreline, have high habitat, water quality protection, and natural buffer values and are especially vulnerable. They may be affected by both the drowning impacts of sea level rise and structural barriers to upland migration in the form of shoreline erosion controls.

Two previous Virginia CZM Program initiatives (Coastal Enhancement Strategies in 2006-2010 and 2011-2015) resulted in a number of outcomes to help improve shoreline management and promote the use of living shorelines. Living shorelines may use plants, sand fill, and stone to protect or enhance a shoreline. They may also provide opportunities for upland migration of wetlands as well as create new fringe wetlands to help offset wetland loss in other areas.

Key outcomes during this timeframe during a previous Virginia CZM Shoreline Strategy included expanded protection for beaches and dunes, and legislation clarifying

that living shorelines are the Commonwealth's preferred shoreline management technique. Legislation also required all coastal localities to adopt comprehensive plan amendments based on shoreline management guidance provided by VIMS. Local comprehensive coastal resource management portals (CCRMPs), developed by the Virginia Institute of Marine Science (VIMS) to help meet this requirement, provide gateways to local shoreline data, maps displaying management recommendations, and decision support tools.

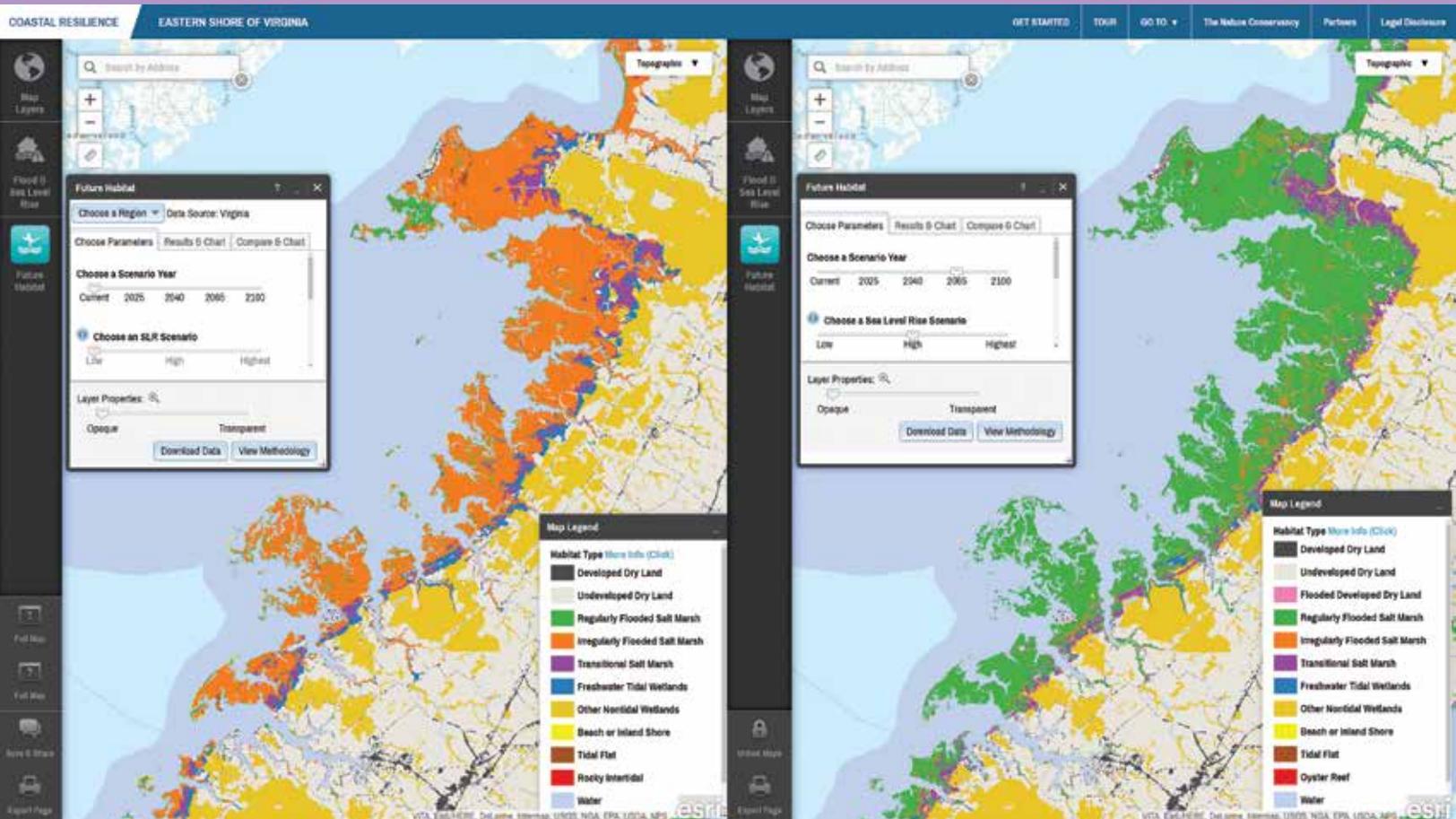
In order to complete a local portal, VIMS must have local shoreline and tidal marsh inventories. Data from these reports are used to run a model that determines the most appropriate shoreline management technique for each reach of shoreline. VIMS has completed 22 CCRMPs and 3 more are in progress. Without additional resources, VIMS estimates it may take many years to complete the portals, including site-specific management recommendations, for all localities. Accelerating development of these portals and corresponding local comprehensive plan elements was identified as a priority by Virginia stakeholders and is included in the new Virginia CZM Program's Coastal Hazards Strategy. During the first year of the strategy, five new CCRMPs will be completed through a Virginia CZM grant to VIMS.

Stakeholder feedback also indicated that there are other critical needs that the strategy should address to support new living shoreline policies. These include training for contractors and local wetland board members and staff, property-owner education, incentive programs, and strengthening of existing shoreline management guidance. Year one of strategy implementation includes a grant to VIMS to provide two living shoreline design workshops and training for local governments. Virginia CZM has also received a \$125,000 FY 2015 Project of Special Merit from NOAA which has been subcontracted to VIMS. The project is titled "Implementing sustainable shoreline management in Virginia: assessing the need for an enforceable policy" and is likely to include recommendations for strengthening current regulations and guidance.

Stakeholders also identified the need for a state policy on building resiliency along Virginia's shoreline and for creating a corresponding coastal resiliency atlas. The atlas, a concept that could be incorporated into one of several resiliency mapping tools currently being developed, would serve as a repository for information on current resiliency-related features, as well as opportunities for adding new features. This information could then be summarized in Virginia CZM Program's "Coastal GEMS" online mapping and information system.



*Building marsh elevations with sediment from nearby dredging projects can help preserve wetlands in the face of sea-level rise. One of the data layers suggested for the "coastal resiliency atlas" concept is opportunities for the beneficial use of dredged material. Photo by Carl Hershner, VIMS.*



The Eastern Shore's new coastal resilience online mapping tool (<http://coastalresilience.org/>) shows expected wetlands migration in response to sea-level rise. The image on the left shows current conditions, while the image on the right shows potential conditions in 2065. The Virginia CZM Hazards Strategy suggests obtaining these data for the entire coastal zone.

