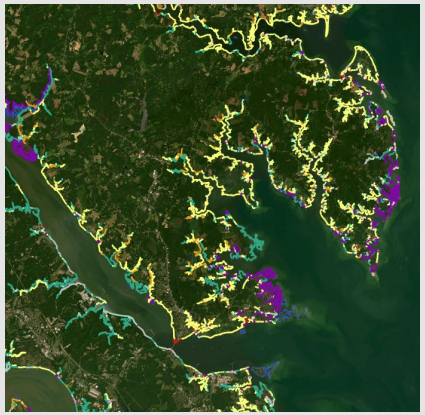
Mapping Shoreline Conditions

Webinar:

Engaging the Community for Sustainable Shorelines

August 1st, 2024



VIMS | William & Mary
Virginia Institute of Marine Science
Center for Coastal Resources Management

Shoreline and Tidal Marsh Inventory

-Purpose-

Geospatial dataset *developed as a resource for assessing* ***conditions along the tidal shoreline.***

- *Provides important* ***baseline information*** *to support shoreline management and improve the decision-making capacity of many stakeholders.*
- *These data are also required to run the VIMS* ***Shoreline Management Model (SMM),*** *which defines Shoreline Best Management Practices (BMPs) along tidal shorelines.*
- *It serves as key* ***input data*** *for running* ***SCHISM*** *(Semi-implicit Cross-scale Hydroscience Integrated System Model) the official model adopted by EPA's Chesapeake Bay Program for* ***assessing water quality and monitoring restoration efforts in the Bay.***

Shoreline conditions included in the inventories

Source: *Lv, et al, 2023.* pyShore: A deep learning toolkit for shoreline structure mapping with high-resolution orthographic imagery and convolutional neural networks

Virginia Coastal Resources Tool (VCRT)

Shoreline and Tidal Marsh Inventory Products

SHORELINE & TIDAL MARSH INVENTORY

- Virginia
- Maryland
- Delaware
- North Carolina

Home / ... / Shoreline & Tidal Marsh Inventory / Virginia

Virginia Shoreline & Tidal Marsh Inventory

The Virginia Shoreline and Tidal Marsh Inventory is a series of reports that describe the condition of tidal shorelines for individual localities in the Commonwealth of Virginia. This inventory series started with historic reports produced in the 1970's. It also includes contemporary digital inventory updates generated from 1998 to the present using a combination of Geographic Information Systems (GIS), Global Positioning System (GPS), and remote sensing technology.

Virginia Coastal Resources Tool *provides visualization of shoreline and tidal marsh inventory data and statistics*

Data Request Form - download GIS data for the entire Virginia Shoreline Inventory *(218MB .zip) - includes Virginia Tidal Marsh Inventory*

Locality Portals

Clicking on a locality below will take you to a portal with links to shoreline and tidal marsh inventory reports, summary tables and GIS data for downloading.

- Accomack County
- City of Alexandria
- Arlington County

https://www.vims.edu/ccrm/research/inventory/virginia/index.php

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Virginia Coastal Resources Tool

About

Natural Shoreline	Tidal Marsh Shoreline	Defended Shoreline *Living Shorelines*	Defended Shoreline *All (includes living shorelines)*
7,858 miles	6,237 miles	68 miles	1,058 miles

EXPLORE YOUR COASTAL COMMUNITY

Virginia Coastal Viewer

Explore shoreline conditions throughout coastal Virginia. View animated sea level rise scenarios through 2100; compare 2 different years of orthoimagery from Virginia Base Mapping Program; view reference layers that include bathymetry, conservation lands and easements, submerged aquatic vegetation (SAV) and more. Shoreline inventory layers and Shoreline Management layers have detailed pop-up descriptions.

Dashboards

There are three different dashboards: Locality Shoreline Inventory, River System Shoreline Inventory, and Shoreline Management Model (SMM). Summary data is displayed by locality, or river system (inventory only). Shoreline inventory displays summary information that includes tidal marsh types, structures such as docks and breakwaters, riparian land use, and more. The SMM dashboard displays best management practice recommendations for shoreline conditions.

