CCMP Update Actions and Objectives with Revised Narratives
& New Numbers
April 2023

The following is a list of objectives and actions to be carried forward into the updated CCMP from the 2012 plan, based on guidance by the Leadership Council on 15 March 2023. Items that will be identified as Match Support or BIL priorities are also noted.

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A 1: Assess the impacts of targeted ecosystem threats

The estuarine ecosystem and its various components are sensitive to both localized and systemic changes. Population growth and associated development, climate change, sea level rise, increasing demand for freshwater, invasive species, nutrients, sediment, and introduced pollutants are among the most significant stressors to the ecosystem. Scientific knowledge of the individual and cumulative impacts of these stressors can be established further, and research is needed to identify thresholds for ecosystem resilience.

A 1.1 **Facilitate mapping the distribution of significant ecological, bathymetric, geologic, demographic, and cultural features.** **(BIL Priority)**
Work with partners to further map the distribution of significant natural and cultural features to support accurate and timely information in support of environmental management decision-making. Activities will focus on mapping SAV, estuarine shorelines, oyster habitat, coastal wetlands, impaired waters, disadvantaged communities, and resilience attributes.
Lead: APNEP
Action: Lead mapping activities for targeted resources
Key Partners: NC-DMF, SALCC, USFWS, USGS, NOAA, NC-DCM, NC-WRC, NC-NHP, VA-NHP
CCMP Outcomes Supported: 1a, 1b, 1c, 1d, 1e, 2a, 2b, 2c, 3a, 3b, 3c, 3d
Outputs: Maps and GIS data
Results: Improved resource management decisions

A 1.2 **Facilitate improved projections of land and water use, and climate change related impacts on the ecosystem to enhance the coordination of multi-scale planning and management.** **(BIL Priority)**
Forecasting future potential impacts allows managers to undertake proactive measures and consider environmental management initiatives. Work with partners to improve the capabilities of federal, state, regional, and local governments to support ecosystem planning and management in the region.
Lead: APNEP
Action: Work with partners to develop projects or action that will support climate change and ecosystem consideration into planning and management within the region
Key Partners: EPA, SALCC, NOAA, USFWS, USFS, NC-DEM
CCMP Outcome Supported: 2a
Outputs: Climate change impact models; land and water use projections
Results: Information to support better resource management decisions

B 1: Protect, restore, and manage areas containing significant natural communities and habitats

The natural communities and habitats of the Albemarle-Pamlico region support a diverse and vibrant collection of species. The services provided by these systems include shelter, food sources, spawning and nursery areas, passage or travel, protection, and habitat for threatened and endangered species. Loss or fragmentation of these habitats can have severe and possibly irreversible impacts to the species that rely on them.

B 1.1 Refine and implement a submerged aquatic vegetation (SAV) protection and restoration strategy. (BIL Priority)

Work with partners in protecting and restoring SAV habitats through monitoring, examination of permitting requirements, water quality and habitat issues, and education for boaters. APNEP will work with partners to restore areas capable of SAV growth. This work will require study of effective restoration techniques, bathymetric mapping, water quality monitoring, and other efforts. APNEP will continue to facilitate its SAV Team to develop and promote a SAV restoration strategy.

Lead: APNEP

Action: APNEP will continue to monitor and assess the condition of SAV to support development of a SAV protection and restoration strategy

Key Partners: NOAA, USFWS, NC-DCM, NC-DMF, NC-WRC, VA-VMRC, VIMS, USACE

CCMP Outcomes Supported: 2a, 2b

Outputs: SAV protection and restoration strategy

Results: Improved management of water quality and ecosystem biodiversity and ecological integrity

B 1.2 Lead collaborative efforts for protection, restoration, and enhancement of targeted natural communities, habitats, and ecosystem processes. (BIL Priority)

Lead and facilitate collaborative efforts for protection, restoration, and enhancement of targeted natural communities, habitats, and ecosystem processes by working Work with the Management Conference and other partners to identify areas and assist in the development of plans and the implementation of protection, restoration, and enhancement measures. An emphasis for protection will be placed on SAV, coastal wetlands, primary nurseries, oyster habitats, floodplains and riparian areas, wetland buffers, and Significant Natural Heritage Areas. Homeowners, farmers, foresters, and businesses control most land in the Albemarle-Pamlico region. The interest and action of private individuals, supported by government expertise and resources, is critical to protect and restore the estuarine ecosystem.

