**Recommended Actions**

**for CCMP Update 2024 - 2029**

4 January 2023

**IDENTIFY**

**A1: Develop and refine a conservation atlas**

A1.1 ~~Facilitate the mapping of significant ecological, bathymetric, geologic, demographic, and cultural features~~.

*Map significant ecological, bathymetric, geologic, demographic, and cultural features (land / water use)*

Text change to reflect the active role for APNEP activity. Retained activities will focus on mapping SAV, oysters, and wetlands, and resilience attributes.

S, W, O, WL, R

A1.2 ~~Facilitate the refinement and use of online conservation planning tools.~~

A1.2 activities incorporated into Action A2.2

**A2: Assess the impacts of targeted threats on the ecosystem**

~~A2.1 Facilitate the development of protocols and conduct rapid assessments to determine presence and potential threat of invasive species.~~

Complete or Partner Lead: APNEP conducted an initial development of a rapid assessment [protocol](https://apnep.nc.gov/media/270/open) in 2013. Limited capacity and infrastructure to continue work, not a priority issue for region.

A2.2 ~~Create and improve projections of land use and climate change related impacts on the regional ecosystem.~~ Improve projections of land and water use, and climate change related impacts on the ecosystem to enhance state, regional, and local planning efforts.

Text change to reflect APNEP’s active role to improve state, regional, and local conservation planning efforts by partners.

S, W, O, WL, R

~~A2.3~~ ~~Support research on adapting to impacts associated with climate change and sea level rise~~.

Complete or Partner Lead: Role for APNEP topic has diminished over the past 10 years.

~~A2.4 Facilitate risk assessments of targeted personal care and pharmaceutical products in the aquatic system~~.

Beyond APNEP and active partner capacity. EPA and states have begun new risk assessments.

**A3: Assess current natural resource policy, laws, and regulations according to ecosystem-based management principles**

~~A3.1 Assess the effectiveness of policies and regulations to minimize wetland loss.~~

Complete or Partner Lead: See [NC Wetland Program Plan](https://www.deq.virginia.gov/home/showpublisheddocument/4978/637565716156800000) and [VA Wetland Program Plan](https://www.deq.virginia.gov/home/showpublisheddocument/4978/637565716156800000)

~~A3.2 Assess the effectiveness of policies and regulations regarding riparian buffers.~~

Complete or Partner Lead: See [NC DEQ Buffer Report](https://edocs.deq.nc.gov/WaterResources/DocView.aspx?dbid=0&id=2483741) and [NC Conservation Network/Sound Rivers Buffer Report](https://soundrivers.org/wp-content/uploads/2016/07/Riparian-Buffer-report-web-2016.pdf)

A3.3 Develop and refine ecological flow requirements for each major river.

APNEP will continue to facilitate collaborative efforts to develop recommendations for the [NC Division of Water Resources for ecological flow](https://deq.nc.gov/about/divisions/water-resources/water-planning/basin-planning/ecological-flows)s in targeted rivers and inclusion in the [NC Basin-wide plans](https://deq.nc.gov/about/divisions/water-resources/planning/basin-planning/water-resource-plans). Active team led by APNEP.

S, W, WL, R

**PROTECT**

**B1: Minimize the introduction of additional water pollution sources**

B1.1 ~~Minimize the introduction of toxics from targeted sources.~~

Minimize the introduction of toxics from marinas, boatyards, stormwater discharges and wastewater facilities through the development and use of BMPs.

Support of water quality though encouragement of BMPs. APNEP can offer grants over next 5 yrs. or hold focused workshops, or participate in other opportunities that may arise.

W, O

B1.2 Minimize the introduction of pathogens from targeted sources.

Wastewater treatment plan upgrades will continue as the targeted approach to reduce the introduction of pathogens. NC Division of Water Infrastructure will continue to provide funding for wastewater treatment plan upgrades as match for APNEP over the next five years.

W

B1.3 Facilitate the protection of natural riparian buffers to reduce runoff.

APNEP will continue to work with partners to protect natural riparian buffers through support letters or grant support, or other opportunities that may arise.