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Virginia has 8,916 miles of tidal shoreline...

Not including Eastern Shore seaside marsh islands

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Shoreline & Tidal Marsh Inventory

UPDATE IN PROGRESS

Project: Advancing the use of spatial data and coastal modeling in implementing adaptive management to support coastal community resilience.

Virginia Coastal Zone MANAGEMENT PROGRAM

NOAA

NORTHERN NECK PLANNING DISTRICT COMMISSION

VIMS | WILLIAM & MARY

VIRGINIA INSTITUTE OF MARINE SCIENCE

CENTER FOR COASTAL RESOURCES MANAGEMENT

New Iteration of the Shoreline & Tidal Marsh Inventory

Main Objectives

1. ***Enhanced*** *shoreline and riparian zone* ***Inventory*** *for selected localities.*

2. ***Upgrade*** *the Shoreline Management Model (****SMM****) (output: shoreline best management practices).*

3. *Map the Location of* ***Marsh Migration Corridors.***

4. *Develop a* ***Community-Science App.***

New Shoreline Inventory Features

(update in progress)

Current Shoreline Inventory

- Riparian Land Use
- Bank Height
- Hardened Shoreline Structures
- Recreational Structures
- Tidal Marshes
- Beaches

New Shoreline Inventory

- Riparian Land Use
- Bank height
- **Bank Slope**
- Hardened Shoreline Structures
- **Living Shorelines**
- Recreational Structures
- **Navigational Channels**
- Tidal Marshes
- **Marsh Migration Corridors**
- Beaches & **Dunes**

Community Science App

MapMyShore

Objective :

Allow the community to assist VIMS-CCRM in collecting and ground truthing shoreline inventory features critical to natural and cultural resources.

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D A S H B O A R D S

About

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GIS Data

Locality Shoreline Inventory | River System Shoreline Inventory | Shoreline Management Model | Community Science Data

Coming SOON!