Developing the atlas will provide an opportunity for Virginia CZM partners to share existing data and to identify and prioritize data gaps for use in targeting future projects. While some data exist already and some of the data sets could be funded through the five-year Virginia CZM Program's Coastal Hazards Strategy, other priority data layers would be targeted for acquisition through nationally competitive grant opportunities such as NOAA's Section 309 Projects of Special Merit.

Potential data layers for the atlas include:

- Recommended sites for the beneficial use of dredge spoil material
- Current and potential living shoreline demonstration sites (on public property)
- An inventory of living shorelines and created wetlands
- Opportunities for upland migration of wetlands
- Detailed shoreline management plans for publicly-owned shorelines

The Coastal Hazards Strategy also recommends that a corresponding state resiliency policy be developed regarding the use of the atlas. In addition to clarifying state policy and project

priorities, this would help coordinate resiliency-building efforts among the various state, federal, local, and private organizations by providing a single reference site for information on these features.

Taken together, projects completed under the Coastal Hazards Strategy over the next five years should result in better management of Virginia's shorelines and help build resiliency for communities and critical coastal resources.

A key component of the Coastal Hazards Strategy will be one or more local pilot projects to address the planning needs identified by stakeholders. By considering the multiple objectives of comprehensive planning, hazard mitigation planning, and the community rating system all at the same time, localities should be able to attract a wide range of stakeholder input and significantly improve community resilience. The Hampton Roads Planning District Commission is starting this process through a Virginia CZM grant to better integrate coastal resilience into local plans, policies and ordinances. This project will serve as a model for other communities to use and build on, and help identify common data needs. 🐾

# OCEAN PLANNING

## *Actions for a Healthy and Sustainable Mid-Atlantic Ocean*

By Laura McKay, Virginia CZM

In just the past seven years, huge strides, like none other in our country's history, have been taken in our collective ability to better understand and manage the Mid-Atlantic Ocean. The Mid-Atlantic Regional Council on the Ocean (MARCO) has come a long way since 2009 when it was formed, as has the Mid-Atlantic Regional Planning Body (RPB) since its inception in 2013. Prior to 2009, no regional ocean planning efforts existed.

Through the efforts of these two organizations, there is now a first ever Mid-Atlantic Regional Ocean Assessment (ROA) and by the end of 2016, a first ever Mid-Atlantic Ocean Action Plan (OAP). The Virginia CZM Program Manager has a role in both groups: currently as Chair of MARCO and also as one of the two Virginia representatives on the Mid-Atlantic RPB. Virginia Marine Resources Commissioner, John Bull holds the other seat. (See Virginia CZM's ocean planning webpages for more background at [www.deq.virginia.gov/Programs/CoastalZoneManagement/CZMIssuesInitiatives/OceanPlanning.aspx](http://www.deq.virginia.gov/Programs/CoastalZoneManagement/CZMIssuesInitiatives/OceanPlanning.aspx).)

MARCO implements an agreement among the five governors of VA, MD, DE, NJ and NY to protect key ocean habitats, promote offshore renewable energy, improve ocean water quality and prepare for impacts of climate change. The Mid-Atlantic RPB is responsible for ocean planning under the 2010 National Ocean Policy. It is comprised of representatives of eight federal agencies, six states (the five MARCO states plus PA) with two representatives each, two federally recognized tribes—the Shinnecock and the Pamunkey, and the Mid-Atlantic Fishery Management Council.

### *The First Mid-Atlantic Regional Ocean Assessment*

The Mid-Atlantic ROA is a dynamic, online document (see <http://roa.midatlanticocean.org/> and three website images at right) which MARCO published in January 2016. It characterizes the Mid-Atlantic ocean ecosystem and resources and current human uses of the ocean with links to the MARCO Mid-Atlantic Ocean Data Portal and other resources.

The ROA also presents an overview of the Mid-Atlantic ocean economy. In Virginia, 32.5% of the state's \$8.3 billion ocean economy is derived from ship building. Each state in the region differs in terms of its major ocean economy drivers but tourism and recreation are very important to all five states and are the largest drivers for the region.



### *The First Mid-Atlantic Ocean Action Plan (OAP)*

This non-regulatory plan (the RPB has no regulatory authority) has been developed by multiple work groups of the RPB. It has two overarching goals: 1) a healthy ocean ecosystem and 2) sustainable human uses.

How can the RPB meet these goals without regulations? The answer is largely through better, and more easily accessible, information about ocean resources and human uses and better coordination and communication among government agencies, scientific and traditional knowledge holders and stakeholders. These are the focus of the plan's 40+ action items.

Six actions fall under the Healthy Ocean Ecosystem goal:

1. *Identify ecologically rich areas of the Mid-Atlantic ocean and develop in-depth assessment reports of their health and management to foster more informed decision making.*





Nick Meade, Virginia CZM

2. Map shifts in ocean species and habitats due to climate change factors such as temperature and shifting currents to allow for more proactive management.
3. Develop a comprehensive Mid-Atlantic Ocean Acidification Monitoring Network that collects data from estuaries and bays out into the ocean and analyzes long-term trends.
4. Develop a regionally appropriate strategy or strategies for marine debris reduction, particularly plastics and derelict fishing gear, using social marketing techniques.
5. Develop indicators of the health of the Mid-Atlantic regional ocean ecosystem and update them on a regular basis to enhance the understanding of trends in ocean health.
6. Incorporate Traditional Knowledge on ocean health into regional ocean planning including knowledge from tribes, fishermen and others who derive their livelihood from the ocean.

Another 24 actions address eight human uses: national security; ocean energy development; commercial and recreational fishing; ocean aquaculture; maritime commerce and navigation; offshore sand management; non-consumptive recreation; and undersea pipelines and cables. Most of these actions involve stronger inter-jurisdictional coordination, increased stakeholder engagement opportunities and commitments to use data in MARCO's Mid-Atlantic Ocean Data Portal (<http://midatlanticocean.org/data-portal/>).

Seven actions address tribal interests and uses. These focus on updating consultation policies, developing a directory of contacts and a Tribal Ocean Planning Network, and filling data gaps about Tribal uses of the ocean. Three actions address maintenance of and improvements to the Ocean Data Portal; one addresses identification and prioritization of applied science and research needs by convening resource managers, scientists and stakeholders. And finally, one action deals with development of a performance monitoring and evaluation plan for the actions.

