A map of Virginia's coastal waters, showing the state's outline in light yellow and the surrounding water in light blue. The map includes major water bodies like the Chesapeake Bay and the Pamlico River. The text is centered over the map.

Virginia Commonwealth University, Center for Environmental Studies
Coastal Management GIS Support & Coastal GEMS
Maintenance: FY14 Annual Report

October 1st 2014 – September 30th 2015

NOAA Grant # NA14NOS4190141

Grant Year FY2014, Task #1.02



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's Center for Environmental Studies and is funded by the Virginia Coastal Zone Management Program at the Virginia Department of Environmental Quality through Grant # NA14NOS4190141 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 outlines tasks performed and products created under task #1.02 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 FY2014 (October 1st 2014 – September 30th 2015).

Contents

- Coastal GEMS Mapping Application
 - Hosting and Maintenance.....3
 - Updates.....3
 - Google Analytics Tracking.....3
- Coastal GEMS Data Management.....4
- Coastal GIS Coordination
 - CZM Grantee Products.....5-6
 - CZM Program Products.....7-8
- Training and Outreach.....8
- GIS Map Products and Services
 - CZM Partner Requested.....9-11
 - CZM Staff Requested.....12
- Appendix
 - Google Analytics Report.....13-14
 - Coastal Population Fact Sheets.....15-18
 - Coastal Population Screenshots.....18-19
 - Virginia Beach Aerial Recreational Use Survey Summary Maps.....20-30

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 FY14 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 FY14 grant period and was only offline to install software/security updates or to refresh map services.

Updates

During the FY14 grant period, at CZM staff request, VCU CES staff updated the data and symbology on three currently in production GEMS layers and added five new data layers as part of a new population map service. The Coastal GIS Coordinator processed GIS data layers for effective display on Coastal GEMS and uploaded layers to VCU to be added to Coastal GEMS. GEMS fact sheets were added/updated where applicable.

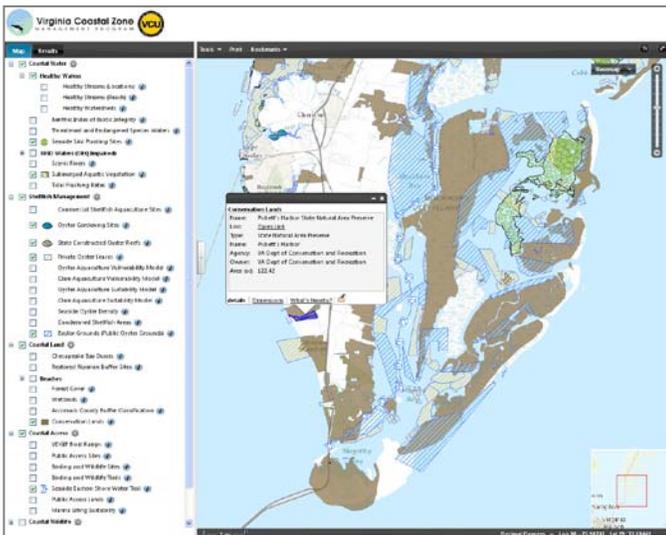
Layers updated: conservation lands, private oyster leases, and scenic rivers

Layers added: Current Population (2014), Population Change (2010-2014), Projected Population (2020), Projected Population (2030), Projected Population (2040)

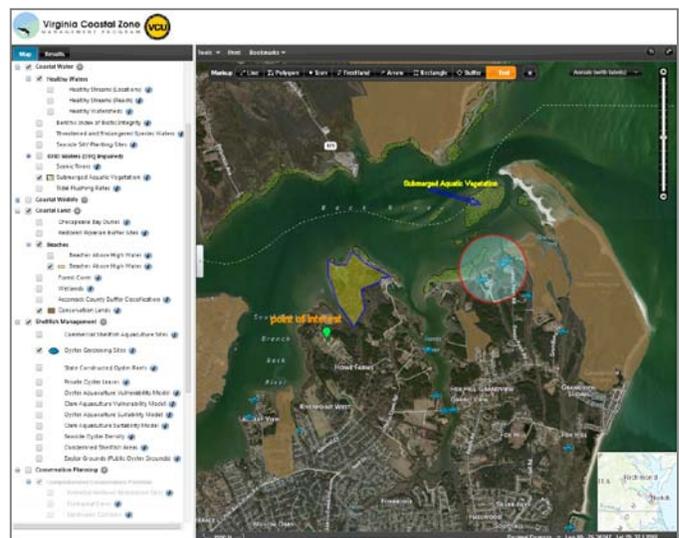
Google Analytics Tracking

Google Analytics services for Coastal GEMS set up by VCU CES staff remained operational throughout the FY14 grant period. VCU CES staff created Google Analytics reports at CZM staff request by querying specific date ranges.

From October 1, 2014 to September 30, 2015, Coastal GEMS received 1,014 visits from 637 unique visitors resulting in 1,299 pageviews and an average site visit time of 1 minutes and 31 seconds. More Google Analytics information for the Coastal GEMS mapping application during the FY14 grant period can be found in the appendix of this report.



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



Right: A screenshot from Coastal GEMS showing available markup functions

Coastal GEMS can be accessed at:
www.coastalgems.org

Coastal GEMS Data Management

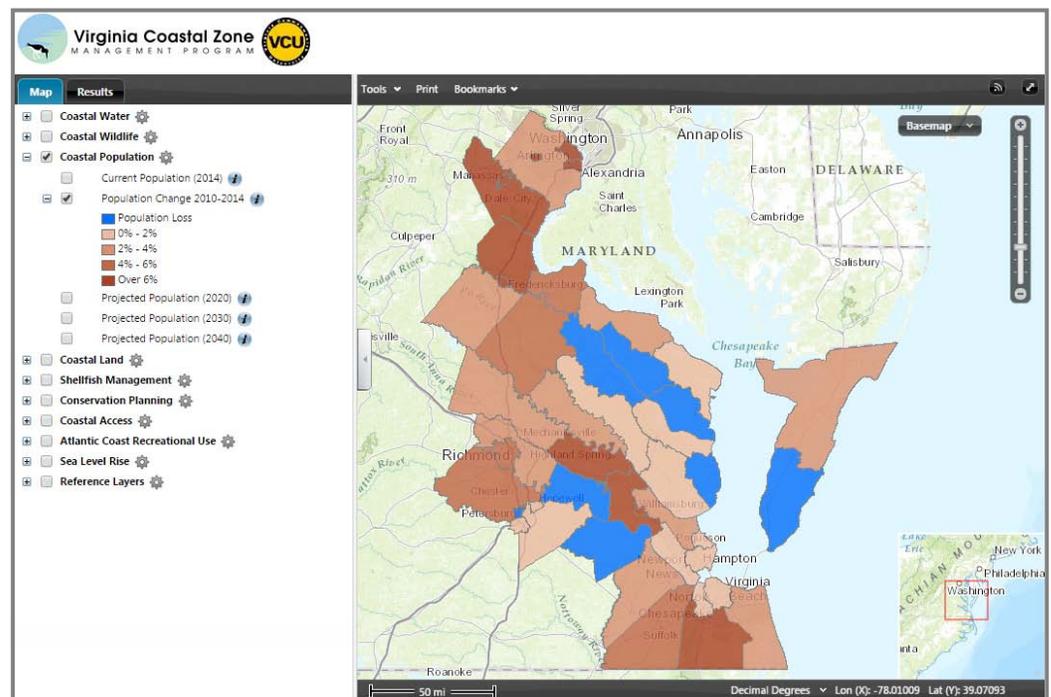
The Coastal GIS Coordinator requested and obtained available data updates for current Coastal GEMS layers from data providers, processed data for display on GEMS, and updated the Coastal GEMS factsheets and website as necessary. In addition a new Coastal Population map service (see below for details) was added to the Coastal GEMS mapping portal during the FY14 grant period.

Coastal Population Map Service

The Coastal GIS Coordinator obtained tabular population data from the Demographics Group at the UVA Weldon Cooper Center and used it to create spatial data that could be incorporated into Coastal GEMS and considered in conjunction with other data hosted on GEMS. The Coastal GIS Coordinator processed the data to allow fast, simple display on the Coastal GEMS application and provided VCU CES GIS staff with a symbolized ArcGIS map package used to create a new coastal population map service available through Coastal GEMS. The Coastal GIS Coordinator also created a fact sheet incorporating information and links about the data and how it is created.

Right: A screenshot from Coastal GEMS showing population change data for VA's coastal zone

Below: A screenshot of factsheet for the population change layer on Coastal GEMS



Coastal GEMS Factsheet

Population Change 2010-2014

These population estimates show the total population for each county and city in Virginia as estimated by the UVA Demographics Research Group for July 1st, 2014. They also show the change in population since the decennial census count on April 1st, 2010. Population data and maps for the entire state can be accessed through the link below.

Status of the data
The population estimates are updated annually for the General Assembly.

Data Source
Virginia County and City Population Estimates for 2014. The University of Virginia, Weldon Cooper Center for Public Service, Demographics Research Group.

To access this data layer/tool directly, please visit:
<http://www.coopercenter.org/demographics/population-data>

For original datasets, please contact:
Hamilton Lombard – Research Specialist
P.O.B. 400206
Charlottesville, VA 22904.00000000
Phone: 434 982-5698
Fax:
Email: Hamilton.Lombard@virginia.edu

Why should we care?
The population size of many of Virginia's counties and cities has changed considerably over the past few decades. These population estimates and projections help us to understand current population change trends as well as likely future trends.