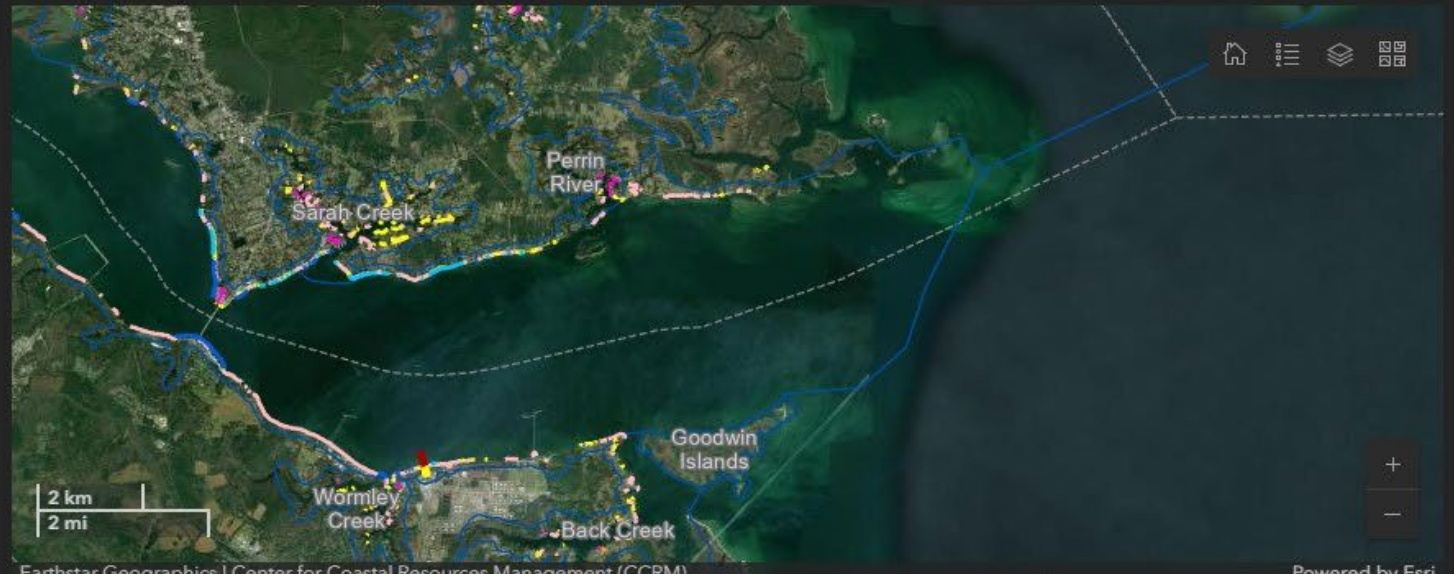
Select a Locality

- Accomack County — Shoreline Miles: 708.78 — 2016
- Alexandria City — Shoreline Miles: 8.47 — 2010
- Arlington County — Shoreline Miles: 15.44 — 2018
- Caroline County — Shoreline Miles: 53.93 — 2018
- Charles City County — Shoreline Miles: 325.97 — 2013
- Chesapeake City — Shoreline Miles: 288.73 — 2016
- Chesterfield County — Shoreline Miles: 160.66

Living Shoreline 68.3 miles

Beach Shoreline 365.2 miles

Marina Shoreline 53.6 miles



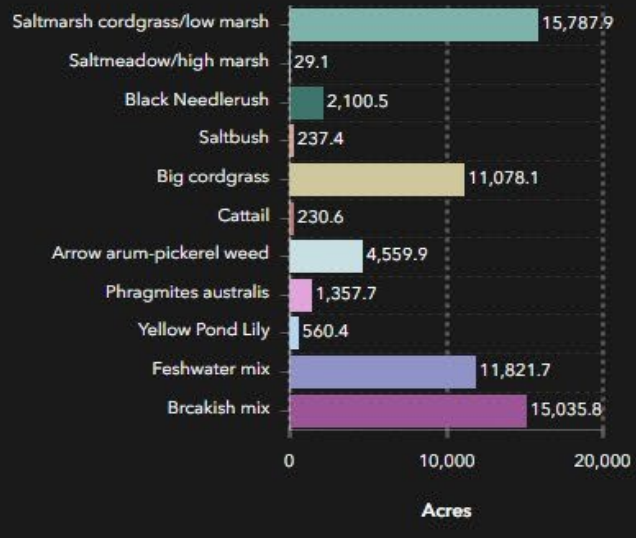
Defended 12%

Natural 88%

Tidal Marsh Shoreline
7,670.2 miles
Includes Northampton seaside marshes

Tidal Marsh Area
195,035.7 acres

Tidal Marsh Community Types

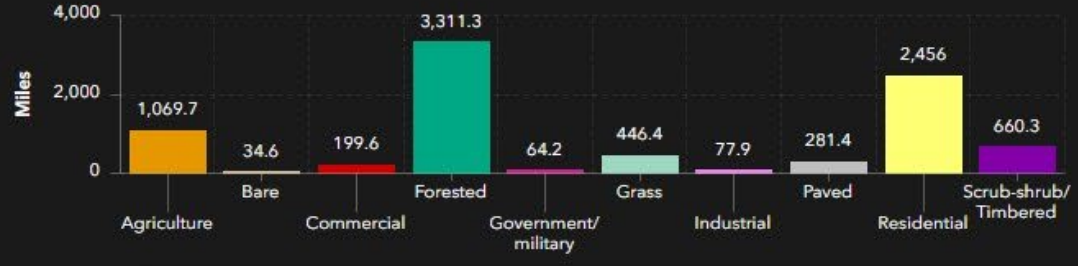


Onshore Protection Structures

921.3 miles

- Bulkhead 39%
- Debris 2%
- Dilapidated Bulkhead 1%
- Riprap 51%

Riparian Land Use/Land Cover



Onshore | Offshore | Access Structures

Bar Chart | Pie Chart

Unsurveyed Tidal Marsh
132,236.6 acres

Community Science App Demo

MapMyShore