Lead: APNEP

Action: APNEP will work with its Management Conference and other partners to identify areas and assist in the development of plans and the implementation of protection, restoration, and enhancement measures.

Key Partners: NC-WRC, NC-DMF, SALCC, CTNC, TNC, NC-SWC, VA-DSM, USFWS, USDA

CCMP Outcomes Supported: 1a, 1b, 1c, 1d, 1e, 2a, 2b, 2c, 3a, 3b, 3c, 3d

Outputs: New incentives for land protection efforts. Workshops and engagement materials on land conservation

Results: Increase in protected lands through easements, better management, or other methods

B 1.3 Facilitate the development of policies to minimize dredge and fill activities in naturalized areas and sensitive habitats.

Facilitate the development of policies to address dredge activities in naturalized waterways and sensitive habitats. Over time, the extensive drainage network in several coastal counties has become naturalized and provides important habitats for fish and wildlife. Work with its partners to propose policies to ensure that these habitats are considered in maintenance of the network. APNEP will facilitate discussions relevant to its role in the Scuppernong Study and other projects. In concert with this action, APNEP will participate in the development of the NC Flood Resilience Blueprint to help guide policy development.

Lead: APNEP

Action: APNEP will work with its partners to assess the status of the naturalized areas and propose policies to ensure that these habitats are considered in maintenance of the network

Key Partners: NC-DMS, NC-DMF, NC-DCM, NC-DWR, USACE, VA-DEQ, NC-WRC, USFWS, EPA, UNC-IMS, CSI, VIMS

CCMP Outcomes Supported: 2a, 2b

Outputs: Coordinated policies and regulations regarding dredge and fill activities

Results: Improved water quality and ecological integrity

B 1.4 Develop and refine a North Carolina integrated aquatic invasive species management plan for federal approval.

The purpose of the plan is to improve the state's ability to address aquatic invasive and aquatic nuisance species with the goal of preventing and controlling their introduction, spread, and negative impacts. Approval will allow North Carolina to seek additional federal funds to implement the plan.

Lead: APNEP, NC-DWR

Action: Development of draft plan for state and federal approval

Key Partners: NC-DWR, NC-WRC, NC-DACS, NC-NHP, VA-NHP, TNC, VA-DGIF, NC-NERR, NC-DMF, , VA-DGIF, USFWS, NOAA, USDA

CCMP Outcomes Supported: 2b, 2c, 3d

Outputs: Federally approved North Carolina integrated aquatic invasive species management plan

Results: Coordinated invasive species prevention and control strategies leading to the prevention of adverse impacts associated with invasive species

B 1.5 Facilitate the construction of new oyster habitats.

Where conditions are optimal for oyster habitat, APNEP will provide funds to support the replanting of cultch material and seed oysters. APNEP will support the development of oyster sanctuaries and shellfish management areas to provide continued propagation of wild oysters. APNEP can also provide letters of support to construct or expand wild oyster habitats.

Lead: NCCF, NC-DMR,

Action: APNEP will fund or support the construction of new wild oyster habitat

Key Partners: NC-DMF, NCCF, TNC, NOAA, USACE, NC-DCM, EPA, CSI, IMS, VIMS

CCMP Outcome Supported: 2b

Outputs: Oyster habitat restoration projects

Results: Increased oyster habitats, improved water quality, and ecological integrity

C 1: Protect and restore water quality by minimizing or eliminating targeted sources of water pollution

The Albemarle-Pamlico estuarine system contains many streams and other waterbodies that are polluted. Where these waters do not meet established water quality standards, they are listed as impaired. Contaminant management strategies will be developed and implemented for waters not meeting water quality standards. Restoration activities will also improve damaged riparian and estuarine shorelines and reduce unregulated discharges from wastewater treatment facilities. Existing developments, infrastructure and activities that create large amounts of polluted runoff will be targeted for retrofitting with low impact development practices.

