



2005 Market Street, Suite 2800 P 215.575.9050
Philadelphia, PA 19103-7077 F 215.575.4939

901 E Street NW, 10th Floor P 202.552.2000
Washington, DC 20004 F 202.552.2299
pewtrusts.org

February 10, 2022

Shawn M. LaTourette, Commissioner
New Jersey Department of Environmental Protection
401 E. State Street
7th Floor, East Wing
P.O. Box 402
Trenton, NJ 08625-0402

Submitted via email

RE: The Pew Charitable Trusts' comments on New Jersey's Natural and Working Lands Strategy Scoping Document

Dear Commissioner LaTourette,

On behalf of The Pew Charitable Trusts (Pew), we thank you for the opportunity to provide input into the New Jersey Department of Environmental Protection (NJDEP) and Department of Agriculture's (NJDA) 2021 Natural and Working Lands (NWL) Strategy Scoping Document (Scoping Document). We applaud the state's commitment to harnessing natural and working lands, including coastal landscapes like wetlands, seagrass, and shellfish reefs, to advance New Jersey's climate goals.

Pew's interests relative to the Scoping Document, and the focus of our comments, is to support protection and restoration of New Jersey's iconic and vital coastal ecosystems as a key component of the state's climate response policies. Coastal habitats like salt marsh and seagrass beds can (on a per acre basis) sequester and store significant amounts of "blue carbon." Oysters and other types of bivalves help protect and build coastal wetlands and seagrass beds; and collectively these habitats form natural defenses against erosion, sea level rise, and flooding. In addition, coastal habitats increase biodiversity, support economically and culturally important wildlife, and provide open space and educational opportunities for communities – both urban and rural – up and down the coast.

We commend NJDEP and NJDA for elevating the importance of coastal and nearshore systems throughout the Scoping Document by explicitly including them as distinct landscape types that can help advance New Jersey's climate goals. We also applaud the principles underpinning the Scoping Document, including the commitment to advance equity, foster collaboration, and build meaningful partnerships.

As NJDEP and NJDA develop the NWL Strategy, we recommend consideration of the following with respect to coastal ecosystems:

- Improve quantification of carbon sequestration and storage provided by New Jersey’s coastal habitats as part of the NWL greenhouse gas (GHG) inventory, using best available science and established methodologies that are consistent with the [Intergovernmental Panel on Climate Change \(IPCC\) 2013 Wetlands Supplement](#) and the [U.S. Inventory of Greenhouse Gas Emissions and Sinks](#).
- Develop specific recommendations and related near-term actions for coastal wetlands to ensure their survival in the face of sea level rise, including restoration and protection of adjacent areas that can serve as inland migration zones.
- Implement specific solutions to restore flow to marshes that have been historically disconnected from their tidal influence as referenced in [New Jersey’s Global Warming Response Act 80x50 Report](#).
- Advance statewide restoration strategies for shellfish and submerged aquatic vegetation (SAV), which play a critical role in the state’s estuaries, helping to improve water quality, providing critical habitat for wildlife including commercially and recreationally valuable species, and stabilizing shorelines and reducing erosion.

In sum, protecting New Jersey’s existing coastal resources, expanding their extent through restoration, and planning for future habitat needs, are no-regret measures that will yield measurable carbon sequestration, climate resilience, and biodiversity benefits for New Jersey communities. Our detailed comments on the Scoping Document are provided below.

Building the NWL Strategy

Information-Gathering and Literature Review

Pew supports the development of an exhaustive literature review to enhance understanding of carbon sequestration and emissions reduction opportunities in natural and working lands. In addition to the resources listed in the Scoping Document, we recommend incorporating the following documents related to coastal landscapes:

