Wetlands Watch/APNEP Project Summary Report

Project Summary:
Albemarle-Pamlico National Estuary Partnership ("APNEP") and Wetlands Watch have previously collaborated as subgrantees on a Virginia Institute of Marine Science Center for Coastal Resources Management ("VIMS CCRM") National Atmospheric and Oceanic Administration ("NOAA") grant for a project titled, "Increasing use of natural and nature-based features to build resilience to storm-driven flooding." During the end of this project, it was discovered that there was an opportunity for the two groups to continue to work together to assess the feasibility of project deliverable transportability from Virginia to North Carolina. Particularly APNEP staff were interested in the Natural and Nature Based Features (NNBF) map layers and the fact sheets created for the NOAA project.

The NNBF map layers indicate locations of existing and potential future NNBFs within 10 feet of sea level and are included in the AdaptVA Interactive Map Viewer. The purpose of these layers is to highlight the tidal flooding mitigation benefits of existing NNBFs, and how these benefits can be expanded on by outlining locations for adjacent potential NNBF project locations. An infrastructure layer is also included to identify buildings that are at the greatest risk of tidal flooding to help display where potential NNBF could be the most beneficial. A series of fact sheets on individual NNBFs were also created to outline benefits and installation resources and tips of each option. The intent of these fact sheets is to help inform land use decision-makers select the most appropriate NNBF once a project site was located using the AdaptVA Map.

In addition to contributing to a portion of the deliverables from the NOAA project, Wetlands Watch has worked on other projects that APNEP staff were interested in potentially modifying for North Carolina stakeholders. The project of most interest was a database created under a Coastal Zone Management (CZM) program that encapsulates plans, studies, and funding opportunities for localities interested in funding resilience-based projects. Due to Wetlands Watch's involvement in these projects, and extensive experience in conducting local staff interviews, it was decided that Wetlands Watch staff would conduct a needs assessment of these resources to North Carolina local staff and stakeholders.

Note: The original agreement for this scope of work included completing the majority of project deliverables from June to September 2021. However, due to unforeseen circumstances with finalizing the grant agreement, a portion of the work was also completed during 2022.

Approach:
To support comprehensive feedback, Wetlands Watch staff made a draft database available for review for NC stakeholders. The draft database, otherwise known as the NC Resiliency Compendium ("Compendium"), was modeled after the Funding and Plans and Studies

databases created under the aforementioned CZM grant. The draft Compendium includes a compilation of tools, funding opportunities, plans and studies, reports, and stakeholders focused on building climate resilience. The geographical scope of these resources are on the national, regional, and North Carolina state-specific levels. In regards to obtaining feedback on a possible NNBF map layer for North Carolina, Wetlands Watch shared the AdaptVA viewer that hosts the NNBF map layer for Virginia, as well as the associated facesheets.

NC: Resiliency Compendium | Data | Automations | Interfaces

Tools | Funding Opportunities | Plans and Studies | Reports | Stakeholders

Views | Grid view | Hide fields | Filter | Group | Sorted by 1 field | Color | Share view

	Name	Notes	Use	Attachments	Link
1	NC Pocosin Wetland Map	Duke Nicholas Institute	NNBF Identification		https://dukeuniv.maps.arcgis.com/apps/webappview...
2	Currituck Sound Marsh Restoration Assessment Web App	Audubon Society	Habitat Restoration		https://audubon.maps.arcgis.com/apps/webappviewe...
3	Coastal Carolinas Blueprint	Audubon Society	Species Protection Habitat Restoration		https://audubon.maps.arcgis.com/apps/MapSeries/in...
4	Tides and Currents	NOAA	Weather and Climate D...		https://tidesandcurrents.noaa.gov/map/index.html
5	NC Nutrient Management Planning Software	NC State University	Nutrient Management		https://nutrientmanagement.wordpress.ncsu.edu/res...
6	Catalog of Nutrient Reduction Practices for North Carolina	NC Division of Water Resources	Nutrient Management		
7	Stormwater Nitrogen and Phosphorus (SNAP)	NC DEQ	Nutrient Management		https://deq.nc.gov/about/divisions/water-...
8	FUTURES Urban Growth Model	NC State Center for Geospatial Analytics	Land Use Impacts		https://cnr.ncsu.edu/geospatial/research/FUTURES/
9	Spreadsheet Tool for Estimating Pollutant Loads (STEPL)	EPA	BMP Implementation Land Use Impacts		https://www.epa.gov/nps/spreadsheet-tool-...
10	Long-Term Hydrologic Impact Assessment Model	Purdue University	BMP Implementation Land Use Impacts		https://engineering.purdue.edu/mapserve/LTHIA7/lthi...

