

Virginia Commonwealth University
Coastal Management GIS Support & Coastal GEMS
Maintenance: FY17 Annual Report

October 1st 2017 – September 30th 2018

NOAA Grant # NA17NOS4190152

Grant Year FY2017, Task #1.04



Virginia Coastal Zone
MANAGEMENT PROGRAM



Acknowledgements

This report was prepared by the Virginia Coastal Zone Management Program's Coastal GIS Coordinator. The Coastal GIS Coordinator position is provided through a contract with Virginia Commonwealth University and is funded by the Virginia Coastal Zone Management Program at the Virginia Department of Environmental Quality through Grant # NA17NOS4190152 from the U.S. Department of Commerce, National Oceanic and Atmospheric Administration, under the Coastal Zone Management Act of 1972, as amended.

Introduction

This report provides a summary of tasks performed and products created under task #1.04 by the Virginia Coastal Zone Management Program's Coastal GIS Coordinator and by staff of Virginia Commonwealth University's Center for Environmental Studies during the grant year FY2017 (October 1st 2017 – September 30th 2018). For full-resolution map images, spatial data, or further documentation of tasks summarized in this report, contact nick.meade@deq.virginia.gov.

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Coastal GEMS Mapping Application

Hosting and Maintenance

Virginia Commonwealth University's Center for Environmental Studies (VCU CES) continued to host the Coastal GEMS online mapping application through the FY17 grant period and VCU CES staff performed routine maintenance and updates on Coastal GEMS during this time.

Tasks included refreshing map services, updating data and cartography in the map file as per CZM staff request, and installing software and security upgrades. Coastal GEMS remained operational throughout the FY17 grant period and was only offline to install software/security updates or to refresh map services.

Google Analytics Tracking

Google Analytics services for Coastal GEMS set up by VCU CES staff remained operational throughout the FY17 grant period. VCU CES staff created Google Analytics reports at CZM staff request by querying specific date ranges. From October 1, 2017 to September 30, 2018, Coastal GEMS received 1,168 visits from 733 unique visitors resulting in 1,378 pageviews and an average site visit time of 55 seconds. More Google Analytics information for the Coastal GEMS mapping application during the FY17 grant period can be found in the appendix of this report.

Application Updates

The Coastal GIS Coordinator worked with VCU staff during the FY 17 grant period to complete updates to the Coastal GEMS mapping application through FY16 Task 11 including software and user interface updates, the creation of a new Coastal GEMS landing page, and the creation of story maps to be linked through the new landing page.

The Coastal GIS Coordinator operated as the project manager for these tasks, working closely with grantees to coordinate and complete work, to ensure that all deliverable and reporting requirements were met, to make certain that extensions were granted when necessary, and to review all final deliverables for completeness and quality.

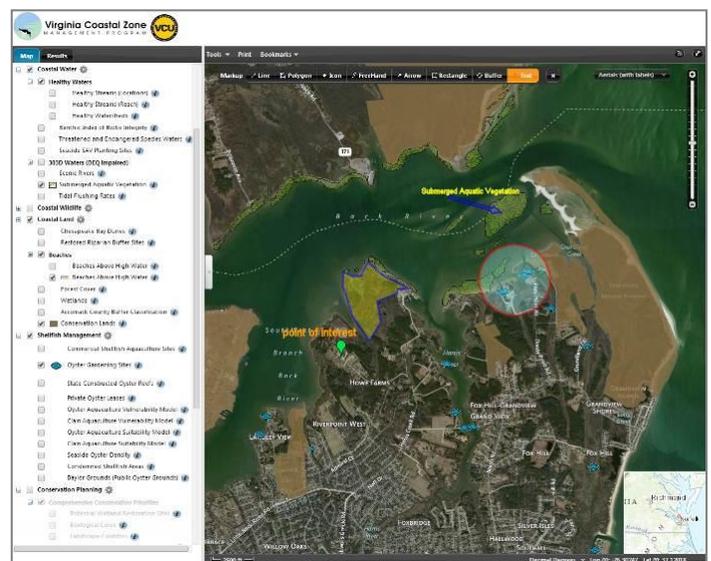
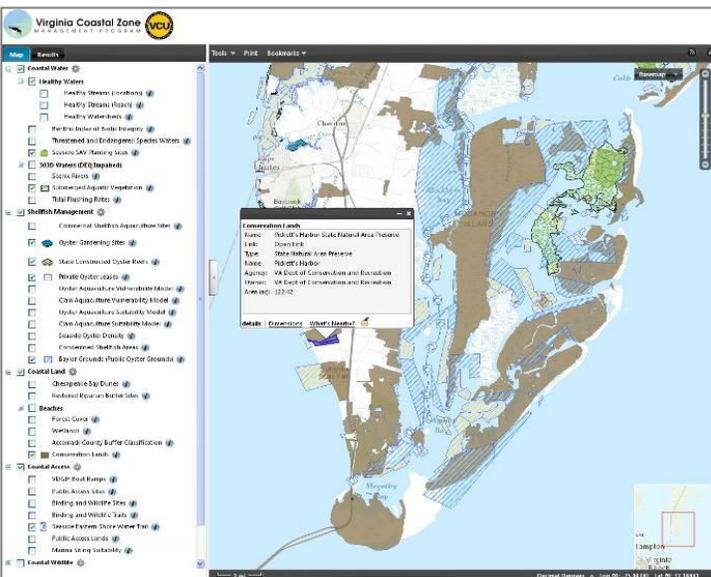
Coastal GEMS Data Management

The Coastal GIS Coordinator requested and obtained available data updates for current Coastal GEMS layers from data providers, processed/prepared data for display on GEMS, packaged symbolized data and uploaded to VCU CES to be added to Coastal GEMS. Coastal GEMS fact sheets were updated as necessary.