C 1.1 **Support the development of water quality standards and any subsequent development of new management strategies for estuarine waters. (BIL Priority)**
APNEP will continue to support the establishment of the NC Nutrient Criteria Development Plan's (NCDP) section on estuarine waters as an important first step to develop new standards for Albemarle Sound and the subsequent development of any new management strategies required. APNEP has current projects and contracts supporting this action.
Lead: NC-DWR
Action: APNEP will continue to participate in the NCDP progress for estuarine waters and may continue to support additional scientific investigations needed to address questions that may arise during the process (e.g., identification of water clarity metrics).
Key Partners: VA-DEQ, NC-DEQ, EPA, NC-DACS, NC-SWC, VA-DSM, UNC-IMS
CCMP Outcomes Supported: 1a, 1b, 1d
Outputs: Coordinated contaminant management strategies
Results: Improved water quality and ecological integrity; reduction in impaired waters.

C 1.2 **Facilitate the implementation of existing contaminant management strategies.**
APNEP will work with partners to support full implementation of existing management strategies for pathogens, toxics, and nutrients by providing support to regulatory agencies, stakeholders, and other partners as needed.
Lead: APNEP
Action: APNEP will fund or support actions to support implementation of existing contaminant management strategies.
Key Partners: NC-DWR, NC-DCM, VA-DEQ, VA-DCR, NC-LWTF, NC-SWC, EPA
CCMP Outcomes Supported: 1a, 1b, 1d, 3b, 3c
Outputs: Coordinated implementation of management strategies
Results: Improved water quality and ecological integrity

C 1.3 **Target the protection, restoration, and enhancement of shorelines and riparian buffers to reduce and treat runoff, and to support ecosystem function/services. (BIL Priority)**
Riparian buffers trap and filter polluted runoff, preventing sediments, nitrogen, phosphorus, pesticides, and other substances from entering the sounds. APNEP will lead and facilitate collaborative efforts to target the protection, restoration, and enhancement activities along shorelines and riparian buffers to reduce and treat runoff, and to support ecosystem function/services. APNEP will work with its Management Conference and partners to identify areas and assist in the development of plans and the implementation of protection, restoration, and enhancement measures. Where feasible, bulkheads and riprap structures will be replaced with living shorelines or structures that control erosion with the least impact to natural shoreline function.
Lead: APNEP

Action: APNEP will work with its Management Conference and partners to identify areas and assist in the development of plans and the implementation of protection, restoration, and enhancement measures.
Key Partners: NC-DWR, NC-DCM, VA-DCR, NC-WRC, NC-LWTF, VA-WQIF, VA-VOF, CTNC, NC-DMS, NC-SWC, VA-DSM, USACE, NC-DMS, NCCF, USFWS, NOAA, TNC, NFWF, NRCS, VA-DCR, DU, UNC, CSI, Sea Grant
CCMP Outcomes Supported: 2a, 2b, 3b, 3d
Outputs: Protect or restore riparian buffers to support natural shoreline ecosystem functions
Results: Improved water quality, habitat availability and ecological integrity

C 1.4   Facilitate voluntary retrofitting of existing development and infrastructure to reduce runoff.
APNEP will work with partners to target existing stormwater systems that need to be improved to reduce runoff. Where development or infrastructure has a high percentage of impervious surfaces, implementation of low impact development practices will be encouraged. APNEP will provide workshops, letters of support or grants for retrofitting of existing development and infrastructure.
Lead: APNEP
Action: APNEP will provide grants, workshops, or letters of support.
Key Partners: EPA, NC-DWR, NC-DWI, VA-DCR, NOAA, NC-LWTF, VA-WQIF, NCCF, Sea Grant, CSI, NC Cooperative Extension
CCMP Outcomes Supported: 2b, 3d
Outputs: Stormwater retrofitting projects
Results: Improved water quality and ecological integrity