Links to find more information:
[Virginia Population Change Analysis](#)

How is this resource managed?
These population estimates have been updated annually for the General Assembly since 1943.

See the appendix of this report for the full fact sheet text as well as more screenshots of the population data on Coastal GEMS

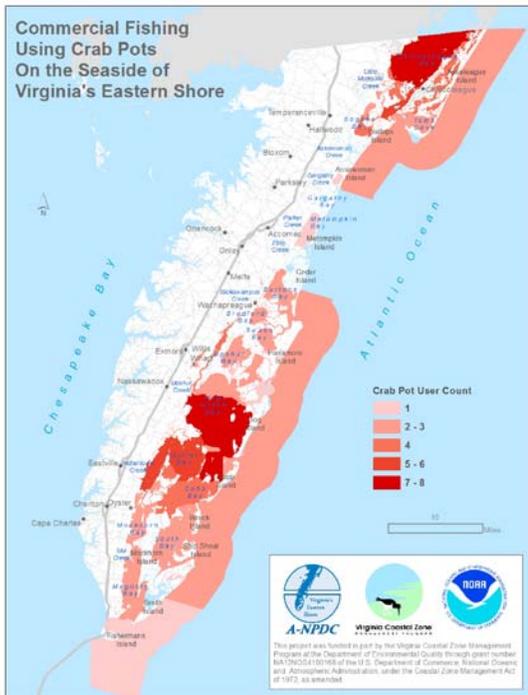
Coastal GIS Coordination

The Coastal GIS Coordinator responded to all data requests in a timely manner. In FY14 this included requests from federal and state agencies, planning district commissions, academic institutions, and private contractors. The Coastal GIS Coordinator also provided support for various products from VA CZM and VA CZM grantees as detailed below.

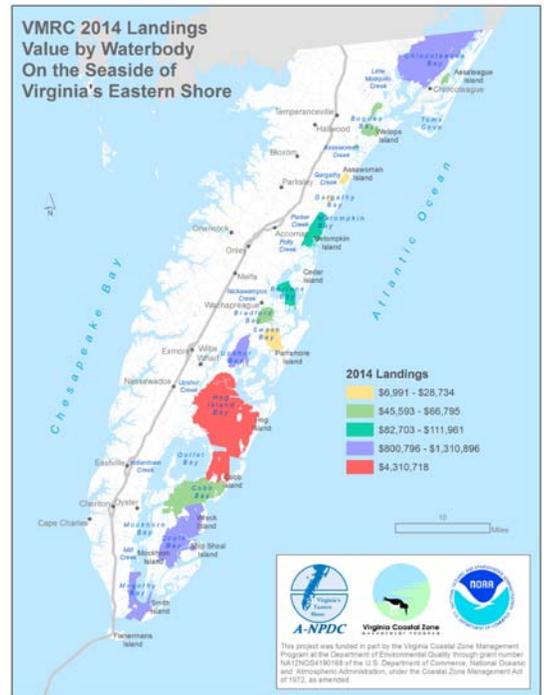
CZM Grantee Products

Eastern Shore Commercial Fishing

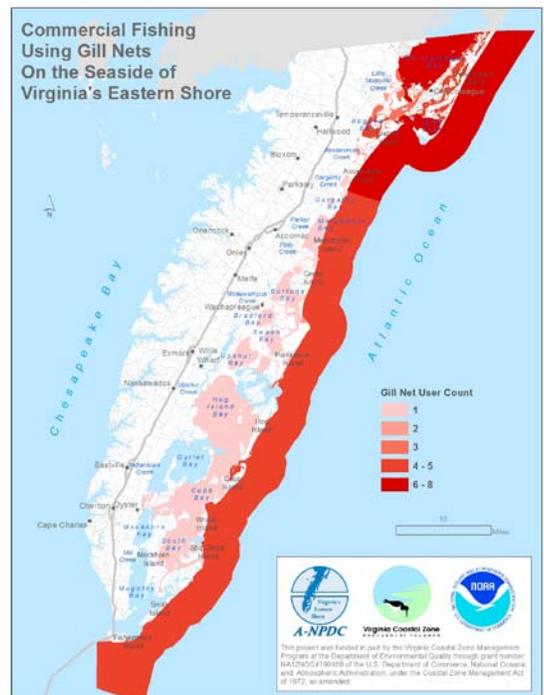
The Coastal GIS Coordinator worked with Accomack-Northampton Planning District Commission (ANPDC) planning staff to create maps of commercial fishing activity for their Seaside SAMP report, including maps of commercial fishery landing values on the seaside utilizing VMRC data as well as labeled map layouts portraying intensity for various commercial fishing uses on the seaside created by digitizing/processing data from over fifty hand drawn maps provided by commercial fishermen denoting their activity within state waters (see below). All of the maps along with more detailed explanations can be found in the ANPDC's report (FY12 Task 96, NA12NOS4190168).



Right: Commercial fishery landing values on the seaside created from VMRC data



Left and below: commercial fishing intensity for various gear types on the seaside created from data provided by fishermen



CZM Grantee Products Continued

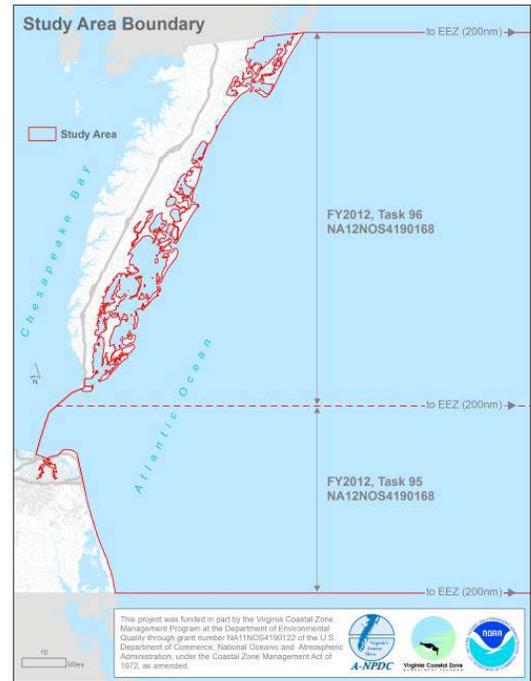
Virginia Atlantic Coast Aerial Recreational Use Survey

Historic Effort

In FY11 the Coastal GIS Coordinator worked with ANPDC staff to design a methodology for recreational use survey flights utilizing VMRC enforcement aircraft and pilots and ANPDC staff equipped with GPS enabled digital cameras. This methodology was used to collect recreational use data along VA's Atlantic coast during thirteen flights in 2012 and 2013. The data collected during these flights was divided into two study areas (see map at right).

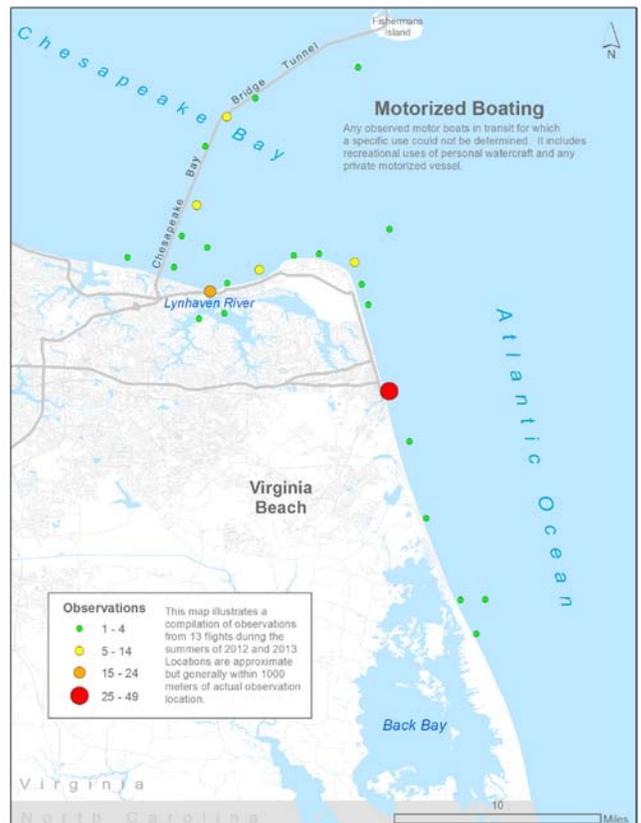
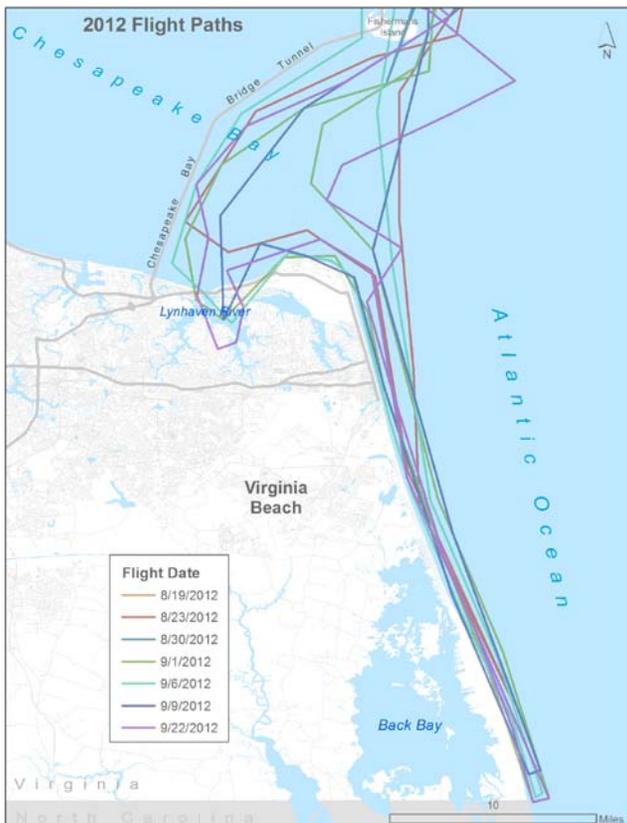
During the FY13 grant period, the Coastal GIS Coordinator worked with ANPDC staff to compile and process data covering the seaside of Virginia's Eastern Shore and created a series of map layouts summarizing the data. Those maps can be found in the final report for FY12 Task 96, NA12NOS4190168.