*Cont'd on page 12*

**Comment on the Draft Mid-Atlantic Ocean Action Plan:**

- 1) via the RPB website at [www.boem.gov/Environmental-Stewardship/Mid-Atlantic-Regional-Planning-Body/index.aspx](http://www.boem.gov/Environmental-Stewardship/Mid-Atlantic-Regional-Planning-Body/index.aspx)
- 2) email [MidAtlanticRPB@boem.gov](mailto:MidAtlanticRPB@boem.gov)
- 3) attend one of the five open houses to be held in each state

**Review Schedule**

- July 6** Public release; start of 60-day public comment period
- July 12** Public open house at Virginia Aquarium, Virginia Beach, 6-8pm
- Sept/Oct** Respond to public comments and finalize plan
- Early Nov** Submit OAP to National Ocean Council for approval

**OCEAN USES**

From fishing and navigation to recreation and national security operations, the ways that people use the Mid-Atlantic ocean are many, and increasing. Regional ocean planning seeks to enhance compatibility, improve regulatory predictability, and support economic growth of existing and emerging uses.

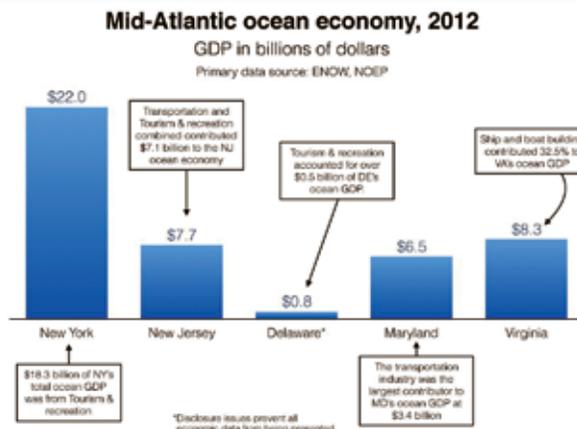
**CHARACTERIZING MID-ATLANTIC OCEAN USES**

- Overview of Ocean Uses
- Overview of the Mid-Atlantic Ocean Economy

**STATUS, TRENDS, AND LINKAGES**

- Tribal Uses
- Commercial and Recreational Fishing
- Critical Undersea Infrastructure
- Maritime Commerce and Navigation
- National Security and Military Uses
- Nonconsumptive Recreation
- Ocean Aquaculture
- Ocean Energy
- Offshore Sand Management
- Scientific Research

**MISSION**



# OCEAN PLANNING

Actions for a Healthy Ocean...cont'd from page 11

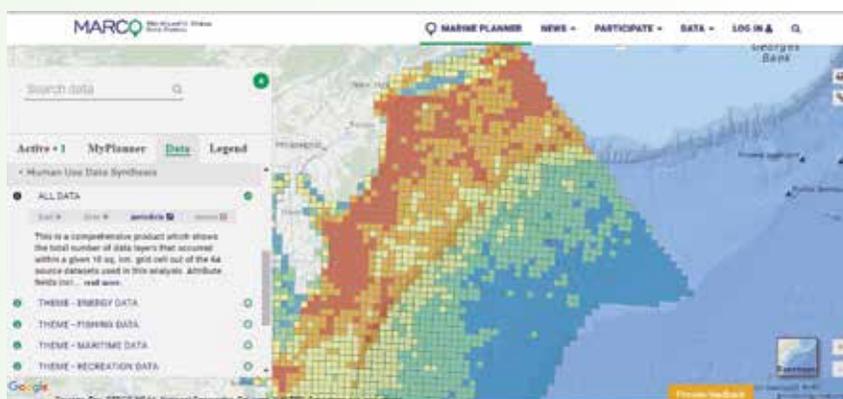
## New Mid-Atlantic Ocean Portal Data

MARCO's Ocean Data Portal (<http://midatlanticocean.org/data-portal/>) is a key tool for the RPB. A key effort over the past two years has been the synthesis of thousands of data layers that have been collected to make it easier to see and understand the big picture of where human uses overlap and where important resources are. To accomplish this, MARCO contracted with two teams of experts.



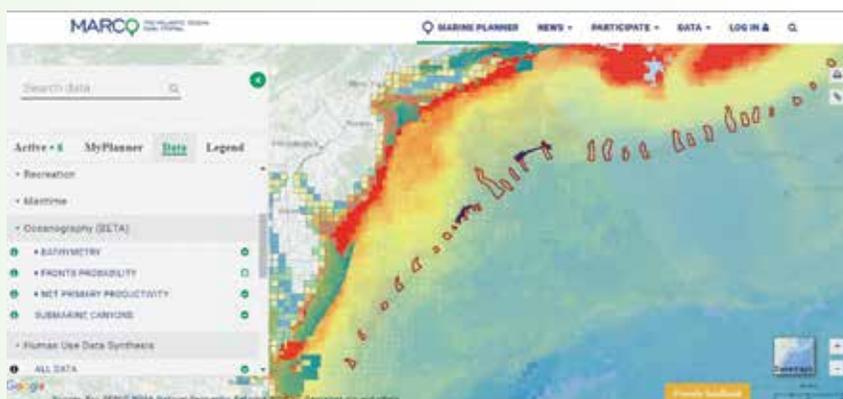
## Human Use Data Syntheses

For human uses, a team of contractors synthesized 64 data sets around the themes of energy, fishing, maritime, recreation and security so that users can see all human uses as a “heat map” which reflects the number of different types of activities occurring in each cell, or users can look at heat maps by theme. These maps are currently available on the portal.



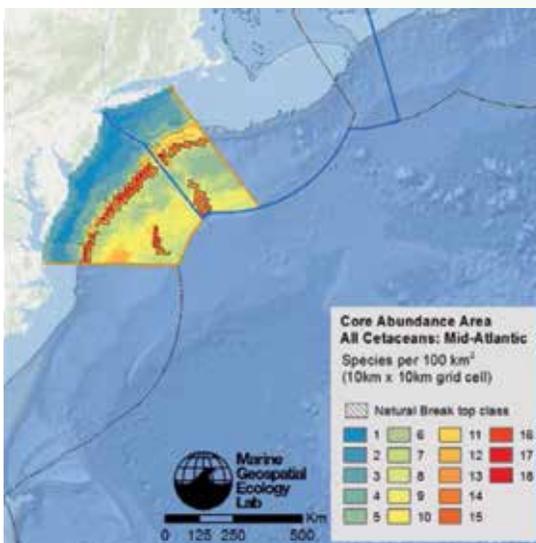
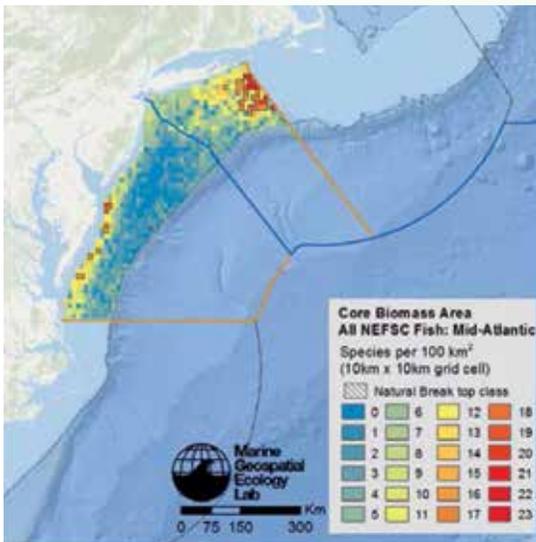
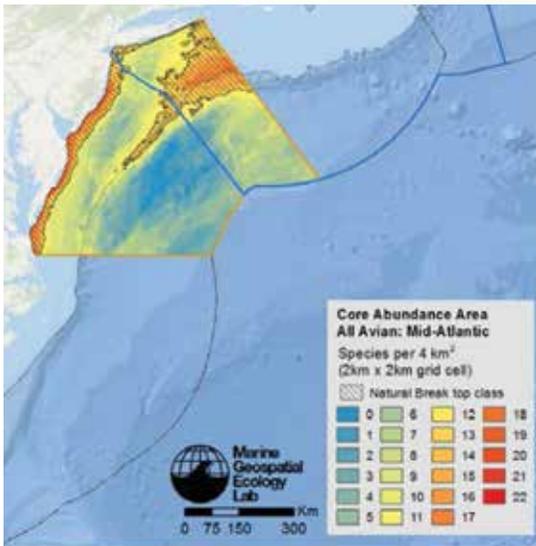
## Oceanography Data

