Virginia Coastal Zone Management

Spring/Summer 2018

IN THIS ISSUE:

Virginia Coastal Zone
MANAGEMENT PROGRAM

Protecting, restoring, and strengthening our coastal ecosystems and economy

DEQ
Virginia Department of Environmental Quality

The Virginia CZM Program's lead coordinating agency celebrated its 25th anniversary on April 1, 2018.

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.

This *Virginia Coastal Zone Management* magazine is funded through a grant to the Virginia Coastal Zone Management Program at the Virginia Department of Environmental Quality from the U.S. Department of Commerce, NOAA, under the Coastal Zone Management Act of 1972, as amended. The views in this publication are those of the authors and do not necessarily reflect the views of NOAA, the U.S. Department of Commerce, or any of its subagencies.

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*.

Virginia Coastal Zone Management Program

DEQ Virginia Department of Environmental Quality

NOAA

*Cover image: Floating narrow-leaved spatterdock (*Nuphar sagittifolia*) and emergent common spatterdock (*Nuphar advena*) on the channel edge of a fresh tidal marsh at Big Marsh Point, along the Chickahominy River in James City County. Photo by Gary Fleming, DCR-NH.*

Message from the Manager

After 24 years in the same office, we've moved - but just 6 blocks east on Main Street. While it's not far, we'll miss certain things like our "beloved bench" (takes up too much space in our smaller quarters - see staff photo below with our old bench) and spectacular winter sunsets out our western windows. However, the move provided a much needed reason to clean out our files and embrace the "paperless office" concept.

Last year also brought other changes. One is the start of exciting new focal areas for our competitive grant funding – see pages 8-9 for new work on Promoting Coastal Industries: Shellfish Aquaculture and Ecotourism and pages 10-13 for new work on Building Natural and Community Climate Resiliency.

We (the Mid-Atlantic Regional Planning Body on which Virginia serves as the co-lead for this federal-state-tribal body) were also recognized for our "Excellence in Solutions" with a Peter Benchley Ocean Award – named for the author of "Jaws." Several of us attended the lovely award ceremony at the Smithsonian last May (*photo left*). Pages 14-15 describe how we are moving ahead on our Ocean Action Plan.

This year, 2018, marks the 25th anniversary of the Department of Environmental Quality. The DEQ website provides a dashboard, timeline and story map highlighting the agency's progress and accomplishments, including the Virginia CZM Program's role.

So these are the "benchmarks" for this issue. Come visit us at our new address!

Laura McKay

Virginia Coastal Zone Management

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Visit us on the Web at *www.deq.virginia.gov/Programs/CoastalZoneManagement.aspx.*

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Economics of Land Conservation

Dollars and Sense of Conserved Lands on Virginia's Eastern Shore

By Laura McKay, Virginia CZM Program

"...lands with conservation easements do not place a fiscal burden on either county. Conserved lands support economic activity that produces significant value added to the Shore's Gross Regional Product." ***Terry Clower, George Mason University***

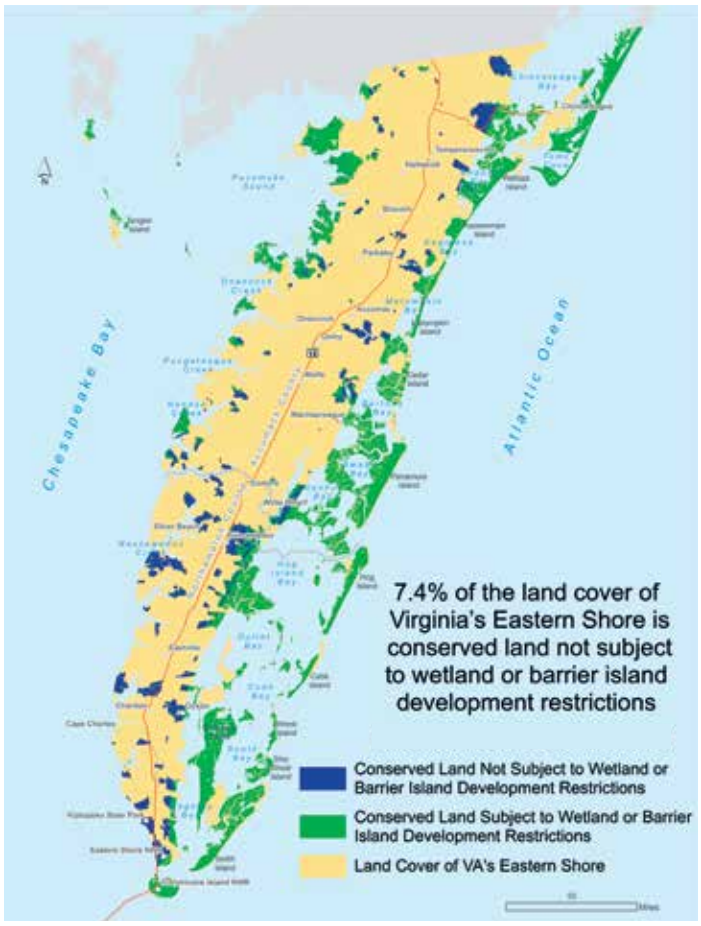
Photo by David Garst, DGIF.

How much conserved land is enough? When does the amount of land "tied up" in conservation become detrimental to economic growth? How much revenue is lost to localities when lands are put in conservation status? These are the kind of questions that citizens and politicians on the Eastern Shore had been asking for some time. Because it is the Virginia CZM Program's mission to strengthen *both* our coastal ecosystem *and* our coastal economies, these were questions we needed to answer.

Although several studies have touted a positive economic impact from conserved lands, they did not look at the specific budgets of Northampton and Accomack counties nor did they specificallly address revenues foregone due to lower tax bills on private lands with conservation easements. Furthermore these studies were not guided by local government officials.

So in late 2015, the Virginia CZM Program convened a team of Eastern Shore government officials representing the two counties, the planning district commission and the Eastern Shore Soil & Water Conservation District to help create a request for proposals from economists at Virginia academic institutions to conduct a study titled "Socio-economic Impacts of Conserved Land on Virginia's Eastern Shore." The local team's mission was then to select the best proposal, guide the work, provide local data as needed and review and approve the final report.

In summer of 2016 the team selected Dr. Terry Clower of George Mason University and his colleague Dean Bellas



of Urban Analytics. A kick-off meeting with the economists and the study team helped refine the focus of the study to two main questions: 1) How do land conservation programs and practices affect local economic conditions? and 2) What is the fiscal impact of conserved land and conservation easements on the "bottom line" of the budgets of each county?

The broader economic impact analysis considered three sources of economic activity related to conserved lands:

1. organizations directly involved in land conservation including non-profit conservation organizations, park operations, and eco-tourism operators who would not locate on the Eastern Shore but for the presence of conserved lands;
2. aquaculture industries dependent on high water quality that can be, at least in part, attributable to land conservation; and,
3. tourism that is specifically focused on outdoor recreation.

The economic activity associated with **organizations involved in land conservation** on the Eastern Shore generated $21.88 million in economic activity in 2016. Economic activity associated with **aquaculture industries** boosted Eastern Shore economic activity by $156.7 million. **Tourism spending** associated with conserved land created $51.38 million in economic activity.

The fiscal impact analysis found that in 2016, total real property taxes paid to Accomack County from land with conservation easements is estimated to be $303,653; and total real property taxes paid to Northampton County from land with conservation easements is estimated to be

Cont'd on page 4


DCR

Direct Organizations
$21.9 million in spending
226 jobs
$8.8 million to GRP*


Virginia Witmer/VACZM

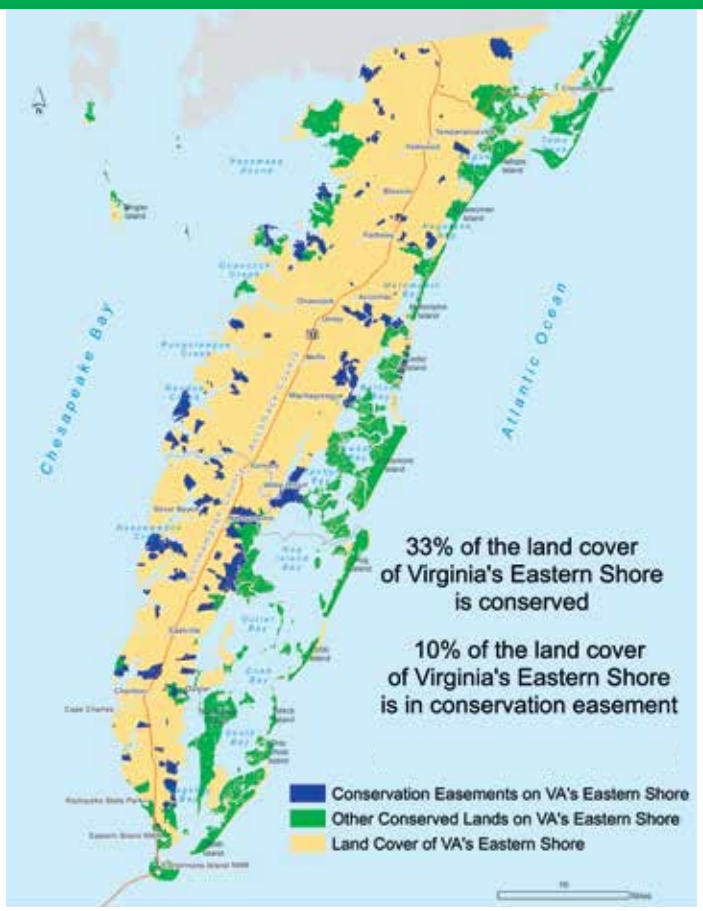
Aquaculture Activities
$156.7 million in spending
365 jobs
$114.4 million to GRP*


Jessica Ruthenberg/DGIF

Visitor Spending
$51.4 million in spending
655 jobs
$24.4 million to GRP*

* Gross Regional Product (GRP) is the market value of all final goods and services produced within a geographic area in a given period of time.