Also during FY13, the Coastal GIS Coordinator set up GIS data input process for the VA CZM Ocean Planning Stakeholder Engagement Coordinator, facilitating creation of recreational use spatial data from geotagged aerial photos of Virginia Beach consistent to data created for the Eastern Shore portion of the project. That spatial data was one of the final deliverables for FY12 Task 95, NA12NOS4190168 but that report did not include map layouts summarizing the data.



FY14 Effort

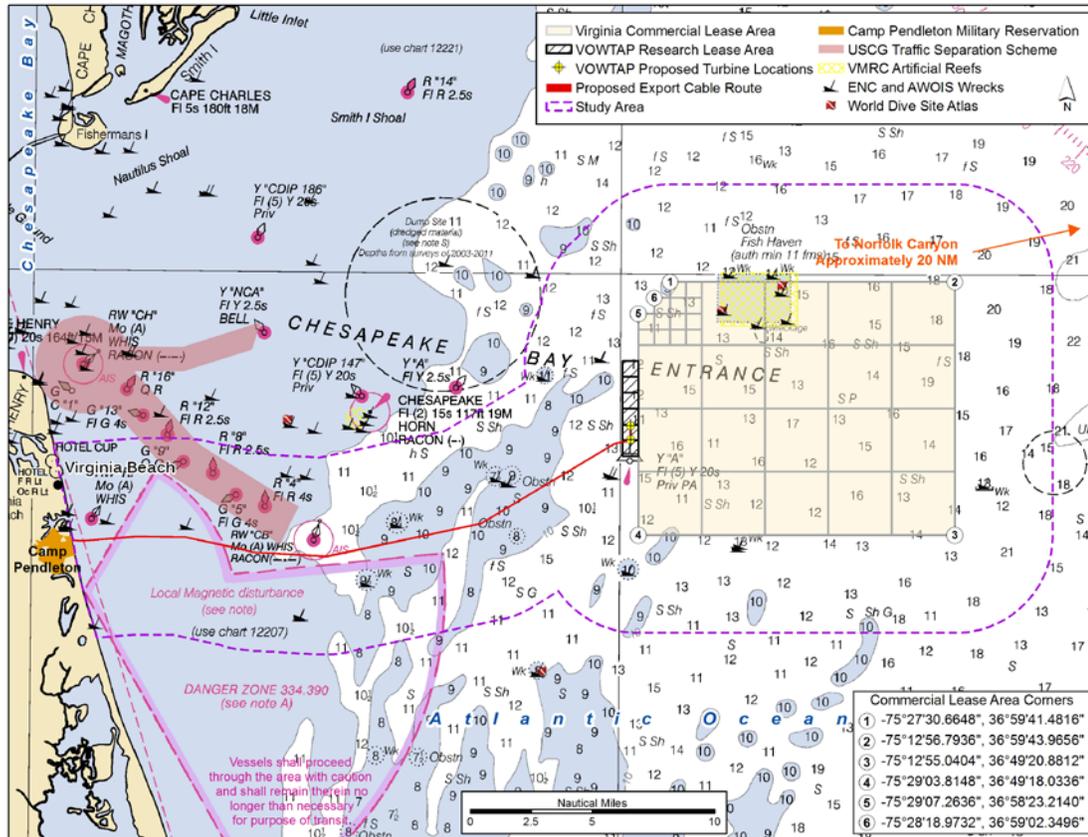
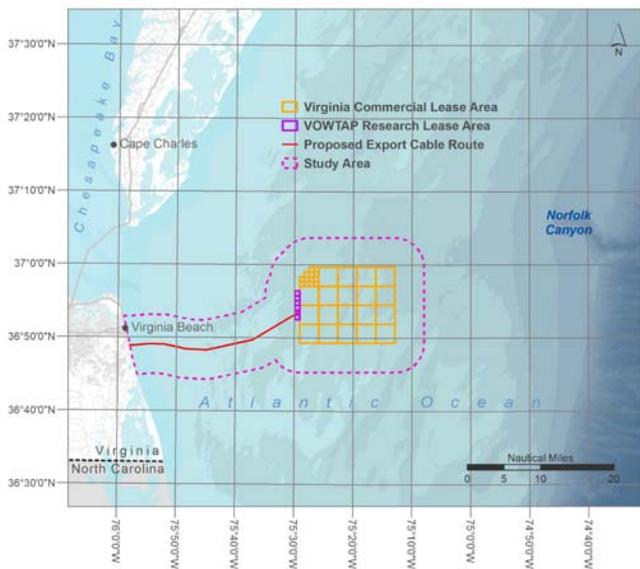
In FY14 the Coastal GIS Coordinator worked with VCU CES staff to compile and process data covering the Virginia Beach portion of the aerial recreational use survey flights study area and created maps (see below for examples) similar to those created for the Eastern Shore portion of the data which summarize the data from the thirteen flights and include layouts for nine distinct recreational uses. Because they were not included in the final report for FY12 Task 95 (NA12NOS4190168), the full set of maps created for Virginia Beach can be found in the appendix of this report.



CZM Program Products

Collaborative Fisheries Planning

The Coastal GIS Coordinator assisted in many aspects of a VA CZM led, BOEM/DMME funded project engaging fishermen through a collaborative process to minimize potential conflicts to fishing communities from the build out of VA's commercial wind energy area. This included helping to secure a necessary sole source contract, actively participating in project team and outreach meetings, helping to develop a data submission questionnaire and compiling offline basemaps for pGIS sessions with fishermen, creating project specific spatial data and producing attractive map layouts for use on project handouts and the web, and printing large scale map layouts for display at public meetings.



Right: The Coastal GIS Coordinator participates in discussion with commercial fishermen, project team members, and UK fishing representatives during a Public Outreach meeting at the Slover Library in Norfolk

Left: Maps layouts created by Coastal GIS Coordinator for use in handouts, on the web and on fishermen data submission forms

CZM Program Products Continued

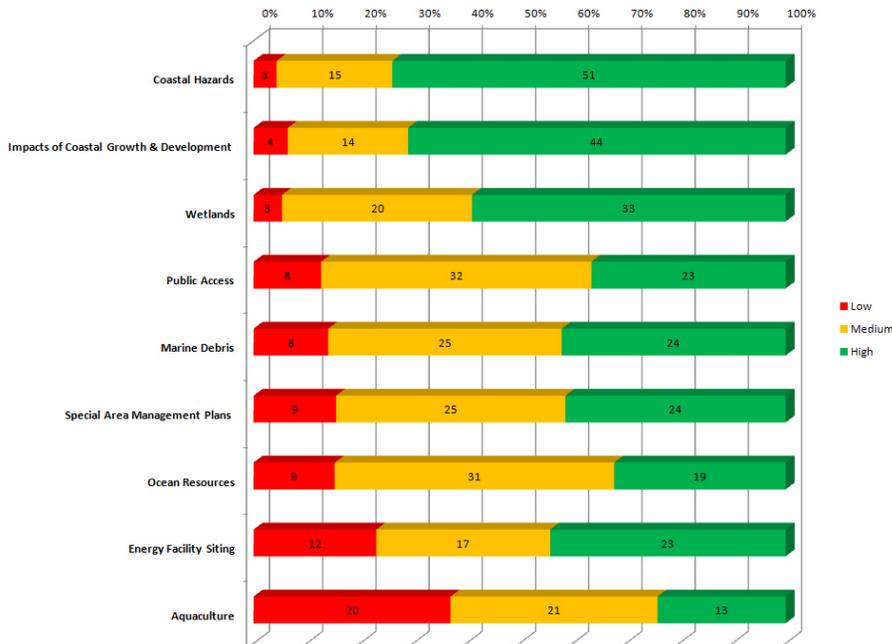
Non-GIS Tasks

The Coastal GIS Coordinator occasionally supports VA CZM on planning and technology tasks not related to GIS. In FY14 the Coastal GIS Coordinator helped to prepare for the annual CZM Coastal Partners Workshop, including organizing speakers, obtaining, setting up, and running an audience participation system, and creating a chart and formula used to present workshop attendees highest priorities for the Virginia CZM Program and Coastal Enhancement strategies for the coming cycle. The Coastal GIS Coordinator also set up a webinar and ran tech for this workshop and many other CZM led meetings during this evaluation period.



Above: An instruction clicker as used for audience participation at VA CZM's Coastal Partners Workshop

Right: Chart showing final priority rankings of issue areas by attendees of the 2014 VA CZM Coastal Partners Workshop



Training and Outreach

The Coastal GIS Coordinator continues to offer Coastal GEMS trainings and provide up to date Coastal GEMS educational outreach materials to CZM partners as requested.

In FY14 the Coastal GIS Coordinator gave a Coastal GEMS presentation and demo to the twenty participants of an ecosystem based management workgroup at the 2015 Sea Grant Symposium.

