



# A National Blue Carbon Action Plan

OPPORTUNITIES &  
RECOMMENDATIONS

Prepared by



RESTORE  
AMERICA'S  
ESTUARIES

# A National Blue Carbon Action Plan

*"Estuary regions cover only 13 percent of the land area in the continental United States but contain nearly 43 percent of the population, 40 percent of the jobs, and nearly 50 percent of the economic output of the United States."*

- Joint resolution to recognize National Estuary Week, 2021

## Introduction:

If you are one of the roughly 130 million Americans living along the coast, you likely pass a coastal wetland on your ride to work or visit one on the weekend to recreate. Whether the landscape is comprised of salt marsh, mangrove, or a cedar forest, for those along the coast it is a daily reminder of the value these wetlands provide in maintaining water quality, reducing flood risk, and supporting vibrant wildlife and fisheries.

Additionally, we are learning more every day about how coastal wetlands benefit all Americans. Coastal wetlands dampen storms, protect property and impede floods. Importantly, wetlands sequester large amounts of carbon dioxide that would otherwise be released into the atmosphere. Plants draw carbon from the atmosphere and transform it into leaves, stems, and roots that are buried over time, a process that happens in wetlands more than 10x faster than forests. However, the benefits of coastal wetlands only continue if we protect and restore them. Restore America's Estuaries (RAE) and the undersigned organizations offer a list of common-sense policies proposals for your consideration that would ensure these benefits for many generations. We urge the Biden Administration and Congress to consider these ideas and work together for the betterment of coastal wetlands nationwide.

\*Signatures here\*

# Blue Carbon Action List

1. *Advance an “all of government” approach to Blue Carbon through dedicated resources and coordination of Federal activities including a research agenda.*
2. *Strengthen protections for Blue Carbon ecosystems.*
3. *Remove barriers to Blue Carbon restoration projects.*
4. *Advance policies and funding that support climate-related financing, public-private partnerships and market-based mechanisms.*



The Administration should establish an interagency working group for Blue Carbon under the U.S. Global Change Research Program and task it with developing a national strategic plan including the mapping of high-priority wetlands.



Congress should fund demonstration projects in relevant land management programs and technical assistance to support public-private partnerships to conserve and restore Blue Carbon.



Congress should provide clear authority to federal land management agencies to approve carbon sequestration projects including the transfer of ownership of emission reductions to non-federal partners.



Congress and the Administration should assess best practices around the country for streamlining permitting in support of habitat restoration.



Congress and the Administration should direct federal agencies to identify opportunities for Blue Carbon protection and restoration and assess barriers for implementation.



The Council on Environmental Quality should consider Blue Carbon ecosystems in its review of the 2016 Final Guidance for Federal Departments and Agencies on Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in National Environmental Policy Act Reviews.



The Army Corps of Engineers should consider the impacts to carbon sequestration under the Clean Water Act Section 404 program, where appropriate.



The Army Corps of Engineers and other federal agencies should expand mitigation banking regulations to allow project proponents to sell verified carbon credits.



The National Marine Fisheries Service should work with regional fishery management councils to consider designating Blue Carbon ecosystems as habitat areas of particular concern.



The U.S. Department of Agriculture’s Natural Resource Conservation Service should modify the Wetland Reserve Program to incentivize farmers in coastal areas to limit soil erosion and carbon flux from coastal saltwater intrusion.



Coastal states should revise their coastal zone management programs so that they consider strategies to increase carbon sequestration and prevent emissions through degradation and loss in coastal habitats.

## Background:

America's coastal estuaries are particularly important ecosystems to conserve and restore. Estuaries function as nursery grounds for our most valuable fisheries, supporting between 60 and 90 percent of commercial fishery production (Source: [NPS](#)). Estuaries and coastal wetlands provide critical flood protection for communities and infrastructure, with one study finding that the presence of wetlands reduced the amount of direct flood damages from Superstorm Sandy by \$625 million (Source: [The Nature Conservancy](#)). Coastal ecosystems are also among the most popular destinations for recreation, generating \$235 billion each year for coastal economies (Source: [BEA](#)). In many areas, estuaries underpin cultural heritage, including food sovereignty of Indigenous peoples.