This new data theme allows users to see high resolution bathymetry (sea floor elevation), the seasonal probability of sea surface temperature fronts, seasonal net primary productivity (the amount of organic carbon generated by photosynthesis in planktonic organisms minus the amount used by the organisms in respiration) and the major submarine canyons.



## Marine Animal Data Syntheses

For marine animal data, a team led by Duke University including NOAA and Loyola scientists is synthesizing over 3,000 map layers of fish, birds, marine mammals and sea turtles. Ultimately this team, with input from the RPB, scientists and stakeholders, will define criteria for “ecologically rich areas” (ERAs) and then map all the areas that meet the definition (see maps in left column on opposite page). This will include these animal layers plus additional habitat layers such as predicted locations of cold water coral habitats. Identifying ERAs is one of the first steps in the RPB’s Healthy Ocean Ecosystem Action #1 to identify ERAs and develop in-depth assessments of their health and current management. A second contract with the Duke team will provide for additional invertebrates fish, sea turtle and whale data to be included in the syntheses and the first iteration of ERAs. That work is expected to be completed by January 2017. The additional whale data will include the Virginia CZM funded whale surveys undertaken by the Virginia Aquarium in 2012-15.



## Ocean Stories

In order to “bring maps to life,” the portal has a section called Ocean Stories where viewers can access maps and video clips related to particular topics. Currently there are seven stories posted, but the project team welcomes more stories from users.

**Ocean Stories**

**3 For Lenape, ancient cultural history lives.**  
Chief Dennis Cover has become a prominent voice on Mid-Atlantic ocean planning issues, often representing his tribe and other members of the Confederation of Sovereign Nanticoke Lenape Tribes of the Delaware Bay (with members from Delaware and No...

**3 Tug and barge industry juggles traditional routes.**  
Tugboats, towboats and barges are the workhorses of maritime transportation.

**4 Long-time fisherman keeps watch over Maryland's...**  
In the nearly 35 years Captain Hawkins has been fishing off Maryland's coast, he's seen an increase in some fish populations as well as a decline in others.

**6 Submarine cables: Preserving the Mid-Atlantic.**  
Telecommunications play an integral role in our everyday lives. The speed and consistency that we are able to make phone calls and access information online is supported by a large network of services, many of which are literally unseen by most end...

**4 Coast Guard marine traffic data a boon for ocean...**  
The success of ocean planning in the Mid-Atlantic relies on the ability for disparate groups to effectively communicate their concerns and needs to one another.

**5 Recreational survey covers the coast.**  
Through a collaborative partnership between the Surfrider Foundation, Monmouth University, The Nature Conservancy, and Point 37 there is now non-consumptive recreational use data available for the Mid-Atlantic region.

**4 Every map tells a story. We help you share yours.**  
The Portal connects agency, industry and community leaders who are shaping the future of our coast to the best available data on ocean science, maps, and each other through a state-of-the-art data visualization, storytelling, and net...

MARCO  
Welcome to the Mid-Atlantic Ocean Data Portal, an ocean planning resource center, and the Marine Planner, an interactive mapping tool.

ABOUT THE PORTAL  
About the Portal  
Visit MARCO  
Mid-Atlantic Regional Planning Body

NEWS  
Ocean Stories  
Columns  
Updates

PARTICIPATE  
Groups  
How to use the Portal  
Join  
Login  
Logout

DATA  
Catalog  
Needs & Priorities  
Resources

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Cont'd on page 20

# OCEAN PLANNING

Actions for a Healthy Ocean...cont'd from page 13

## MARCO's NOAA Regional Resilience Grant

MARCO received \$514,507 from NOAA this spring for a variety of tasks aimed at helping the region deal with climate changes that will impact the ocean and ocean economy. The project period is June 2016 – May 2018. Objectives include:

1. *Characterize changing ocean conditions affecting ecological, social and economic resilience of coastal communities, land and ocean use.*
  - a. *Launch an initial Mid-Atlantic Ocean Acidification Network (this will jumpstart one of the OAP's actions)*
  - b. *Develop a communications approach for data products on changing ocean conditions impacting living resources (e.g., fish) and regional resilience.*
  - c. *Enhance regional shoreline and sediment management including nature-based shoreline management.*
2. *Strengthen regional collaboration, identification and sharing of state and regional resilience strategies and best practices.*
3. *Expand communication regarding the role of the coastal ocean in community resilience, and risks posed by a changing climate.*

## MARCO Canyons Workshop



In April 2016, MARCO hosted a workshop for resource managers and the MARCO Board to learn from scientists about their 2011-2016 expeditions in the Mid-Atlantic submarine canyons. The meeting participants concluded that on-going science and management efforts on these canyons should emphasize:

1. *Research that reveals how important ecological communities of submarine canyons interact with each other and with surrounding Mid-Atlantic habitats.*
2. *Data sharing and collaboration tools and processes.*



3. *Outreach, especially the development of narratives that emphasize the importance of Mid-Atlantic canyons to the public through media, aquariums, and digital platforms.*
4. *Solutions to address negative impacts on the canyons and corals such as marine pollution (e.g., toxics, plastics and lost fishing gear), and climate change (e.g., warming sea temperatures and increasing acidification).*

One impact to canyons has already been addressed. Last year, the Mid-Atlantic Fishery Management Council took a bold step, in cooperation with the fishing community, to protect the Mid-Atlantic canyons and their sensitive and ancient cold water coral habitats by prohibiting bottom-tending fishing gear in these areas (see [www.mafmc.org/actions/msb-am16](http://www.mafmc.org/actions/msb-am16)).

For a truly remarkable seven minute video of Mid-Atlantic canyon habitats taken during NOAA's Okeanos expeditions see <http://midatlanticocean.org/media-resources-submarine-canyons/>.