The Coastal GIS Coordinator represented VA CZM on the Port of Hampton Roads Lower Chesapeake Bay Use Subcommittee, providing the group with information about the VA CZM Coastal GEMS data portal and the MARCO Data Portal.

Right: Slide outlining the main features and functions of Coastal GEMS

Coastal GEMS
Geospatial and Educational Mapping System
 A gateway to information on the location, value, and management of Virginia's coastal resources

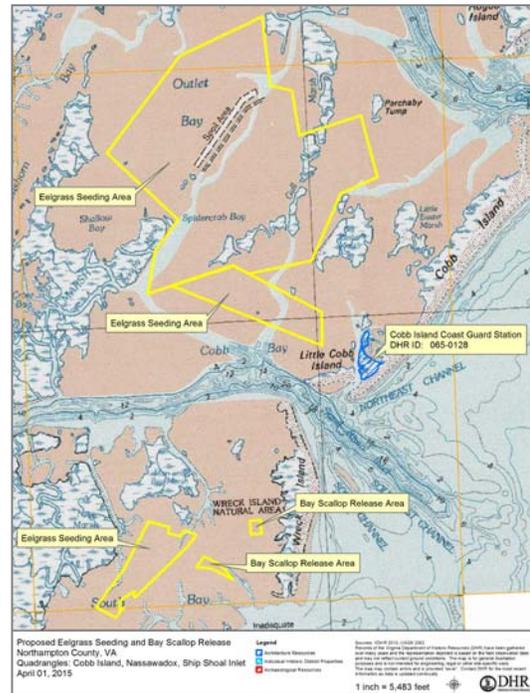
- Print:** Print or save a quick .jpg snapshot of the map or a full .pdf layout with title and map legend.
- Bookmarks:** Quickly zoom to some of the most used map extents.
- Advanced Tools:** Search data, measure distance or area, basemap swipe tool, identify features on the map, add custom markup to the map, and more!
- Map Layers:** Click the [-] to collapse a layer group or legend or click the [+] to expand a layer group or legend. Click on the check box to turn on layer groups or specific layers. Tip: Layers that are grey cannot be activated at the current map scale – zoom in until the name turns black.
- Where am I?:** Zoom the map to your current location.
- Maximize Map:** Hides the layer list and other toolbars to give you a larger map to explore.
- Sliding Scale Bar:** Zoom in or out using the scale bar or just use your mouse (see Pan/Zoom below).
- Basemaps:** Choose from a variety of basemaps and aerial imagery.
- Overview Map:** Click the arrow in the bottom right corner to minimize hide or show the overview map.
- Pan/Zoom with your mouse:** Click anywhere on the map to grab and drag it around. Place the cursor anywhere on the map and use your scroll wheel to zoom in or out from that point.

GIS Map Products and Services

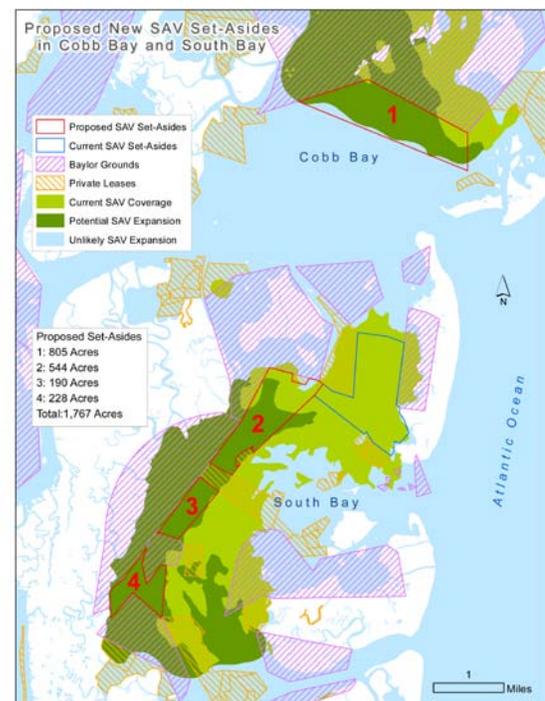
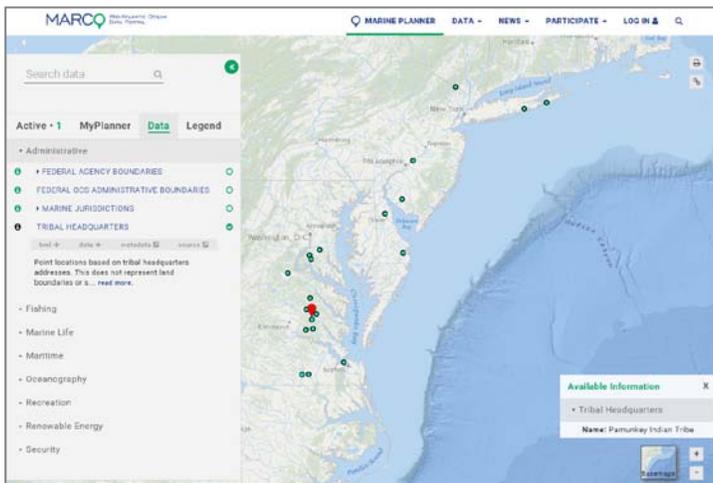
CZM Partner Request

The Coastal GIS Coordinator continues to provide GIS technical assistance as requested by VA CZM partners. In FY14 this included:

- Performing DHR GIS archive searches and creating maps required for 306a documentation and SHPO clearance for VA CZM grantee projects (see below)



- Providing spatial data to VIMS and VMRC of two new SAV set-asides approved by the VMRC board in continuation of last year's efforts to map new eelgrass expansion areas on the seaside of VA's Eastern Shore
- Consulting for MARCO on the use of participatory GIS to map Tribal uses of the mid-Atlantic ocean (including reviewing related draft documents and proposals) and geocoding Tribal headquarter addresses to create an attributed point GIS layer currently housed on the staging site of the MARCO portal for vetting with Tribes

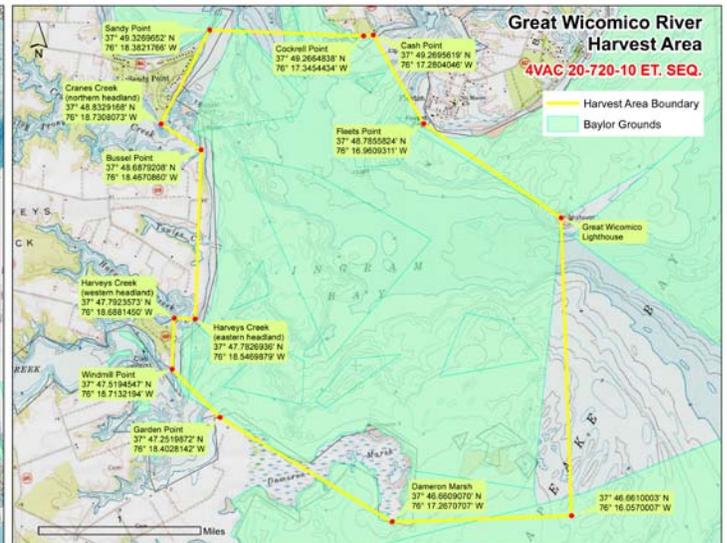
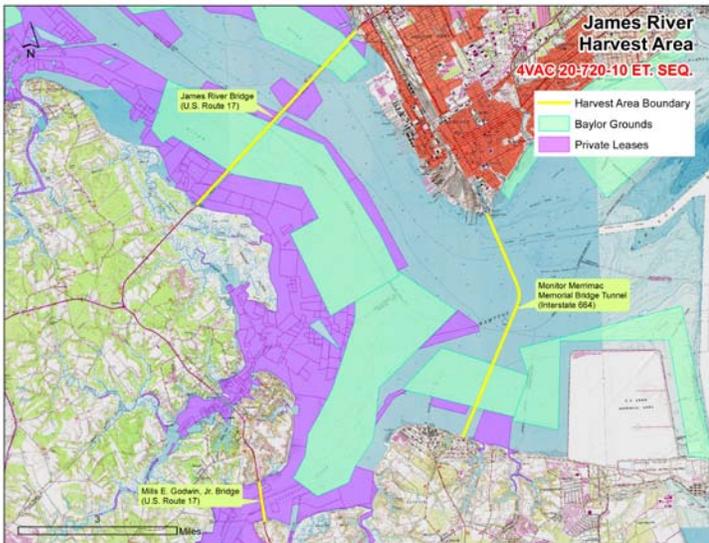
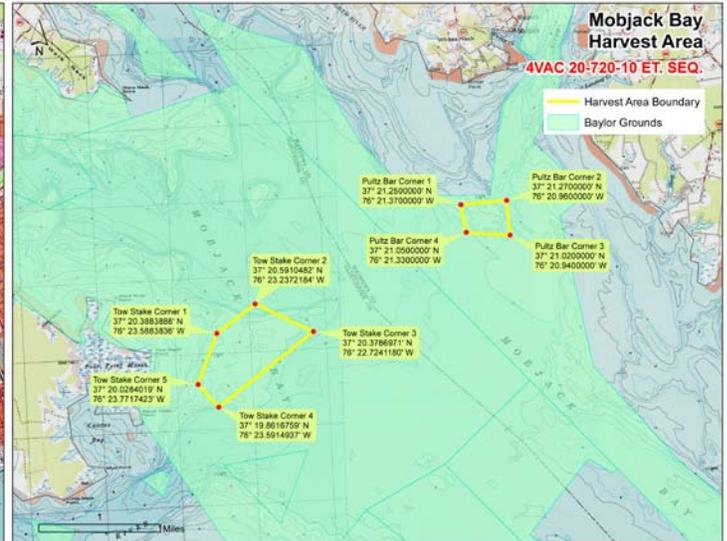
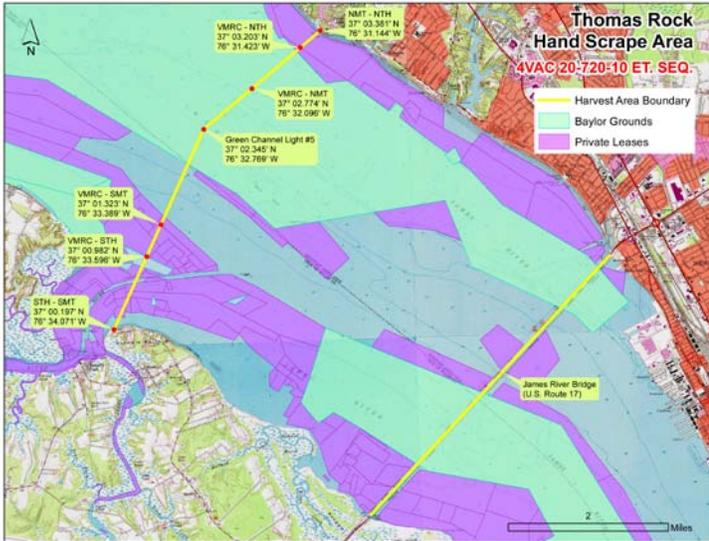