Layers updated during the FY17 grant period include: Coastal VEVA, Conserved Lands, Scenic Rivers, Threatened & Endangered Species Waters, Important Bird Areas, Anadromous Fish Use Areas, Public Access Sites, Ecological Cores, Landscape Corridors, Submerged Aquatic Vegetation Coverage, Current Population, Population Change, and Projected Population for 2025, 2035, and 2045

Coastal GEMS can be accessed at:

www.coastalgems.org



Above: A screenshot from Coastal GEMS showing available markup functions

Left: A screenshot from Coastal GEMS showing selected layers on the Southern tip of Virginia's Eastern Shore

Coastal GIS Coordination

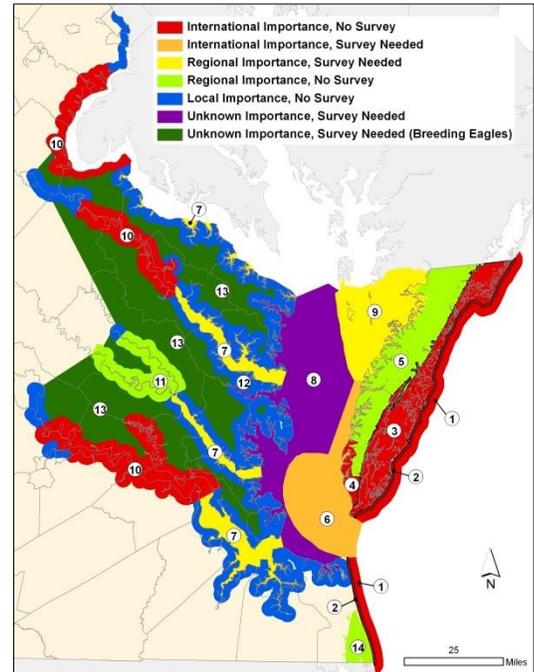
Data Requests

The Coastal GIS Coordinator responded promptly to all data and information inquiries in FY17, including requests from USFWS-NALCC, DCR-DNH, CBF, RRPDC, Terracon natural resources staff, Aecom environmental sciences staff, Timmons Group GIS staff, ANPDC, The Baldwin Group, Inc., Solunesco, Duke University, VIMS, and Cypress Creek Renewables.

Once again, the single most requested dataset remained the Coastal Avian Protection Zone (CAPZ) layer. CAPZ was created by VA CZM in 2010 to identify areas critically important to avian resources and was designed to be used in concert with regulations and guidance to assist applicants wishing to construct and operate small renewable energy projects in Virginia's coastal zone.

In FY17, the Coastal GIS Coordinator updated the CAPZ fact sheet on Coastal GEMS to reflect that the map applies to both wind and solar projects, which each have their own distinct guidance narrative with zone descriptions, regulatory provisions, and supporting literature.

A labeled CAPZ map is provided to the right as reference. The map and more information can be found on Coastal GEMS under the Coastal Wildlife category. www.coastalgems.org



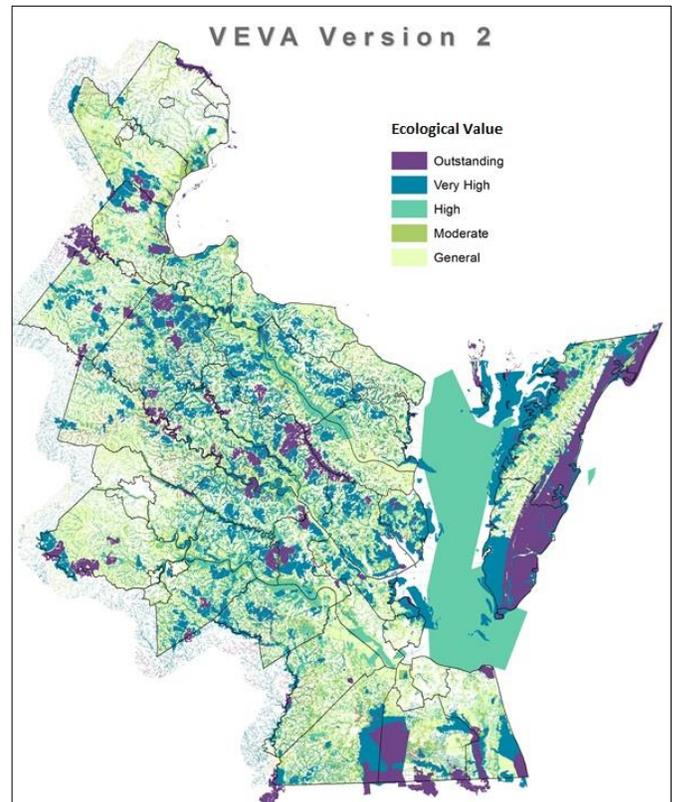
Coastal Virginia Ecological Value Assessment Update

The Coastal GIS Coordinator continued to work on the Coastal Virginia Ecological Value Assessment (Coastal VEVA) update during the FY17 grant period.