C 1.5   Minimize the introduction of toxics from marinas, boatyards, stormwater discharges and wastewater facilities by developing and applying best management practices (BMPs).
APNEP will support the development and implementation of best management practices (BMPs) that curb introduction of toxic materials into the estuarine system. Targeted sources of toxic pollution may include new marinas, boatyards, stormwater discharges, and wastewater treatment facilities. APNEP can offer grants over the next five years, hold focused workshops, or participate in other opportunities that may arise.
Lead: APNEP
Action: APNEP can offer grants over the next five years, hold focused workshops, or participate in other opportunities that may arise.
Key Partners: NC-DWR, NC-DWI, VA-DEQ, VA-DCR, EPA, NC-LWTF, VA-WQIF
CCMP Outcomes Supported: 1b, 1d, 2b, 3c
Outputs: Pollution control measures, BMPs
Results: Reduction in toxics within targeted water bodies

C 1.6   Minimize the introduction of contaminants to receiving waters through wastewater management and system upgrades. (Match Support)
The reduction of contaminant and pathogens entering the estuarine system helps improve ecosystem integrity and resiliency. Aging infrastructure and rising sea levels are two challenges that must be addressed to reduce bacteria, viruses, and other microorganisms from entering public waters through identified sources. APNEP will work with municipalities whose wastewater infrastructure need repair or upgrade. To address this action APNEP will work with the NC-DWI and other partners to support upgrades to wastewater treatment facilities and associated infrastructure that account for future risks.
Lead: DWI
Action: APNEP will work with the NC-DWI and other partners to support upgrades to wastewater treatment facilities and associated infrastructure.

Key Partners: NC-DWR, VA-DEQ, VA-DCR, NC-DMF, NC-DCM, EPA, NC-LWTF, VA-WQIF, SRF

CCMP Outcomes Supported: 1a, 1b, 1d, 2b, 3b

Outputs: Wastewater treatment systems upgrade projects. Additional pollution control measures, upgraded infrastructure, BMPs implemented

Results: Improved water quality and ecological integrity. Reduction in pathogens within targeted water bodies

C 1.7 ==Target== **the use of best management practices (BMPs) on agricultural and silvicultural lands to protect water quality.**

Best management practices (BMPs) include a variety of methods and techniques to reduce pollutant runoff from lands modified by human use. BMPs will be promoted through educational resources, workshops, and demonstration projects. APNEP has facilitated BMP use by funding BMP manual updates and hosting workshops. Support will continue by assisting partners in hosting focused workshops or offering grants during the next five years.

==**Lead:**==

==**Action:**==

Key Partners: NC-SWC, VA-DSM, NC-NCFS, VA-VDOF, NC-DWR, NC Cooperative Extension, NC-DACS, NRCS

CCMP Outcomes Supported: 2b, 3b, 3d

Outputs: Increased use of BMPs for agricultural and silvicultural activities

Results: Improved water quality and aquatic biodiversity

C 2: Ensure hydrological processes in rivers and estuaries support significant natural communities and ecosystem functions

As earlier generations developed the Albemarle-Pamlico region, the system's hydrology became highly altered. An increase in impervious surfaces resulted in increased runoff and higher erosion rates. Streams were physically altered and diverted, sometimes eliminating habitats, or leaving poor conditions for natural growth. Along the shores of the sounds and estuaries, hardening methods, such as bulkheads, have become the standard to prevent loss of coastal acreage.

To improve system hydrology, large-scale, coordinated efforts must be initiated. Alternative methods to shoreline armoring, including living shorelines, will be promoted to restore tidal shorelines while providing shallow water habitat and shoreline access to wildlife. Incentives will help increase the implementation of living shorelines. Restoration of streams to provide natural function and flow conditions provides a direct benefit to the ecosystem.

C 2.1 Facilitate the development and implementation of coordinated landscape-scale hydrological restoration strategies.

Much of the lowland agricultural areas are characterized by modified drainage networks that incorporate ditches and pumps. A coordinated hydrologic strategy is the best way to ensure restoration is accomplished at the system scale. APNEP has current projects and contracts supporting this action and will continue to facilitate the coordination of landscape-scale efforts including the Scuppernong Regional Water Management Study on the northern Albemarle-Pamlico peninsula.