W, O, WL, R

~~B1.4 Facilitate the development of state and local policies that support the use of low impact development.~~

Complete or Partner Lead – LID guidance from [NCDEQ](https://deq.nc.gov/about/divisions/energy-mineral-land-resources/energy-mineral-land-permit-guidance/stormwater-lid-storm-ez) and [VA DEQ](https://www.deq.virginia.gov/home/showpublisheddocument/15584/637931518610630000)

B1.5 Facilitate the use of best management practices on agricultural and silvicultural lands.

APNEP have assisted in BMP use by updating BMP manuals and hosting workshops. Support can continue by assist partners in hosting focused workshops or offer grants over next 5 yrs.

S, W, WL, R

**B2: Protect and manage areas containing significant natural communities and habitats**

~~B2.1 Facilitate the development and implementation of an integrated freshwater habitat protection strategy.~~

Beyond APNEP / active partner capacity. See Wildlife Action Plans for [NC](https://www.ncwildlife.org/Plan) an [VA](https://dwr.virginia.gov/wildlife/wildlife-action-plan/).

B2.2 Develop and implement a submerged aquatic vegetation (SAV) protection strategy.

APNEP will continue to facilitate collaborative efforts to develop a SAV Protection and Restoration Plan (supportive of [NC Coastal Habitat Protection Plan](https://deq.nc.gov/about/divisions/marine-fisheries/habitat-information/coastal-habitat-protection-plan) and [NC Nutrient Criteria Development Plan](https://deq.nc.gov/about/divisions/water-resources/water-sciences/nutrient-criteria-development-plan) ). Active team led by APNEP, project and contract. Coordinated mapping and monitoring efforts.

S, W, R

~~B2.3~~ ~~Facilitate the development of incentives for protection and management of targeted natural communities and habitats.~~

Support collaborative efforts for protection and management of targeted natural *c*ommunities and habitats

APNEP has limited capacity/ability to develop new incentives. Text change to reflect the active role for APNEP. APNEP will continue to provide letters of support and can offer grants for efforts to protect and manage targeted natural communities and habitats.

S, W, O, WL, R

B2.4 Facilitate the development of policies to minimize dredge and fill activities in naturalized areas and sensitive habitats.

Limited action on this topic in the region. In support of this action, APNEP will participate in the development of the [NC Flood Resilience Blueprint](https://deq.nc.gov/about/divisions/mitigation-services/flood-resiliency-blueprint) to help guide policy.

S, W, O,WL,R

~~B2.5 Facilitate protection of designated anadromous fish spawning areas and inland primary nursery areas from marina impacts~~.

Complete or Partner Lead - Not a significant threat issue to be addressed at present. See [NC](https://www.ncwildlife.org/Plan) and [VA](https://www.ncwildlife.org/Plan) Wildlife Action Plans and [NC Coastal Habitat Protection Plan](https://deq.nc.gov/about/divisions/marine-fisheries/habitat-information/coastal-habitat-protection-plan)

B2.6 Minimize and rapidly respond to the introduction of invasive species through the development and implementation of integrated prevention and control strategies.

Continue APNEP’s efforts in development of the [NC Aquatic Nuisance Species Management Plan](https://deq.nc.gov/media/11595/download)

S, WL

**~~B3: Utilize natural and constructed “living” shorelines to maintain estuarine and riverine ecosystem processes~~**

Actions under this objective have been deemed complete or a partner has taken lead role.

~~B3.1 Assist local governments in the development of incentives for protecting natural shorelines~~.

Complete or Partner Lead: A NC [general permit](https://files.nc.gov/ncdeq/Coastal%20Management/documents/PDF/t15a-07h.2400.pdf) has been developed as an incentive. See materials and information from the [NC Division of Coastal Management](https://deq.nc.gov/about/divisions/coastal-management/estuarine-shorelines/estuarine-shoreline-stabilization/how-stabilize-your-estuarine-shoreline)

~~B3.2 Develop and distribute educational materials encouraging landowners to protect natural shorelines~~.