Above: Draft Tribal headquarter layer on the MARCO Portal staging site for vetting with Tribes

Right: Areas 1 and 2 on this map were approved by the VMRC board as new SAV set-asides on the seaside of VA's Eastern Shore

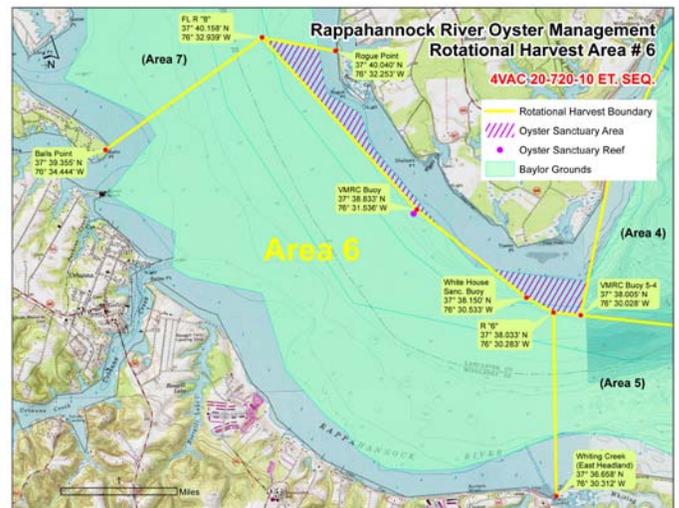
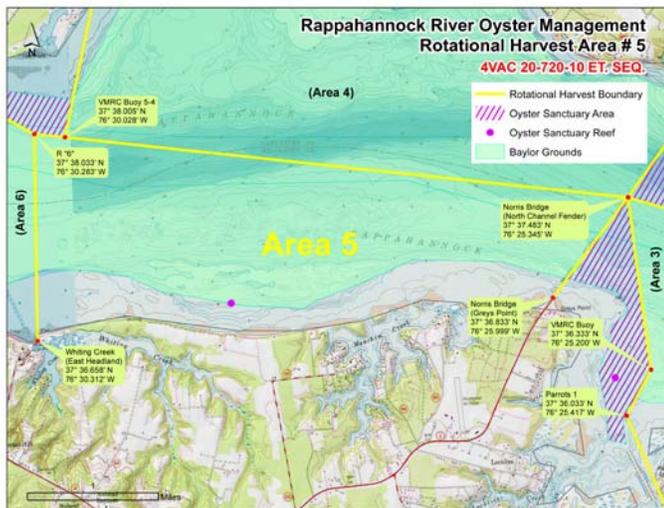
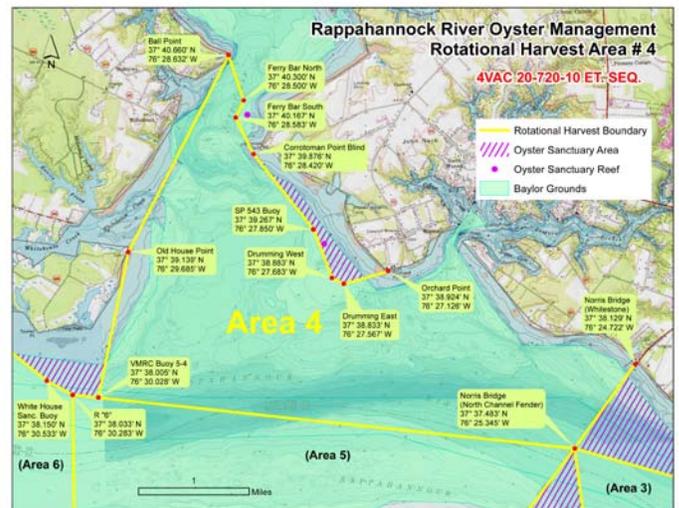
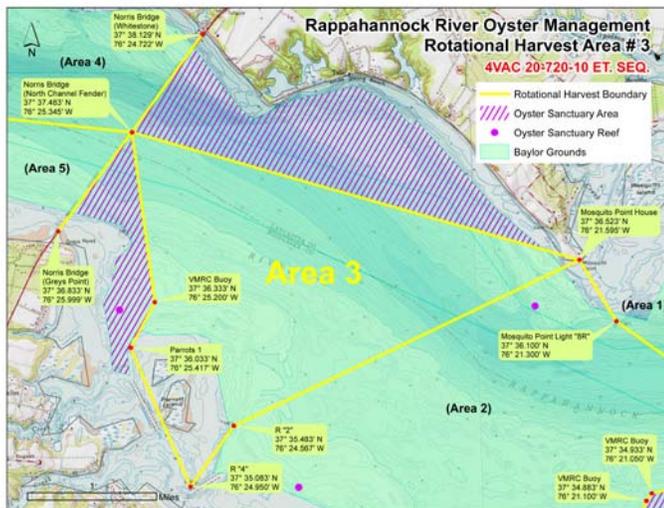
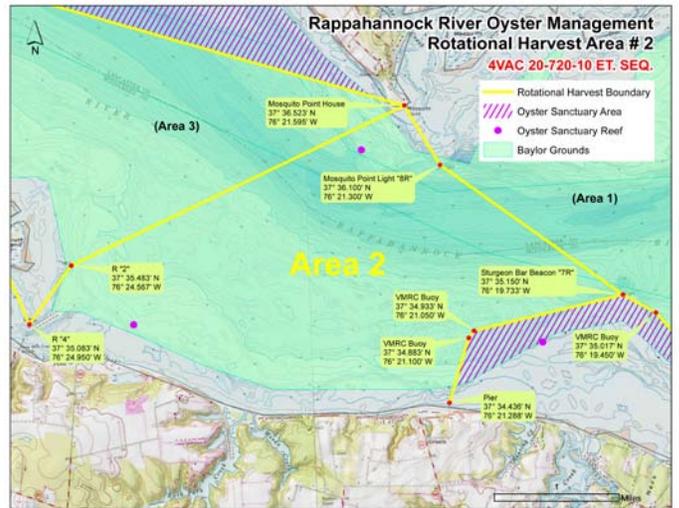
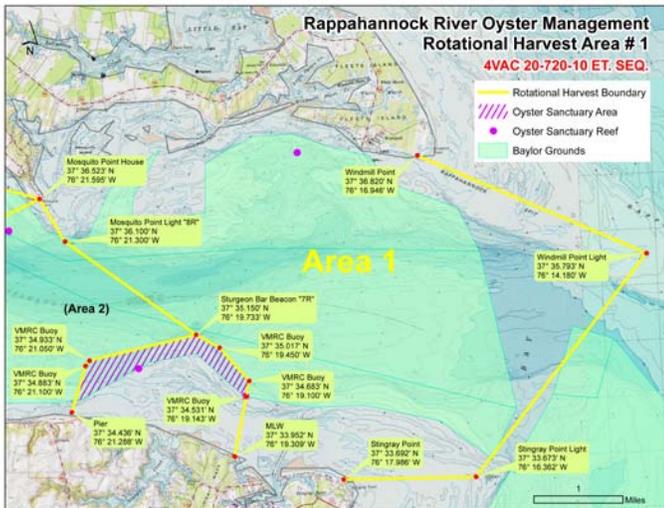
CZM Partner Request Continued

- Working with VA CZM Coastal Planners to design a methodology to produce a working waterfronts spatial database utilizing existing Coastal PDC working waterfront inventory products and Coastal GEMS
- Coordinating with NOAA and VGIN staff to ensure state priorities for high resolution elevation data acquisition in coastal VA were reflected in NOAA priorities submitted to USGS for the USGS 3D Elevation Program
- Working with VMRC Conservation and Replenishment staff to create maps used for oyster harvest enforcement in the Rappahannock River, James River, Great Wicomico River, and Mobjack Bay including updating six existing map layouts and producing four new map layouts by creating spatial data from VMRC regulation text.