Lead: APNEP

Action: Lead or participate in collaborative and coordinated landscape-scale hydrological restoration planning efforts

Key Partners: SECAS, USFWS, TNC, NCCF**,** USFWS, EPA, NOAA, USACE, NC-LWTF, NC-DWR, NC-DCM, NC-WRC, NC-DMS, NC Cooperative Extension, NC-DWR, NC-DSWC

CCMP Outcomes Supported: 2a, 2b, 3a, 3b, 3d

Outputs: Coordinated landscape-scale hydrological restoration strategies

Results: Improved water quality and ecological integrity

C 2.2 Facilitate the hydrologic restoration of floodplains and streams.

Floodplain restoration will include restoring wetland function and planting riparian vegetation. Removing channelization and improving stream banks will restore streams that have been altered. APNEP will continue to work with partners to support hydrologic restoration of floodplains and streams, including the offer of project support letters and grants. Additionally, APNEP will participate in the development of the NC Flood Resilience Blueprint that will also contribute to the success of this action.

Lead: TBD

Action: Provide funds or support for the hydrologic restoration of floodplains and streams in targeted areas

Key Partners: NC-DMS, TNC, NCCF, USFWS, EPA, USACE, NC-WRC, VA-DCR, NOAA, NC-LWTF, NC-DWR, NC-DCM, NC-DSWC, VA-DSWC

CCMP Outcomes Supported: 3a, 3b, 3d

Outputs: Floodplain restoration projects

Results: Improved water quality, hydrology, and ecological integrity

C 2.3 Develop and refine ecological flow requirements for each major river for inclusion in basin-wide water management plans.

Many of the fish, aquatic plants, and other species that live within the estuarine system depend on flowing water to survive. Identifying these ecological flows will help ensure that these species and ecosystems are protected. APNEP will work to provide scientific information and engage regional stakeholders to develop and implement water management plans that fully account for both human and ecological demands.

Lead: APNEP

Action: Continue to support development of ecological flow requirements for each major river

Key Partners: NC-DWR, USFWS, USGS, NC-WRC, VA-DCR, VA-DEQ, USACE, SECAS

CCMP Outcomes Supported: 1c, 2a, 2b, 3a

Outputs: Hydrologic models of each river basin and associated ecological flow requirements to support better resource management decisions. Draft management plans establishing minimum in-stream flows.

Results: Science-based management of in-stream flows to support both human and ecological demands and management of river flows that support ecological integrity.

C 3: Restore spawning areas for diadromous fish

Humans have modified the rivers and streams of the Albemarle-Pamlico region for centuries to meet needs for water supply, irrigation, flood control, and other infrastructure requirements. These changes have often come to the detriment of diadromous species, which depend on both rivers and the ocean for their survival. A single impassable barrier between these two environments can prevent miles of otherwise acceptable habitat from being utilized by these species. Barriers will be removed where feasible to facilitate the movement of these species around obstructions and restore degraded habitats.

C 3.1 Facilitate the installation of fish bypass infrastructure and operations protocols on existing dams and other permanent barriers.

Fish ladders and eel-ways can preserve passage across dams that are otherwise providing societal benefits like drinking water supplies or electricity. APNEP will support the siting, construction, and maintenance of mechanisms for fish and eel passage around in-stream barriers. APNEP can also offer letters of support or grants to install fish ladders and eel-ways .

Lead: APNEP

Action: Provide funds or support for the installation of fish bypass infrastructure in targeted areas

Key Partners: NC-WRC, VA-DGIF, USACE, NOAA, USFWS, NFWF, SALCC, American Rivers, NC-DMF, NCCF, TNC, NC-DWR

CCMP Outcomes Supported: 2a, 2b

Outputs: New fish ladders and eel-ways

Results: Improved fish populations and ecological integrity

C 3.2 Facilitate the removal of dams, culverts, and other in-stream barriers.

Structures that have surpassed their designed lifespan or intended use will be targeted for removal. In-stream barriers scheduled for replacement also present opportunities to implement technologies that improve fish passage. APNEP will support the siting, construction, and maintenance of mechanisms for fish passage around in-stream barriers. APNEP can also offer letters of support or grants to assist in barrier removal where appropriate.