Image 1. Draft NC: Resiliency Compendium

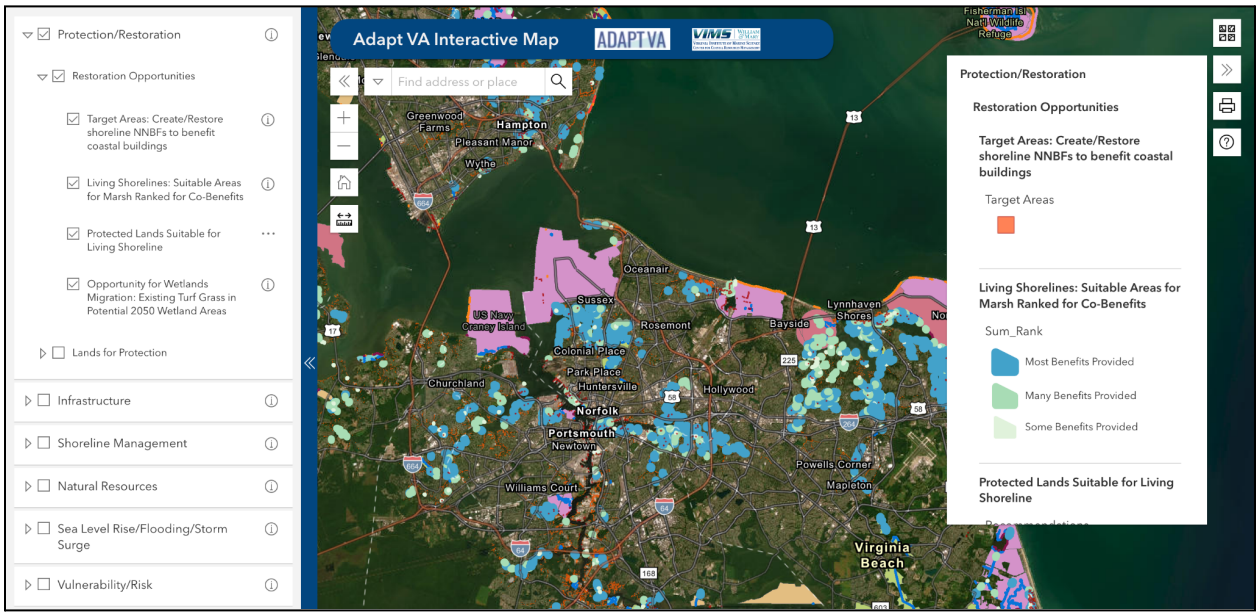


Image 2. NNBF Opportunity Layer in AdaptVa Viewer

In order to create an effective outreach strategy to North Carolina stakeholders, Wetlands Watch and APNEP staff met to identify individuals and groups Wetlands Watch should schedule meetings with to obtain feedback. If possible, Wetlands Watch would send the draft Compendium and AdaptVA viewer in advance to stakeholders so they could have ample time to review the products prior to the meeting. Wetlands Watch staff presented a brief presentation on both resources at the beginning of each stakeholder meeting, but the majority of time was spent collecting feedback and answering questions. An overview of the responses collected can be found in the submitted NC Stakeholder Meetings Summary Report.

Additionally, Wetlands Watch staff dedicated time during the beginning of the project period to create an online survey to be distributed amongst APNEP's networks and to stakeholders who were not able to participate in meetings with Wetlands Watch staff. Survey questions included gauging respondents job responsibilities in reference to grant writing, feedback on the AdaptVA viewer and draft Compendium, feasibility in modifying both of these resources for North Carolina, asking who should be responsible for the maintenance of the resources, and if they were aware of any similar tools that already existed. The survey responses collected can be found in the submitted Wetlands Watch and APNEP Project Survey Responses spreadsheet.