Above: Oyster harvest enforcement areas (spatial data created from VMRC regulation text) in the James River, Great Wicomico River, and Mobjack Bay

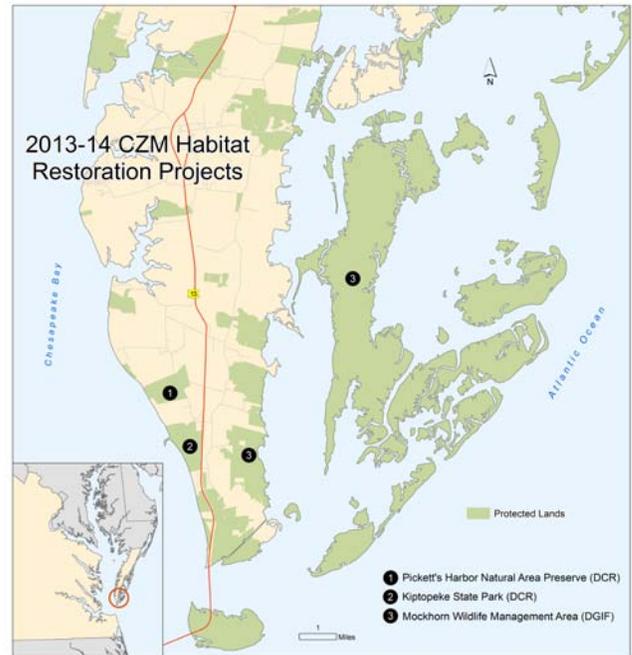
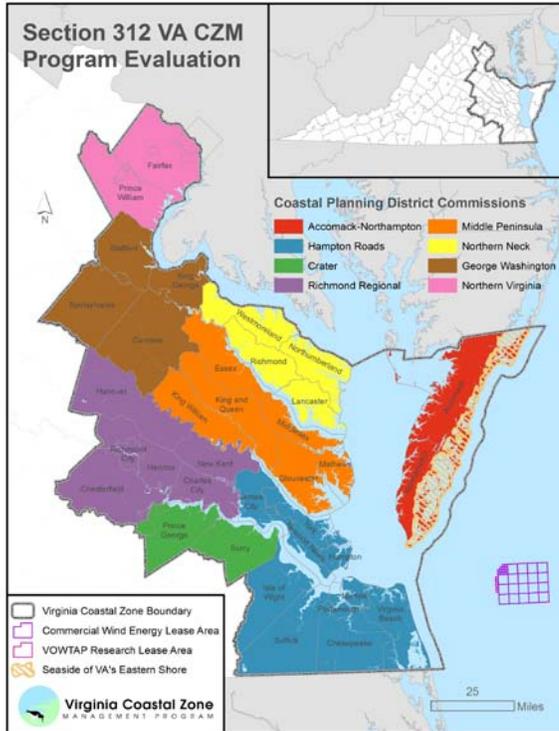
CZM Partner Request Continued



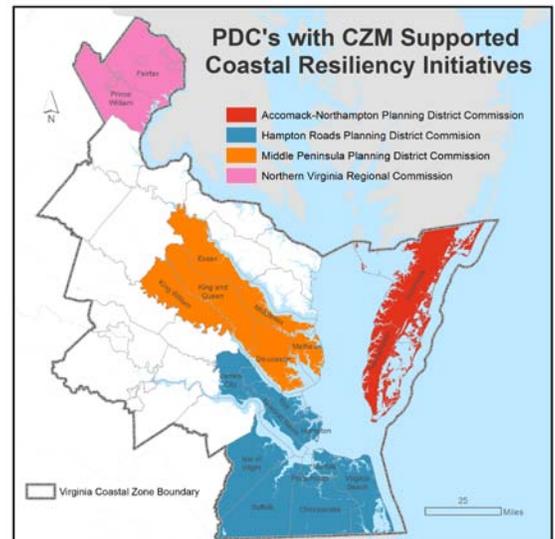
Above: Rotational oyster harvest areas (spatial data created from VMRC regulation text) in the Rappahannock River

VA CZM Program Support

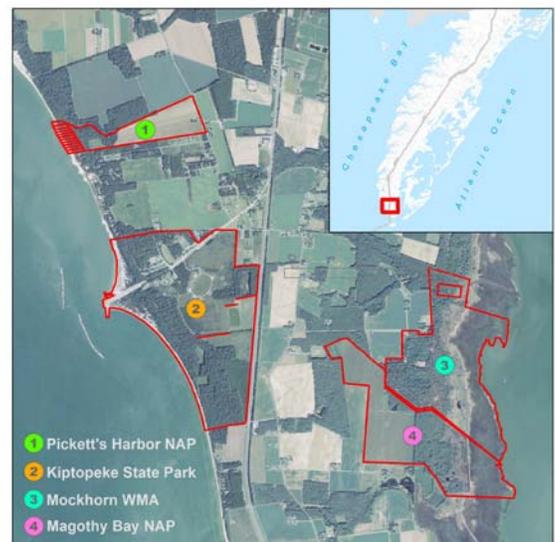
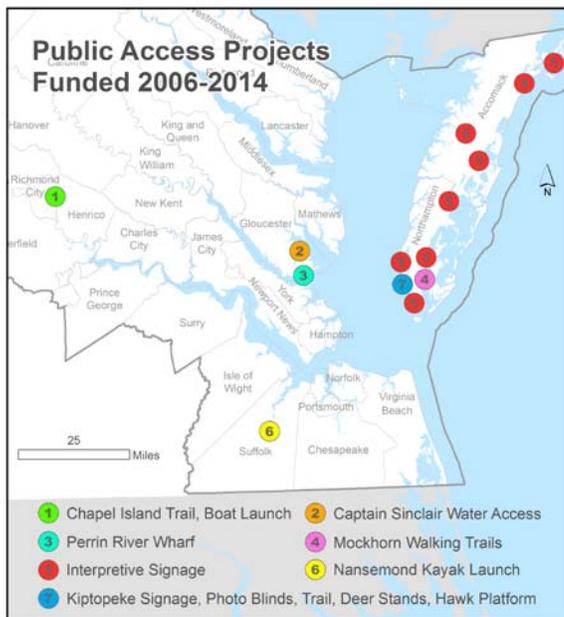
The Coastal GIS Coordinator produced various maps as requested by VA CZM staff including a map layout highlighting habitat restoration projects for the VA CZM exhibit at the 2014 Eastern Shore of Virginia Birding and Wildlife Festival and multiple maps for inclusion in presentations and printed materials for 2015 Section 312 Evaluation meetings.



Top Right: Map of VA CZM habitat restoration projects created for the 2014 Eastern Shore of Virginia Birding and Wildlife Festival.



Left and Right: Various maps created at VA CZM staff request for 2015 Section 312 Evaluation meetings



Appendix

Google Analytics



coastalgems v 3 - <http://gis.vcu.edu/ge...> [Go to this report](#)
All Web Site Data

Audience Overview

Oct 1, 2014 - Sep 30, 2015

All Sessions
100.00%

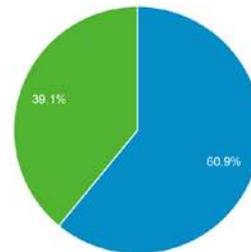
Overview

Sessions
20



Sessions 1,014	Users 637	Pageviews 1,299
Pages / Session 1.28	Avg. Session Duration 00:01:31	Bounce Rate 84.12%
% New Sessions 60.95%		

■ New Visitor ■ Returning Visitor



Language	Sessions	% Sessions
1. en-us	977	96.35%
2. pt-br	14	1.38%
3. vi	5	0.49%
4. en-gb	3	0.30%
5. it-it	3	0.30%
6. en	2	0.20%
7. de-de	1	0.10%
8. el-gr	1	0.10%
9. en-za	1	0.10%
10. es-cr	1	0.10%