Coastal VEVA was originally developed in 2011 to provide guidance to local governments engaged in land use management and conservation planning. VEVA is a collaborative effort among several state programs to synthesize the best available natural resource information into a single geospatial product.

In FY15 the Coastal GIS Coordinator worked with Coastal VEVA partners to begin the process of creating an updated (Version 2) Coastal VEVA dataset including organizing and leading meetings with staff from VCU CES, the Virginia Department of Conservation and Recreation's Natural Heritage Division (DCR-DNH), the Virginia Institute for Marine Science (VIMS), and the Virginia Department of Game and Inland Fisheries (DGIF) and working with DCR-DNH, DGIF, and VCU CES staff to produce proposals for FY14 and FY16 CZM funds to update the Coastal VEVA data synthesis as well as many of the key datasets it synthesizes.

The Coastal GIS Coordinator operated as the CZM Project Manager for these interconnected tasks throughout the FY16 grant period and into the FY17 grant period. In FY17 this included the addition of an FY17 task to DCR-DNH to update the VA Natural Landscape Assessment dataset. Project management tasks included working closely with grantees to draft proposals, coordinate work, make certain all deliverable and reporting requirements were met, and that extensions were granted when necessary. The Coastal VEVA Version 2 map can be seen above and a full report on the updated data, including an analysis of changes from Version 1, is included as a deliverable for FY16 Task 11.



Training and Outreach

Presentations

The Coastal GIS Coordinator continued the Coastal GEMS training program during the FY17 grant period, with a focus on the updated Coastal VEVA data available on the Coastal GEMS mapping application. This included presenting at the 2018 Virginia GeoCon, at a DCR-DNH all staff meeting, and at a “Green Infrastructure for Coastal Resilience workshop” at VIMS Gloucester Point

In addition to in person presentations, the Coastal GIS Coordinator continued to work to raise awareness of Coastal VEVA and improve comprehension of the data, including engaging Coastal VEVA partners in a discussion on factors driving change in the updated model, and developing informational materials such as infographics for use in presentations and story maps and a 2-page handout describing the synthesis and how it was created.

Coastal Virginia Ecological Value Assessment

The Coastal Virginia Ecological Value Assessment (Coastal VEVA) is a collaborative integration of conservation datasets and priorities in Virginia's coastal zone.

Coastal VEVA was developed to provide guidance for land use management and conservation planning by synthesizing the best available natural resource information into a single geospatial product.

To create this integrated map depicting areas of ecological importance, the Virginia Coastal Zone Management Program (VA CZM) partnered with the Virginia Department of Conservation and Recreation Division of Natural Heritage (VA DCR-DNH), the Virginia Department of Game and Inland Fisheries (VA DGIF), VCU Center for Environmental Studies (VCU CES), and VIMS Center for Coastal Resources Management (VIMS CCRM).

Coastal VEVA combines scientific data and best professional judgment to rank terrestrial and aquatic areas for their ecological value. These values can be used to prioritize lands for preservation, develop strategies for special area management actions, or to build awareness about Virginia's natural communities. Coastal VEVA and all partner component models were most recently updated in 2017.

This project was funded in part by the Virginia Coastal Zone Management Program at the Department of Environmental Quality through grant number NA14NOS4190141 and NA16NOS4190 of the U.S. Department of Commerce, National Oceanic and Atmospheric Administration, under the Coastal Zone Management Act of 1972, as amended.

Coastal VEVA was created by overlaying areas of ecological importance as defined and created by identified partner experts. Each partner provided models which assigned values of significance to areas based on expert opinion.

Partner Component Models and Input Data

- VA DCR-DNH**
 - Conservation Sites
 - Natural Landscape Assessment
 - Natural Land Network – a network of the highest priority Ecological cores and the corridors and nodes that connect them
- VA DGIF**
 - Priority Wildlife Diversity Conservation Areas
 - Important Bird Areas
 - National Wetland Inventory
 - Unique Terrestrial Areas
 - Threatened and Endangered Species Waters
 - NEO Streams
 - Species Observations
 - Potential Aquatic and Terrestrial Habitat
 - Ecological Cores
 - Colonial Water Birds
 - Anadromous Fish Use Areas
- VCU CES**
 - Aquatic Resource Integrity Layer
 - Stream Reach Assessment
 - Modified Index of Biotic Integrity Watershed Assessment
 - Healthy Waters Watersheds
- VIMS CCRM**
 - Aquatic Priority Conservation Areas
 - Shellfish Vulnerability
 - Reef Restoration Sites
 - Oyster Density
 - Artificial Fishing Reefs
 - Submerged Aquatic Vegetation Coverage
 - Seed Areas
 - Articulate Sites
 - Turtle Nests
 - Regulated Areas

The final layer was created by overlaying all the models and picking out the highest value at each location (called a max value). The highest value was then used to create the final layer.

Coastal VEVA can be found under the Conservation Planning category on Virginia CZM's Coastal GEMS mapping application at www.coastalgems.org

For more information contact:

Coastal VEVA:
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Partner Component Models:
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VA DGIF, Jay Kapalczynski
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VCU CES, Will Shuart
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VIMS CCRM, Marcia Berman
marcia@vims.edu

Coastal VEVA is intended to guide conservation planning and efforts, and is not intended to replace on the ground surveys or consultation with biologists. This data serves as a compliment to existing local data.

