Mass Audubon

September 16, 2024

Tori Kim, Assistant Secretary/MEPA Director
Executive Office of Energy and Environmental Affairs
Massachusetts Environmental Policy Act (MEPA) Office
100 Cambridge Street, Suite 900
Boston, MA 02114

Via email: MEPA-regs@mass.gov

Re: **Updates to the *2010 MEPA Greenhouse Gas (GHG) Emissions Policy and Protocol* and the *2021 MEPA Interim Protocol on Climate Change Adaptation and Resiliency***

Dear Assistant Secretary Kim:

Mass Audubon offers the following comments on the straw proposals for updating two important MEPA policies, on GHG emissions and climate adaptation and resiliency effects associated with projects undergoing MEPA review. We appreciate the inclusive process you have undertaken for these updates including public and stakeholder meetings and the public comment process.

We also take this opportunity to suggest a potential broader role for MEPA to support the Commonwealth's ambitious goals for wetlands restoration by improving efficiency and consistency of state permit reviews for those projects.

These comments are offered within the context of the purpose of MEPA, which is to ensure that all state agency actions avoid, minimize and mitigate impacts to the environment, whether directly or through permits or financing of projects undertaken by other parties. MEPA also provides important transparency and opportunities for public input. Avoiding, minimizing, and mitigating the loss of forests and tree canopy and accelerating the pace of wetlands restoration are two key strategies for maximizing the capacity of land to contribute toward the achievement of the Commonwealth's ambitious goals on climate, biodiversity, and Environmental Justice (EJ). The MEPA review process can help ensure that state actions are aligned with those goals and strategies.

Mass Audubon generally supports the proposed straw proposals and offers suggestions for refinements as the general proposals are fleshed out into revised detailed protocols.

GHG Policy and Protocol

The state's climate goals[1] include protecting 30% of the state's land area by 2030 and 40% by 2050; and providing 16,100 acres of new tree cover by 2030 and 64,400 acres by 2050. Updating the MEPA GHG review

[1] www.mass.gov/info-details/recommendations-of-the-climate-chief

protocol to strengthen review of and mitigation for removal of forests and mature trees on all categories of development sites supports these goals.

Thresholds and Applicability:

The 2010 MEPA GHG policy requires analysis of GHG emissions from projects but excludes detailed review of the impacts of land alteration including forest removal, except on a case-by-case basis, for projects clearing >50 acres. Mass Audubon supports the proposed change to lower this threshold and require GHG analysis for any project that exceeds any MEPA threshold for land alteration (i.e. 25 acres of land alteration excluding agriculture or forestry). Discretionary authority should also be retained for review for projects less than 25 acres.

It may be appropriate to exclude from this requirement projects that are redeveloping previously developed sites that currently feature predominantly impervious surfaces, provided mature trees are not being removed. MEPA and other regulations should, wherever feasible, incentivize redevelopment that improves existing conditions by reducing impervious surfaces, increasing tree canopy, incorporating green infrastructure and native landscaping, replacing less efficient buildings with structures meeting current efficiency standards, generating and storing clean energy on previously developed land, and otherwise reducing the GHG impacts and increasing climate resiliency of the site.

The 2010 policy provides discretion to allow large-scale solar projects to opt-out of GHG analysis and review. The updated policy should include GHG review for solar and other energy projects that involve forest removal.

Analysis of the GHG impacts of land clearing should include both immediate loss of carbon storage and foregone ongoing sequestration capacity. This includes energy projects such as transmission rights of way clearing and ongoing management that prevents the growth of trees and construction of solar arrays on forested sites.

Mass Audubon supports the recommendations of the Commission on Energy Infrastructure Siting and Permitting (CEISP) regarding development and application of site suitability standards to avoid and minimize impacts to important land resources while supporting the Commonwealth's clean energy goals.