Estuaries also play a vital role with respect to carbon cycling and climate change. It is estimated that 83 percent of carbon is circulated through the oceans, with coastal ecosystems accounting for half of all carbon sequestered in the oceans. Mangrove forests, salt marshes, and seagrasses can store more carbon per acre than a tropical forest, with mangroves sequestering up to six times as much carbon (Source: [The Blue Carbon Initiative](#), Figure 3.1). In these ecosystems, most of the carbon is stored below ground.

To date, coastal wetlands are the only marine ecosystem for which the Intergovernmental Panel on Climate Change has developed methodologies for measuring carbon dynamics – an essential element in bringing carbon credits to market. Researchers are working to quantify the role that other marine ecosystems such as kelp forests may play in reaching targets

## Restore America's Estuaries & Fostering Blue Carbon Markets:

For over a decade RAE has been convening workshops and webinars to expand understanding of Blue Carbon and how it increases the value of coastal wetland protection and restoration activities. RAE has produced a variety of tools and resources to use Blue Carbon as a conservation and restoration strategy, such as expanding Verra rules to include wetland restoration and conservation as an eligible project activity.

On September 9, 2021, RAE convened the third meeting of the Blue Carbon National Working Group. Participants included representatives from federal agencies, non-profit organizations, and the private sector. The group focused its discussion on the following questions:

- What are the respective roles and responsibilities of relevant federal programs, and which interagency coordinating mechanisms are most effective?
- What are the top three research priorities for Blue Carbon?
- What are the foremost impediments to developing Blue Carbon for voluntary carbon markets?

These discussions informed our proposals in this paper. To continue to advance knowledge and utilization of Blue Carbon, an initiative must be well coordinated among all relevant federal agencies, target funding for research to the highest priorities, while also addressing those policies that will have the greatest impact.

## **The Opportunity:**

We agree with Congress that America's coastal wetlands, including emergent wetlands (e.g., salt marsh, mangroves) and seagrass beds, are amazing ecosystems that are vital for economic growth, fish and wildlife habitat, flood protection, recreation, and culture. In addition to these reasons to protect and restore coastal wetlands, research has demonstrated their outsized role in carbon sequestration or "Blue Carbon" when compared to other carbon sinks like terrestrial forests. For example, seagrasses sequester CO<sup>2</sup> equivalent 35 times faster than tropical forests (Source: [UNEP](#)) while improving water quality and fisheries nursery grounds. For over a decade, RAE and our partners have been leading an effort to understand and better leverage the ability of healthy, functioning coastal wetlands to mitigate climate change. Accordingly, we are proposing a National Blue Carbon Action Plan, a comprehensive, common-sense list of policies that all Americans can support, to scale up efforts to protect and restore coastal wetlands in service of climate goals.

For decades, the United States has recognized the critical role coastal wetlands play for the nation's economy and environment through protective regulations and the adoption of a no net loss goal. More recently, agencies have incorporated coastal wetlands into climate-related analyses and strategies. For example, in 2017 the U.S. Environmental Protection Agency (EPA) began including coastal wetlands into its annual greenhouse gas inventory of emissions and sinks. According to the 2021 inventory, coastal wetlands in the lower 48 states sequestered 4.8 million metric tons of carbon dioxide equivalent—and held a total of about 2.9 billion metric tons in their soils.

President Biden's Executive Order 14008, Tackling the Climate Crisis At Home and Abroad, as well as the American Jobs Plan, specifically identifies conserving and restoring coastal ecosystems to protect vulnerable coastlines, sequester carbon, and support biodiversity and fisheries. The Administration's FY22 Budget request reflects this commitment to leveraging coastal wetland conservation and restoration in support of the many benefits these ecosystems provide.

Carbon sequestration and other important services coastal wetlands provide should not be taken for granted. According to the latest wetlands "status and trends" report released by [U.S. Fish and Wildlife Service \(FWS\)](#) and [National Oceanic and Atmospheric Administration \(NOAA\)](#), the nation is losing 80,000 acres of coastal wetlands each year to development, drainage, erosion, subsidence and sea-level rise, a 25 percent increase over the previous 6-year study period. An estimated 1 billion tons of carbon dioxide equivalent is emitted from degraded coastal ecosystems worldwide, a number that is expected to increase as existing tidal marshes are lost to erosion and inundation as a result of sea level rise.

Accordingly, we propose the following four priority action areas that the nation should pursue to prevent further loss and scale up restoration of coastal wetlands where feasible in support of climate mitigation.

## **Recommendations for a National Blue Carbon Action Plan:**

Below we propose a National Blue Carbon Action Plan, a comprehensive, common-sense list of policies that all Americans can support.