## Virginia CZM's 5 Year Ocean Strategy 2016-2020

Thanks to funding from NOAA, Virginia CZM will continue its work with MARCO and the RPB. The five year grant strategy includes continued funding for an Ocean Stakeholder Coordinator at VCU as well as funds for development of new data. 

### Additional Resources

MARCO's Course of Action for the Conservation of Mid-Atlantic Submarine Canyons: <http://midatlanticocean.org/wp-content/uploads/2014/09/MARCO.Submarine-Canyons.2014.09.12.pdf>

Mid-Atlantic Fishery Management Council Deep Sea Coral Amendment: [www.mafmc.org/actions/msb-am16](http://www.mafmc.org/actions/msb-am16)

Media Resources: Including map-based data and open source imagery: <http://midatlanticocean.org/media-resources-submarine-canyons/>

# OFFSHORE WIND ENERGY

## Collaborative Planning with Fishermen

By Nick Meade and Laura McKay, Virginia CZM

Offshore wind has the potential to be a significant source of renewable energy in Virginia. If fully developed, the Virginia Wind Energy Area (VWEA), in federal waters, about 24 nautical miles east of Virginia Beach, could support more than 2,000 megawatts of wind generation, enough electricity to power 700,000<sup>1</sup> homes.

In July of 2014, the US Bureau of Ocean Energy Management (BOEM) offered the Virginia Department of Mines, Minerals, and Energy (DMME) a cooperative agreement opportunity to undertake both geophysical survey analyses and collaborative fisheries planning in preparation for future development of the VWEA. Given Virginia CZM's role in ocean planning, DMME asked the program to lead the collaborative fisheries planning effort.

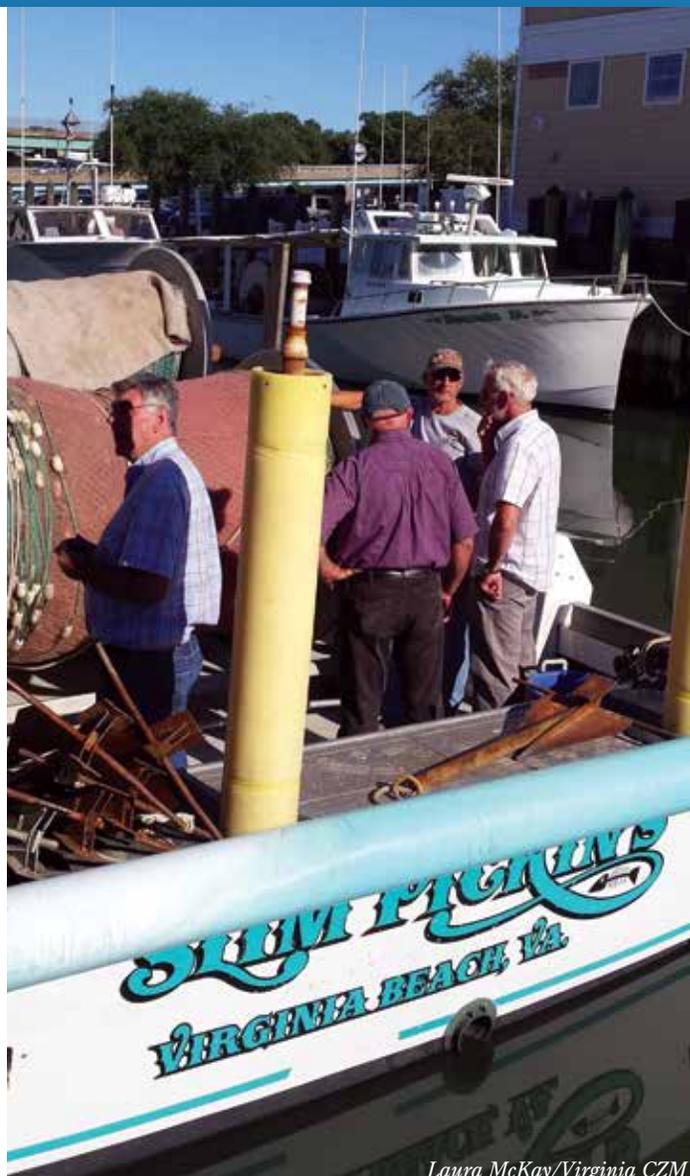
Like much of Virginia CZM's work, we knew that collaborative fisheries planning is best accomplished by leveraging the skills and expertise of multiple partners. With that in mind, the program partnered with the Virginia Marine Resources Commission, the Mid-Atlantic Fishery Management Council, The Nature Conservancy, Chesapeake Environmental Communications, and coastal planners with Virginia Commonwealth University (working in Hampton Roads) and Accomack-Northampton Planning District Commission to form a Collaborative Fisheries Planning Team.

### Project Goals

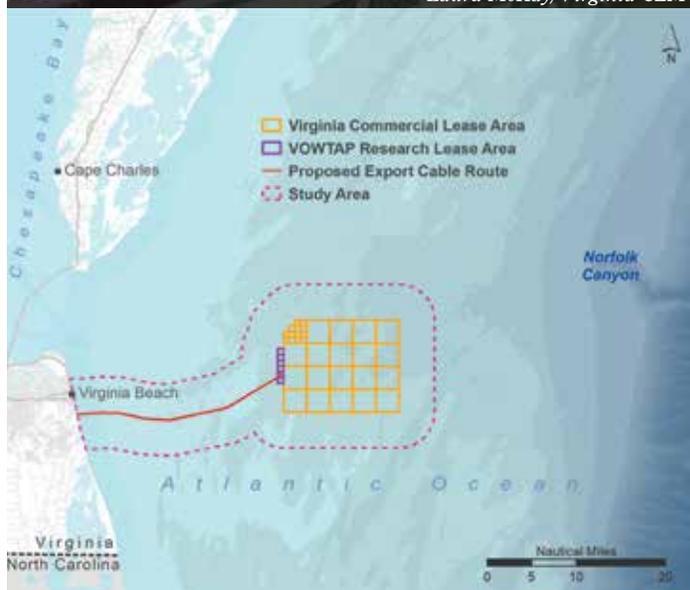
The goals were to work with recreational and commercial fishermen to: 1) develop fine-scale maps of fishing in and around the VWEA; 2) identify best management practices for maximizing fishing and mitigating use conflicts between fishing and wind energy development; and 3) create a plan for communicating with fishermen about wind development activities. These efforts built on previous Virginia CZM-led engagement of the fishing community, both in review of Mid-Atlantic commercial fishing maps developed for the MARCO Portal and through a participatory Geospatial Information System workshop in 2012 to map recreational fishing off Virginia's coast.