Lead: APNEP

Action: Provide funds or support to removal in-stream barriers in targeted areas.

Key Partners: NC-WRC, VA-DGIF, NC-DMF, USACE, NOAA, USFWS, SALCC, NC-SWC, VA-DSM, NFWF, NC-DMS, American Rivers, NC-DOT, VA-VDOT, FHA, SEPA, NC-DCM

CCMP Outcomes Supported: 2a, 2b

Outputs: In-stream barrier removal projects

Results: Improved fish populations and ecological integrity

C 3.3 Restore degraded anadromous fish spawning habitats.

Anadromous fish spawning habitat is dependent on suitable current velocities, adequate dissolved oxygen levels, and low turbidity. APNEP will work to support suitable hydrologic flows and restore submerged aquatic vegetation in streams and rivers that contain anadromous species. In support of implementation of the NC and VA Wildlife Action Plans and NC Coastal Habitat Protection Plan, APNEP can offer partners letters of support or grants to promote anadromous fish spawning habitat restoration.

Lead: APNEP

Action: Provide funds or support to restore degraded anadromous fish spawning habitats.

Key Partners: NC-DMF, NC-WRC, VA-DGIF, USACE, NOAA, USFWS, NFWF, NC-DCM, CTNC, NCCF

CCMP Outcomes Supported: 2a, 2b

Outputs: Habitat restoration projects

Results: Improved fish populations and ecological integrity

D 1: Foster watershed stewardship

The Albemarle-Pamlico region's inhabitants and visitors recognize its beauty and rich natural resources . Through targeted engagement, education, and communications efforts, APNEP and its partners will encourage citizens to reduce their environmental impacts and provide meaningful opportunities to protect and restore the ecosystem. APNEP will further work to find areas of mutual benefit between citizens, businesses, and governments related to the protection and restoration of the region's resources.

D 1.1 **Communicate the importance of stewardship and offer opportunities for volunteerism to further APNEP's mission.**

APNEP will continue advocating environmental stewardship and providing citizens with meaningful volunteer opportunities that improve the environment while engaging and educating the public about the Albemarle-Pamlico estuarine system. APNEP can offer our partners grant funding for projects and activities and assist them in communications supporting stewardship and opportunities for volunteerism .

Lead: APNEP

Action: Incorporate into APNEP's Engagement Strategy methods to communicate the importance of stewardship and offer opportunities for volunteerism to further APNEP's mission.

Key Partners: NC-DENR, NC-ODMSA, VA-OEE, VA-DCR, VA-DEQ, NCCF, TNC, EPA, NOAA, PfS, IMS, CSI, VIMS, NC-NERR, NC-AQ, VA-AQ

CCMP Outcomes Supported: 1a, 1b, 1d, 1e, 2a

Output: Workshops and engagement materials on stewardship and volunteer opportunities

Results: Increase in voluntary citizen action to protect and restore the Albemarle-Pamlico estuarine system

D 1.2 **Provide and promote opportunities for outdoor experiences that connect individuals with the Albemarle-Pamlico ecosystem.**

A meaningful and educational outdoor experience can change the lens through which a person views the natural world. A person who is connected to the estuarine system is more likely to take the steps necessary to ensure that it thrives. APNEP will continue to work with its partners to provide and promote opportunities for meaningful outdoor experiences. We will continue to assist partners implementing watershed level activities in the region, such as Shad in the Classroom.

Lead: APNEP

Action: Provide funds and promote opportunities for outdoor experiences for the public.

Key Partners: NC-DNCR, VA-DCR, NC-NERR, NC-WRC, PfS, VA-OEE, NC-ODMSA, USFWS, NPS, NCCF, NC-DOC, VA-DOC, NC-DACS, NC-AQ, VA-AQ

CCMP Outcome Supported: 2a

Outputs: Activities for the public to become engaged in experiencing the Albemarle-Pamlico ecosystem

Results: Increased awareness and engagement in CCMP implementation

D 2: Conduct targeted environmental education efforts regarding estuarine habitats, water quality, and ecosystem services

Environmental education is a learning process that increases people's knowledge and awareness about the environment and associated challenges while developing the necessary skills and expertise to address these challenges.   Environmental education also fosters attitudes, motivations, and commitments to make informed decisions and take responsible action with respect to the environment. APNEP is committed to educating children and adults about the rich natural resources found throughout the Albemarle-Pamlico ecosystem, with the purpose of increasing knowledge of the ecosystem and equipping the region's citizens with the skills to effectively approach environmental issues.