- 1. Advance an “all of government” approach to Blue Carbon through dedicated resources and coordination of Federal activities including a research agenda.*
- 2. Strengthen protections for Blue Carbon ecosystems.*
- 3. Remove barriers to Blue Carbon restoration projects.*
- 4. Advance policies and funding that support climate-related financing, public-private partnerships and market-based mechanisms.*

Administrative and regulatory actions can help achieve these goals and are detailed more extensively below. In summary, as an immediate first step relevant to advancing an “all of government” approach, we recommend that the Biden Administration direct agencies to establish an interagency working group for Blue Carbon under the U.S. Global Change Research Program. This group should set research priorities with emphasis on developing the necessary science to incorporate Blue Carbon into regulatory and management frameworks, as well as facilitate climate financing. The working group should also develop a map of high-priority wetlands for protection and restoration that prioritizes restoration “hot spots” based on potential climate mitigation and adaptation values.

While Blue Carbon ecosystems, including mangroves, salt marshes, and seagrasses, can play an outsized role relative to other natural carbon sinks with respect to mitigating climate change, U.S. policies could do more to both conserve and restore these unique ecosystems. There are presently no requirements for government agencies to consider how impacting coastal ecosystems affects carbon emissions and/or future carbon sequestration services, despite numerous laws that are intended to conserve coastal wetlands. Among these laws are the Clean Water Act, Magnuson-Stevens Fishery Conservation and Management Act, the Coastal Barrier Resources Act and Coastal Zone Management Act. RAE recommends several targeted regulatory changes so that impacts to Blue Carbon habitats are considered as part of the decision-making process.

The federal government can also play an important role in streamlining permitting for restoration, prioritizing public funding and creating enabling conditions for market-related financing to scale up restoration of Blue Carbon ecosystems. One estimate projects carbon offset demand to reach \$50 billion in value by 2030 (Source: [Institute for International Finance](#)).



Major impediments for financing include the high cost of assessing carbon sequestration potential and verification for participation in carbon markets. Another consideration is the large geographic scale necessary for financial viability. It is inevitable that carbon sequestration projects will need to include publicly-owned lands, which creates unique challenges. We recommend that Congress provide clear authority and guidance to federal agencies to enable the transfer of ownership of emission reductions from projects located on public lands. Arrangements between relevant government agencies and project developers for activities on public lands and/or benefit-sharing agreements would facilitate investment in habitat restoration on federal lands and any associated carbon credits, while the federal agency retains full jurisdictional authority.

America's coastal wetlands present a compelling opportunity to contribute to climate mitigation efforts through conserving and enhancing their ability to sequester and store carbon. More research, technical assistance, and enabling policies to facilitate climate financing are needed to advance conservation of Blue Carbon. RAE looks forward to continuing its efforts to advance a National Blue Carbon Action Plan and its vision of productive, resilient coastal wetlands for future generations.

***Action #1: Advance an “all of government” approach to Blue Carbon through dedicated resources and coordination of Federal activities including a research agenda.***

Several agencies are presently working on aspects of understanding and conserving Blue Carbon:

- The U.S. Geological Survey is involved in a nationwide effort to collect and synthesize data to improve estimates of coastal wetland carbon fluxes (Source: [USGS](#)).
- Several programs within the National Oceanic and Atmospheric Administration are involved in Blue Carbon including the Office for Coastal Management and [National Estuarine Research Reserve System](#), [Office of Habitat Conservation](#), [National Sea Grant Program](#), [National Marine Sanctuaries Program](#), and the [Climate Program Office](#). Activities include providing technical assistance to communities on how to avoid or minimize the effects of actions that adversely impact coastal Blue Carbon ecosystems, how to account for sequestered and stored Blue Carbon as well as factors that influence sequestration and storage rates and identifying legal considerations for Blue Carbon projects on publicly owned lands. NOAA also supports habitat restoration through the [Community Based Restoration Program](#), among others.
- The Environmental Protection Agency maintains an [Inventory of U.S. Greenhouse Gas Emissions and Sinks](#) that includes information on changes in greenhouse gas emissions in coastal wetlands nationwide. EPA, along with the U.S. Army Corps of Engineers and other agencies collaborate as part of the [Interagency Coastal Wetlands Working Group](#) to address coastal wetland loss, management, and restoration.