Economics of Land Conservation

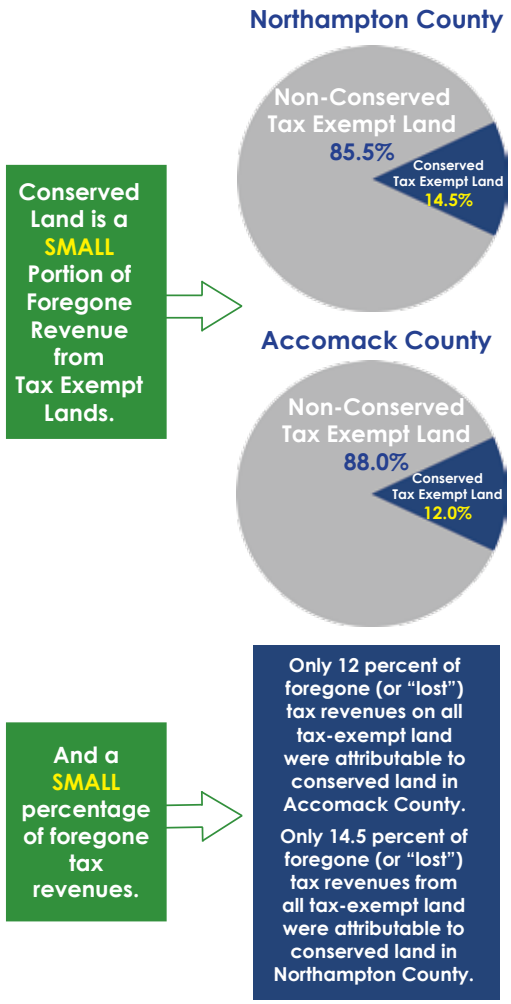


Eastern Shore Conserved Lands Study...cont'd from page 3

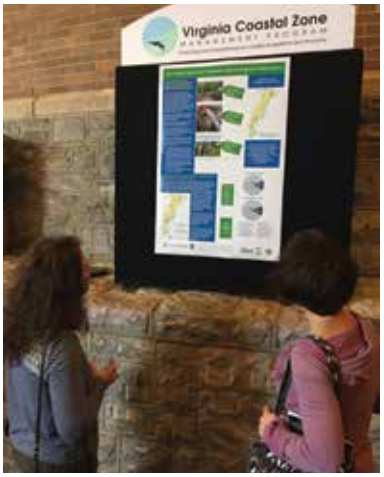
$322,694. Estimated real property taxes foregone reflects the "lost" tax revenue to each county as land with a conservation easement has a lower use-value tax assessment recorded on the books of each county. In 2016 foregone real estate tax revenues were estimated to be $79,095 in Accomack and $283,611 in Northampton.

To estimate the fiscal impacts of conservation easements in both counties, the study assessed revenues from real estate taxes, local sales and uses taxes, and hotel and motel taxes compared against public service expenditures for general government administration; public safety; public works; and parks, recreation and culture. ***For every $1.00 spent in Accomack County annually to provide public services to support land with conservation easements, revenues to Accomack County were estimated to be $2.38. In Northampton County, for every $1.00 spent annually in the provision of public services to support land with conservation easements, revenues to Northampton County were estimated to be $1.15.***

The findings of the fiscal impact model indicate that lands with conservation easements do not place a fiscal burden on either county. The final report also includes appendices

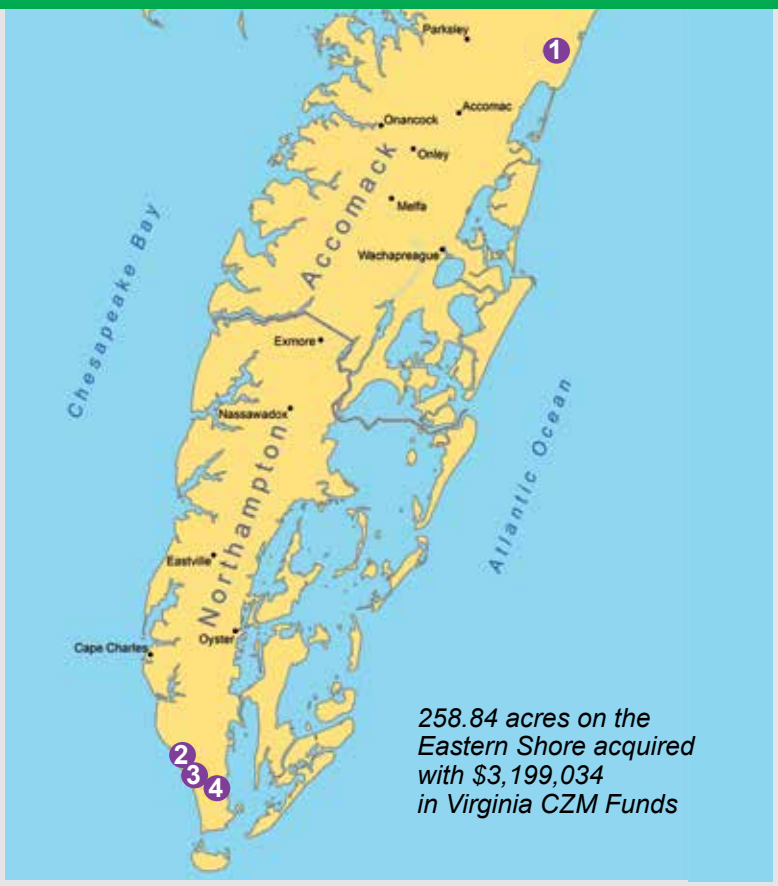


describing how various conservation agencies and organizations prioritize which lands they wish to acquire from willing sellers. The complete report can be downloaded at: https://www.deq.virginia.gov/Portals/0/DEQ/CoastalZoneManagement/FundsInitiativesProjects/task10-01-14.pdf. Given these findings, the Virginia CZM Program looks forward to acquiring additional lands on the Eastern Shore for conservation and eco-tourism purposes with its FY16-FY18 funds.



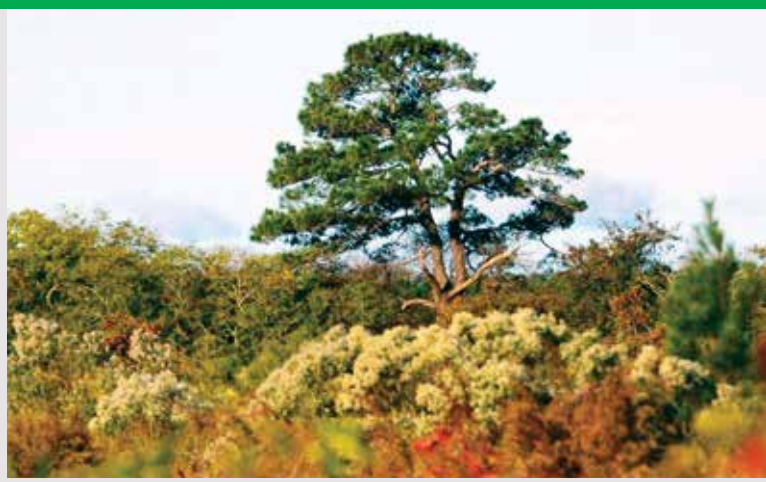
Attendees viewing the Virginia CZM exhibit on Economics of Conserved Land. at the April 2018 Virginia Association of United Land Trust's Land Conservation and Greenways Conference in Roanoke. Photo by Tom Smith, DCR.

For more information, contact Laura McKay at (804) 698-4323 or Laura.McKay@deq.virginia.gov.



3. *Parson's Tract at Kiptopeke State Park - 54 of 165 acres acquired with $482,504 in Virginia CZM funds. Photo courtesy of DCR.*

3. *Taylor Tract at Kiptopeke State Park - 18 of 26 acres acquired with $444,846 in Virginia CZM funds. Photo by Laura McKay, VA CZM.*



1. *Easement at Mutton Hunk Natural Area Preserve - 83.2 of 104 acres acquired with $200,000 in Virginia CZM funds. Photo by Dot Field, DCR-NH.*

2. *Beautiful Woods Bay front lots at Pickett's Harbor Natural Area Preserve - 2.14 acres acquired with $613,000 in Virginia CZM funds. Photo by Dot Field, DCR-NH.*

4. *Bull Tract at Magothy Bay Natural Area Preserve - 101.5 of 285 acres acquired with $1,458,684 in Virginia CZM funds. Photo by Virginia Witmer, VA CZM.*

Economics of Land Conservation

Lower Chickahominy Project Takes to the Field

By Beth Polak, Virginia CZM

"The extensive marshes and swamp forests of the Lower Chickahominy represent some of the most impressive fresh tidal vegetation in the Mid Atlantic."
DCR, Natural Heritage Program

Redbreast Sunfish, Eastern Mudminnow, Chain Pickerel, Fallfish and Pirate Perch are some of nine native species documented by VCU biologists last field season in Tomahund Creek, Charles City County. David Hoppler, VCU Center for Environmental Studies fisheries biologist and VCU graduate student Andrew McIntyre began stream assessments this summer as part of field work for CZM's five-year project - "Leveraging Economic Benefits of the Natural Resources of the Lower Chickahominy."

VCU and state conservation agencies launched the project in its first year by evaluating watershed health and filling data gaps to refresh outdated information. A clear picture of the unique characteristics of this Northern Coastal Plain watershed will help economists build accurate analyses and equip policy makers to craft appropriate long-range plans.

New field data will be mapped by project lead, Richmond Regional (RR) PDC and overlaid with base watershed maps created in the initiative's first year. These data will be made available to localities in the lower watershed to better understand the status and location of significant natural resources. Prior to this update, some of the available data was approaching 20 years old and was not representative of the current landscape. "An accurate understanding of the landscape and location of resources is crucial for accurate planning and policy development for protection and promotion of these resources," said Sara Stewart, RRPDC.