*Cont'd on page 16*

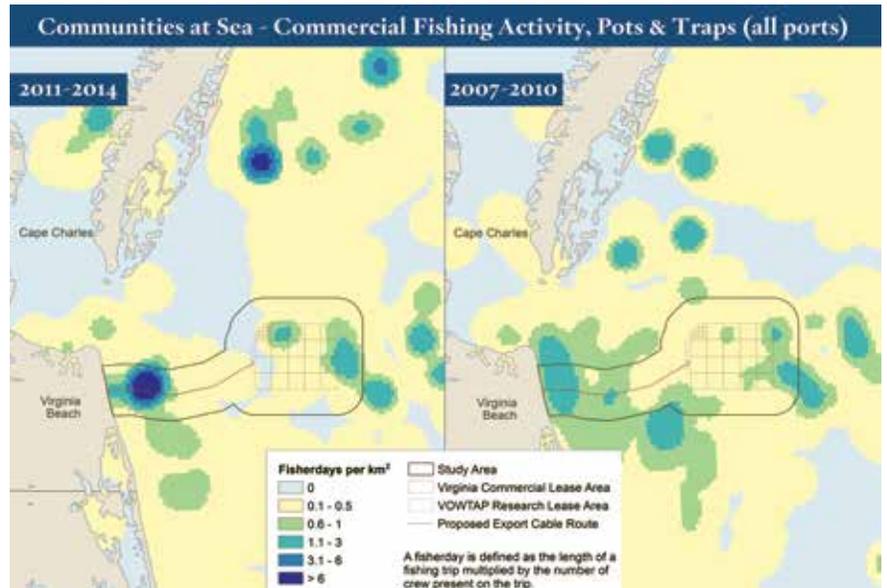
<sup>1</sup>BOEM: <http://www.boem.gov/Renewable-Energy-Program/State-Activities/VA/Commercial-Lease-for-Wind-Energy-Offshore-Virginia.aspx>



Laura McKay/Virginia CZM



The team met with fishermen both in group meetings and one-on-one on the docks to provide information about offshore wind development in the VWEA and to ask for information about where they fish in and around the VWEA. Although reluctant at first, many fishermen provided information electronically and on hand-drawn paper maps about where they fish, understanding that not divulging the information could result in those areas being built upon. They were also asked by the team to vet existing maps including MARCO's Communities at Sea maps (example atright), Virginia CZM's Recreational Use maps, and BOEM's Fishery Exposure Analysis maps (based on NOAA's vessel monitoring data).



*Communities at Sea maps use NOAA's Vessel Trip Reports and heat maps that link fishermen's home ports to the places in the ocean where they fish. The maps can also be viewed by gear type and over a variety of time periods.*

### Best Management Practices Workshop

In September 2015, the Collaborative Fisheries Planning Team held a workshop in Virginia Beach bringing together interested agencies and experts on the interaction of fishing communities and offshore wind developers. The meeting included Rhode Island's Fisheries Coordinator (RI is the first state to construct offshore wind turbines in the United States—construction began in fall 2015) and a Fisheries Liaison and Fisheries Representative from England (where hundreds of offshore wind turbines have been erected). The workshop provided an opportunity to learn from the invited experts, identify and refine Best Management Practices (BMPs), and draft a communication plan to keep fishermen informed of wind energy activities.

Before the workshop the project team and guest experts from RI and England visited fishermen in the Hampton Roads area. We continued to vet maps of fishing in the VWEA and gave Virginia fishermen a chance to talk informally with the RI and British experts about their experiences. The British fishermen noted that in England, offshore wind had an overall neutral effect on fishing—some fisheries did better, some did



*Participants in the BMP Workshop (pictured) included members of the Collaborative Fisheries Planning Team, Rhode Island's Fisheries Coordinator, BOEM staff and a Fisheries Liaison and Fisheries Representative from England. Image courtesy of Chesapeake Environmental Communications.*

worse. They also saw Virginia's collaborative planning efforts in advance of construction as a great advantage to Mid-Atlantic fishermen which British fishermen were not afforded.

After the workshop the team continued to refine the BMPs and then provided them to the fishing community for review before the project ended in May 2016.

## Will Undersea Electrical Cables Affect Migrating Sturgeon?

When speaking with Virginia's fishermen about offshore wind energy, one of the concerns they raised was whether fish, particularly those that frequent the bottom, would be affected by electromagnetic fields (EMF) from the cables that bring electricity to shore. The cable proposed for Virginia's offshore wind turbines would be buried about 6 feet under the ocean floor and run the roughly 24 miles from the turbines to the substation in Virginia Beach.

Biologists working to restore the iconic (and federally listed) Atlantic sturgeon are also concerned about potential EMF affects. This prehistoric looking fish with its delicious meat and caviar once thrived in great numbers in Virginia and is now making a bit of a comeback in the James River.

Atlantic sturgeon use the earth's magnetic field to navigate during their long annual migrations between riverine and marine habitats as they swim along the bottom. Sturgeons may also rely on bio-electric fields generated by their benthic prey to find them and forage effectively. Some sturgeon biologists are concerned that submarine high voltage cables might disrupt Atlantic sturgeon migratory and feeding behaviors.

In an attempt to answer some of these questions, Virginia CZM is funding VCU's Life Sciences Department and its Department of Electrical Engineering to jointly design and implement experiments to quantify behavioral responses of captive, juvenile Atlantic sturgeon to externally applied magnetic and electromagnetic fields. The engineers modeled, designed, and built a high-precision Magnetic and Electromagnetic (M/EM) Field Generator as well as an array of magnetometers (sensors) that allow researchers to track and record M/EM values continuously during each experiment. In the laboratory, sturgeon biologists from the VCU Center for Environmental Studies are using visual tracking software and data gathered by high-speed cameras to quantify and evaluate a range of fish behaviors in response to the magnitude and orientation of M/EM fields.

Once the project is complete in late summer, the Virginia CZM/ VCU Ocean Stakeholder Coordinator, funded under the next five year Virginia CZM Ocean Strategy (see page 10) will complete a fact sheet for fishermen that summarizes the results and other available studies on the effects of EMF on fish. 🐟

For more details, contact Dr. Greg Garman ([ggarman@vcu.edu](mailto:ggarman@vcu.edu)).



VCU Center for Environmental Studies

### Sturgeon Facts: The Bay's Pre-Historic Native

- *The Atlantic sturgeon (Acipenser oxyrinchus) is a bony, prehistoric fish that visits the Chesapeake Bay in the spring to spawn in Virginia's James and York rivers, returning to the ocean in the fall. It was once found throughout the Bay and its freshwater rivers, but is now very rare.*
- *Sturgeons were abundant when English settlers arrived in the Bay region in the 1600s. They were a reliable source of food for the settlers most of the year. In particular, caviar from sturgeon eggs was considered a delicacy in Europe.*
- *Sturgeons are very sensitive to low oxygen, pollution and other poor water conditions. This, combined with their slow rate of maturity, damming of their spawning rivers and historic commercial fishing pressure, has caused the species to become very rare. In 2012, NOAA officially declared the Atlantic sturgeon an endangered species. It is illegal to fish for, catch or harvest Atlantic Sturgeon or their eggs.*

# MARINE DEBRIS

## State and Regional Efforts

By Laura McKay, Virginia CZM

Marine debris, particularly plastic, continues to flow from Virginia's rivers, bays and airshed into the Atlantic Ocean at an alarming rate. Since Virginia CZM began working on this issue in 2012, hopefully awareness of the problem, and efforts to change human behavior, are also spreading.