- [Oregon Global Warming Commission’s Natural and Working Lands proposal](#) and related blue carbon recommendations.
 - [“Incorporating Coastal Blue Carbon Data and Approaches in Oregon’s First Generation Natural and Working Lands Proposal.”](#)¹ The white paper includes a greenhouse gas (GHG) inventory for emergent coastal wetlands that incorporates disaggregated Oregon-specific data from the US EPA [National Greenhouse Gas Inventory of Emissions and Sinks](#) (which is based on NOAA Coastal Change Analysis Program land cover change data) refined using state and local data. The white paper also identifies high value restoration opportunities to expand coastal wetland carbon sinks, as well as opportunities to leverage the state’s existing land use policies in support of climate mitigation goals.
- The California Natural Resources Agency’s draft “Natural and Working Lands Climate Smart Strategy”² (Strategy) addresses the use of nature-based solutions to meet California’s climate goals. The Strategy explicitly recognizes and defines blue carbon as a critical ecosystem service

¹ Troost, Sylvia, et. al., Oregon Climate Plan Is First in U.S. to Account for ‘Blue Carbon’ Benefits of Coastal Habitats, The Pew Charitable Trusts, August 5, 2021, <https://pew.org/3rS35F1>.

² California Releases First-Ever Draft Natural and Working Lands Climate Smart Strategy. Press Release, California Natural Resources Agency, October 11, 2021. <https://resources.ca.gov/Newsroom/Page-Content/News-List/California-Releases-First-Ever-Draft-Natural-and-Working-Lands-Climate-Smart-Strategy>.

provided by coastal habitats (including seagrasses and seaweeds) with significant potential in terms of climate mitigation.³

- “An assessment of marine, estuarine, and riverine habitat vulnerability to climate change in the Northeast U.S.”⁴ This recent vulnerability assessment, funded by NOAA, looked at 52 marine, estuarine, and riverine habitats from North Carolina to the Gulf of Maine, and found that 54% of the habitats examined are expected to be negatively impacted by climate change, 37% neutrally impacted, and 8% positively affected, with coastal habitats identified as highly vulnerable, in part due to the influence of non-climate anthropogenic stressors. This assessment can help state managers prioritize conservation, restoration, and other planning priorities.

Recommendation Development with Subject Matter Experts

We applaud your inclusive and science-based process and look forward to supporting the various workgroup efforts. In addition to the subject matter experts already identified, we encourage you to engage with the New Jersey Department of Military and Veterans Affairs to help identify new opportunities to work with the Department of Defense (DoD) and its various installations in New Jersey. DoD managed and state-owned National Guard Land in New Jersey totals 72,515 acres as of 2017, making continued engagement with DoD initiatives like the Readiness and Environmental Protection Integration ([REPI](#)) Program and the Office of Local Defense Community Cooperation ([OLDCC](#)), potential key contributors to the NWL Strategy.⁵ We also suggest working with the New Jersey Commission on American Indian Affairs, which serves as a liaison among the tribes and the State and Federal governments in New Jersey, to provide equitable representation of the interests of indigenous peoples and accounting for ancestral homelands and traditional territories.

Carbon Accounting Methodologies and Tracking

As the state compiles and reviews data on carbon sequestration and storage, Pew recommends New Jersey utilize newly available data from the U.S. EPA’s National Greenhouse Gas Inventory (NGGI) for coastal wetlands covering the period 1990-2019. This information can help states that want to recognize the role of coastal wetlands in their GHG inventories and lack resources and/or robust state level data, particularly land cover change data. For coastal counties in the conterminous U.S., a time-series of land use change data starting in 1996 and most recently in 2016 is provided by the NOAA Coastal Change Analysis Program (C-CAP) and forms the basis of the NGGI.⁶ The C-CAP land cover classifications include estuarine and palustrine emergent, scrub-shrub, and forested wetlands, among 21 other land cover classes. Leveraging federal data sets would have the additional benefit of creating consistency between New Jersey’s NWL inventory and the NGGI, allowing the state to improve national GHG accounting in future updates through refined state-level data.

The Oregon white paper noted above demonstrates a robust approach for utilizing NGGI data and resolving with more refined regional and state level information. New Jersey can take a similar approach by refining the New Jersey-specific NGGI data and applying associated emissions factors gleaned from New Jersey and region-specific published data. Data sources include the Smithsonian Environmental Research Center’s [Coastal Carbon Atlas](#) and its recently-published [national assessment](#) of blue carbon

³ We note that the California Natural and Working Land’s Plan referenced in the Scoping Document is a draft, and the California Air Resources Board is in the process of developing a new [Natural and Working Lands Plan](#). New Jersey may want to track development of this plan, a draft of which should be released in spring 2022, as it develops its own strategy.