Complete or Partner Lead: See materials from [NC Division of Coastal Management](https://deq.nc.gov/about/divisions/coastal-management/estuarine-shorelines/estuarine-shoreline-stabilization), [NC Coastal Reserve](https://files.nc.gov/ncdeq/Coastal%20Management/coastal-reserve/research/publications/Weighing-your-Options-Final-5x7-11-18-15.pdf), and [North Carolina Coastal Federation](https://www.nccoast.org/protect-the-coast/restore/living-shorelines/)

~~B3.3 Facilitate the development of requirements for living shoreline stabilization projects that optimally protect estuarine aquatic and shoreline habitats while minimizing regulatory requirements.~~

Complete or Partner Lead: See materials from [NC Division of Coastal Management](https://deq.nc.gov/about/divisions/coastal-management/estuarine-shorelines/estuarine-shoreline-stabilization), [NC Coastal Reserve](https://files.nc.gov/ncdeq/Coastal%20Management/coastal-reserve/research/publications/Weighing-your-Options-Final-5x7-11-18-15.pdf), and [North Carolina Coastal Federation](https://www.nccoast.org/protect-the-coast/restore/living-shorelines/)

**RESTORE**

**C1: Restore water quality by eliminating targeted sources of water pollution**

C1.1 ~~Establish contaminant management strategies for waters not meeting water quality standards.~~

Support the development of water quality standards and any subsequent development of any new management strategies for the Sounds.

Text change to reflect APNEP role. APNEP will continue working to support the establishment of the [NC Nutrient Criteria Development Plan](https://deq.nc.gov/about/divisions/water-resources/water-sciences/nutrient-criteria-development-plan) as 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.

S,W,

C1.2 Facilitate the implementation of existing contaminant management strategies.

Provide support to NC DWR and stakeholders as needed - *Input from Leadership Council needed*

W

C1.3 Facilitate the restoration of riparian and estuarine shorelines.

APNEP can provide letters of support or grants for restoration of riparian and estuarine shorelines over the next five years.

*Input from Leadership Council needed as restoration can be very expensive- what is the best role for the Partnership?*

W, O, WL, R

C1.4 Reduce unregulated discharge from wastewater treatment systems.

APNEP will continue to use focus on wastewater treatment plan upgrades will continue to reduce unregulated discharges. NC Division of Water Infrastructure will continue to provide funding for [wastewater treatment plant upgrades](https://files.nc.gov/ncdeq/WI/Authority/Statewide_Water_and_Wastewater_Infrastructure_Master_Plan_2017.pdf) as match for APNEP over the next five years.

W, O, R

C1.5 Facilitate voluntary retrofitting of existing development and infrastructure to reduce runoff.

APNEP can provide workshops, letters of support or grants for retrofitting of existing development and infrastructure over the next five years.

*Input from Leadership Council needed*

W, O, R

**C2: Restore hydrological processes in rivers and estuaries to support significant natural communities and ecosystem functions**

C2.1 Facilitate the development and implementation of coordinated landscape-scale hydrological restoration strategies.

APNEP will continue to facilitate collaborative efforts to coordinate landscape-scale efforts including the Scuppernong Study on the northern A-P peninsula. Active Projects and Contracts.

W, O, WL, R

C2.2 Facilitate the development of incentives to replace hardened estuarine shorelines with living shorelines.

A NC [general permit](https://files.nc.gov/ncdeq/Coastal%20Management/documents/PDF/t15a-07h.2400.pdf) has been developed as an incentive and information from the [NC Division of Coastal Management.](https://deq.nc.gov/about/divisions/coastal-management/estuarine-shorelines/estuarine-shoreline-stabilization/how-stabilize-your-estuarine-shoreline)

APNEP will continue to work with partners to replace hardened estuarine shorelines through letters of support or grants over next 5 years.

*Input from Leadership Council needed*

W, O, WL, R

C2.3 Facilitate the hydrologic restoration of floodplains and streams.

APNEP will continue to work with partners to support hydrologic restoration of floodplains and streams. APNEP can provide support letters and offer grants for projects. APNEP will participate in the development of the [NC Flood Resilience Blueprint](https://deq.nc.gov/about/divisions/mitigation-services/flood-resiliency-blueprint).

W, WL, R

**C3: Facilitate collaborative and integrative restoration programs and projects**

C3.1 Develop and refine integrated invasive species eradication and control strategies.

APNEP will continue efforts in development and implementation of the [NC Aquatic Nuisance Species Management Plan](https://deq.nc.gov/media/11595/download).

S, WL, R

~~C3.2 Develop and implement a coordinated wetland restoration strategy.~~

Complete - Partner lead: See [NC Wetland Program Plan](https://www.deq.virginia.gov/home/showpublisheddocument/4978/637565716156800000) and [VA Wetland Program Plan](https://www.deq.virginia.gov/home/showpublisheddocument/4978/637565716156800000)

C3.3 Develop and implement a submerged aquatic vegetation restoration strategy.