- The Department of Interior’s National Park Service and Fish and Wildlife Service both support place-based projects to restore coastal habitat and increase Blue Carbon sequestration. The National Park Service manages 88 ocean and Great Lakes parks across 23 states and four territories, conserving over 11,000 miles of coastline and 2.5 million acres of ocean and coastal waters. Since 1985, the Fish and Wildlife Service’s [Coastal Program](#) has worked with partners to protect and restore over 2.6 million acres of habitat, and 2,600 miles of streams through the [National Coastal Wetland Conservation Grant Program](#) and other programs.
- Additionally, the Department of Defense is investing in resilience at its facilities at risk due to climate change and has the capability to integrate carbon sequestration into grant programs that support community coordination on climate change and weather.
- The National Science Foundation provides grants to study Blue Carbon, one of which supports the Smithsonian Institute’s management of a [Coastal Carbon Research and Coordination Network](#). This network brings together scientists and Blue Carbon data to reduce uncertainty in the science and recently [published an inventory](#) of Blue Carbon around the country.
- The National Aeronautics and Space Agency funds research on carbon cycling as well as STEM education and [provided grants](#) in both areas to advance Blue Carbon.
- There are also considerable synergies between Blue Carbon and efforts underway in the U.S. Department of Agriculture’s Natural Resources Conservation Service to survey soils nationwide, [including coastal zones](#), and quantify carbon flux in forests, agricultural fields, and other terrestrial ecosystems. The NRCS Coastal Zone Soil Survey (CZSS) program generates precise soil analysis to a depth of 2 meters, and captures historic carbon sequestration layers. In 2014, USDA issued the technical report, [Quantifying Greenhouse Gas Fluxes in Agriculture and Forestry: Methods for Entity-Scale Inventory](#), which discusses procedures for quantifying GHG sources and sinks in managed wetland systems. In addition, NRCS has established strong partnerships in support of habitat restoration on privately held lands that could be leveraged in support of coastal ecosystem restoration and Blue Carbon.

Although federal agencies are partnering in some of the activities, there is no formal mechanism to coordinate and leverage these efforts. The lack of formal coordination limits the ability to concentrate funding, build out complementary programs, and accelerate progress.

### **We Recommend:**

President Biden create a Blue Carbon Interagency Working Group within the U.S. Global Change Research Program. The Blue Carbon Working Group would develop a national strategic plan to coordinate federal funding and programmatic activity, in coordination with White House offices including the Office of Science and Technology Policy, Council on Environmental Quality, and Office of Management and Budget.



Developing a map of high priority Blue Carbon ecosystems that are important for protection, conservation, and restoration from a climate mitigation and adaptation standpoint. In developing this map, the group should (1) look for opportunities to refine National Wetland Inventory mapping (e.g., better account for impounded wetlands) to support prioritization efforts; (2) ensure regions that are currently underserved with respect to mapping (Alaska, Hawaii, U.S. Territories in the Western Pacific and U.S. Caribbean) are included; and (3) coordinate with non-agency research entities engaged in data collection and mapping, including the Smithsonian Institute.

Including a national research program within the strategic plan to improve our understanding of carbon flux within coastal and nearshore ecosystems that includes the impacts of climate change, sea level rise, and other anthropogenic stressors on fluxes; support federal, state and local climate mitigation policies related to natural and working lands; and support specific restoration projects focused on Blue Carbon.

Developing one or more authoritative models that coastal managers and project proponents can use to estimate greenhouse gas emissions. To do this, we need to improve understanding of the dynamics of methane and salinity in coastal wetlands. For the purposes of assessing the impacts of restoration on climate mitigation goals, it is also important to understand long term sediment flux, both from erosion the deposition of organic carbon from adjacent ecosystems (including nearshore waters) and sea level rise.

The research plan undergoes external peer review, such as from the National Academy of Sciences. We note that the activities of a Blue Carbon Working Group are relevant to the National Ocean Council and other interagency bodies and encourage the Administration to maximize these opportunities to leverage resources.

## ***Action #2: Strengthen protection for Blue Carbon ecosystems.***

Several regulatory programs currently manage impacts to coastal wetlands. [The Clean Water Act Section 404 program](#), administered by the U.S. Army Corps of Engineers, requires a permit for any activity that may discharge dredge or fill material into a water of the U.S. Impacts that cannot be avoided or minimized may conduct compensatory mitigation to offset impacts pursuant to what is known as the [2008 Mitigation Rule](#).

