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Place-Based Estuary Science Education at Machicomoco State Park

Anna Caputo
Virginia Institute of Marine Science, arcaputo@vims.edu

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Anna Caputo

A capstone project in partial fulfillment of the requirements for the degree of Master of Arts in Marine Science at the Virginia Institute of Marine Science, William & Mary

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Advisory Team:
Capstone Advisor - Dr. Mark Brush
Professional Advisor - Christen Miller

Other Collaborators:
Courtney Kirberger - Environmental Educator at Machicomoco
Sarah Nuss - Education Coordinator at CBNERR

Overview of this Curriculum

Photo credit: Courtney Kirberger-Lecombe

Project description:

This experiential estuary science field trip program was initially created as a master's capstone project by Anna Caputo in partnership with Machicomoco State Park, the Virginia Institute of Marine Science (VIMS), and the Chesapeake Bay National Estuarine Research Reserve (CBNERR). The ultimate goal of the project is to strengthen community estuarine literacy in the local area by teaching students who will be future marine scientists, community leaders, watermen, and environmentally conscious citizens. The program is designed to highlight the coastal habitats at the state park, the issues those habitats are facing, and how science and monitoring efforts done by VIMS and CBNERR lead to solutions.

The curriculum aligns with Virginia Standards of Learning (SOL) and highlights the marine science that is being done in and around the park by VIMS and CBNERR. It was designed as a program that could be offered by Machicomoco to local schools as a regular field trip option.

There are three foci for different age groups (i.e., elementary, middle, and high school students). The elementary unit focuses on habitats and ecosystems and covers topics such as estuarine food webs. The middle school unit focuses on relationships humans have with these habitats. These can be beneficial relationships or the negative impacts humans can have on the environment. Topics for this group may include climate change, sea level rise, water quality, and ecosystem services. Lastly, the high school unit focuses on solutions, science, and monitoring by surveying a salt marsh habitat and exploring living shorelines as an ecological engineering technique for shoreline restoration. In addition, optional classroom extension activities can be offered for advanced high school classes that want to apply what they have learned during their time at the park beyond the field trip.

The curriculum is designed to scaffold concepts, meaning that each field trip builds off of the information from the previous one. Therefore it will be most effective if students visit Machicomoco three times during their school experience (once per elementary, middle, and high school). However, the program can accommodate one-time visits.

A note on the audience for this product:
This field trip curriculum was built for Machicomoco State Park. All the lesson plans were written for the park's interpretive staff and volunteer docents.

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Virginia Institute of Marine Science

Chesapeake Bay National Estuarine Research Reserve Virginia

DCR
Virginia Department of Conservation & Recreation

Table of Contents

I. **How to Approach this Program**
   A. Overview of Curriculum
   B. Master List of Materials
   C. Expectations for Teachers

II. **Elementary School Field Trip**
   A. Program Synopsis
   B. Lesson Plan and Activities
      1. Food Chain Activity Icons
      2. Marsh Datasheet
      3. Species ID Guide
   C. Evaluation
   D. References and Resources

III. **Middle School Field Trip**
   A. Program Synopsis
   B. Field Trip Schedule
   C. Lesson Plan and Activities
      1. Carbon Journey Activity
      2. Water Quality Data Sheet
      3. Water Quality SAV table
   D. Evaluation
   E. References and Resources

IV. **High School Field Trip**
   A. Program Synopsis
   B. Lesson Plan and Activities
      1. Shoreline Warmup Activity
      2. Data Sheet
      3. Marsh Plant ID Guide
   C. Evaluation

V. **Extension Activities**
   A. Living Shoreline PSA
   B. Shoreline Data Activity
      1. Shoreline “Living” Excel Sheet