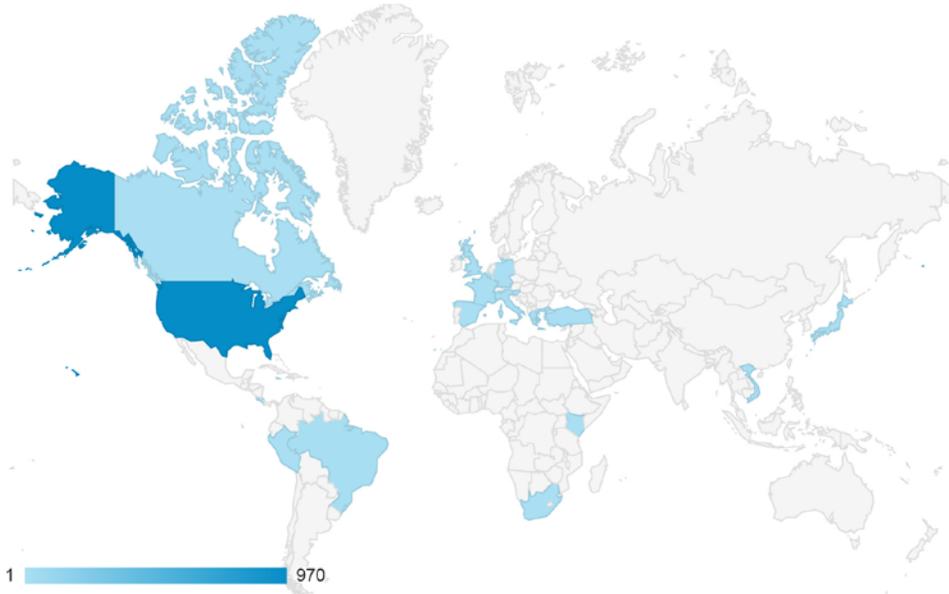
Location

Oct 1, 2014 - Sep 30, 2015

 All Sessions
100.00%

Map Overlay

Summary



Country	Acquisition			Behavior			Conversions		
	Sessions	% New Sessions	New Users	Bounce Rate	Pages / Session	Avg. Session Duration	Goal Conversion Rate	Goal Completions	Goal Value
	1,014 % of Total: 100.00% (1,014)	60.95% Avg for View: 60.95% (0.00%)	618 % of Total: 100.00% (618)	84.12% Avg for View: 84.12% (0.00%)	1.28 Avg for View: 1.28 (0.00%)	00:01:31 Avg for View: 00:01:31 (0.00%)	0.00% Avg for View: 0.00% (0.00%)	0 % of Total: 0.00% (0)	\$0.00 % of Total: 0.00% (\$0.00)
1. United States	970 (95.66%)	59.18%	574 (92.88%)	83.51%	1.29	00:01:35	0.00%	0 (0.00%)	\$0.00 (0.00%)
2. Brazil	14 (1.38%)	100.00%	14 (2.27%)	100.00%	1.00	00:00:00	0.00%	0 (0.00%)	\$0.00 (0.00%)
3. Vietnam	8 (0.79%)	100.00%	8 (1.29%)	100.00%	1.00	00:00:00	0.00%	0 (0.00%)	\$0.00 (0.00%)
4. Italy	3 (0.30%)	100.00%	3 (0.49%)	100.00%	1.00	00:00:00	0.00%	0 (0.00%)	\$0.00 (0.00%)
5. Canada	2 (0.20%)	100.00%	2 (0.32%)	100.00%	1.00	00:00:00	0.00%	0 (0.00%)	\$0.00 (0.00%)
6. Spain	2 (0.20%)	100.00%	2 (0.32%)	50.00%	1.50	00:00:01	0.00%	0 (0.00%)	\$0.00 (0.00%)
7. United Kingdom	2 (0.20%)	100.00%	2 (0.32%)	100.00%	1.00	00:00:00	0.00%	0 (0.00%)	\$0.00 (0.00%)
8. Belgium	1 (0.10%)	100.00%	1 (0.16%)	100.00%	1.00	00:00:00	0.00%	0 (0.00%)	\$0.00 (0.00%)
9. Costa Rica	1 (0.10%)	100.00%	1 (0.16%)	100.00%	1.00	00:00:00	0.00%	0 (0.00%)	\$0.00 (0.00%)
10. Germany	1 (0.10%)	100.00%	1 (0.16%)	100.00%	1.00	00:00:00	0.00%	0 (0.00%)	\$0.00 (0.00%)

Rows 1 - 10 of 20

Coastal Population Fact Sheets

Current Population (2014)

These population estimates show the total population for each county and city in Virginia's coastal zone as estimated by the UVa Demographics Research Group for July 1st, 2014. Population data and maps for the entire state can be accessed through the link below.

Status of the data

These population estimates are updated annually for the General Assembly.

Data Source

Virginia County and City Population Estimates for 2014.. The University of Virginia, Weldon Cooper Center for Public Service, Demographics Research Group.

To access this data layer/tool directly, please visit:

<http://www.coopercenter.org/demographics/population-data>



For original datasets, please contact:

Hamilton Lombard – Research Specialist
P.O.B. 400206
Charlottesville, VA 22904.00000000
Phone: 434 982-5698
Fax:
Email: Hamilton.lombard@virginia.edu

Why should we care?

The population size of many of Virginia's counties and cities has changed considerably over the past few decades. Population estimates and projections help us to understand current population change trends as well as likely future trends.

Links to find more information:

[Virginia 2014 Population Estimates Analysis](#)
[Virginia Population Change Analysis](#)
[Virginia Population Projections Analysis](#)

How is this resource managed?

The population estimates have been updated annually for the General Assembly since 1943.

Links to find more information about how this resource is managed:

[Virginia County and City population estimates](#)

Why was the GIS data created?

The population estimates are produced each year for planning purposes, particularly in state and local government agencies. Annual estimates are necessary because the Census Bureau only counts the population every 10 years. The Bureau also produces a population estimate for localities in Virginia, but because its methodology has to work in over 3,000 counties across the country it is typically less accurate than the UVA estimates.

Links to projects that funded this data acquisition:

How was the GIS data created?

The population estimates are produced by taking the state level annual estimate produced by the Census Bureau and then allocating the total change in Virginia's population since 2010 to each locality. The population change is allocated to localities based on indicators of population change, including: building permits, fiscally responsible school enrollment, driver's licenses, births and deaths.

Future Directions?

The population estimates will continue to be updated each year, with the population estimates for 2015 scheduled for release at the end of January, 2016.

Frequently Asked Questions

What's the difference between population estimates and population projections?

Population estimates reflect the present or the recent past. Population projections suggest the future. Population estimates are typically based on a variety of observed administrative record data (such as births, deaths, school enrollment, and residential housing construction) to detect population changes since the most recent decennial census. Estimates are based on known population data. While there is uncertainty with estimates, they are highly accurate: Cooper Center estimates for Virginia's localities in 2010 were, on average, less than 3 percent off of the 2010 census counts. Population projections, on the other hand, predict future population change based on prior patterns. Due to unknown future natural, social, economic, and political events, population projections have higher levels of uncertainty than estimates.

What if I need a more detailed analysis for my community?

There are many community factors that might cause future population to change substantially from their past patterns. For example, the completion of a major roadway; the relocation of large, local employers; and the nature of local zoning ordinances all may influence future patterns. Weldon Cooper Center researchers can assist your community in producing projections that account for local planning and development. Please contact Qian Cai, Director of the Demographics & Workforce Group, at qian.cai@virginia.edu or (434) 982-5581 if you are interested in our contract services.

Population Change 2010-2014

These population estimates show the total population for each county and city in Virginia as estimated by the UVa Demographics Research Group for July 1st, 2014. They also show the change in population since the decennial census count on April 1st, 2010. Population data and maps for the entire state can be accessed through the link below.

Status of the data

The population estimates are updated annually for the General Assembly.

Data Source

Virginia County and City Population Estimates for 2014. . The University of Virginia, Weldon Cooper Center for Public Service, Demographics Research Group.

To access this data layer/tool directly, please visit:

<http://www.coopercenter.org/demographics/population-data>



For original datasets, please contact:

Hamilton Lombard – Research Specialist
P.O.B. 400206
Charlottesville, VA 22904.00000000
Phone: 434 982-5698
Fax:
Email: Hamilton.lombard@virginia.edu

Why should we care?

The population size of many of Virginia's counties and cities has changed considerably over the past few decades. These population estimates and projections help us to understand current population change trends as well as likely future trends.

Links to find more information:

[Virginia Population Change Analysis](#)

How is this resource managed?

These population estimates have been updated annually for the General Assembly since 1943.

Links to find more information about how this resource is managed:

[Virginia County and City population estimates](#)

Why was the GIS data created?

These population estimates are produced each year for planning purposes, particularly in state and local government agencies. Annual estimates are necessary because the Census Bureau only counts the population every 10 years. The Bureau also produces a population estimate for localities in Virginia, but because its methodology has to work in over 3,000 counties across the country it is typically less accurate than the UVA estimates.

Links to projects that funded this data acquisition:

How was the GIS data created?

These population estimates are produced by taking the state level annual estimate produced by the Census Bureau and then allocating the total change in Virginia's population since 2010 to each locality. The population change is allocated to localities based on indicators of population change, including: building permits, fiscally responsible school enrollment, driver's licenses, births and deaths.

Future Directions?

The population estimates will continue to be updated each year, with the population estimates for 2015 scheduled for release at the end of January, 2016.

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Projected Population (2040)

These population projections show the projected future populations for each county and city in Virginia's coastal zone for 2020, 2030 and 2040, based on demographic trends during the past few decades. Population data and maps for the entire state can be accessed through the link below.

Status of the data

These population projections need to be updated within the next few years.

Data Source

Virginia County and City Population Projections for 2040.. The University of Virginia, Weldon Cooper Center for Public Service, Demographics Research Group.

To access this data layer/tool directly, please visit:

<http://www.coopercenter.org/demographics/population-data>



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Why should we care?

The population size of many of Virginia's counties and cities has changed considerably over the past few decades. These population estimates and projections help us to understand current population change trends as well as likely future trends.

Links to find more information:

[Virginia Population Projections Analysis](#)

How is this resource managed?

These population projections were produced by the Weldon Cooper Center in 2012 for the Virginia Employment Commission. In the past their production has been intermittent.

Links to find more information about how this resource is managed:

[Virginia County and City population projections](#)

Why was the GIS data created?

These population projections were produced in 2012 because it had been nearly a decade since the last round of projections were produced. The projections are needed for longer term planning among Virginia's state and local government agencies.

Links to projects that funded this data acquisition:

How was the GIS data created?

These population projections were produced by analyzing growth trends on the locality level in the past few decades. Those trends were then projected forwards to 2020, 2030 and 2040, accounting for changes in age structures.

Future Directions?

The future of these population projections is less certain, they have been updated irregularly in the past but ideally they should be updated every 2 to 3 years.

Frequently Asked Questions

What are the Weldon Cooper Population Projections?

The Weldon Cooper Center produced these population projections for Virginia under contract with the Virginia Employment Commission. These are the first set of post-2010 projections for Virginia and its counties and cities.

Why are projections developed?

Population projections are critical and widely used in state revenue forecasts, in localities' comprehensive plans, in creating urban development areas, and in statewide transportation planning. They are also often employed in assessing the demand for education, healthcare, housing, and many other goods and services.