Although impacts to jurisdictional waters must be fully offset, the regulations do not specify how much habitat must be restored to compensate for losses. The regulations also do not formally consider how carbon flux may be affected by activities, nor do they require that impacts to carbon emissions be fully offset with habitat restoration that sequesters an equal or greater amount of carbon.

Aquatic habitat, including seagrass, that is important for commercial fisheries can be managed as essential fish habitat (EFH) under the [Magnuson-Stevens Fishery Conservation and Management Act](#). EFH is designated by NOAA's National Marine Fisheries Service (NMFS) in coordination with regional fishery management councils through a formal rule-making process. Once designated, federal actions including federally issued permits must undergo consultation with NMFS on ways to minimize impacts to EFH. Regional fishery management councils may also designate habitat areas of particular concern (HAPC) for high priority areas for conservation and management. HAPCs do not necessarily convey additional restrictions or protections on an area; however, they provide increased scrutiny, study, and mitigation planning compared to surrounding areas.

State agencies broadly consider activities within their respective coastal zones as part of coastal zone management plans pursuant to the Coastal Zone Management Act. Every coastal state and territory except for Alaska has a Coastal Zone Management Program. Federal actions and permits (inside or outside a state or territory's coastal zone) that have foreseeable effects on land or water use, or natural resource of the affected state's coastal zone are subject to a consistency determination by the state or territory. States and territories also receive funding to develop and implement their coastal zone management programs through coastal zone management grants that are administered by NOAA's Office for Coastal Management. Many states and territories are starting to create policies related to climate change, carbon sequestration goals, and climate equity that can be incorporated into these coastal management programs.

### **We Recommend:**

Impacts to carbon sequestration are considered under the Clean Water Act Section 404 program, where appropriate. One approach would be for EPA and USACE to revise their regulations to increase mitigation ratios for Blue Carbon ecosystems (e.g., mangroves, salt marshes, and seagrasses). A higher ratio will help to address temporal differences between when carbon is emitted as a result of an impact and the time necessary to sequester sufficient carbon to fully offset the impact.

All coastal states revise their coastal zone management programs so that they consider strategies to increase carbon sequestration and preventing emissions through degradation and loss in coastal habitats. Some states have begun doing so and revisions could be facilitated through NOAA's coastal zone management grants and technical assistance. Once included in a state's plan, consistency decisions could consider impacts with respect to Blue Carbon, among other factors. NOAA is presently in the process of revising the federal consistency procedures under the CZMA (15 CFR 930). According to the [Unified Regulatory Agenda](#), it proposed changes in December 2021.

The Council on Environmental Quality consider Blue Carbon ecosystems in its review of the [2016 Final Guidance for Federal Departments and Agencies on Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in National Environmental Policy Act Reviews](#). As noted earlier, these ecosystems are unique with respect to their role in carbon cycling, while also under tremendous pressure from development and other human activities. Similarly, the analysis of federal activities that impact Blue Carbon ecosystems should use appropriate figures for the social cost of greenhouse gases. The Office of Management and Budget is presently reviewing and updating the [2016 interim technical support document](#). These policies help to ensure impacts to Blue Carbon ecosystems are fully considered and valued as part of federal decision-making.

The National Marine Fisheries Service work with regional fishery management councils to consider designating Blue Carbon ecosystems as habitat areas of particular concern, thereby ensuring a higher level of scrutiny for activity that may affect these areas.

Strengthening cooperation with landowners around federally managed coastal areas (National Wildlife Refuges, National Parks, military installations) to ensure coastal wetlands have room to migrate inland as sea levels rise.

### ***Action #3: Remove barriers to Blue Carbon restoration projects.***

The process for restoring coastal wetland is often complicated and involves numerous authorizations from different government agencies. This adds considerable cost and time to reaping the benefits of habitat restoration.

#### **We Recommend:**

Congress and the Administration assess the best practices around the country for streamlining permitting in support of restoration and incorporate improvements into agency regulatory programs. The [San Francisco Bay Restoration Regulatory Team](#) is an example that could serve to inform national efforts with respect to streamlined “green” permitting.

Congress and the Administration direct agency land holders who manage coastal landscapes (e.g., FWS, National Park Service) to identify opportunities for Blue Carbon protection and restoration and assess barriers for implementation. Particular focus should be paid to addressing impediments to public-private partnerships.