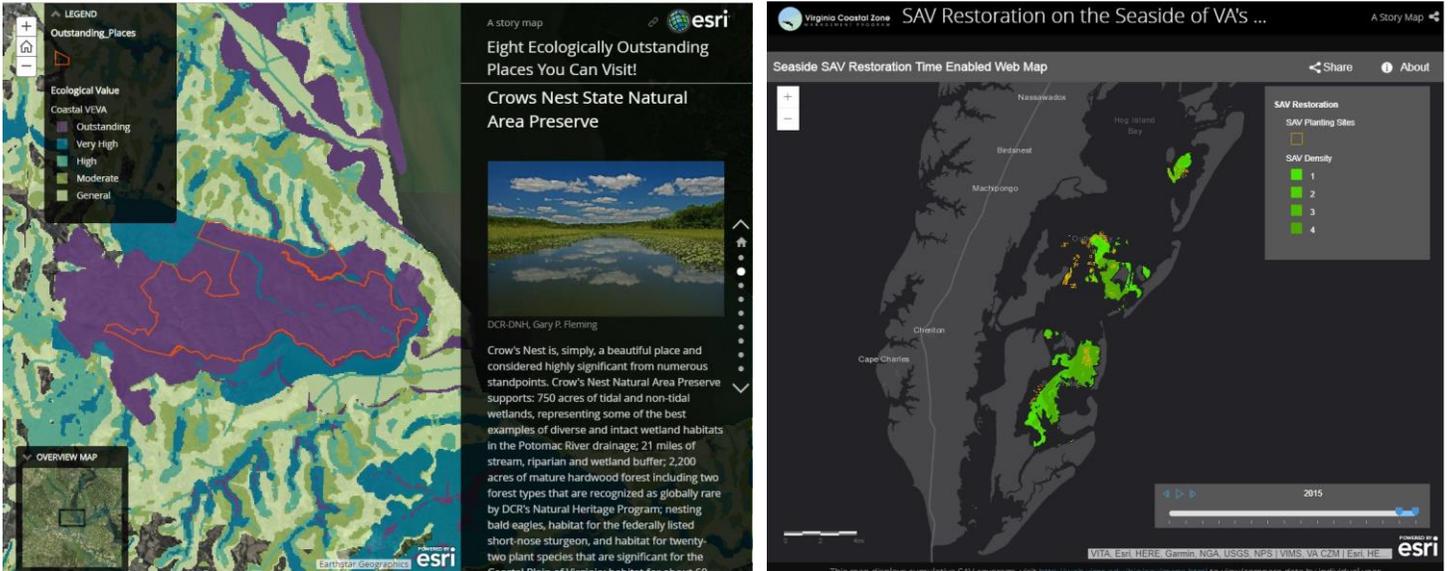
Above: Handout describing the Coastal VEVA synthesis and how it was created

Story Maps

The Coastal GIS Coordinator created story maps for Coastal GEMS including a cascade story map detailing the restoration of eelgrass on VA's Eastern Shore featuring a time enabled interactive map of SAV planting sites and coverage and a story map journal highlighting publicly accessible places in VA's coastal zone ranked in the highest category of the updated Coastal VEVA. Links to these story maps, hosted by VCU CES, can be found below.

Eight Ecologically Outstanding Places You Can Visit! <https://arcg.is/101bLW>

SAV Restoration on the Seaside of VA's Eastern Shore <https://arcg.is/C8Pnr>



Above: Screenshots of story maps highlighting Coastal VEVA and SAV restoration

Mid-Atlantic Ocean Plan Non-Consumptive Recreation Workgroup

The Coastal GIS Coordinator worked with the Mid-Atlantic Ocean Plan Non-Consumptive Recreation Action workgroup and MARCO staff to organize a Non-Consumptive Recreation Workshop in Virginia. The workshop was one of several state workshops throughout the Mid-Atlantic region designed to make progress towards one of the Non-Consumptive Recreation actions in the Mid-Atlantic Ocean Plan Action by offering an opportunity for non-consumptive recreational users of the ocean and coast to engage in a discussion with state and federal officials on the value of important non-consumptive recreational areas and the activities they sustain.