APNEP will continue to facilitate collaborative efforts to help develop a SAV Protection and Restoration Plan (supportive of [NC Coastal Habitat Protection Plan](https://deq.nc.gov/about/divisions/marine-fisheries/habitat-information/coastal-habitat-protection-plan) and [NC Nutrient Criteria Development Plan](https://deq.nc.gov/about/divisions/water-resources/water-sciences/nutrient-criteria-development-plan) )

S, W, R

**C4: Remove in-stream barriers and restore spawning areas for diadromous fish**

C4.1 Install fish ladders and eel-ways on existing dams and other permanent barriers.

APNEP can provide letters of support or grants to install fish ladders and eel-ways over the next five years.

W, R

C4.2 Facilitate the removal of dams, culverts, and other in-stream barriers.

APNEP can provide letters of support or grants to assist in improving fish passage and accessibility to upstream habitats.

W, R

C4.3 Restore degraded anadromous fish spawning habitats.

In support of implementation of the [NC](https://www.ncwildlife.org/Plan) and [VA](https://www.ncwildlife.org/Plan) Wildlife Action Plans and [NC Coastal Habitat Protection Plan](https://deq.nc.gov/about/divisions/marine-fisheries/habitat-information/coastal-habitat-protection-plan), APNEP can provide letter of support or grants to assist in restoring degraded anadromous fish spawning habitats.

W, R

~~C4.4 Facilitate research to improve fish passage.~~

Complete or Partner Lead: APNEP has funded several projects to identify and support targeted fish passage. Also see [NC](https://www.ncwildlife.org/Plan) and [VA](https://www.ncwildlife.org/Plan) Wildlife Action Plans and the [NC Coastal Habitat Protection Plan](https://deq.nc.gov/about/divisions/marine-fisheries/habitat-information/coastal-habitat-protection-plan), [Southeast Aquatic Connectivity Program](https://southeastaquatics.net/sarps-programs/southeast-aquatic-connectivity-assessment-program-seacap).

**C5: Restore oyster habitats to improve water quality and other ecosystem functions**

C5.1 Construct new oyster habitats.

APNEP can provide grants or letters of support to construct or expand oyster habitats.

*DMF and NCCF lead major efforts - APNEP may not need to provide additional funds at present – given limited resources*

W, O, R

~~C5.2 Reduce the adverse impacts of harvests to existing oyster habitat.~~

Beyond APNEP / active partner capacity

~~C5.3 Facilitate research to improve oyster restoration technologies and methods.~~

Complete or Partner Lead: APNEP has funded research studies to support oyster restoration techniques. Not a pressing issue at present

**ENGAGE**

**D1: Foster environmental stewardship**

D1.1 Communicate the importance of stewardship and offer opportunities for volunteerism to further APNEP’s mission.

APNEP will continue to offer grant funding for projects and assist our partners in communications for stewardship and opportunities for volunteerism.

W, O, WL, R

D1.2 Facilitate efforts to improve collaborations to protect and restore ecosystem processes.

APNEP will continue facilitate collaborations to protect and restore ecosystem processes. A strength of APNEP is bringing partners together. This is an integrative action for the partnership to implement the CCMP. Additionally, APNEP will provide letters of support and can offer grants for workshops and engagement activities on land conservation.

CCMP Outputs and results need updating.

S, W, O, WL, R

D1.3 Coordinate outreach and engagement efforts regarding the impacts of invasive species.

Continue APNEP’s participation in the development and implementation of the [NC Aquatic Nuisance Species Management Plan](https://deq.nc.gov/media/11595/download)

S, WL, R

~~D1.4 Coordinate outreach efforts regarding the proper application of fertilizers to reduce nutrient runoff.~~

Beyond APNEP / active partner capacity

~~D1.5 Increase opportunities for public access to waterways, public lands, and trails.~~

Complete or partner Led - Not needed. DMC, DMF, DPR and DCM have active programs.

**D2: Conduct targeted environmental education efforts regarding sustainable use, habitats, and ecosystem services**

D2.1 Provide and promote opportunities for outdoor experiences that connect individuals with the Albemarle-Pamlico ecosystem.

