Virginia Coastal Zone MANAGEMENT PROGRAM

Final Project Summary

Your final project summary is an important contribution to the Virginia Coastal Zone Management Program's communication efforts and will be used to produce accomplishment reports, fact sheets and Virginia Coastal Zone Management Web Site information.

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NOAA Grant #:	**NA 23NOS4190255**	**Grant Year:**	**1**	**Task #:**	**71**
Agency/Locality:	**Virginia Institute of Marine Science**				
Project Title:	**Advancing the use of spatial data and coastal modeling in implementing adaptive management to support coastal community resilience**				

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PROJECT SUMMARY

This project aims to enhance coastal inventory data through an adaptive management approach. It leverages cutting-edge technology, satellite data, and community science to accomplish four main tasks: 1) applying machine learning techniques to update and expand shoreline condition inventories based on locality needs; 2) upgrading the VIMS Shoreline Management Model (SMM) to support the implementation of Natural and Nature-based features (NNBFs), 3) mapping marsh migration corridors under various sea level rise scenarios to aid in conservation and restoration decisions, and 4) developing and testing a community science application for citizens and local government to contribute to maintaining current shoreline condition information in Virginia. This project was conducted in partnership with the Northern Neck Planning District Commission (NNPDC). The first year of this project targeted the following localities: Poquoson, Hampton, Westmorland, Northumberland, and Virginia Beach.

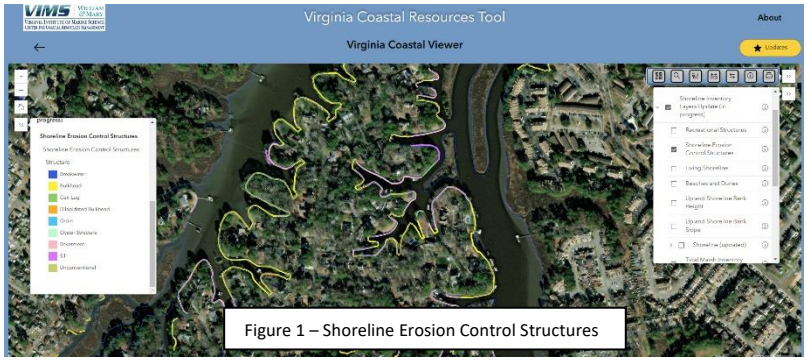

Figure 1 – Shoreline Erosion Control Structures

Task 1: Enhanced shoreline and riparian zone inventory for selected localities - Shoreline and Tidal Marsh Inventories for the selected localities have been generated. Final files (digital geodatabases) with the NOAA-compliant metadata have been uploaded to ScholarWorks (VIMS repository & data sharing): Hampton - https://doi.org/10.25773/yktc-vc66; Northumberland - https://doi.org/10.25773/frdc-d079; Poquoson - https://doi.org/10.25773/g2n4-cm14; Virginia Beach - https://doi.org/10.25773/9xre-6v38; and Westmoreland - https://doi.org/10.25773/7j0c-7r38. The final files can also be visualized in the Virginia Coastal Resource Tool (VCRT). Within the VCRT, the inventory files can be visualized in the in the "**Virginia Coastal Viewer**": https://cmap22.vims.edu/VACoastalResourcesTool/?page=CoastalViewerPage . To bring those layers on the map, click the layers icon ( ), then check the "Shoreline Inventory Layers - Update (in progress)" layers, and select the datasets (e.g., Fig. 1 – Shoreline Erosion Control Structures). These datasets can also be visualized in the **"Dashboards"** section of the VCRT (Fig. 2): https://cmap22.vims.edu/VACoastalResourcesTool/?page=DashboardPage&views=Locality-Shoreline-Inventory-Update-%28in-progress%29