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*(Above) Virginia Natural Heritage Program ecologist Karen Patterson surveys a dense tidal freshwater marsh, here dominated by Southern Wild Rice (*Zizaniopsis miliacea*). This is one of the key species in the diverse Wild Rice-Mixed Forbs Tidal Freshwater Marsh community type.*

(Top, right) Dave Hopler and Andrew McIntyre, VCU. Photo by Richie Dang.

(Center, right) Redbreast Sunfish, Lepomis auritus*, and Warmouth,* Lepomis gulosus*, documented in Tomahund Creek, Charles City County. Photos by David Hopler.*

(Bottom, right) Virginia Natural Heritage Program botanist Nancy Van Alstine surveys the shoreline of the Chickahominy for rare plants.

All images by Gary Fleming, DCR-NH, unless otherwise noted.

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(1) *An old, stranded Baldcypress (*Taxodium distichum*) with numerous "knees" in a broad meander of the Chickahominy River west of Graves Landing, Charles City County.*

(2) *Narrow-leaf Blue Curls,* Trichostema setaceum*, state-rare plant discovered in one of the Fluvial Terrace Woodlands along Ware Creek.*

(3) *Tidal Baldcypress Woodland along the western shore of the Chickahominy. The river probably supports more acreage of this natural community type than all other Virginia tidal rivers combined.*

(4) *Virginia Least Trillium,* Trillium pusillum var. virginianum.

(5) *Scarlet Kingsnake,* Lampropeltis elapsoides*, New Kent County. Photo by Dane Conley, DGIF.*

(6) *The Lower Chickahominy River is an exemplary freshwater estuarine system that contains outstanding examples of aquatic bed, tidal marsh, and tidal swamp forest natural communities.*

(7) *Bluespotted Sunfish (*Enneacanthus gloriosus*). Photo by Dave Hopler, VCU.*


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Lower Chickahominy Study...cont'd from page 7

The information provided to localities by these data is useful not only for this initiative, but also for other planning purposes such as land use, recreation and transportation elements of a local comprehensive plan.

The Chickahominy project presents an opportunity for VCU to revisit stream data collected 25 years ago and run simple change analyses explained Greg Garman, Director of VCU's Rice Rivers Center and principal investigator of the stream assessment work for this project. "It's good to go back to some of these old data sets and see how things may have changed," Garman said. "Are we losing ground in the Chickahominy or are we gaining ground?"

Fisheries biologists at VCU are ranking sections of 40 streams in the Chickahominy watershed with the Interactive Stream Assessment Resource (INSTAR) a web-supported interactive database. INSTAR, scientifically classifies streams as healthy using data about fish communities, instream habitats and riparian borders. A Virtual Stream Assessment score is assigned based on collected data - number and variety of fish and macroinvertebrates collected along an approximately 150 meter stream reach. Condition of stream banks with vegetation present to filter storm water runoff is also considered. Statistical analysis is then done comparing the actual stream to a model stream that represents ideal biological conditions for a stream in that region.

Data collected through the stream assessment work also helps advance the Department of Conservation and Recreation's (DCR) Heathy Waters Program. Heathy Waters is an initiative to raise awareness about the need to protect streams, creeks and other waters while they are still healthy, not waiting until a stream becomes impaired and then backtracking to restore it.

DCR's Division of Natural Heritage has also devoted field time to the project by surveying the lower Chickahominy river and parts of Ware Creek. The program has documented more than 120 occurrences of natural heritage resources in Charles City, James City and New Kent counties with more than half of these records potentially becoming so old (over 25 years) that they would no longer be used by the division to develop conservation prioritization tools and assessments like those used in the Coastal Virginia Ecological Value Assessent (VEVA).

The extensive marshes and swamp forests of the Lower Chickahominy have been described by Natural Heritage ecologists as "nearly pristine" and representing some of the most impressive fresh tidal vegetation in the Mid Atlantic. With

*(Top) Tidal shore of the Chickahominy River near Wilcox Neck. The Chickahominy estuarine system supports outstanding examples of Tidal Freshwater Marshes (foreground), Tidal Freshwater/Oligohaline Aquatic Beds dominated by narrow-leaved spatterdock (*Nuphar sagittifolia*, middle), and Northern Coastal Plain Tidal Bald Cypress Woodlands (background). Photo by Gary Fleming, DCR-NH.*

this field work, five new natural communities were found and three existing community records were updated. Three rare plant records were confirmed - one of these, Eastern Doll's Daisy (*Boltonia asteroids var. glastifolia*), has not been seen near the Chickahominy since the 1940s.

A herpetological survey was also conducted in the watershed by the Virginia Department of Game and Inland Fisheries where more than 60 reptile and amphibian species were documented. These include nine species of greatest conservation need, specifically - Common Ribbonsnake, Scarlet Kingsnake, Eastern Hognose Snake, Common Rainbow Snake, Woodland Box Turtle, Spotted Turtle, Snapping Turtle, Eastern Spadefoot and Lesser Siren. For this field work, the Game Department surveyed Game Farm Marsh and Chickahominy Wildlife Management Areas, New Kent Forestry Center, Crawford State Forest and private lands.

Now that field work in the watershed is complete, George Mason University and Urban Analytics have kicked-off year two of the initiative with an economic study, similar to the study they completed on the Eastern Shore (see page 2). Through the Chickahominy study, researchers will examine economic activities that are directly related to protected lands in the Lower Chickahominy Watershed. They will also examine how land conservation programs and practices in the lower Chickahominy affect local economic conditions and measure and quantify the impact of conservation land on bottom-line budgets in Charles City, James City and New Kent Counties.

Products include: quantifying the value of direct, indirect and induced benefits; quantifying direct and forgone tax revenues; and, determining overall net benefits and costs of conserved land.

"Based on previous studies we have conducted with Virginia CZM, conserved lands and related business activities on these lands can have a positive influence on local economies and generate net tax revenues for local government," observed Terry Clower, Principal investigator and Director of the Center for Regional Analysis at GMU. "This study will specifically focus on these three counties to provide local leaders with critical information on the relative costs of providing public services on conserved lands and their contributions to local tax revenues."

For more information, contact Beth Polak at (804) 698-4260 or Beth.Polak@deq.virginia.gov.

The Coastal VEVA ranked the Chickahominy Watershed area as predominately "outstanding" in ecological value.

This section of the lower Chickahominy as seen from the air reveals an expanse of undeveloped lands in James City and Charles City Counties.

Projects Benefit Public from Richmond to Hampton Roads

Richmond: Native Plant Demo & Signage Along the James River

This habitat restoration project created a native plant demonstration that functions as a rain garden on the south bank of a public access bridge spanning the James River in the City of Richmond. Virginia CZM funding provided for the purchase and installation of 185 native plants including trees, shrubs and ferns. The project also included the design, fabrication and installation of an interpretive sign about the value of native plants in the landscape and their function in the rain garden. The habitat restoration project was part of a larger undertaking that dramatically improved public access to the James River. The Tyler Potterfield Memorial Bridge is a bicycle and pedestrian bridge that crosses the James River in downtown Richmond, connecting Brown's Island on the north bank to the neighborhood of Manchester on the south bank. The bridge creates a safe ADA-accessible (Americans with Disability Act) link for cyclists and pedestrians that previously did not exist in this area of the city, filling a void identified in the city's Riverfront Master Plan. The bridge has been well received by the general public since opening in early December 2016; it saw 35,000 visitors in the first month! Co-location of the Virginia CZM habitat restoration project with the bridge provides a high visibility project site that is frequented by both residents and tourists.

For more information about the Tyler Potterfield Memorial Bridge and the City of Richmond's Riverfront Master Plan see *www.richmondgov.com/planninganddevelopmentreview/riverfrontplan.aspx*.

Invasive overgrowth was removed as part of the habitat restoration on the south bank of the James River. Photo courtesy of Richmond Regional Planning District Commission.

(Top) An aerial view of the entire habitat restoration project, with the new Potterfield Memorial Pedestrian Bridge visible in the top left of the photograph.

(Bottom) The CZM-funded rain garden, planted with native species. Photos courtesy of Richmond Regional Planning District Commission.

Isle of Wight: Pier and Canoe & Kayak Launch

Carrollton Nike Park in northern Isle of Wight County is a large recreational facility with tennis and basketball courts, softball and soccer fields and other community resources. Located along Jones Creek, the park provides direct access to the water for visitors via a fishing pier and newly constructed canoe and kayak launch. The original water access structures were damaged by Hurricane Irene in 2011. Although the pier was partially restored, the full landing was only recently replaced with assistance from the Virginia Coastal Zone Management Program. The completed project provides ADA-accessibility to the pier and kayak launch and additional space for fishing.

Norfolk: Fishing Pier and Canoe & Kayak Launch

Although laced with water, Norfolk has relatively little public access to its waters. In addition, its long history and level of urbanization has resulted in degraded riparian areas with lost or reduced ecosystem services. The Lavalette Avenue project, a combined canoe/kayak launch and fishing pier, addresses both issues by providing a new access point for the public to view and enter the water and by restoring a stretch of shoreline, which has been damaged over the years by shoreline fishing. The new facility, located near the Virginia Zoological Park on the Lafayette River, will help implement the city's long-term goals of improving public access and restoring its riverfronts.

Norfolk's new canoe/kayak launch and fishing pier provides access to the Lafayette River near the Virginia Zoological Park. The CZM-funded project also included restoration of a stretch of shoreline, a portion of which is visible in the lower right. Photo by Ben McFarlane, HRPDC.

Port Royal: Interpretive Water Trail & Fishing Pier

The Port Royal Interpretive Water Trail offers three tracks along the Rappahannock River beginning at the Port Royal Canoe/Kayak Launch. The three tracks overlap but are designed for novice, intermediate and advanced paddlers. The Port Royal trail features sites of interest including the Rappahannock River Valley National Wildlife Refuge and James Madison's birthplace. An interactive app was created to guide guests through the three different options of interpretive trails. Access is located at the end of King Street in Port Royal from the newly completed fishing pier. The Rappahannock River Water Trail app also features points of interest along the trail; it is available for free download from the Apple and Google Play stores.