## **Incorporate strategies to conserve Blue Carbon into existing federal programs**

Healthy coastal wetlands provide carbon capture and storage services “for free.” There is an opportunity for the U.S. to better account for this climate mitigation role and dedicate funding to prevent further loss and accelerate restoration. For example, The USDA manages several programs that compensate farmers for taking land out of agricultural production and applying conservation practices. It’s largest program, the Conservation Reserve Program, has obligated between \$72 million in FY 2015 to \$110 million in FY 2020 (Source: [USDA](#)). The Wetland Reserve Program is a voluntary program that provides technical and financial assistance to private landowners to protect, restore and enhance wetlands in exchange for retiring eligible land from agriculture. However, erosion and carbon flux resulting from sea level rise and saltwater intrusion is distinctly different from the purposes presently funded under these programs.

### **We Recommend:**

USDA modify the Wetland Reserve Program to incentivize farmers in coastal areas to limit soil erosion. Farmers experiencing erosion and carbon flux from saltwater intrusion can be compensated to plant appropriate vegetation. Planting vegetation tolerant of saltwater both protects agricultural lands from rapid soil loss while also retaining the organic carbon it contains. It also reduces turbidity and other adverse effects associated with coastal erosion.

EPA’s [Brownfields Program](#) be utilized to increase Blue Carbon. This program provides grants and technical assistance to communities, states, tribes, and others to assess, safely remediate, and sustainably reuse contaminated properties. Sequestering carbon for the purpose of selling credits in carbon markets is not presently an approved use for remediated lands. Modifying the program to expressly support Blue Carbon would create another opportunity for communities to rehabilitate polluted coastal lands while also conserving it for the public’s enjoyment.

The federal government scale up demonstration projects on federally owned coastal lands. We recommend that the federal government fund demonstration projects to restore Blue Carbon in relevant land management programs (e.g., Fish and Wildlife Service, National Estuarine Research Reserves, National Marine Sanctuaries Program, and National Park Service). Agencies should monitor and regularly report on the results from these demonstration projects to increase the public’s understanding of Blue Carbon, in addition to disseminating knowledge of the technical aspects with respect to carbon markets.

The [Herring River Carbon Feasibility Study](#) is one example of a successful demonstration project. Conducted on lands primarily owned by the National Park Service and in partnership with NOAA’s National Estuarine Research Reserve System, this first-of-its-kind market feasibility assessment evaluated the carbon market potential of restoring a portion of the Herring River in Massachusetts

The study considered the market, technical, financial, legal, and organizational aspects of carbon project development, and identified important additional actions to support a decision to pursue a habitat restoration project.

Federal agencies coordinate in support of a Blue Carbon grant program. This program would fund extramural grants to establish baselines for carbon flux and potential for reduced emissions and sequestration for coastal habitat restoration projects. The program could consider a range of investment criteria, including prioritizing projects that may be suitable for climate related financing including resilience bonds, payment for ecosystem services, and market-based credits. This program could be created within a single federal program; however, an interagency program may be more effective given the number of agencies that could participate. The [National Oceanographic Partnership Program](#) (NOPP) is one such program that could not only jointly fund Blue Carbon projects but also leverage funds from non-federal partners. NOPP facilitates partnerships between federal agencies, academia, and industry to advance coastal and ocean science research and education. Since 1997, NOPP has funded over 200 projects, spanning a broad range of topics including environmental monitoring, ocean exploration, earth systems modeling, technology development, and marine resource management.

### **Create policies that incentivize dynamic public-private financing**

Despite the Federal government owning 640 million acres of land-- nearly 30 percent of the U.S.-- it lacks a legal framework to complete carbon development projects (i.e., carbon sequestration). For that reason, these projects occur predominately on private land, where a landowner or non-profit entity retains unambiguous title to the carbon sequestration occurring on the property. As federal agencies look to finance habitat restoration, these agencies are missing an important funding source-- private capital. Prior precedent-setting carbon offset transactions involving the U.S. Fish and Wildlife Service were structured as donations subject to conditions that furthered the interest of the FWS. Such an approach is more complicated to execute than a straightforward lease, transfer, or sale of rights to carbon offsets.

Consider the Seaside Heritage Program sponsored by the Commonwealth of Virginia's Coastal Management Program. The Commonwealth has made significant investments that restored 5,000 acres of eelgrass-- likely the most successful seagrass restoration project in the world. With an eye towards tapping into carbon markets, the Commonwealth, working with partners including Sea Grant, The Nature Conservancy, the Virginia Coastal Policy Clinic, and Restore America's Estuaries took additional steps to conduct a greenhouse gas assessment of the restoration site that verified the overall net carbon captured by the restored eelgrass, and then explored the legal feasibility of securing carbon revenue.