D 2.1 Provide environmental education training opportunities for educators within the region.

By teaching educators about the Albemarle-Pamlico region and its associated environmental issues and providing them with science-based resources, APNEP works with its partners to enrich the education of thousands of students annually. APNEP will continue to assist with providing training opportunities for educators in the watershed.

Lead: APNEP

Action: Provide funds for environmental education training opportunities for educators that support the APNEP mission and CCMP implementation

Key Partners: NC-NERR, PfS, NCCF, NC-DPR, Sea Grant, NC-MNS, NC-ODMSA, VA-OEE, VIMS, CSI, UNC, NC-AQ, VA-AQ

CCMP Outcome Supported: 1c, 1e, 2a, 2b, 2c, 3b

Outputs: Workshops and materials for educators

Results: Increased awareness and engagement in implementation of the CCMP

D 2.2 Increase public understanding of the relationship between ecosystem health and human health advisories relating to water, fish, and game.

Few people fully understand the relationships among the environment, human activity, and health advisories. APNEP will work to help people make these connections, allowing people to take concrete steps to address pollution sources. APNEP will continue to produce or support the development and distribution of materials and fund studies/programs (*i.e*., ecosystem metric reports, swim guide, NC Division of Marine Fisheries' Recreational Water Quality Monitoring,) to increase public understanding of these relationships.

Lead: APNEP

Action: Develop and implement a strategy to increase understanding of the relationship between ecosystem health and human health advisories.

Key Partners: Sea Grant, USFWS, NC-WRC, EPA, NC-DWR, NC-DMF, VA-VDH, NC-DPH

CCMP Outcome Supported: 1a, 1b, 1d

Outputs: Outreach and educational materials

Results: Improved water quality

D 3: Provide tools and training to support ecosystem-based management

Many decisions that affect the integrity of the estuarine ecosystem are made at the local level with little incentive to consider their broader impacts. Regional and local leaders are tasked with making decisions based on a wide range of political, economic, and social factors. Often environmental considerations represent only a small part of a given issue. Because these leaders come from all disciplines and face many issues, APNEP recognizes the need to provide government officials with tailored information necessary for efficient and informed environmental decision-making. APNEP will work with its partners to ensure that local governments have access to quality educational opportunities, mapping resources, and other pertinent information necessary to make informed decisions.

D 3.1 Develop and implement a strategy to improve decision-makers' understanding of the costs and benefits of environmental protection, restoration, planning, and monitoring.

While the costs of environmental protection are easy to see on a balance sheet, the benefits can be harder to quantify. APNEP will work with its partners to provide science-based information to government officials and the public regarding the monetary and non-monetary value of ecosystem services and help them incorporate this information into the decision-making process. APNEP will continue to support the creation of ecosystem services assessments and economic evaluations.

Lead: APNEP

Action: Conduct ecosystem services assessments and economic evaluations

Key Partners: NC-DCM, NC-DWR, NC-DWR, IOG, COGs, PDCs, APA, Sea Grant, IOG, NC-NHP

CCMP Outcomes Supported: 1a, 1b, 1d, 2a, 2b, 3a, 3c, 3d

Outputs: Communication strategy and materials on ecosystem services

Results: Informed decisions by environmental management

D 3.2 Enhance the coordination of targeted ecosystem management by federal, state, regional, and local governments, and communities by assisting with the incorporation of resilience, climate change and sea level rise considerations into planning processes. (BIL Priority)

APNEP and its partners have made significant strides predicting and mapping future climate risks, but much work remains to be done. APNEP will continue to work with partners, including local governments and Tribal communities, to integrate climate considerations and information into their planning process, including the development of tools and resources to promote the use of natural and nature-based infrastructure to build community and ecosystem resilience. APNEP will work across sectors to identify and leverage mutually beneficial climate adaptation opportunities and mechanisms to collaborate across jurisdictional boundaries.