Photos by Tim Ware, GWRC.

The new ADA-accessible canoe and kayak launch in Isle of Wight County provides access to Jones Creek and the James River. Photo by Ben McFarlane, HRPDC.

Promoting Shellfish Aquaculture, Minimizing Use Conflicts

By Laura McKay, Virginia CZM

Back in the 1980's and 90's Virginia's oyster harvests were at an all-time low and a very small fraction of the historical population survived. During that same time, intensive research at Virginia Institute of Marine Science (VIMS) on disease resistant oyster strains began to reveal promise. In 1999 the Virginia CZM Program initiated the "Virginia Oyster Heritage Program" in partnership with the Virginia Marine Resources Commission and many others. Virginia CZM invested $1.5 million in construction of 3-dimensional oyster reefs in the Rappahannock and Seaside of the Eastern Shore. Major investments by many others followed in various Virginia waters, and today our oyster industry is again beginning to flourish.

But challenges remain – do we have enough public and privately leased space for the oyster industry to continue to grow? Do we have enough shell or other substrate for new oysters to grow on? Where are our natural reefs thriving and what areas are barren? Do we have a sufficient regulatory framework to address use conflicts? Is there enough access to shore-based facilities the industry needs given that housing developments replaced many working waterfronts during the collapse of the industry?

Over the next three years, through a grant from the Virginia CZM Program, the team of Roger Mann, Missy Southworth, Marcia Berman, Tamia RudnIcky and Jim Wesson at VIMS will seek answers.

*Virginia oyster (*Crassostrea virginica*) spat on shell. Photo by Beth Polak, VA CZM.*

"Oyster aquaculture has enormous potential for economic growth in Virginia. We must find a way for it to expand in concert with the traditional fishery and other water uses so that it becomes a stable and significant industry in the Commonwealth," says Mann.

Over the next 3 years, VIMS will undertake the following work:

Year One (2018): Review of current status of the oyster industry, current industry practices and current regulatory and statutory framework.

This will include GIS analysis of shell resources and active harvesting as well as assessments of aquaculture metrics, regulatory impediments and use conflicts.

Year Two (2019): Short- term opportunities in the oyster industry.

This will include assessments of hatchery production, future bottom culture production, public grounds productivity

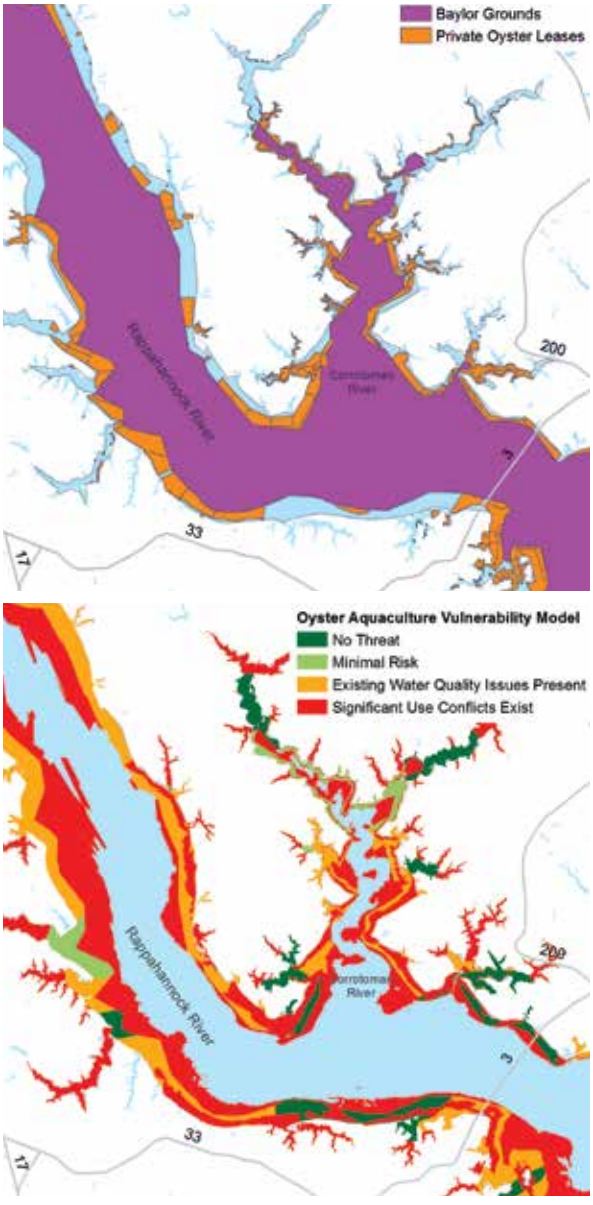
Cowart Seafood

and use and opportunities for 3-dimensional aquaculture. Strategy options to advance expansion of the industry will be developed.

Year Three (2020): Long- term opportunities in the oyster industry.

This will include development of a strategy outline, engaging stakeholders to vet the outline and develop a final recommended strategy for industry expansion.

For more information, contact Laura McKay at (804) 698-4323 or Laura.McKay@deq.virginia.gov.



Maps above showing a portion of the Rappahannock River. These data layers are available at www.coastalgems.org.

Master Plan and New Legislation Secure Economic Vitality of Working Waterfronts

By Beth Polak, Virginia CZM

The 2016, 2017 and 2018 General Assembly Sessions delivered a robust collection of coastal focused legislative bills targeting key issues important to working waterfronts. These bills addressed waterfront property tax exemption, living shorelines, dredging, expediting dredge spoil permitting, storm water management, waterway maintenance and the establishment of the Rural Coastal Virginia Community Enhancement Authority, a coalition created to unify all of rural coastal Virginia.

In March, Governor Ralph Northam signed into law HB 1091 and HB 1092, which allow for financing of dredging projects—either through the Virginia Resources Authority or through tax incremental financing—on projects that advance economic development for waterfront communities.

In April, three additional bills—HB 1093, 1095, and 1096—were signed into law by the Governor, effective July 1, 2018. Together they support the vitality of local waterfronts, expanding public and recreational access and fast-tracking permits for specific dredge disposal projects.

This legislation implements recommendations of the Virginia Working Waterfronts Master Plan completed in 2015 as part of CZM's initiaitve to preserve and re-develop working waterfronts in the Commonwealth.

The Virginia working waterfronts plan was developed through CZM Section 309 funding in partnership with ANPDC, MPPDC, HRPDC, NNPDC, VIMS, Community Futures, the Virginia Seafood Council, Virginia Shellfish Growers and the Virginia Watermen's Association. The plan can be viewed on the CZM web site. Search Virginia Working Waterfronts.

For more information, contact Beth Polak at (804) 698-4260 or Beth.Polak@deq.virginia.gov.

Cross-regional Planning to Promote Ecotourism in Rural Coastal Virginia

By Shannon Alexander, ANPDC, Laura McKay and Beth Polak, Virginia CZM

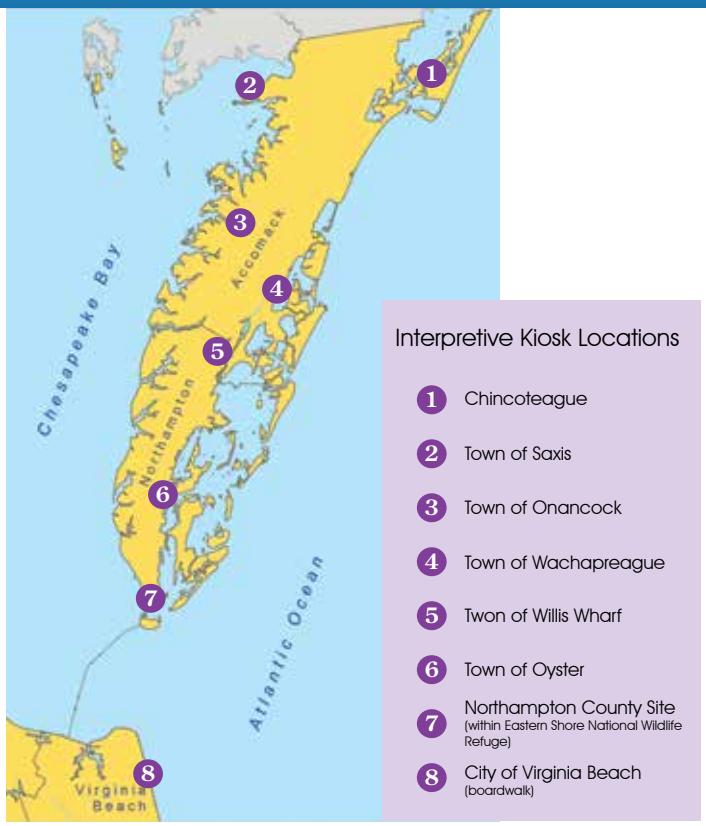
The Accomack-Northampton (A-N), Middle Peninsula (MP) and Northern Neck (NN) planning district commissions (PDCs) are banding together to create more opportunity for eco-tourism. These three PDCs will develop a unified approach to promoting their unique water, wildlife and oyster trails to make visitor planning and exploration of rural, coastal Virginia easier to access. With more than 9,500 hits per year on the Virginia CZM Program Seaside Water Trail website and close to 1,800 Facebook fans for the Virginia Oyster trail, a synchronized site for rural water trails with easy links to other ecotourism assets could certainly be useful.

Lisa Hull, Economic Development and Tourism Coordinator with the NN PDC said, "With CZM funding, existing water trails will be gathered onto one platform to improve the visitor experience for those seeking to explore the creeks and rivers that surround the three peninsulas. This site will help visitors understand how the waterways influenced settlement and habitation of our regions first by indigenous people and subsequently by English settlers and will tie in to existing assets such as the Captain John Smith Chesapeake National Historic Trail, the Virginia Oyster Trail and the Birding and Wildlife Trails.