### Virginia Efforts

Spreading the word to the public and improving communication among those working on the issue is one of the major themes in the Virginia Marine Debris Reduction Plan which grew out of the first Marine Debris Summit in early 2013. With the tremendous help of Virginia CZM grantee (Clean Virginia Waterways of Longwood University) and many partners. The Second Marine Debris Summit was held at VIMS in March

2016 to review progress to date on the plan and to gather ideas for next steps. A summary of the plan and the 2016 Summit are available at [www.deq.virginia.gov/Programs/CoastalZoneManagement/CZMIssuesInitiatives/MarineDebris.aspx](http://www.deq.virginia.gov/Programs/CoastalZoneManagement/CZMIssuesInitiatives/MarineDebris.aspx). Attending the 2-day summit were 116 people representing 50+ different agencies and organizations. Their enthusiasm for working together and genuine concern for the health of ocean and coastal waters was truly uplifting. Great ideas, hatched in

small-group sessions, including offering training in social marketing techniques (which Virginia CZM plans to do in June 2017) and extending to additional locations successful local efforts such as Clean Virginia Waterway's Virginia Beach "Beachy Clean" litter prevention program.

As a result of the first summit, Virginia CZM was able to secure funding from NOAA to establish baseline monitoring that meets federal standards and feeds into NOAA's national database. Since April 2014 a team from the Virginia Aquarium, Clean Virginia Waterways, 2 contractors and 20+ trained and dedicated volunteers have completed 106 monthly surveys at 4 protected sites (where little public visitation occurs) on Virginia's coast, collecting data and uploading it to the national database. An additional grant from NOAA to Virginia CZM starting in



October 2016 will allow for extension of this effort into 2018. So far over 8,000 debris items have been documented within the roughly half mile of the shoreline areas monitored.

Virginia CZM's 2016-2020 Coastal Enhancement Strategy will include a second, five-year round of grants on marine debris reduction. This will provide \$300,000 over the five years to allow us and Clean Virginia Waterways to continue to work with partners on refinement and implementation of Virginia's Marine Debris Reduction Plan.

### Mid-Atlantic Regional Efforts

Both NOAA and EPA are helping the Mid-Atlantic region tackle the marine debris problem. NOAA has held several meetings with Virginia, Maryland, DC and Delaware. EPA has met with New Jersey and New York. Those efforts could be pulled together under the auspices of the Mid-Atlantic Ocean Action Plan (see page 11).

Working together as a region could result in cost-savings when up-scaling local projects such as "Beachy Clean"—especially if social marketing materials can be mass-produced. MARCO will be looking at ways to address one of its four shared regional priorities, ocean water quality improvement, at its August Board meeting in Albany, New York. Marine debris reduction is one possible avenue. MARCO's efforts could help lay the groundwork for the Mid-Atlantic Regional Planning Body which will begin work on choosing a marine debris reduction strategy in early 2017.

Virginia CZM has plans for a social marketing training workshop in June 2017 include inviting colleagues from the Mid-Atlantic states to increase the region's capacity for developing effective programs.



*Pictured are some of the attendees of the Second Virginia Marine Debris Summit. Behind the group is a jellyfish made from plastic bottles. All grades at Seatac Elementary in Virginia Beach worked together to create "Jingles the Jelly." Photo courtesy of Virginia CZM.*

## Taking the Rise Out of Balloon Debris

By Virginia Witmer, Virginia CZM and \*Katie Register,  
Clean Virginia Waterways

Balloons are unique among all the man-made litter and debris found in the ocean and on the land. Helium-filled balloons, and their attachments (e.g., plastic valves, disks and ribbons) are the one form of litter that people actually purchase with the intent to release into the environment. Although some people make the connection that when balloons go up they come back to Earth later as potentially harmful litter, too many other people participate in a mass release of balloons without making this connection. Why is this?

Virginia CZM received grants from NOAA's Marine Debris Program and Office of Coastal Management to focus on this question and to develop a social marketing campaign to encourage alternatives to balloon releases. Through formative research—interviews, focus groups and surveys—Virginia CZM and Clean Virginia Waterways are working with a team of partners to determine the underlying drivers of celebratory or bereavement behavior associated with balloon releases, and the barriers to a different way of expressing these emotions at important events.

*Cont'd on page 20*



*Christina Trapani*

### Balloon Debris Numbers



*Christina Trapani*

Over a period of five years, 2010-2014, volunteers participating in the International Coastal Cleanup in Virginia found and reported 4,916 pieces of balloon litter. Of these, 3,122 (63.5%) were found on ocean beaches. In 2014, 236 volunteers found 904 balloons on Chincoteague National Wildlife Refuge in a three-hour period. Recent surveys of remote islands on Virginia's Eastern Shore documented up to 40 balloons per mile of beach. Virginia's balloon litter problem mirrors a US problem; on average, balloons are the 17th most commonly found litter item

in Virginia as well as in the US. This suggests that Virginia is an appropriate state to research and create an educational and outreach program that could be scalable to other states.



*Christina Trapani*

### Impacts of Balloon Debris

Released balloons can drift hundreds of miles and out over the ocean. Latex balloons burst in the atmosphere, so that when they fall into the water they resemble jelly fish – a favorite food of sea turtles. Birds are also easily entangled in the balloons and their ribbons. Foil balloons (incorrectly referred to as Mylar) that become entangled in power lines can cause wide-spread power outages.



*Christina Trapani*

# MARINE DEBRIS

*Balloon Debris...cont'd from page 17*

This research will inform the design of a social marketing strategy to encourage alternatives to balloon releases. A successful campaign will secure commitments from individuals and organizations to switch from the mass release of balloons to a more environmentally-sensitive activity, ultimately leading to a decrease in balloon releases and balloon litter. The project will be designed to be scalable to the regional and national levels, and will build the team's capacity to conduct similar campaigns to prevent marine debris.

The project team worked with the research firm, OpinionWorks, to conduct pre-campaign research, including a literature review, mass and social media analysis, interviews, a public survey, and focus groups in coastal Virginia and areas west. This research found the following:

**A lack of awareness** – many people do not understand that no balloon is environmentally friendly, and that every released balloon becomes litter and can be harmful.

**People assume “biodegradable” means “harmless.”**

**Who plans these events?** Mostly associations, families and schools.

**Where are balloons released?** Mainly in parks, outside of schools, churches and other wedding venues. Distance from ocean affects awareness of impacts to this environment. Increased awareness of inland impacts is also needed.