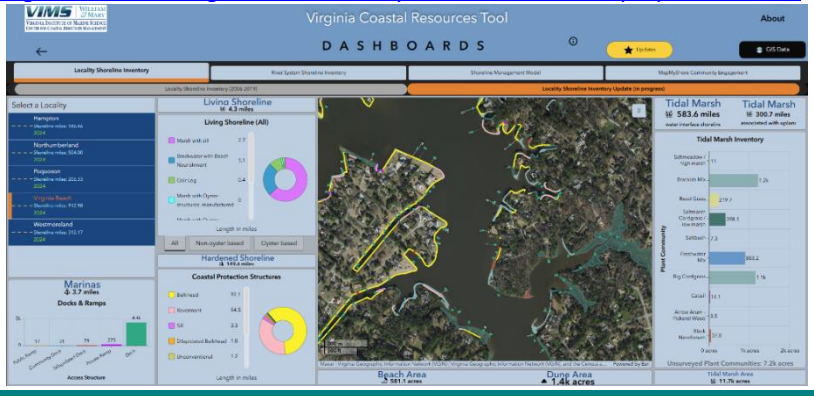

Figure 2 – Shoreline Inventory Datasets - Dashboard

Task 2: Upgrade of the Shoreline Management Model (SMM) - VIMS completed the application of the upgraded Shoreline Management Model (SMM) v.6.0 for the selected localities. Final files (digital geodatabases) with the NOAA-compliant metadata have been uploaded to ScholarWorks (VIMS repository & data sharing): SMM_Hampton - https://doi.org/10.25773/zcpm-fk11; SMM_Westmoreland - https://doi.org/10.25773/t2ke-sn05; SMM_Poquoson -https://doi.org/10.25773/zhs8-2v50; SMM_Virginia Beach - https://doi.org/10.25773/78qx-yz66; and SMM_Northumberland: https://doi.org/10.25773/gmys-qv62. The final files can also be visualized in the VCRT: https://cmap22.vims.edu/VACoastalResourcesTool/?page=DashboardPage&views=Locality-Shoreline-Inventory-Update-%28in-progress%29%2CShoreline-Management-Model%2CShoreline-Management-Model---SMM-v-6.0-%28in-progress%29