Together, the three regions encompass close to 4,785 square miles of rural landscape with 5,300 miles of shoreline –features that have established a rich cultural history in water-based entrepreneurialism. The project will support and generate direct, indirect, and induced jobs - jobs that rely on the natural resources of rural coastal areas. Individual products and cumulative effects of this collaborative will also address identified targets in the 2014 New Virginia Economy Strategic Plan and Virginia Statewide Tourism Plan.

A-NPDC will update the 10-year-old Seaside Water Trail and continue to offer the Virginia Ecotour Guide Certification Program. The MPPDC will focus on an inventory and eco-business water trail effort for the region. The NNPDC will enhance The Virginia Oyster Trail website, focusing on an interactive tool to connect

Children kayaking on Virginia's Eastern Shore. Photos this page by Dave Burden.



participating communities, seafood producers, and trail users by building a digital site for creating trip itineraries.

Signs to Increase Visibility

Since 1986 the Virginia CZM Program has funded close to 60 public access sites and funded acquisition of over 2,000 acres of coastal land. Section 306A of the Coastal Zone Management Act provides low-cost construction of access and land acquisition. The access sites feature kayak launches, boardwalks, observation decks and wildlife trails. The lands acquired became parts of State Natural Area Preserves, State Parks and Wildlife Management Areas. Each site is required to have a CZM/NOAA acknowledgement sign. These signs are key to program visibility and are an important way of showing the public where their tax dollars go.

Brainwaves on the beach signage along boardwalk in Virginia Beach. Photo courtesy of Virginia Aquarium.

Working with our partners, we are creating an inventory of all sites to include status of required signage. The inventory will involve visiting, inspecting and photographing signs followed by prioritization of signs that are in need of repair, update or replacement.

New interpretive signage also will be installed on Atlantic coast and Bay-side of Eastern Shore. Virginia CZM funding to ANPDC and The Nature Conservancy will facilitate an update to five Seaside Eastern Shore information kiosks, and the installtion of two new kiosks, which will interpret coastal and ocean habitats and how to access them. In Virginia Beach, the Virginia Aquarium will receive funding to continue their "Brainwaves on the Beach" kiosk series to interpret ocean resources and ocean planning issues. ANPDC will also construct two interpretive kiosks on the Bayside.

For more information, contact Laura McKay (804) 698-4323 Laura.McKay@deq.virginia.gov.

Congratulations to the Middle Peninsula Chesapeake Bay Public Access Authority!

(l to r) Clyde Cristman - Director of DCR, Lewie Lawrence - MPCBPAA, Matt Strickler - Virginia Secretary of Natural Resources, David Paylor - Director of DEQ.

The Middle Peninsula Chesapeake Bay Public Access Authority (MPCBPAA) received a 2018 Governor's Environmental Excellence award. Since 2003, the MPCBPAA has acquired public waterfront land at no cost to local governments through private donations. From 2006 to 2015, 35 parcels - over 174 acres, valued at approximately $4 million, were gifted with limited to no deed encumbrances. MPCBPAA has pending donations of 334 acres, valued at $1.1 million. In 2015, the Coastal Land Giving Public Access Program was developed, creating a process for land acquisition for public use, educating both the public and private sectors on the economic benefits to private land donations and creating an outreach program targeting potential donors. Learn more at www.virginiacoastalaccess.net/MPPAA.html.

Building Coastal Resiliency

By Shep Moon, Virginia CZM

As more information about the predicted impacts of climate change and sea level rise on our coastal resources becomes available, the importance and urgency of adapting to these impacts is becoming more evident. The Virginia CZM Program is taking steps to help meet this need through initiatives to help build both natural and community resiliency. The Program's Coastal Hazards Strategy is now well underway with first year (FY 16) projects completed, second year (FY 17) projects underway and FY 18 projects scheduled to start in October 2018.

In addition to these projects, funded through the Coastal Enhancements portion (Section 309) of the federal Coastal Zone Management Act, other adaptation projects are being funded through Virginia CZM's Focal Area over the next three years. With input from stakeholders who attended the 2016 Coastal Partners Workshop and from the Virginia CZM Coastal Policy Team, "Building Natural and Community Climate Resiliency" was selected as one of two focal areas to be funded over the next three years (FY 17-19).

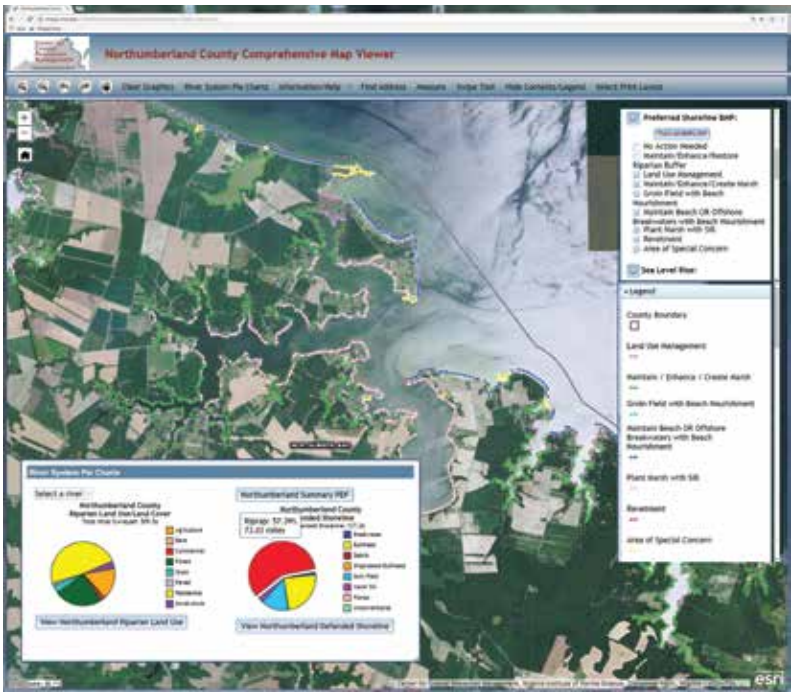
Building Natural Resiliency

The Virginia CZM Program has supported a number of efforts over the years to help improve shoreline management and promote the use of living shorelines. Two recently completed projects, funded through the Program's Coastal Hazards Strategy and undertaken by the Virginia Institute of Marine Science (VIMS), have continued this effort. The first supported development of five new Comprehensive Coastal Resource Management Portals (CCRMPs) for coastal localities. The portals are required by legislation adopted by the 2011 Virginia General Assembly. Site-specific shoreline management guidance provided through the portals helps implement the legislation's directive that living shorelines are the Commonwealth's preferred alternative for erosion control by showing where these techniques are most appropriate.

The Virginia CZM Program supported data acquisition for the local shoreline inventories and tidal marsh inventories necessary for developing the portals, as well as new model runs using this data and training for local government officials on the use of the portals.

Additional training on living shorelines and shoreline management in general was provided by VIMS through the

This rock sill and planted marsh at Captain Sinclair's Recreational Area in Gloucester is being monitored by VIMS for long-term effectiveness. Almost 2 years after installation the planted marsh has blended well with the natural marsh, submerged aquatic vegetation has come into the sill gaps, oysters have settled on the rocks, and juvenile fish are using the rock crevices and marsh. Photo by Donna Milligan, Shoreline Studies Program, VIMS.



Comprehensive Coastal Resource Management Portals, or CCRMPs, developed by VIMS provide site-specific shoreline management guidance based on the output of a shoreline planning model. This helps implement Virginia's legislative preference for living shorelines by showing where the technique is most appropriate.

second project which provided two living shoreline design training sessions for contractors, as well as shoreline plan presentations for four local wetland boards in localities where shoreline management plans had already been developed with Virginia CZM assistance. Six more of these presentations are scheduled to begin in the fall of 2018.

Another recently completed Virginia CZM-supported VIMS project evaluated adherence to the state preference for living shorelines in shoreline permit decisions by local wetland boards. The Virginia CZM Program received funding for this project through a nationally competitive grant program from the National Oceanic and Atmospheric Administration (NOAA) for "projects of special merit."

The VIMS study found that although the number of living shorelines constructed in Virginia continues to slowly increase, many decisions by local wetland boards still don't modify the proposed shoreline management technique, even if shoreline hardening is proposed by the property owner in an area that is more suitable for a living shoreline. While there is certainly a need to continue efforts to improve the local shoreline management process through training, technical assistance, and possibly stronger legislation, the results of the study also point to the importance of bolstering initiatives to promote interest in the use of living shorelines by property owners.

Two current Coastal Hazards Strategy grants to VIMS will provide data for four additional CCRMPs, a delineation of areas suitable for living shorelines on public lands with an emphasis on state parks, and designs for three living shoreline demonstration sites in state parks.

Having site-specific analyses of living shoreline suitability and project designs in place should put Virginia in a better position to apply for grants to construct demonstration projects as funding becomes available. Public access points to coastal waters are highly visible and should draw attention to the benefits of a technique that provides both shoreline erosion control and restores habitats.

More projects to build natural resilience are proposed for FY 18 funding. One would help promote the beneficial use of dredged materials to help wetlands and shorelines adapt to sea-level rise. Others would provide an updated handbook for local wetland boards and better information on changes to shorelines and wetlands on the Seaside of the Eastern Shore.

Other natural resiliency projects from VIMS are being funded through the Virginia CZM Program's new focal area. One enhances the shoreline model used to develop CCRMPs, including addressing shorelines that have already been hardened for erosion control. It will also identify co-benefits of living shorelines such as nutrient reduction credits to help address the Chesapeake Bay Total Maximum Daily Load (TMDL) requirements.

The other VIMS focal area project supports monitoring the long-term effectiveness of four existing living shoreline sites with varying site conditions for both shore protection and habitat creation and stability. The study will help document their viability and model the response of living shorelines to predicted sea- level rise.