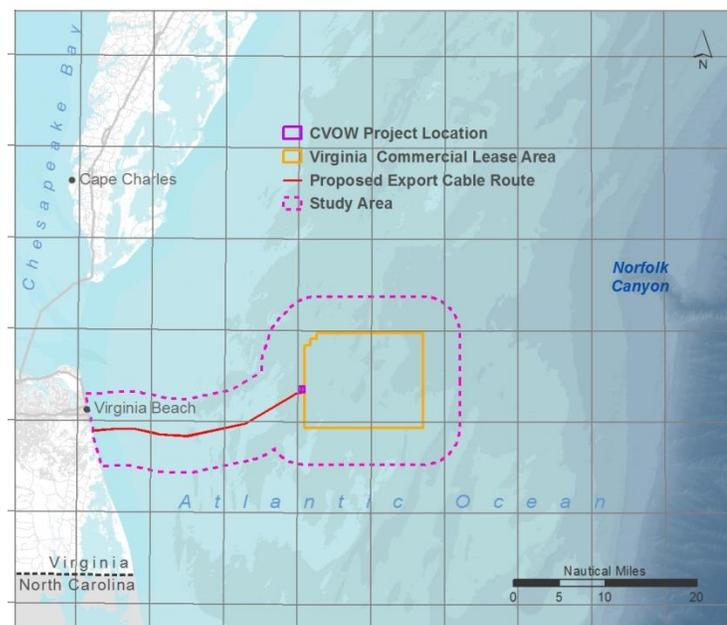
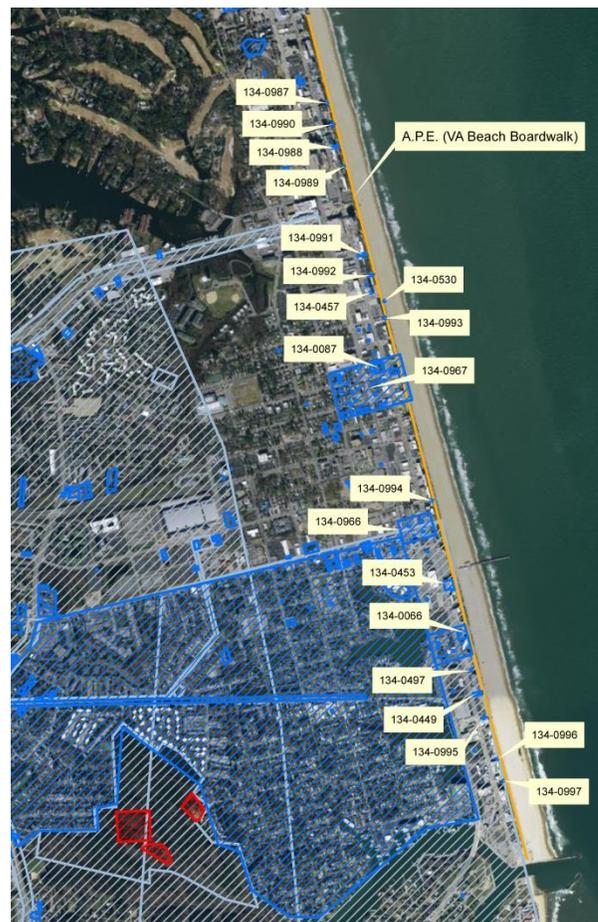
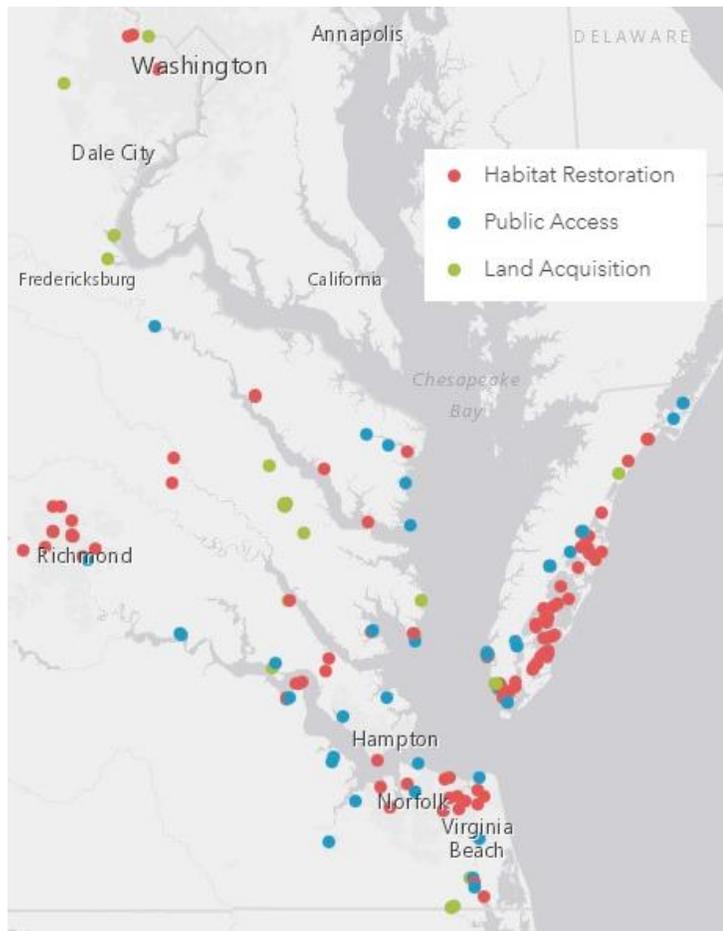
The Coastal GIS Coordinator worked to promote the Virginia workshop via email and social media posts to reach a broad range of local recreational users of coastal areas as well as other stakeholders. The VA workshop was held at the Brock Environmental Center in Virginia Beach and was the best attended workshop of all the Mid-Atlantic states. The Coastal GIS Coordinator presented the preliminary results of the recently concluded survey on non-consumptive recreation disseminated by the Mid-Atlantic RPB's Non-Consumptive Recreation Action workgroup. Workshop participants were divided into groups, moderated by MARCO and CZM staff including the Coastal GIS Coordinator, to provide input as to what characteristics make non-consumptive recreation areas "important" to them, what types of use conflicts they are experiencing among ocean users, and what type of impacts they are seeing on recreation resources. Participants also provided ideas for how to better engage their community in the future.