⁴ Farr ER, Johnson MR, Nelson MW, Hare JA, Morrison WE, Lettrich MD, et al. (2021) An assessment of marine, estuarine, and riverine habitat vulnerability to climate change in the Northeast U.S. PLoS ONE 16(12): e0260654. <https://doi.org/10.1371/journal.pone.0260654>.

⁵ NJDEP’s efforts to secure REPI funds for resilience projects adjacent to military installations is referenced under Priority 2 in New Jersey’s [Climate Change Resilience Strategy](#).

⁶ See: <https://coast.noaa.gov/digitalcoast/data/ccapregional.html>

data, which includes New Jersey. Pew and our partners would welcome the opportunity to provide input into the development of a New Jersey-specific GHG inventory.

Strategy Recommendations

Forests

Although Pew is not specifically engaged in forest conservation issues in New Jersey, we have two recommendations for the state to consider as it develops a NWL Strategy specific for this landscape. First, we recommend that the state explores the extent to which spatial land cover datasets for forests overlap with coastal wetlands. This issue has been brought to our attention in a related effort we are engaged in with managers and researchers in North Carolina.⁷ Second, when considering management strategies to enhance climate mitigation goals in forest landscapes, we recommend advancing a Sentinel Landscapes Partnership designation. Once designated, the Sentinel Landscapes Partnership, currently led by the U.S. Departments of Agriculture, Defense, and Interior, works together to connect private landowners with government assistance programs that advance protection of natural and working lands and waters, as well as complementary natural resource restoration projects.⁸ We see New Jersey's pursuit of an Sentinel Landscapes Partnership designation as a crosscutting strategy that could provide multiple benefits across the land types identified in the Scoping Document.

Agricultural Lands and Aquaculture

Pew supports consideration of the role of aquaculture as a “working waters” strategy that can help advance state climate goals while also restoring coastal/nearshore areas and bolstering local economies and food production. There is growing recognition of the benefits to nature and people of farmed “unfed” species like shellfish and seaweed that require no freshwater or energy inputs.⁹ When unfed aquaculture operations implement science-based best management practices, they have the potential to enhance estuarine areas by augmenting ecosystem services such as nutrient filtering that improves water quality, increasing fish habitat, enhancing biodiversity and (in the case of seaweeds) providing localized amelioration of ocean acidification.

We recommend reviewing The Nature Conservancy's [Global Principles of Restorative Aquaculture](#) report and applying its lessons to New Jersey. The Scoping Document also identifies the USDA's Natural Resources Conservation Service (NRCS), and we offer the example of Rhode Island, where [NRCS is working closely with the state's shellfish growers to restore the functions and values of reefs](#), as a working strategy that could be adapted to New Jersey on a large scale.

⁷ Pew helped organize and continues to facilitate the North Carolina Coastal Greenhouse Gas Inventory Workgroup, a workgroup reporting to state's Department of Environmental Quality Coastal Habitats Subcommittee. The workgroup is developing a coastal wetland-specific greenhouse gas inventory to be included in the upcoming iteration of the North Carolina Greenhouse Gas Inventory. Through these efforts, the workgroup has identified and is working to formulate a solution to challenges originating from use of multiple land representation data within the Land Use, Land-Use Change, and Forestry Section (LULUCF, Section 6) of the NGGI. More specifically, within the LULUCF section of the NGGI Inventory, the workgroup has identified appreciable spatial overlap in lands classified as forest within the national forest inventory (NFI), which is the land representation used to delineate Forest Land, and lands classified as forested, scrub/shrub, and emergent palustrine wetlands within C-CAP spatial layers, the land representation used to delineate Wetlands. While the US EPA and the United States Forest Service's Forest Inventory and Analysis Program (USFS FIA) are aware of and diligently working to address this discrepancy, harmonizing land representation layers at a national scale will likely not be completed for multiple years. The workgroup is engaged with both agencies to identify an optimal remedy for this issue that can be implemented in the nearer term, and Pew can provide this information and guidance to those leading wetland carbon inventory development in New Jersey as it becomes available.