With this information VIMS will be able to develop adaptive management strategiesc for these sites, including guidelines for resource managers, contractors and homeowners. Concerns about living shoreline viability and maintenance requirements, especially in the face of rising waters, may be an important reason why their use is still somewhat limited. Better information on these topics should help increase confidence in their performance and hopefully lead to increased use.

Cont'd on page 18

Living shoreline demonstration sites, like this one at Leesylvania State Park, provide a great opportunity for the public learn about this shoreline resiliency technique. VIMS is currently identifying opportunities for more demonstration sites like this in other coastal state parks and public lands, and developing plans for future projects. Photo by Corey Miles, NVRC.

Coastal Hazards

Coastal Hazards...cont'd from page 17

Having good information on the elevation of structures in flood-prone areas is critical for community resilience planning. Actions like elevating houses to avoid flood damage can help localities improve their CRS rating, but data on first floor elevation levels is typically incomplete. The Hampton Roads PDC is evaluating ways to obtain better data through cost-effective means, while Wetlands Watch is taking steps to promote local CRS participation. Photos by Shep Moon, VA CZM.

Building Community Resiliency

A corresponding initiative under the Coastal Hazards Strategy focuses on building community resiliency to climate change and sea-level-rise through the actions of local governments in the coastal zone.

The Northern Virginia Regional Commission's (NVRC) "Roadmap to Resilience" project, completed in February 2018, began with NVRC convening a workshop of approximately 70 stakeholders. The November 2016 workshop helped frame the climate change challenges faced by the region and outline core activities for adaptation planning in the region.

As a follow-up to the workshop, NVRC formed a Climate Resiliency Team composed of stakeholders that represent different frames of reference such as coastal planning, community development, education, emergency management, natural resource management, policy, urban planning and public works. The goal of the team is to ultimately produce a Climate Resilience Roadmap for the region which identifies challenges, who should address these challenges, and when.

The Hampton Roads Planning District Commission (HRPDC) report, entitled "Integrating Coastal Resilience into Local Plans, Policies and Ordinances" evaluated plans from coastal localities in Virginia and developed case studies of local adaptation initiatives. The PDC held a workshop for local government officials in May 2017 as part of this project.

Several Virginia CZM-funded initiatives have been undertaken by Wetlands Watch to advance local use of the National Flood Insurance Program's Community Rating System (CRS) as a resilience tool. The CRS incentivizes revisions to local ordinances, plans and policies because of the flood insurance cost savings it can provide to landowners. Results of the first part of this initiative were completed in the fall of 2017.

Wetlands Watch currently chairs the Coastal Virginia CRS Workgroup, which provides an excellent forum for analyzing local government participation in the CRS program. Their study identified co-benefits such as assistance with meeting regulatory burdens related to stormwater permits and Chesapeake Bay requirements, improved water quality, increased recreational opportunities, reduced costs for emergency response operations, increased community resilience and a better informed citizenry. Feedback from this analysis will also help Wetlands Watch in developing a strategy to best market the CRS as a resilience tool in coastal Virginia.

The second phase of the Wetlands Watch CRS initiative began in September 2017. It includes: (1) analysis of regional CRS support positions; (2) an analysis of data needs and funding opportunities; (3) recommended changes to the CRS Program to benefit Virginia's coastal localities; and (4) additional cost-benefit analysis and marketing of the CRS.

A proposal from Wetlands Watch for FY 18 funding would provide training and an evaluation of potential CRS status for twelve coastal localities. It would also provide case studies of four of the co-benefits identified through their previous project.

The Resiliency and Adaptation Feasibility Tool, or RAFT, was funded by the National Fish & Wildlife Foundation and developed by an interdisciplinary academic collaborative led by the University of Virginia Institute for Environmental Negotiation, along with the William & Mary Virginia Coastal Policy Center and Old Dominion University/Virginia Sea Grant.

The tool uses a "scorecard" that is completed by an inter-university academic advisory committee that includes environmental scientists, engineers, architects, landscape architects, planners and marine scientists. This approach lends independence and academic collaboration to the process, and can assist coastal communities that may not have the time or resources to conduct a self-assessment. Virginia CZM Program funding is helping to refine the tool, developing a RAFT website, and undertake a regional assessment for Eastern Shore localities.

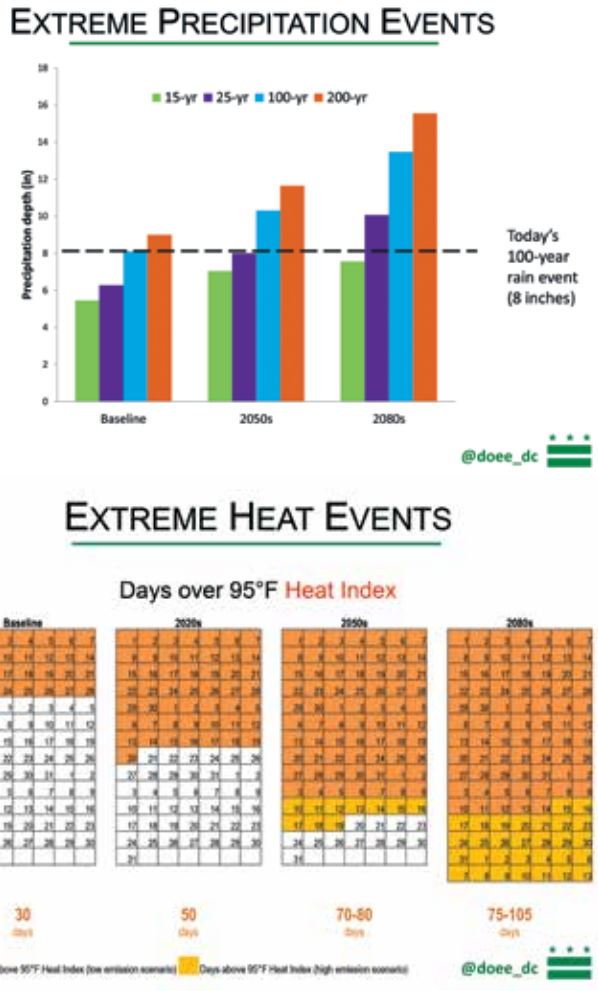
Two community resiliency focal area projects are currently underway. NVRC is supporting the work of the "Northern Virginia Climate Resiliency Team" and assisting in development of a plan to increase resiliency across each of the participating jurisdictions of the region. In addition to flooding from sea-level-rise and storm surge, heat waves and extreme precipitation events pose a risk for vulnerable people, assets, economies and ecosystems in Northern Virginia.

Specific objectives of the NVRC project include characterizing the risks to infrastructure from climate stressors, quantifying effective resilience-building strategies through a resiliency index, developed a monitoring plan for living shorelines in Northern Virginia and piloting the use of a Risk Characterization Template based on a matrix provided in the NOAA Resiliency Toolkit.

HRPDC is developing and testing a methodology for determining first floor building elevations in order to better assess vulnerability to flooding. While information exists on the extent of land areas vulnerable to flooding and sea-level-rise, localities can't accurately estimate potential damage from flooding events without good first floor elevation data. This information gap is common throughout Virginia's Coastal Zone, and may hamper the utility and accuracy of local adaptation and hazard mitigation planning efforts, including local efforts to expand use of the CRS.

Building natural and community resiliency to adapt to a changing climate is a long-term challenge for coastal Virginia. Meeting this challenge will require the combined attention and resources from all levels of government, as well as property owners, businesses and institutions. The Virginia CZM Program plans to continue to help support the needs of those involved in this challenge.

For more information, contact Shep Moon at (804) 698-4527 or Shep.Moon@deq.virginia.gov.



Sea level rise is not the only community resiliency issue evaluated by coastal localities. The Northern Virginia Regional Council has been considering the potential impacts of extreme precipitation and heat on its localities through its CZM-supported planning efforts. Graphics courtesy of Katherine Johnson.

"Nuisance flooding" as shown here on King St. in Alexandria can occur outside of storm events but still affect coastal communities. As sea level rises these events are becoming more common in Virginia's Coastal Zone. Photo courtesy of NOAA.

Implementing the Mid-Atlantic Ocean Action Plan

By Laura McKay, Virginia CZM

Humpback whale, Megaptera novaeangliae. *Photo courtesy of Virginia Aquarium.*

In December 2016, the Mid-Atlantic Ocean Action Plan was one of the first two plans to be certified by the National Ocean Council. In January 2017 the Mid-Atlantic Regional Planning Body (RPB – a federal-state-tribal body) with help from the Mid-Atlantic Regional Council on the Ocean (MARCO – a 5 state Governor's organization), got straight to work to implement its more than 40 actions.

In January 2017, the Virginia CZM Manager became the State Co-lead for the RPB. NOAA serves as the Federal Co-Lead and the Shinnecock Nation of Long Island, NY serves as the Tribal Co-Lead. The three Co-Leads hold monthly RPB calls and semi-annual in-person meetings to oversee implementation of the plan.

Progress on actions through June 2017 can be seen at: www.boem.gov/Draft-2017-Annual-Work-Plan-and-Progress-Report/ and progress through December 2017 and plans through summer 2018 can be seen at: *www.boem.gov/Semi-Annual-Work-Plan-and-Progress-Report/*.

Virginia leads or co-leads work groups for four of the six actions under the "Healthy Ocean Ecosystems" goal and leads the Ocean Mapping Data Team for development of MARCO's Mid-Atlantic Ocean Data Portal (http://midatlanticocean.org/data-portal/). The actions include identifying and better understanding ecologically rich areas (ERAs), mapping shifts in species and habitats as climate changes, creating a

comprehensive ocean acidification monitoring network and reducing marine debris. Virginia also serves on work groups for developing indicators of ocean ecosystem health and maintaining the value of non-consumptive recreation areas.