Left: VA CZM Program Manager addressing participants of VA's 2018 Non-Consumptive Recreation Workshop held at CBF's Brock Center in Virginia Beach

GIS Map Products and Services

CZM Partner Request

The Coastal GIS Coordinator continued to provide technical support to VA CZM partners, including working with MACAN and MARCO staff to maintain Acidification Monitoring Location data layers on the MARCO Portal, advising ANPDC on water trail website development, consulting with TNC and ANPDC staff on the use of participatory GIS tools, assisting ANPDC, DCR-DNH, and Virginia Aquarium with SHPO review process, providing a data layer showing VA CZM land acquisition, public access, and habitat restoration projects to DEQ staff for inclusion in a DEQ 25th anniversary story map, and creating a map of the VA offshore wind energy area for use on a factsheet about research regarding EMF impacts on fisheries.



Clockwise from top left:

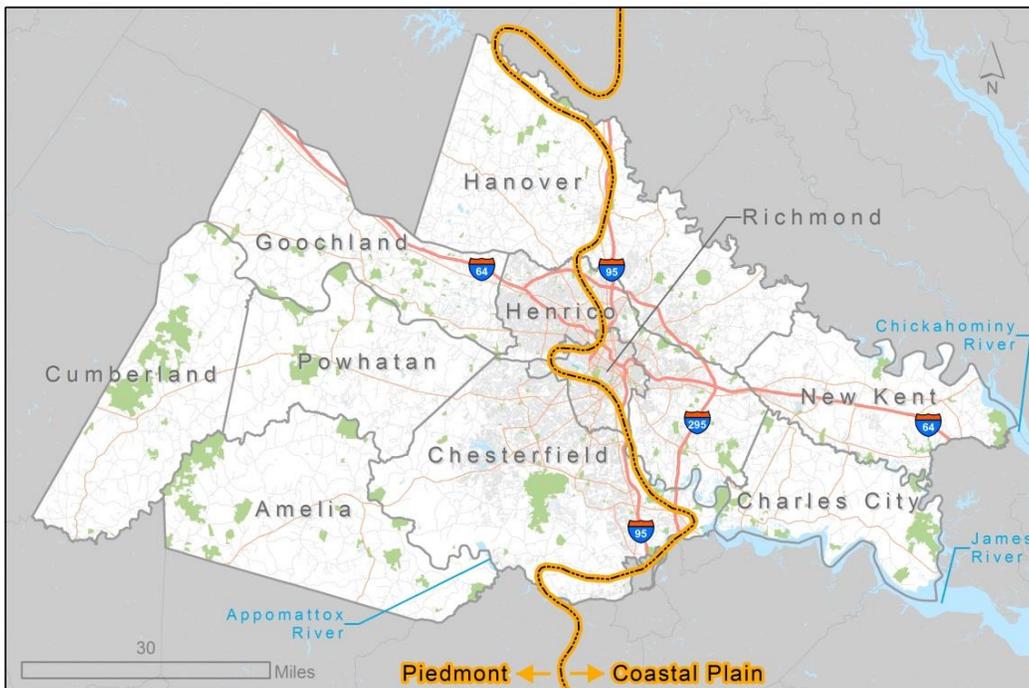
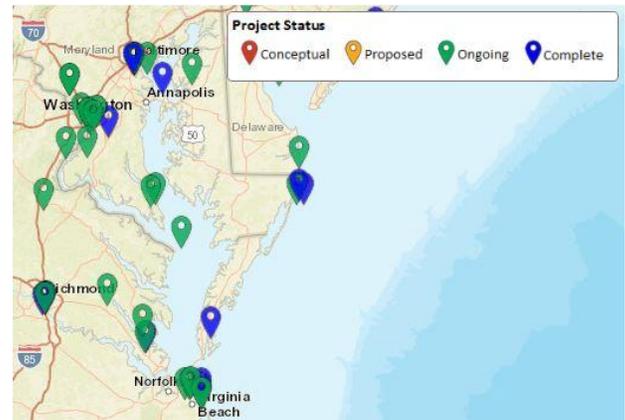
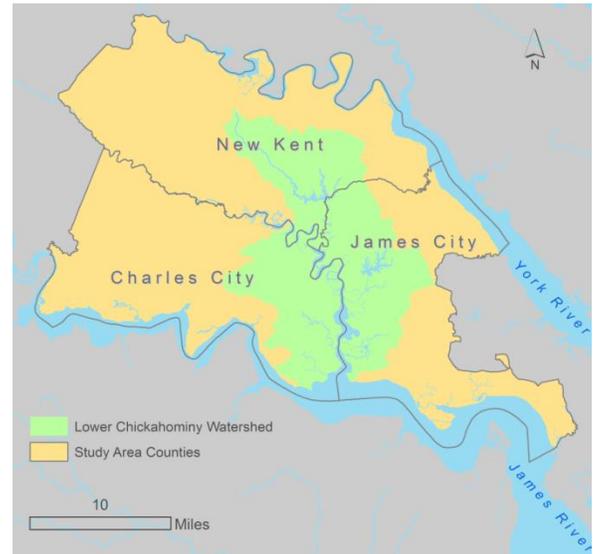
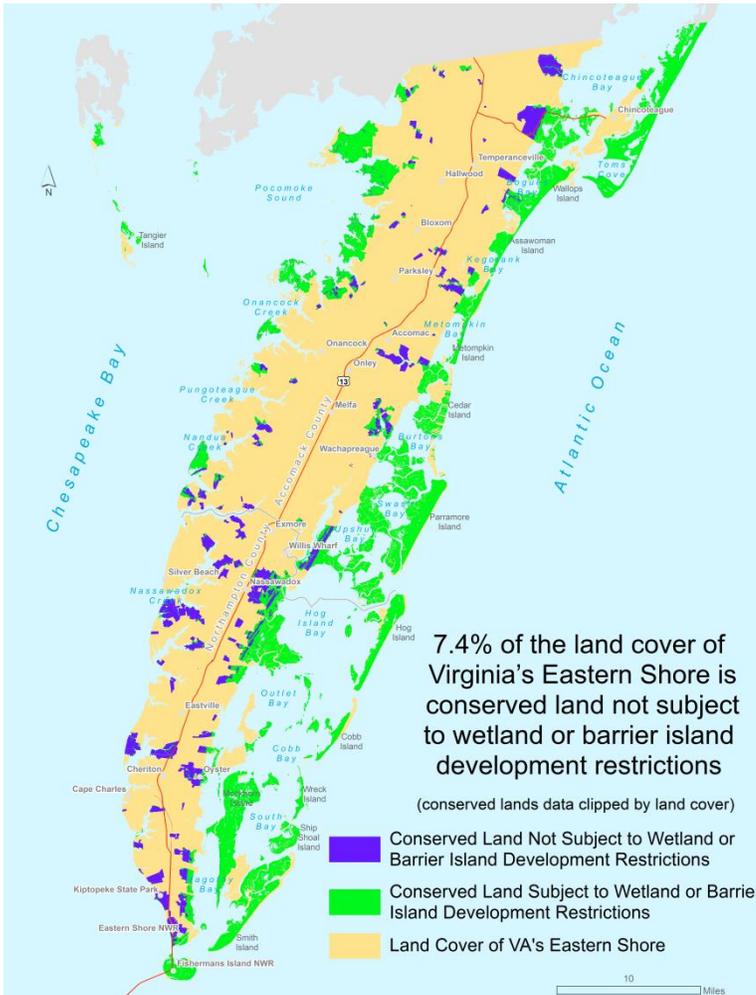
Data layer showing VA CZM land acquisition, public access, and habitat restoration projects provided to DEQ staff (along with instructions to incorporate data into ArcGIS online map) for inclusion in DEQ 25th anniversary story;