⁸ Gordon, Joseph, et. al., How The Pentagon and Partners Are Working Together to Combat Climate Change, The Pew Charitable Trusts, February 4, 2022, <https://pew.org/3L2Px2u>.

⁹ The Nature Conservancy, “Global Principles of Restorative Aquaculture” (2021), last accessed February 7, 2021: <https://www.nature.org/aquaculture>.

In addition, oyster reef restoration projects can benefit from the use of farmed shellfish – see The Nature Conservancy and The Pew Charitable Trusts’ Supporting Oyster Aquaculture & Restoration ([SOAR](#)) Program – to provide natural substrate of oysters that tend to be both older and larger and thus may be more resistant to disease. In New Jersey, as referenced in the Aquaculture Development Plan Update, SOAR worked with 24 oyster growers to purchase and replant over 616,000 oysters and is currently supporting two resiliency fund projects in the state. Oyster reefs provide numerous benefits to coastal and nearshore ecosystems, including providing shelter for adjacent, carbon storing coastal wetlands.

Wetlands

We support exploration of all the example strategies and recommendations listed in the Scoping Document and applaud the state’s commitment to building a robust plan for New Jersey’s tidal wetlands. On a per acre basis, blue carbon habitats can store up to 10 times more carbon¹⁰ in the soil than forests, while also protecting frontline communities from sea level rise and flooding, filtering water, and providing vital habitat for fish and other wildlife. Because the loss of coastal wetlands and the resulting limited spatial footprint (relative to historic extent) are now the “new normal” in many states, these habitats can be overlooked in the policy realm related to prioritizing and advancing nature-based solutions. Accordingly, a key policy need is to elevate the importance of maintaining and expanding functioning, intact coastal ecosystems as part of the state’s climate calculus with relevance to mitigation, adaptation, and resilience.

As the state explores specific strategies and recommendations with respect to wetlands, we would like to highlight the following resources and considerations:

- Chapter 13 in the [“Second State of the Carbon Cycle Report”](#) characterizes the distribution of carbon stocks and fluxes in nontidal freshwater wetlands in North America. The US EPA’s National Greenhouse Gas Inventory does not account for greenhouse gas emissions from most freshwater wetlands, though there is [ongoing research](#) to further understand and examine the [biogeochemistry of methane dynamics in freshwater wetlands](#).
- Studies indicate that reconnecting wetlands with ocean tides by removing anthropogenic barriers can avoid GHG emissions, including methane, while also helping to create future carbon storage opportunities through restoration.¹¹ Research in Massachusetts’s Waquoit Bay Research Reserve found that restoring tidal flow to 1,100 acres of degraded wetlands could, over four decades, prevent estimated carbon dioxide emissions of up to 300,000 tons from entering the atmosphere.¹² The Smithsonian Environmental Research Center is working on research related to coastal wetland impoundments, and results should be available later in 2022.
- Some research has indicated that sea level-driven marsh migration results in rapid net loss of carbon given the loss of woody aboveground biomass in forests along the upland edges of salt marsh.¹³ A study by Smith and Kirwan¹⁴ notes that this loss is partially offset with expanding organic soil in newly formed marsh, but the carbon lost from forest mortality is greater than carbon sequestered in expanding marsh soils. Given that sea-level rise will fundamentally alter carbon dynamics in coastal wetlands and coastal forests, the state should develop holistic

¹⁰ The National Oceanic and Atmospheric Administration (NOAA) Fisheries Service: Coastal Blue Carbon, <https://tinyurl.com/y6a2zkgs>.

¹¹ See <https://environment-review.yale.edu/tidal-marsh-restoration-could-be-powerful-tool-fight-global-warming>

¹² See: http://nerrsciencecollaborative.org/media/resources/TerraCarbon_HRR_Feasibility_v1.7_Clean.pdf

¹³ <https://agupubs.onlinelibrary.wiley.com/doi/10.1029/2021GL092420>

¹⁴ <https://agupubs.onlinelibrary.wiley.com/doi/10.1029/2021GL092420>

management strategies for these landscapes in transition with the goal of enhancing both climate resilience and carbon sequestration.