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How are the projections developed?

The Weldon Cooper population projections are based on a multi-layered methodological approach developed through extensive research, careful and thoughtful evaluation of options, and creative and practical applications of demographic and statistical theories. The methods produced consistent results with past trends and retain locality population characteristics.

How accurate/reliable are these projections?

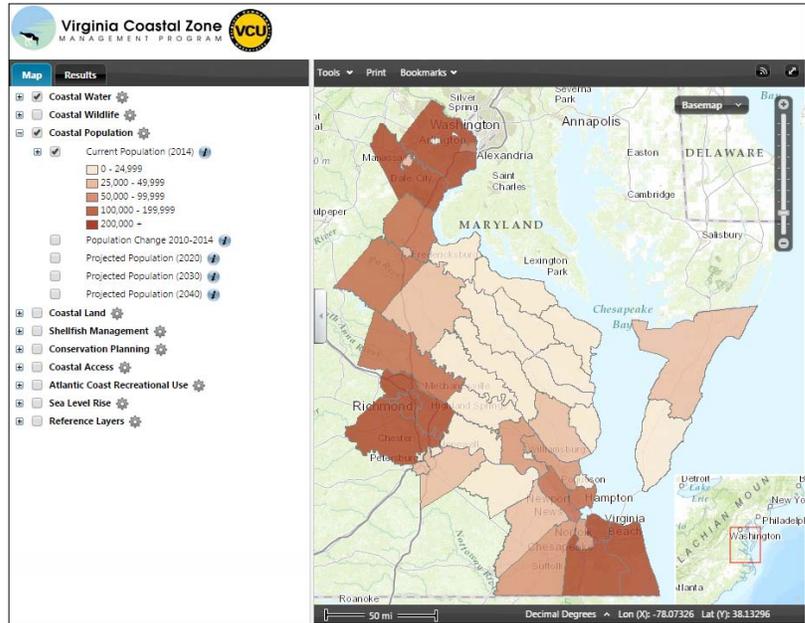
Due to the unknown nature of the future, all projections are uncertain. Nationwide studies of population projections for counties find that the average 10-year projection of total population differs from its census count by about twelve percent. Projections made for further into the future (20 or 30 years) have larger errors. We evaluated our methodology by projecting total population for localities for 2000 and 2010 and comparing these projections to census counts. Both projections had error levels that were well below the average error of twelve percent.

What if I need a more detailed analysis for my community?

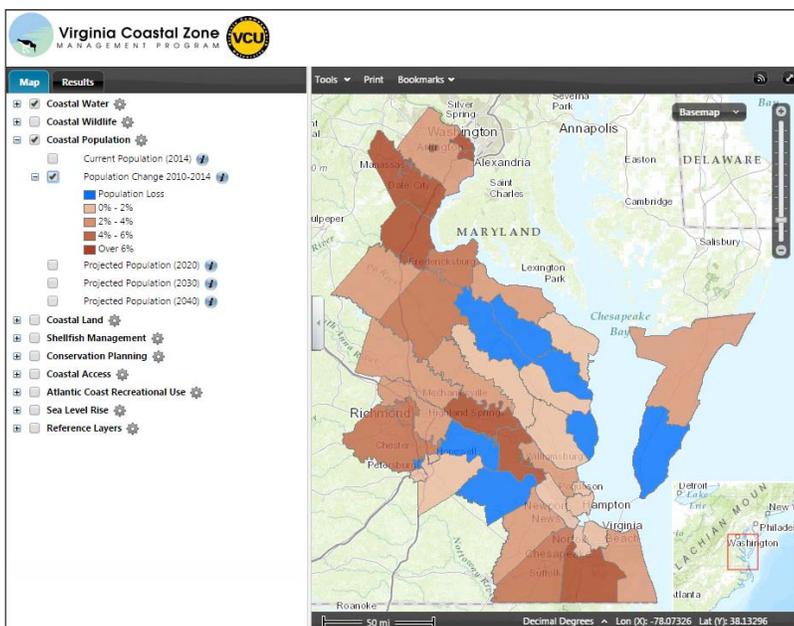
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Coastal Population Screenshots

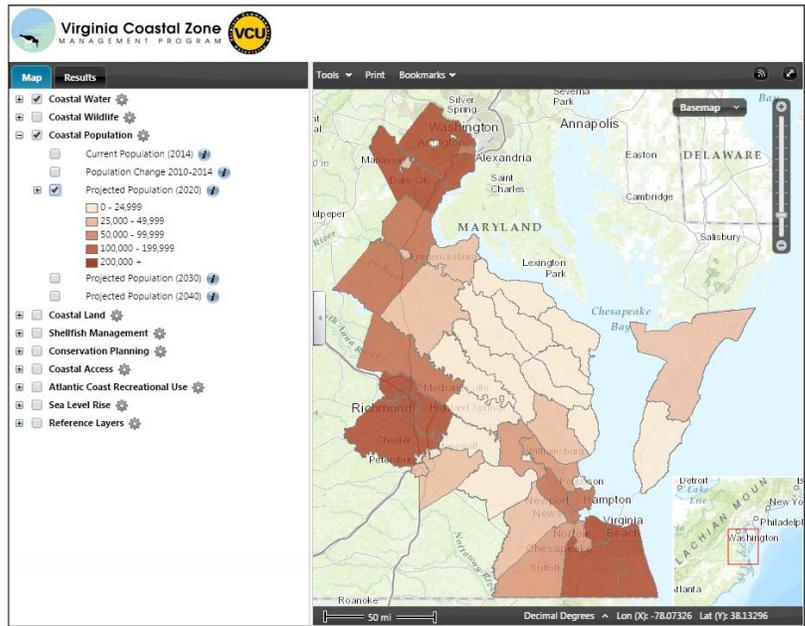
Right: Screenshot of the current population layer on Coastal GEMS



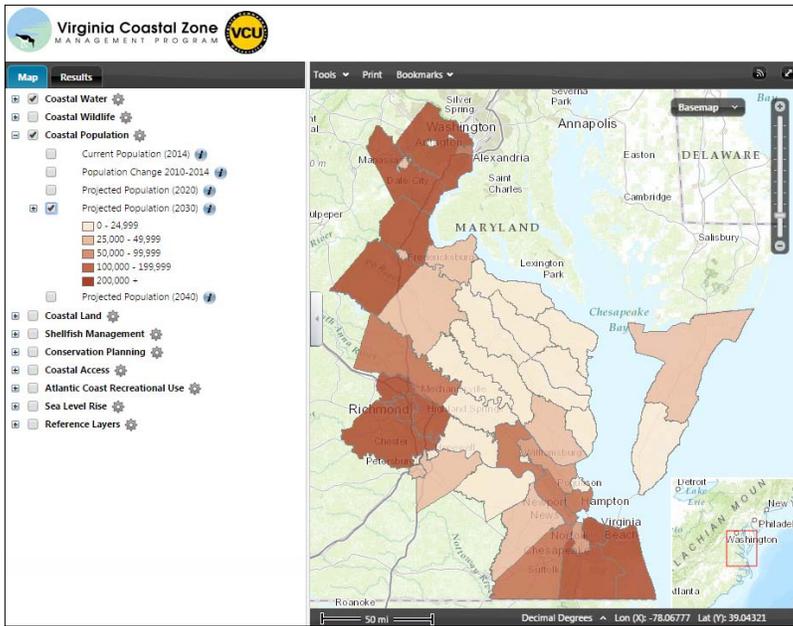
Left: Screenshot of the population change layer on Coastal GEMS



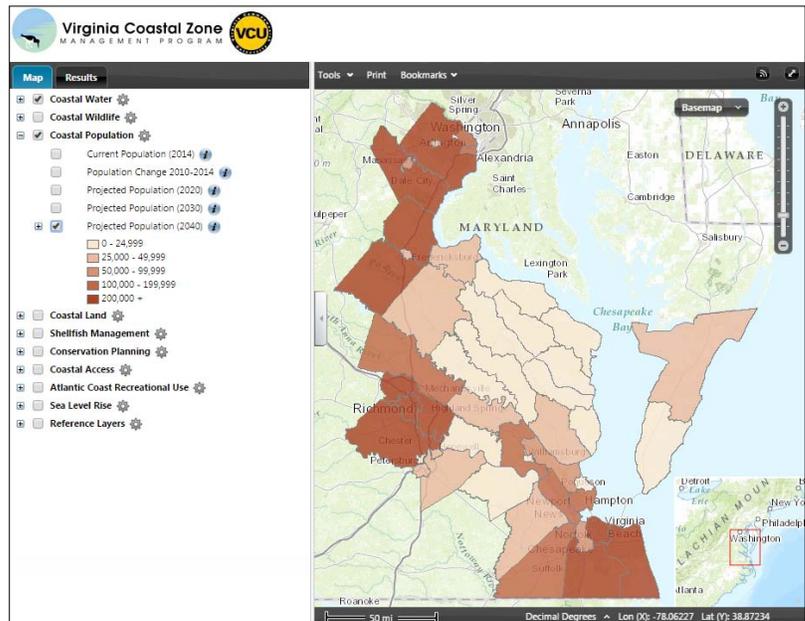
Right: Screenshot of the projected population (2020) layer on Coastal GEMS



Left: Screenshot of the projected population (2030) layer on Coastal GEMS



Right: Screenshot of the projected population (2040) layer on Coastal GEMS



Virginia Beach Aerial Recreational Use Survey Summary Maps