DHR archive search map for VA Beach Boardwalk created as part of SHPO project review package prepared by Coastal GIS Coordinator;

Map of VA offshore wind energy area for use on factsheet about research regarding EMF impacts on fisheries

CZM Program Support

The Coastal GIS Coordinator continued to provide technical support to VA CZM staff in FY17, including reviewing spatial data deliverables, creating maps and drafting text for VA CZM publications, assisting with an exercise to locate high ecological value parcels for potential conservation along the lower Chickahominy River, compiling GIS boundaries for all CZM funded land acquisitions dating back to 1991, and inputting all VA marine debris projects into a NOAA online portal.



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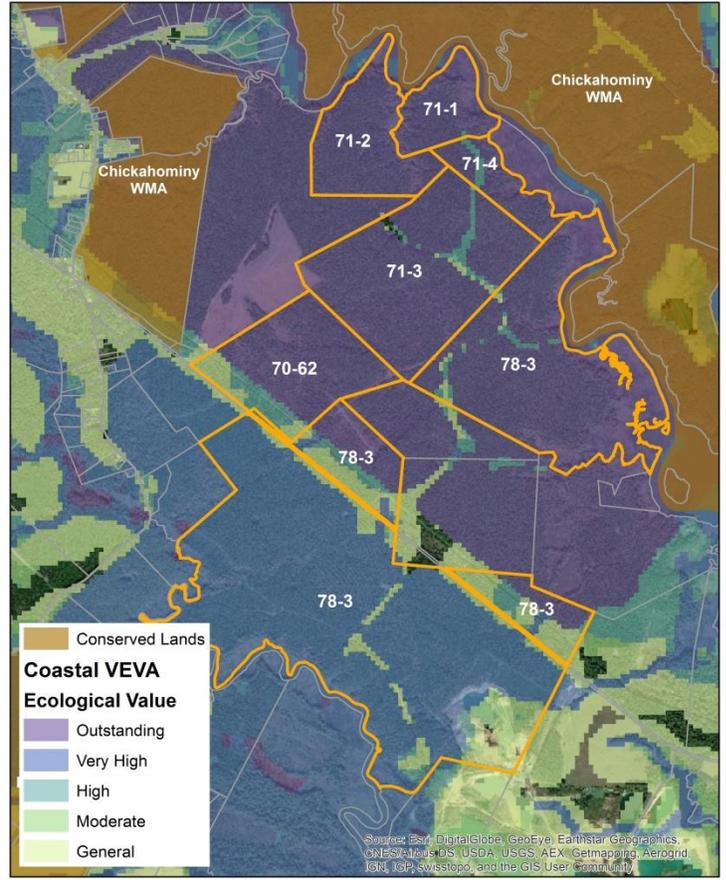
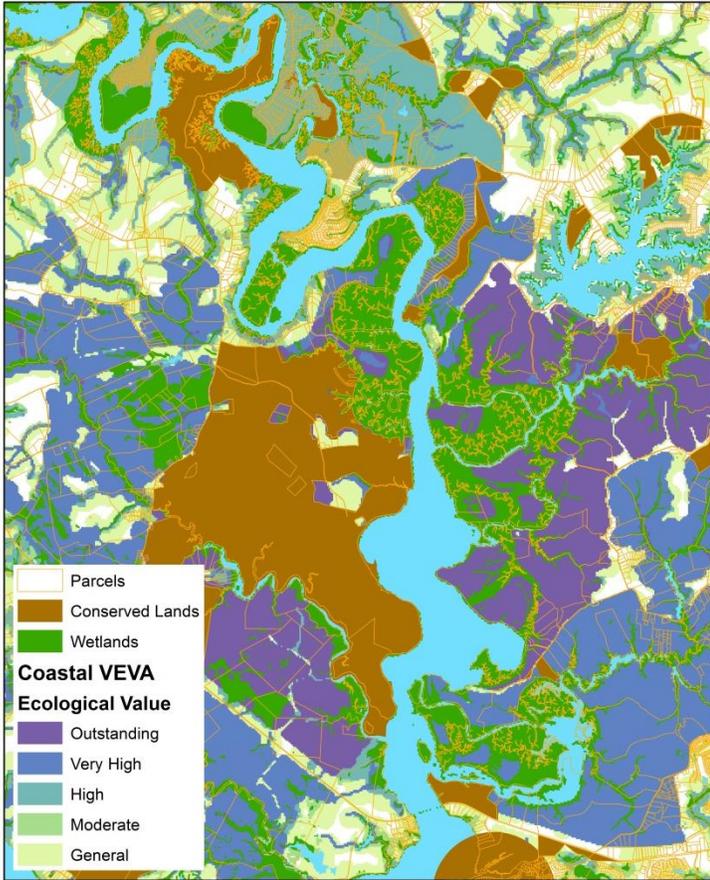
Map created for 'Economics of Conserved Lands on VA's Eastern Shore' fact sheet;