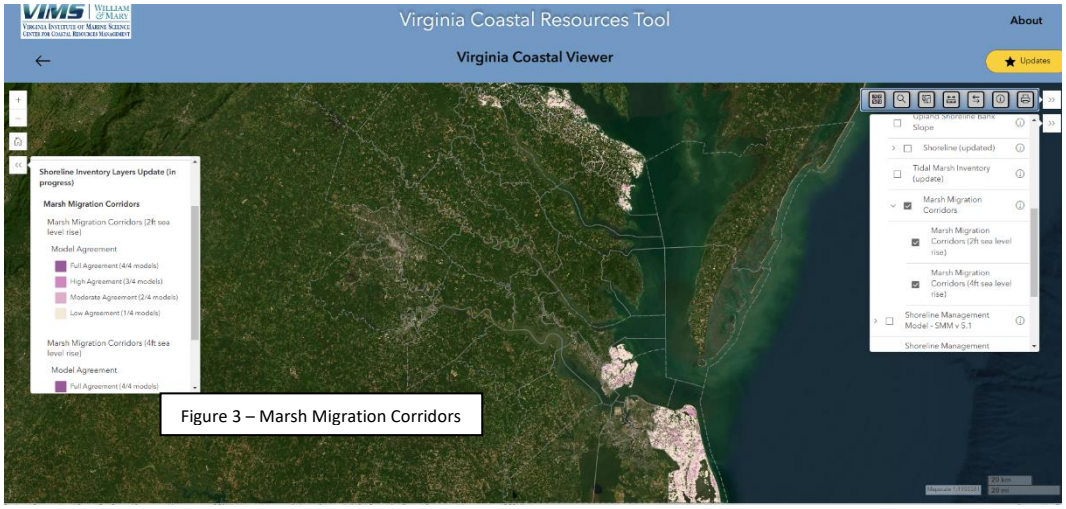

Figure 3 – Marsh Migration Corridors

Task 3: Location of Marsh Migration Corridors. Marsh migration corridor layers for the selected localities were generated by combining outputs from the following models: InVEST, NOAA, SLAMM, and VIMS-ETM models for 2ft and 4ft water levels. Final files (digital geodatabases) with the NOAA-compliant metadata have been uploaded to ScholarWorks (VIMS repository & data sharing): Hampton - https://doi.org/10.25773/yktc-vc66; Northumberland - https://doi.org/10.25773/frdc-d079; Poquoson - https://doi.org/10.25773/g2n4-cm14; Virginia Beach - https://doi.org/10.25773/9xre-6v38; and Westmoreland - https://doi.org/10.25773/7j0c-7r38. Within the VCRT, the Marsh Migration Corridors layer can be visualized in the in the "**Virginia Coastal Viewer**": https://cmap22.vims.edu/VACoastalResourcesTool/?page=CoastalViewerPage

To bring those layers on the map, click the layers icon (), then check the "Shoreline Inventory Layers - Update (in progress)" layers, and select the Marsh Migration Corridors (Fig. 3).

Task 4: Development and testing of a community-science tool. With stakeholder feedback (including NGOs, PDCs, and state agencies), VIMS has developed a Mobile Community Science App called **MapMyShore**. In September 2024, the Beta testing of the App was successfully conducted. A total of 57 entries were received. All categories of the App were successfully tested. Feedback received from the Beta Testing was incorporated into the App, and the **MapMyShore v.1.0** has been released. To get started, users need to first download **ArcGIS Survey 123**, and then scan the **QR code** (this step only needs to be done once). **Detailed instructions on how to download the App can be found here:** https://www.vims.edu/ccrm/_docs/map-my-shore/tutorial_app.pdf

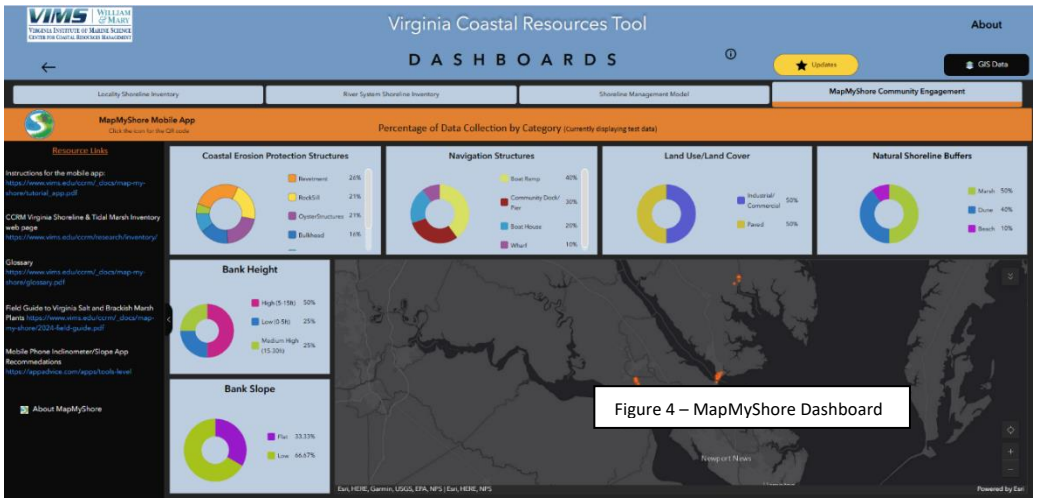

Figure 4 – MapMyShore Dashboard

Additionally, users can access the App, as well as the associated documentation via the App webpage: https://www.vims.edu/ccrm/research/inventory/map-my-shore/ and in the dashboard section of the VCRT (Fig.4) https://cmap22.vims.edu/VACoastalResourcesTool/?page=DashboardPage&views=MapMyShore-Community-Engagement

***NOTE:* GIS files in the VCRT are displayed with color palettes designed to meet the needs of users with visual impairments, including those with color vision deficiencies. All the App documentation displayed in the VCRT, including the tutorial and glossary, has been developed and checked for accessibility.**