Based on this work, in 2020, the Commonwealth of Virginia authorized its Department of Environmental Quality to participate in carbon markets where submerged aquatic vegetation generates carbon offset credits (Source: [Virginia State Law Portal](#)).

Funding generated will be able to support management needs such as continued monitoring.

Currently there is no federal legal framework to guide the development of projects that may be suitable for market financing.

### **We Recommend:**

Congress explore the legislative changes that are necessary to allow federal agencies to lease carbon rights on federally managed lands to support restoration projects that also provide carbon sequestration. Private parties would therefore be able to partner with the federal government to restore habitat on federal lands, consistent with all applicable laws and the respective agency's management purposes. The non-federal partners would possess the privilege to claim offsets, and the federal agency retains ownership and management responsibility of the area. As the value of carbon credits increases, it may open up the opportunity for non-federal project proponents to share revenue with federal, state, and tribal governments.

### **Leverage market-based mechanisms**

We support avoiding impacts to coastal wetlands and minimizing impacts that cannot be avoided. However, while building infrastructure, environmental impacts are sometimes impracticable to avoid and minimize and the only solution is to offset those impacts by restoring degraded habitat. This practice is a form of “compensatory mitigation,” and involves improving habitat at another location to replace the environmental attributes that are degraded as a result of the project being authorized. A “mitigation bank” is a financial construct where a landowner, company, or other entity restores habitat and then sells credits to permittees in need of replacing the environmental functions that are lost as a consequence of their actions. The entire process from the design of the habitat restoration project to release of credits, is conducted in consultation with the respective regulatory agency(ies). From the perspective of a permittee, purchasing credits from a mitigation bank is typically more cost-effective than designing and implementing its own habitat restoration project, taking roughly half the amount of time to be approved (150 days) than applicants proposing their own mitigation activities (Source: [Environmental Law Reporter](#)).

Wetland and stream compensatory mitigation is the largest and best-established ecosystem market in the United States, transacting an estimated \$3.5 billion in credits in 2016 (Source: [State of Biodiversity Mitigation 2017](#)). There are several regulatory programs that utilize mitigation banks, most notably the Clean Water Act Section 404 program. Under the Army Corps' 2008 Mitigation Rule, a bank sponsor submits a prospectus, instrument, and other relevant documents to the agency for review. An Interagency Review Team, which includes representatives from federal, state, and Tribal government agencies, is assembled to advise the Army Corps District Engineer. Among the aspects considered by the review team is the service area (geographic region where the bank can sell credits), long-term monitoring plan, and the timing of credit release. Mitigation projects must be durable, meaning that the habitat restoration site has protections in place (e.g., a conservation easement) that restrict future development.



There is no guarantee that a mitigation bank quickly sells its credits, meaning that sponsors must wait for credits to sell until they have the means to undertake new habitat restoration projects. For this reason, there is a strong interest in designing multipurpose or “joint banks” that would allow a mitigation bank to sell its credits under multiple regulatory programs. For example, a mitigation bank that restores aquatic habitat where imperiled species also benefit could sell credits to permittees under the Clean Water Act Section 404 program or under the Endangered Species Act.

### **We Recommend:**

Extending this concept to allow project proponents to sell verified carbon credits. Through this process, an approved mitigation bank under the Clean Water Act Section 404 program that restores a salt marsh could also certify the emissions reductions with a third-party verifier. To ensure that the habitat restoration is additional, or not “double-counted,” a credit could be sold either to a Clean Water Act permittee or as a greenhouse gas emissions offset. Either the federal regulatory agency granting those credits, or the delegated state program would need to maintain registers to verify additionality. Both concepts are required by most offset methodologies and would uphold the No Net Loss policy.

### **Conclusion:**

*Coastal wetlands are both beautiful and economically vital, and we now understand that carbon sequestration is another valuable benefit. However, we need more planning to identify which locations provide the greatest opportunity, more technical assistance to aid interested communities, and more flexibility in federal and state laws to facilitate carbon sequestration on public lands. RAE and its partners look forward to continuing its efforts to advance these goals and its vision of productive, resilient coastal wetlands for future generations.*