APNEP will continue to assist implementing activities in the region; such as [Shad in the Classroom](https://apnep.nc.gov/resources/educators/shad-classroom).

S, W, O, WL, R

D2.2 Provide environmental education training opportunities for educators in the region.

APNEP will continue to assist with training opportunities for educators in the region; such as [Shad in the Classroom](https://apnep.nc.gov/resources/educators/shad-classroom).

W, O, WL, R

D2.3 Increase public understanding of the relationship between ecosystem health and human health advisories relating to water, fish, and game.

APNEP will continue to produce materials and fund studies and programs (*i.e*., ecosystem metric reports, swim guide, DMF Recreational Water Quality Monitoring) to increase public understanding of these relationships

S, W, O, WL, R

**D3: Provide tools and training to support ecosystem-based management**

D3.1 Develop and implement a strategy to improve decision-makers’ understanding of the costs and benefits of environmental protection, restoration, planning, and monitoring.

APNEP will continue to support the creation of ecosystem service assessments and economic evaluations. APNEP fills knowledge gaps with these projects and provides support for implementation of various CCMP actions and partner needs.

S, W, O, WL, R

D3.2 Facilitate the development and implementation of basin-wide water management plans to ensure no less than minimum in-stream flows are maintained.

Will build upon ecological flows methodology development efforts that APNEP is facilitating: APNEP will continue to work with the NC Division of Water Resources and partners to incorporate [ecological flow information](https://deq.nc.gov/about/divisions/water-resources/water-planning/basin-planning/ecological-flows) into the [basin-wide plans](https://deq.nc.gov/about/divisions/water-resources/water-planning/basin-planning-branch).

S, W, WL, R

D3.3 ~~Provide assistance to state, regional, and local governments to incorporate climate~~ ~~change and sea level rise considerations into their planning processes~~.

Assist state, regional, and local governments, and communities with incorporating ecosystem resilience, climate change and sea level rise considerations into their planning processes.

Text change to reflect active APNEP role. APNEP will continue to provide support through its work with Tribal communities, development of tools and resources to promote the use of natural and nature-based infrastructure to build community resilience and identifying mechanisms to collaborate across state lines through the MOU with Virginia.

S, W, WL, R

**MONITOR**

**E1: Develop and maintain an integrated monitoring network to collect information for assessment of ecosystem outcomes and management actions associated with the implementation of the CCMP**

E1.1 Facilitate the development and implementation of an integrated monitoring network through the guidance of regional monitoring and assessment teams.

APNEP will continue its collaborative development of integrated ecosystem monitoring to support implementation of the CCMP

S, W, O, WL, R

~~E1.2 Assess the value of information for measuring ecosystem and CCMP implementation outcomes.~~

This action is integrated in Action E1.1.

E1.3 Facilitate the expansion of volunteer monitoring into a core element of the integrated monitoring network.

APNEP will continue to integrate volunteer monitoring as a component of the Partnership’s monitoring strategies.

S, W, O, WL

**E2: Develop and maintain a comprehensive spatial database for pertinent environmental data and modeling information**

~~E2.1 Facilitate the design and content acquisition of a regional database based on partners’ data and information needs.~~

Limited APNEP capacity/ partner led

E2.2 Develop and maintain an online resource that clearly conveys regional information in support of ecosystem-based management.

APNEP intends to continue to investigate an appropriate online media for conveying regional ecosystem information (maps, reports, metric reports, etc.) to our partners and engaged stakeholders.

S, W, O, WL, R

**Color Key for CCMP Actions for the CCMP Update Recommendations**

**Blue** - Objective in current CCMP. Objectives will be repeated in Update. No changes recommended for Update

**Green** – Priority Action for Update. Listed as a priority action.

**Black** – Retain the action from current CCMP. Not a priority, but to be listed in the Update as an action to be supported.

**Red** – Action to be removed. Would be noted in a crosswalk for Update/Original CCMP

**~~Strikethrough~~** - Text change intended to clarify Action and **replacement text** is underlined.

**Yellow Highlight-** Background information on recommendation

**Aqua Highlight** – Priority area association from 2020 strategic planning meeting

S - SAV

W - Water Quality

C - Coastal Habitats (Oysters & Coastal Wetlands)

R - Resiliency

Existing **Outputs** and **Results** still mostly align with CCMP action. Some minor changes may be necessary upon further review.