Lead: APNEP

Action: Implement activities to support partners in the incorporation of ecosystem resilience, climate adaptation, and sea level rise considerations into planning processes

Key Partners: Sea Grant, NC-DCM, NC-DMF, NC-DEM, EPA, SECAS, VA-CZM, USFWS, NC-WRC, NOAA, NC-DOT, NC-DHHS, IOG

CCMP Outcomes Supported: 1a, 1b, 1c, 1d, 1e, 2a, 2b, 2c, 3a, 3b, 3c, 3d

Outputs: State, regional, and local plans that address climate risk and vulnerability including sea level rise

Results: Improved climate resiliency for human and natural communities in the region.

E 1: Develop and maintain an integrated monitoring network to collect and disseminate information for assessment of ecosystem outcomes and management actions associated with the CCMP implementation

Implementation of CCMP actions should produce positive changes in the ecosystem, and monitoring should be designed to measure these changes. Where possible, monitoring should also detect other environmental trends, helping the Partnership to identify and adjust priorities. Measuring progress toward desired outcomes will require the establishment of a coordinated and integrated monitoring strategy. If fully implemented, these monitoring actions will support a systems-level understanding of the region's environment.

E 1.1 Facilitate the development and implementation of an integrated monitoring network through the guidance of regional monitoring and assessment teams. (BIL Priority)

APNEP resource-themed teams (SAV, aquatic fauna, water, wetlands, terrestrial, air, human dimensions) will help assure that the results of environmental management efforts can be measured, and that management initiatives can be tailored based on the results of environmental assessments. APNEP will continue its collaborative development of integrated ecosystem monitoring to support CCMP implementation.

Lead: APNEP

Action: Develop plans to support development of integrated monitoring network.

Key Partners: NC-DEQ, NC-DCNR, VA-DEQ, VA-DCR, SECAS, EPA, NOAA

CCMP Outcomes Supported: 1a, 1b, 1c, 1d, 1e, 2a, 2b, 2c, 3a, 3b, 3c, 3d

Outputs: Regional integrated monitoring network

Results: Management decisions based on the results of environmental monitoring and assessments

E 1.2 Facilitate the expansion of volunteer monitoring into a core element of the integrated monitoring network.

Evaluate and where feasible incorporate a volunteer monitoring component for active ecosystem and management indicators. A rigorous quality assurance protocol will help maximize the utility of volunteer-produced data in APNEP assessments. Continue to integrate volunteer monitoring as a component of the Partnership's integrated monitoring network strategy.

Lead: APNEP

Action: Incorporate a volunteer monitoring component where feasible into monitoring strategies

Key Partners: NC-MNS, NCCF, NOAA, USFWS, NC-DEQ, NC-DRP, NC-NHP, VA-DEQ, VA-DCR

CCMP Outcomes Supported: 1a, 1b, 1c, 1d, 1e, 2a, 2b, 2c, 3a, 3b, 3c, 3d

Outputs: High-quality volunteer monitoring data for select ecosystem and management indicators

Results: More comprehensive and effective monitoring network to support management decisions

E 1.3 Develop and maintain an online resource that clearly conveys regional information in support of ecosystem-based management.

In addition to creating a regional database, work to make APNEP deliverables easily and readily available. Continue to evaluate media to effectively convey regional ecosystem information (maps, reports, metric reports, etc.) to our partners and other engaged stakeholders.

Lead: APNEP

Action: Lead development of accessible environmental **information systems.**

Key Partners: SECAS, NC-WRC, NOAA, NCDEQ, NCDNCR

CCMP Outcomes Supported: 1a, 1b, 1c, 1d, 1e, 2a, 2b, 2c, 3a, 3b, 3c, 3d

Outputs: Publicly accessible (external) and partner-accessible (internal) environmental information systems

Results: More informed management decisions and public knowledge based on current shared data and assessments