The plan includes many actions under the "Sustainable Ocean Uses" undertaken primarily by federal agencies for national security (DoD), ocean energy and sand management (BOEM), fishing and ocean aquaculture (NOAA), maritime commerce and navigation (US Coast Guard), Tribal interests and uses, and critical undersea infrastructure.

Note: As the magazine went to print, a new Executive Order (EO), https://www.whitehouse.gov/presidential-actions/executive-order-regarding-ocean-policy-advance-economic-security-environmental-interests-united-states/, replaced the 2010 National Ocean Policy EO. This order eliminates "Regional Planning Bodies" and directs federal agencies to coordinate with state-led Regional Ocean Partnerships such as MARCO.

Components of Ecological Richness

Since 2015 a team of scientists led by Duke, under contract from MARCO, has amassed 6,000+ available data layers for marine mammals, sea birds and fish and synthesized them to produce about 150 layers. With input from scientists and stakeholders across the Mid-Atlantic and the Northeast they organized these layers into five components of ecological richness: productivity, biodiversity, abundance, vulnerability and rarity.

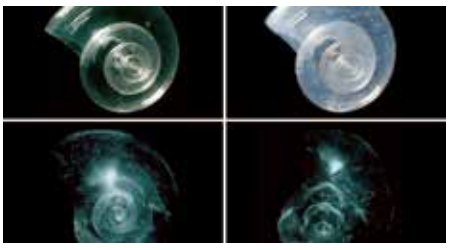
At a workshop in November 2017, the Duke Team laid out three options for furtherdata synthesis given the difficulty of understanding what areas exhibit ecological richness, based on 75-150 different map layers. The options ranged from no further synthesis to development of an overall index of ecological richness. On a February 2018 public webinar, the RPB decided to move ahead with an option that involves organizing the data layers on the portal according to the five components of ecological richness and testing of a "classify and overlay tool" that lets the user toggle between statistical breaks in the data for each layer and then overlay the areas of "high value." Work will continue on this hybrid approach through summer of 2018 with results expected by the end of this year.

Shifts in Ocean Species and Habitats

Some species and habitats stay put over time (e.g.; deep sea corals) but many of our ocean species move about seasonally and over longer periods of time creating the need for dynamic maps on the Ocean Data Portal. Key to understanding where these mobile or ephemeral areas occur, or may occur in the future, is understanding how species distributions are changing as the ocean warms and ocean currents and wind patterns shift over time. A great deal of work remains on this topic, but animations of species movements over time will be further investigated under this action, in part through a Virginia CZM grant to The Nature Conservancy.

Ocean Acidification

As more CO^2 enters the atmosphere and is absorbed by the ocean, acidity increases causing problems for many ocean species. This RPB work group collaborates with the Mid-Atlantic Coastal Acidification Network. The group has created a map of past and current monitoring sites (now available on the Portal) which allows us to see where important gaps may be. They are also working with scientists and shellfish industry reps to prepare a paper on monitoring and research needs. Information on public webinars on these topics is available at *http://midacan.org/*.



*In a lab experiment, a sea butterfly (*pteropod*) shell placed in seawater with increased acidity slowly dissolves over 45 days. Photo courtesy of David Littschwager/ National Geographic Society.*

A cold water coral reef off the Mid-Atlantic coast. Photo courtesy of NOAA.

Marine Debris

After training in the techniques of social marketing and a regional workshop, this Work Group recommended the RPB's action on marine debris should be to expand Virginia's balloon release reduction campaign (see page 22) to the other four states. The full RPB agreed and in December 2017 MARCO, on behalf of the work group submitted a grant application to NOAA to fund this effort. Results of the national funding competition are due out by July 2018.

Ocean Data Portal

MARCO's Ocean Data Portal continues to grow and improve since its debut in 2010. Within its 11 map themes are literally thousands of data layers – many are in the "marine life library" theme containing maps of individual species. Recent additions include updated shipping density, national security, renewable energy and commercial fishing maps. The portal also has interactive "ocean stories" linked to different map layers. It is the main "hub" by which all the "spokes" of the Action Plan and RPB members are held together. A key effort has been to train agency staff, tribes and stakeholders in using the portal. Through a series of workshops throughout the Mid-Atlantic in 2017, training went both ways with the portal team receiving helpful ideas for portal improvements.

Photo courtesy of Monmouth University.

For more information, contact Laura McKay at (804) 698-4323 or Laura.McKay@deq.virginia.gov.

www.boem.gov/Mid-Atlantic-Regional-Ocean-Action-Plan/
http://midatlanticocean.org/data-portal/

Selling the Joy of Send-offs Without Balloons

By Virginia Witmer, Virginia CZM

Virginia has 112 miles of ocean-facing coastline, much of which is either protected or restricted from public use. These areas are the northernmost nesting beaches for threatened loggerhead sea turtles. They also are an important migratory stop-off and nesting area for several species of endangered and protected shorebirds.

Ribbon wands are a colorful alternative to balloon releases at weddings. Photo courtesy of Dragon Studios, Inc.

The Problem

Several species of birds and sea turtles are impacted by balloon litter in Virginia through ingestion and entanglement in the ribbons attached to balloons. Recent beach cleanup data have shown that turtle and seabird nesting beaches are severely impacted by balloons. In fact, balloons are usually the first or second most commonly found litter item on Virginia's beaches.

Kemp's Ridley, Lepidochelys kempii, *found on Fisherman Island with ingested balloon and ribbon. Photo by Pam Denmon, USFWS Fisherman Island NWR.*

The Virginia Marine Debris Reduction Plan identified balloons and their attachments (often made of non-biodegradable plastics) as one of the top five most harmful types of marine debris.

The Behavior

Balloon releases are often used as a way to celebrate special occasions such as weddings, birthdays, festivals, fundraisers, graduations, store openings and sporting events, and to commemorate the loss of loved ones. Partners in Virginia conducted extensive research to better understand who plans balloon release events – and, most importantly, why balloons are selected to celebrate and memoralize in lieu of other actions. The Virginia CZM Program 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 "sell" litter-free alternatives to balloon releases.

Balloons released during wedding in Virginia Beach. Photo by Christina Trapani.

Understanding Our Audience

The Virginia CZM Program and Clean Virginia Waterways worked with the research firm OpinionWorks to conduct interviews, focus groups and surveys to determine the underlying drivers of celebratory or bereavement behavior associated with balloon releases. Conducting this research was the first and most important step in developing social marketing strategies that change behavior and reduce mass balloon releases.

The Campaign Strategy

This research, and additional message testing with engaged and married couples, informed the design of the first campaign, *Joyful Send-off,* to reduce balloon releases at weddings and, by extension, other celebratory events couples, and their family and guests may engage in the future.

The *Joyful Send-off* campaign "sells" memorable, joyful, picture-perfect and litter-free send-offs. The goal is that brides and grooms will learn that all released balloons become litter and will not organize or participate in a balloon release in the future. The campaign strategy focuses on the positive and includes colorful, vivid and captivating imagery and multi-media, including videos with couples sharing their personal experiences. The strategy engages venues, planners and other wedding businesses, who influence the decisions of couples, in sharing behavioral prompts with couples.

The pre-campaign research was carefully comprehensive so that it not only informed the *Joyful Send-off* campaign strategy, but laid a foundation for development and implementation of additional strategies to reduce balloon release during other "celebratory" and "memorial" events, engaging other non-traditional audiences, including funeral directors, sports team managers and school administrators.

Another important goal of the project was to build the capacity of our partners to use social marketing to target common, persistent and harmful marine debris items such as single-use plastic, derelict fishing gear, crab pots, microplastics and cigarette butts. In June 2017, Virginia CZM provided training for Virginia and Mid-Atlantic partners with Dr. Doug McKenzie-Mohr—the founder of community-based social marketing and the author/co-author of three books on the topic. Expanding the *Joyful Send-off* campaign to the entire Mid-Atlantic is now one of the strategies of the Mid-Atlantic Ocean Action Plan.

For more information, contact Virginia Witmer at (804) 698-4320 or Virginia.Witmer@deq.virginia.gov.

Joyful Send-off!

A picture-perfect ending to a picture-perfect wedding day.

Joyful Send-off Campaign Strategy Components

Compelling Photography…

Colorful imagery that is self-explanatory and clearly model couples using alternative send-offs.

…and Videography

The Joyful Send-off campaign message is vivid, personal and concrete.

Print Ads and Articles

Joyful Send-off message is being delivered by trusted sources.

Website and Social Media

Joyful Send-off enhances social diffusion through use of social media and encouraging couples to share their experience.

Joyful Send-off pivots to the positive, and also educates about the problem of balloon debris.

Wedding Venue Kits

Joyful Send-off partners personally contacted and delivered kits to venues to encourage them to partner in the campaign and help convey the message to couples.

Sample Handouts

Samples of send-off ideas, such as bubbles and ribbon wands, are displayed and distributed at wedding expo exhibits. A magnet full of ideas is placed in bridal show bags.

Photos courtesy of Dragon Studios, Inc., unless otherwise noted.

For a copy of the campaign report, outlining all research and strategy details, visit go.longwood.edu/cleanva-publications.

2018 CZM Project List

Funding for Coastal Management

By Laura McKay, Virginia CZM

Despite the recent uncertainties of federal budget negotiations, funding for Coastal Zone Management Programs actually increased for the coming year. Virginia will be receiving $3,436,000 from NOAA's Office of Coastal Management. These FY18 projects will begin in October, 2018. This is $765k more than last year. $575k of this additional funding is coming from NOAA's Chesapeake Bay Office for the Marine Resources Commission to construct oyster reefs in the Lynnhaven River. The other additional $190,000 was for the Virginia CZM Program to decide how to allocate.

To help make this allocation decision, Virginia CZM staff developed a survey for the Coastal Policy Team (state agency and local government members of the CZM network). They were asked to vote on 3 options: 1) use it for land acquisition; 2) put out a Request for Proposals for new projects; or 3) increase continuing grants that have been level funded for 20+ years by about 15%. Although option #1 technically won the most votes, option 3 was a close second place. So $100,000 was added to the land acquisition task and $90,000 was added to continuing program implementation tasks that had been level funded.