Map of lower Chickahominy watershed prepared for VA CZM Magazine;

Screenshot of VA projects in NOAA Marine Debris portal;

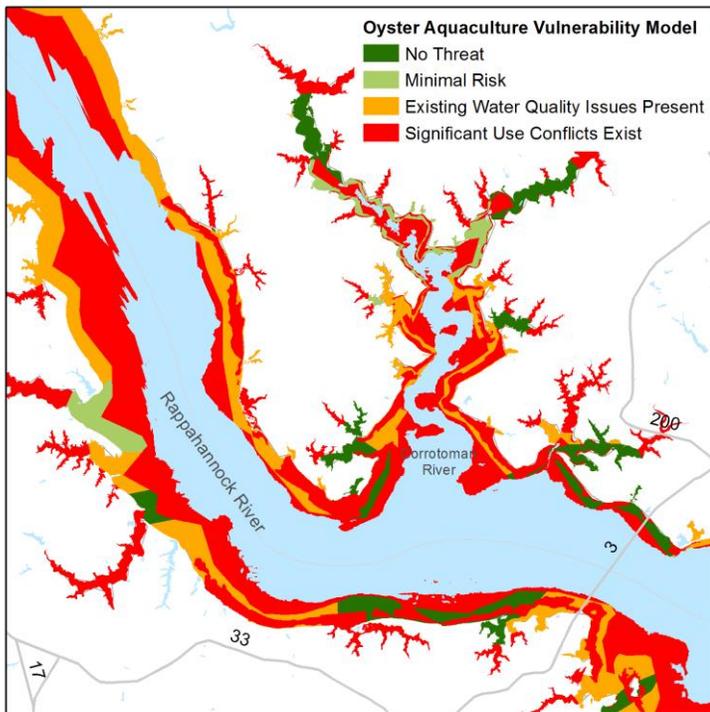
Map of geographic extent covered by Capital Region Native Plant Guide

CZM Program Support continued



Above: Maps created as part of exercise to locate high ecological value parcels for potential conservation along the lower Chickahominy River

Left: Map of oyster aquaculture vulnerability along the Rappahannock River created for the VA CZM Magazine



Appendix

Google Analytics

coastalgems v 3
All Web Site Data

[GO TO REPORT](#)

Audience Overview

Oct 1, 2017 - Sep 30, 2018

All Users
100.00% Users

Overview

Users



Users
744



New Users
733



Sessions
1,168



Number of Sessions per User
1.57



Pageviews
1,378



Pages / Session
1.18



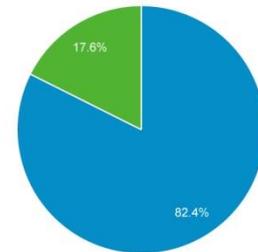
Avg. Session Duration
00:00:55



Bounce Rate
87.24%



■ New Visitor ■ Returning Visitor



Language	Users	% Users
1. en-us	721	96.91%
2. fi-fi	6	0.81%
3. en-gb	4	0.54%
4. es-419	3	0.40%
5. c	2	0.27%
6. vi	2	0.27%
7. de	1	0.13%
8. en-ca	1	0.13%
9. es	1	0.13%
10. ko	1	0.13%