Aquatic Resources and Habitats

Pew supports exploration of all the example strategies and recommendations listed in the Scoping Document. Coastal aquatic resources and habitats, including shellfish reefs and seagrass beds, play a critical role in New Jersey, supporting biodiversity and coastal resilience and bolstering the economic vitality of coastal communities. During the New Jersey Coastal Management Program's 2021-2025 Section 309 Assessment and Strategy update process¹⁵, and again in response to New Jersey's Protecting Against Climate Threats (PACT) initiative^{16,17}, Pew advocated that New Jersey should prioritize the mapping, restoration and monitoring of coastal aquatic resources and habitats, while also seeking out regulatory changes that align and enhance habitat protection, restoration, and adaptation.

For example, Pew strongly recommends that New Jersey update its approach to permitting so that in impaired waters, shellfish can be more readily incorporated into coastal habitat restoration projects. The state should also consider streamlining permitting for aquatic habitat restoration as a management strategy that can advance climate mitigation and adaptation goals. With respect to seagrass beds, conserving and expanding their extent would support carbon sequestration and storage as well as potentially provide localized amelioration of ocean acidification. We also encourage the state not only to extend Marine Conservation Zones to seagrass beds, but to think creatively about how said zones can be established to maximize ecosystem, economic and societal benefits. For instance, using climate change scenario planning to establish a marine conservation zone further "up watershed" to provide flexibility for marine habitats to migrate into the future.

As the state explores the ways in which improved management of aquatic resources and habitats can help advance climate goals, Pew stands ready to share best practices and lessons learned from our work in other states, including for example a forthcoming project to inventory seagrass habitat as part of North Carolina's coastal wetland GHG inventory (mentioned previously in this letter). In addition, we recommend looking at "mosaic approaches" to coastal habitat restoration as described in this study, "Harnessing positive species interactions to enhance coastal wetland restoration"^{18 19}.

Conclusion

Thank you for this opportunity to comment on New Jersey's NWL Strategy Scoping Document. By prioritizing coastal habitats, New Jersey can deliver a triple win for people and nature in the state through climate mitigation, resilience, and biodiversity. The state can be a national leader in protecting and restoring coastal "blue carbon" habitats and help drive improvements in national GHG accounting for blue carbon. With the aim of presenting a set of statewide policies and recommendations, the Strategy Document can provide much needed, landscape level recommendations that can lead to recovering essential coastal habitats like shellfish reefs and seagrass beds more rapidly and holistically.

¹⁵ Pew Commends New Jersey's Coastal Management Assessment and Strategy, The Pew Charitable Trusts, May 29, 2020, <https://pew.org/30LSRK5>.

¹⁶ Pew Recommends Reforms to Improve Flood Resilience in New Jersey, The Pew Charitable Trusts, October 8, 2020, <https://pew.org/37sAEW1>.

¹⁷ New Jersey's Science-Based Approach to Climate Adaptation, The Pew Charitable Trusts, February 17, 2021, <https://pew.org/30xlmJy>.

¹⁸ Renzi, J.J., He, Q., and Silliman, B.R. (2019) Harnessing positive species interactions to enhance coastal wetland restoration. *Frontiers in Ecology and Evolution*. <https://doi.org/10.3389/fevo.2019.00131>.

¹⁹ Can Partnerships Between Organisms Interactions Increase Yields and Decrease Coastal Restoration Costs?, Lenfest Ocean Program, last accessed February 7, 2022: <https://pew.org/2L5edMB>.

Pew welcomes the opportunity to help build knowledge and advance science-based policies in support of New Jersey's NWL Strategy, and we look forward to continuing to engage as the work progresses.

Sincerely,

A handwritten signature in black ink that reads "Alyx Clayton". The script is fluid and cursive.

Alexandra Clayton
Principal Associate
Conserving Marine Life in the U.S. Project

A handwritten signature in black ink that reads "Zachary Greenberg". The script is fluid and cursive.

Zachary Greenberg
Officer
Conserving Marine Life in the U.S. Project