Some of the additional products that will be developed due to this increased funding include:

- **Marine Resources Commission:** A fast-track permitting program for beneficial use of dredged material to build sea level rise resiliency.
- **Dept of Conservation and Recreation/Virginia Commonwealth University:** Additional supplies (eyed oyster larvae) for the Oyster Shell Recycling Program.
- **Virginia Institute of Marine Science:** 122 additional hours of labor for SAV mapping.
- **Accomack-Northampton Planning District Commission:** Planting of native trees with plaques for the Plant ES Natives Campaign Shore Big Trees program.
- **Northern Neck Planning District Commission:** New brochures and tours of Living Shoreline demo sites for homeowners.
- **Middle Peninsula Planning District Commission:** Contract with a local media company to strategize messaging and produce a biennial outreach product for local elected officials describing Virginia CZM investments.

SAV Mapping and Monitoring

The Virginia CZM Program has supported the Virginia Institute of Marine Science for the mapping of submerged aquatic vegetation (SAV) since 1987 with a total investment since then of $1.55 million. It has also supported VIMS for the restoration of eelgrass and bay scallops on the Seaside of Virginia's Eastern Shore since 1999 with a total investment of $1.77 million. Learn more at www.deq.virginia.gov/Programs/CoastalZoneManagement/CZMIssuesInitiatives/SeaGrass.aspx. Map of SAV flight lines courtesy of VIMS.

Virginia Osyter Shell Recycling Program

The Virginia Oyster Shell Recycling Program at VCU's Rice Center uses a team of volunteers to collect oyster shells from restaurants and seafood suppliers and uses them to build oyster sanctuary reefs in the Chesapeake Bay. With additional funds from CZM this year, the program will purchase another 8 million eyed oyster larvae to be grown out on the reefs. Learn more about this project at https://ricerivers.vcu.edu/community-engagement/oyster-shell-recycling/ Image by Beth Polak, VA CZM.

Plant ES Natives Shore Big Trees

The Accomack-Northampton Planning District Commission established the Shore Big Trees Program in 2013 through a partnership with the Virginia CZM Program, the Virginia Department of Conservation and Recreation, and the Eastern Shore Soil and Water Conservation District as part of the ES Native Plants campaign. The water oak (at right) was planted with CZM funds in Seaside Park in Wachapreague. It will grow to about 80 feet and live up to 80 years. Learn more at www.PlantVirginiaNatives.org/plant-es-native/. Photo courtesy of Virginia Witmer, VA CZM.

Coastal Planning District Commissions

Virginia's PDCs are critical partners in implementing the Virginia CZM Program at the local level. We wish to thank Tim Ware, Executive Director of the George Washington Regional Commission retired in June. Tim is photographed at right touring the site of a future Plant Central Rapp Natives campaign demo garden in King George County. Learn more at www.deq.virginia.gov/Programs/CoastalZoneManagement/DescriptionBoundary/VirginiaCoastalPlanningDistrictCommissions.aspx Photo courtesy of Beth Polak, VA CZM.

Total FY18 Award (NOAA/State/Local Funds): $3,436,000

Grantee	Title	Federal $	Match $	Total $
Virginia CZM Program Implementation *(Total federal funds - $1,611,003; total match funds - $1,540,647)*				
DEQ	Virginia CZM Program Management	$323,931	$ 27,825	$351,756
DEQ	Virginia CZM Program Outreach & Social Marketing	$104,387	$ 8,095	$112,482
VIMS	Virginia CZM Program Management Support	$120,255	$ 0	$120,255
VCU-CES	Coastal GEMS Maintenance	$106,461	$ 21,955	$128,416
DEQ	Environmental Impact Review & Federal Consistency	$173,906	$ 15,419	$189,325
DEQ	Fairfax County Stormwater Local Assistance-Match Only	$ 0	$984,631	$984,631
VMRC	Permit Review and Compliance	$181,200	$256,713	$437,913
DCR-NH	Habitat Conservation/Locality Liaison	$ 56,600	$ 59,959	$116,559
VIMS	Tidal Wetlands Management Technical Support	$ 47,550	$ 47,550	$ 95,100
VIMS	SAV Mapping	$ 68,000	$ 68,000	$136,000
DCR-NH	Healthy Waters Program	$ 30,500	$ 30,500	$ 61,000
TBD	Eastern Shore Land Acquisition	$398,213	$ 20,000	$418,213
Regional Coastal Technical Assistance Programs *(Total federal funds - $346,150; total match funds - $436,683)*				
ANPDC	Coastal Technical Assistance Program	$ 34,500	$ 34,500	$ 69,000
Crater PDC	Coastal Technical Assistance Program	$ 34,500	$ 34,500	$ 69,000
HRPDC	Coastal Technical Assistance Program	$ 69,000	$ 69,000	$138,000
MPPDC	Coastal Technical Assistance Program	$ 34,500	$ 34,500	$ 69,000
NNPDC	Coastal Technical Assistance Program	$ 34,500	$ 34,500	$ 69,000
NVRC	Coastal Technical Assistance Program	$ 34,500	$123,929	$158,429
GWRC	Coastal Technical Assistance Program	$ 34,500	$ 34,859	$ 69,359
RRPDC	Coastal Technical Assistance Program	$ 34,500	$ 35,500	$ 69,000
VA Beach/VAMSC	Marine Mammal and Sea Turtle Stranding Response	$ 35,650	$ 36,395	$ 72,045
Three Year Competitive Focal Area Projects *(Total federal funds - $400,847; total match funds - $380,670)*				
VIMS	Expanding Oyster Industry - Minimizing Conflicts	$ 70,000	$ 70,000	$140,000
ANPDC	Oyster & Water Trail Ecotourism	$110,000	$100,000	$210,000
DEQ	Public Access Signage	$ 20,000	$ 0	$ 20,000
VIMS	Expanding Natural Infrastructure	$ 70,000	$ 70,000	$140,000
VIMS	Living Shoreline Performance	$ 40,000	$ 41,224	$ 81,224
NVRC	Building Coastal Resiliency	$ 59,223	$ 67,822	$127,045
HRPDC	Vulnerability to SLR Based on Elevation Data	$ 31,624	$ 31,624	$ 63,248
Oyster Restoration Project *(Pass through Funding from NOAA Chesapeake Bay Office)*				
VMRC	Oyster Restoration - Lynnhaven River	$575,000	$ 0	$575,000
Five Year Policy Development Projects *(Total federal funds - $503,000; no match required)*				
W&M/CPC	Narrative Enforceable Policies (No task in FY18)	$ 0	$ 0	$ 0
VIMS/CCRM	Tidal Shoreline Policies Handbook	$ 40,099	$ 0	$ 40,099
VIMS/SP	Shore Evolution & Wetland Board Presentations	$ 43,700	$ 0	$ 43,700
MPPDC	Beneficial Use of Dredged Material	$ 50,000	$ 0	$ 50,000
Wetlands Watch	Advancing CRS Participation	$ 40,651	$ 0	$ 40,651
RRPDC	Chickahominy Project Coordination	$ 30,630	$ 0	$ 30,630
UVA/IEN	Chickahominy Stakeholder Engagement	$ 45,920	$ 0	$ 45,920
W&M/CPC	Chickahominy Tribal Policies	$ 30,000	$ 0	$ 30,000
GMU	Chickahominy Economic Policy Development	$ 14,000	$ 0	$ 14,000
NNPDC	Working Waterfronts	$ 40,000	$ 0	$ 40,000
ANPDC	Working Waterfronts	$ 10,000	$ 0	$ 10,000
VCU	Ocean Stakeholder Coordination	$ 48,000	$ 0	$ 48,000
TNC	Mid-Atlantic Ocean Data Development & Visualization Tools	$ 50,000	$ 0	$ 50,000
Longwood U.	Marine Debris Plan Refinement	$ 60,000	$ 0	$ 60,000
GRAND TOTAL		**$3,436,000**	**$2,358,000**	**$5,794,000**

Virginia Coastal Zone Management Program
Virginia Department of Environmental Quality
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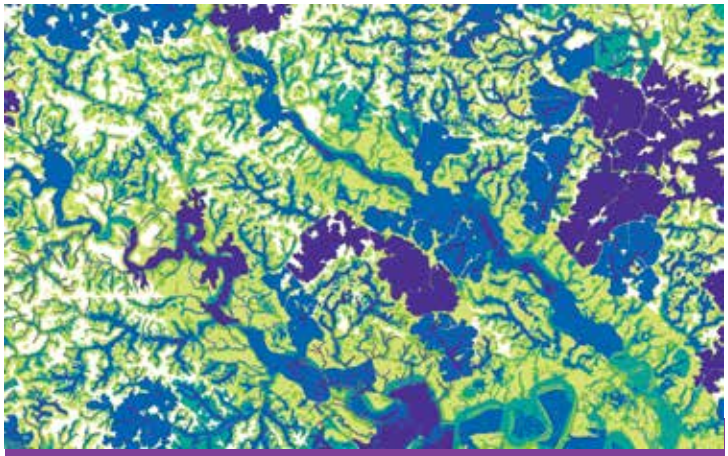
Please circulate this publication to other interested parties.



Updated Coastal VEVA Now Available!

The *Coastal Virginia Ecological Value Assessment* (Coastal VEVA) is a conservation planning tool that synthesizes the best available natural resource datasets for Virginia's Coastal Zone into a single map.

A full update to Coastal VEVA has just been completed utilizing the latest data inputs.

Visit **www.coastalgems.org** *to access the updated map and learn more!*

SAVE THE DATES

Virginia Coastal Partners Workshop

November 14 & 15, 2018
Virginia DEQ, Richmond

Watch our website for registration details.

Virginia Coastal Policy Center Annual Conference

November 2, 2018
College of William and Mary, School of Education