**When are balloons released?** Spring has the highest number of balloon releases, followed by the fall.

**Why are balloons released?** The majority of balloon releases are at “sad” events (such as funerals or memorials). Other releases are organized to raise awareness, or are at “happy” events (such as weddings or graduations). The sight of balloons rising into the sky elicits very strong emotions.

Once a research analysis is complete, a planning team will meet to identify the primary audience(s) and messaging for the campaign and develop a social marketing campaign strategy. Two campaign pilots are planned—one in fall 2016 and another in spring 2017. Once the results of these pilots have been evaluated, a campaign will be implemented coastal zone wide.

## *Monitoring Changes in Marine Debris*

How will we know our marine debris reduction efforts are making a difference? Balloon debris (types, quantities and sources where possible) are being studied prior to implementation of the campaign, and this monitoring will continue throughout the campaign to document changes in balloon debris, and help measure the effectiveness of the campaign.

More than 1,750 littered balloons have been documented and removed from five Virginia barrier islands during this monitoring. On some of these island beaches, balloon litter was the most frequently found litter item. 🐬

*\*Katie Register is Executive Director of Clean Virginia Waterways - [www.longwood.edu/cleanva/Index.html](http://www.longwood.edu/cleanva/Index.html).*



*Christina Trapani*

## *New Balloon Release Policies at Public Sites*

Partners working on the Virginia Marine Debris Reduction Plan have helped raise awareness about the harmful impacts of litter from balloon releases as well as sky lanterns. This has contributed to several new policies in Virginia. Longwood University in Farmville now has a policy that prohibits balloon and sky lantern releases on campus as well as at all university-sponsored events. After learning that parks are often the location of balloon releases, several Virginia state parks will add balloons and sky lanterns to their list of litter sources, and discourage their intentional releases. Parks are planning to educate visitors through flyers, brochures, and informational kiosks. The Virginia Green Program (the Commonwealth's program that works to reduce the environmental impacts of Virginia's tourism industry) will also modify its guidelines to discourage the mass release of balloons and sky lanterns at events, festivals, conferences and gatherings. These new policies could be models for other universities, schools, parks and other venues.

## *New Signage in Cape Charles Encourages Visitors to Help Keep the Beach Free of Debris*



*Virginia Witmer/VACZM*

Virginia CZM partnered with the Town of Cape Charles to install a 6-panel interpretive kiosk to educate visitors about the dune, beach and nearshore environment, and how they can help conserve its beauty and function by properly disposing of litter and reducing marine debris. Additional signage on the nearby jetty pier highlights fish found in the Town's Bay-side waters.

## NOAA Evaluates Virginia CZM Program

By Beth Polak, Virginia CZM

Partnerships are one of the Virginia CZM Program's greatest strengths, according to the NOAA review team's evaluation of the program from June 2006 to May 2015. Stakeholders interviewed by the NOAA team described the program as partner-oriented and having effective partnerships with local communities and regional and non-profit groups. "Flexible to meet the needs of locals" and "inclusionary" were some of the ways stakeholders expressed the excellence in partnership demonstrated by Virginia CZM.

"Partners clearly value the leadership of the Virginia CZM Program across various 'niche' roles, such as regional ocean planning and climate resilience," said NOAA's evaluation team leader, Kenneth Walker. The evaluation team included Walker along with NOAA Program Specialist, John Kuriawa and Bruce Carlisle, Executive Director of the Massachusetts Office of Coastal Zone Management.

The NOAA team identified three target areas in which Virginia CZM would be evaluated: 1) Restoring and Protecting Coastal Habitats and increasing Public Access, 2) Ocean Planning and 3) Coastal Resilience (see box at right).

NOAA's report, *Evaluation Findings for the Virginia Coastal Zone Management Program: June 2006 - May 2015*, was circulated to the Virginia CZM Program's partner agencies for review. Once NOAA finalizes the report, it will be posted on the Virginia CZM Program website at: [www.deq.virginia.gov/Programs/CoastalZoneManagement/DescriptionBoundary/Goals/Accomplishments.aspx](http://www.deq.virginia.gov/Programs/CoastalZoneManagement/DescriptionBoundary/Goals/Accomplishments.aspx). 

## Accomplishments and Recommendations

### Restoring and Protecting Coastal Habitats & Increasing Public Access

**Accomplishment:** The Program's place-based restoration efforts have been highly successful, leveraging significant funding from partners and resulting in "on the ground" coastal habitat improvements.

**Accomplishment:** The Program's financial support of public access authorities has provided a new tool for public access acquisition and management through a local policy framework enabled by state legislation.

### Ocean Planning

**Accomplishment:** The Program's leadership in regional ocean planning has brought together diverse stakeholders to plan for the location of future offshore facilities while minimizing user conflicts and impacts to coastal resources.

**Recommendation:** NOAA encourages the Program to continue its leadership role in regional ocean planning and to plan for how the work will move forward over the next five years, including continued emphasis on ways to diversify and leverage funding.

### Coastal Resilience

**Accomplishment:** The Program's leadership in coastal resilience has enhanced the capacity of local partners for adaptation planning and promoted the use of living shoreline approaches to enhance community and ecological resilience.

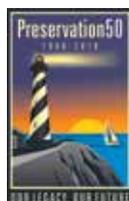
**Recommendation:** NOAA recommends that the Program further define the program's "niche" as it relates to coastal resilience.

### Partnerships

**Accomplishment:** The Program is leveraging partnerships, providing new data and tools to partners, and building local and nongovernmental-organization partner capacity to better manage Virginia's coastal resources.

## Happy Anniversaries! Congratulations to All!

Years ending in "6" are special ones for so many of us! Virginia CZM is celebrating our 30th. The Virginia Department of Game and Inland Fisheries is a century old. Virginia State Parks turned 80 this year. The Virginia Department of Historic Resources is celebrating its 50th anniversary, as well as the 50th anniversary of the National Historic Preservation Act. The Virginia Outdoors Foundation also celebrates 50 years. The NOAA Marine Debris Program just turned 10. The DCR Natural Heritage Program is celebrating its 30th, and was recently recognized by NatureServe with the "Conservation Impact Award." Tom Smith, Natural Heritage Program director from 1992 until 2016 (now deputy director of operations), was recipient of NatureServe's first-ever Lifetime Achievement Award.



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*Winner -  
2015 Eastern  
Shore Birding  
and Wildlife  
Festival Photo  
Contest:  
Semi-palmated  
Plover by Jim  
Duffy. Almost  
40 photographs  
were judged by  
a panel of  
birders and  
Festival  
Committee  
members.*

## SAVE THE DATE

### Eastern Shore Birding and Wildlife Festival

October 6 - 9, 2016  
Sunset Beach Resort, Cape Charles

Keynote speaker: *E.J. Williams, American Bird  
Conservancy*

[www.esvabirdingfestival.com](http://www.esvabirdingfestival.com)

## SAVE THE DATE

### Virginia Coastal Partners Workshop

November 16 & 17, 2016  
Virginia DEQ, Richmond



Watch our website  
for registration details.