Findings:
The majority of feedback given in stakeholder meetings and in the survey outlined that the two resources would be useful in North Carolina; however, both would need to be organized and maintained regularly in order for them to be effective. The overwhelming majority noted that North Carolina localities are inundated with resources and tools to the point that they are not useful. A Compendium of resources could be helpful, but it would need to be made well-known, easily accessible, and updated regularly for stakeholders across the state to utilize it. As for the NNBF map layers, stakeholders noted that the capacity for the state to maintain this data is very unlikely, as it would need to be updated at least twice a year due to frequent landscape changes in the Outer Banks region.

It is important to note that during this project, a similar effort, but unconnected to this one, was on-going to create a North Carolina Statewide Resilience Clearinghouse ("Clearinghouse"). Wetlands Watch staff participated in a NC Resilience Clearinghouse Steering Committee ("Steering Committee") meeting in August 2022 to learn more about the Clearinghouse initiative and share general feedback received from stakeholders. Discussion focused on how the Clearinghouse resource should be organized online to maximize effectiveness for end users. A full summary of this meeting, as well as all other feedback collected, can be found in the submitted NC Stakeholder Meetings Summary Report.

Potential Next Steps:
Wetlands Watch staff believes the best use of our findings and draft deliverables would be to integrate them into the ongoing Clearinghouse effort. These two projects serve the same purpose, increasing locality and stakeholder capacity to implement resilience initiatives, and duplicate efforts would only limit stakeholder's ability to utilize the resources effectively. During the Steering Committee meeting, there was a discussion on whether the Clearinghouse should

be resource or solution centric. The former meaning materials would be organized by resource type, and the latter meaning materials would be organized by the desired outcome. The draft Compendium would serve as a useful supplemental source of obtaining tools, funding opportunities, plans and studies, reports, and stakeholders focused on resilience for either organizational system.

A useful tool that could be developed as part of the Clearinghouse effort would be a North Carolina iteration of the NNBF map layers; however, significant time and resources would need to be dedicated to the effort for it to be successful. As noted above, nearly all stakeholders mentioned how difficult it would be to regularly update map layers for North Carolina's coastal region, and that if this could not be done, it would render the map layers useless. Wetlands Watch staff interviewed staff from North Carolina State University and Duke University and discussed the possibility of their organizations taking on this responsibility. Both mentioned that they would need continuous funding in order for the initiative to be worthwhile. Therefore, APNEP staff should not plan to create a North Carolina iteration of these map layers unless they plan to pursue and secure long-term funding for the project.

Lastly, Wetlands Watch staff recommends that additional interviews and feedback sessions should be conducted to collect intended end user feedback for the Clearinghouse. During the August 2022 Steering Committee meeting, it was mentioned that 20 interviews had been conducted so far to compile feedback on how best to organize the Clearinghouse online resource. Based on the discussion that followed in the same meeting, it was apparent that there was limited consensus on how best to organize the Clearinghouse. The North Carolina staff in charge of the Clearinghouse project would benefit from more extensive feedback listening sessions, including stakeholder workshops that allow for intended end users to collaboratively brainstorm on how the Clearinghouse should be organized.

Recommendations:
Wetlands Watch staff recommend that any finalized resources or tools that result from this project of the Clearinghouse effort be made on a regional scale to the maximum extent possible. Decisions for resilience planning are ultimately made by local stakeholders; therefore, the tools to support these planning efforts should be made with this in mind. Solutions for climate change impacts for coastal, piedmont, and mountain communities will be drastically different, and planning resources should reflect these differences. The online Clearinghouse could be organized by region, potentially by Regional Council jurisdictions, or a similar geographic scope. The Steering Committee should consider inquiring Regional Council staff about this possibility, and including them on any future feedback sessions if the regional scale option is decided upon for the Clearinghouse.

As the Clearinghouse is being developed, it may be beneficial for North Carolina staff to connect and collaborate with Virginia staff on how the Clearinghouse initiative and Virginia's AdaptVA resource could benefit one another. Climate impacts certainly do not recognize state boundaries, and the sooner the two states can begin to integrate their resilience planning efforts, the better. A potential avenue for this partnership could be through NC Sea Grant and VA Sea Grant, as both entities are involved with their respective state's university systems and could leverage the

expertise at those institutions for this effort. Additionally, both states have been working on their long-term resilience planning, North Carolina with the "NC Climate Risk Assessment and Resilience Plan" and Virginia with the "Virginia Coastal Resilience Master Plan." If there is an opportunity for the two planning teams of these documents to meet and share lessons learned, it would be greatly beneficial for the two states and their long-term planning strategies.