Carbon Accounting Methodology:

Mass Audubon supports the development and application of a standard methodology for estimating the GHG impacts of forest conversion. Best available science and publicly available data should be employed. We understand that the state's most recent assessment of forest carbon will be published soon, and we expect that will be the definitive source for determining impacts on carbon storage and future sequestration for individual projects. Two additional sources that we recommend MEPA consider are Clark University's report and associated data: Avoided deforestation: A climate mitigation opportunity in New England and New York and The Nature Conservancy's (TNC) Resilient Lands Mapper tool, that utilizes peer-reviewed data to assess the carbon impact of developing specific parcels.

Mitigation:

The existing policy includes an appendix of "Suggested Mitigation Measures." The list for site selection and design could be strengthened in the following ways:

- Add provisions emphasizing avoidance and minimization of removal of existing forest or mature trees. For projects undertaken by state agencies or involving state financial assistance, the consideration of

alternative sites should be particularly stringent. All projects should incorporate the highest standards of green design to minimize removal of existing trees and alteration of grades and soils.

- Mitigation should be provided in relation to all applicable impacts including carbon storage and sequestration, climate resiliency, biodiversity, and environmental justice.
- Mitigation should meaningfully compensate for lost GHG storage and sequestration. While we support many of the actions listed, e.g. reuse of wood in long-lived products and contributions to tree planting programs are not always feasible, and these will not fully mitigate the loss of mature trees or forest cover on a site. Replacing the carbon value of a single mature tree requires planting hundreds of saplings, for example. We support adding land conservation to the mitigation toolbox. The development of a new in-lieu fee program is mentioned as a possibility. This should be considered with caution. While there may be some role for such a system in instances where local land protection is truly infeasible, such a system has significant administrative costs and the benefits tend to be delayed, often for years after the impacts occur. Nationally, the use of mitigation banks and in-lieu fee programs for wetlands mitigation have experienced significant delays, with mitigation banks taking 1,000 days on average for approval.[2]
- Tracking and transparency are important for mitigation. MEPA should develop a dataset of land impacts and mitigation commitments, and a system for ensuring that projects report on their implementation of those commitments. This information should be publicly available.

The existing policy also supports on-site distributed generation in the list of mitigation strategies, which is positive. We recommend adding on-site battery storage within such distributed generation systems, as this is not currently listed in the protocol. (Note that this is different than stand-alone battery storage systems, which should be sited to avoid and minimize impacts to forests and other important natural resources.)

Climate Change Adaptation and Resiliency Protocol

The 2021 MEPA *Interim Protocol on Climate Change Adaptation and Resiliency* requires all projects to submit the output from the Resilient Massachusetts Action Team (RMAT) Climate Resilience Design Standards Tool and to fill out the associated section in the Environmental Notification Form (ENF). This is an important process to ensure that all projects undergoing MEPA review consistently evaluate the climate risks and vulnerabilities associated with the project site and plan accordingly. This policy is intended to provide a mechanism to gather data as well as encourage projects to include resiliency in their designs. Mass Audubon supports updating this protocol and the proposed additional information to be included in ENFs and Environmental Impact Reports (EIRs) for development projects of all types. We also support requiring projects to be designed to not exacerbate climate risks for the life of the project, and to incorporate green infrastructure designs as standard practice.

Segment Analysis of Development vs. Restoration:

We strongly recommend that, going forward, MEPA make a distinction between development and infrastructure projects vs. restoration or nature-based solutions (NBS) projects. The latter will generally ***reduce*** local climate impacts and increase resiliency, often with co-benefits for biodiversity and/or EJ communities.

[2] www.policyinnovation.org/blog/new-research-finds-that-wetland-and-stream-mitigation-banks-take-over-1000-days-to-approve

The analysis of data gathered to date under this protocol found that the majority of projects reviewed were rated high in exposure to climate impacts including sea level rise, storm surge, flooding from extreme precipitation, and extreme heat. However, the data was not segmented between development projects located in high-risk areas vs. restoration or NBS projects like tree planting or park creation that usually reduce these risks and impacts. We recommend that the data be segmented along these lines for future data analysis.

MEPA and Wetlands Restoration Projects:

We also request that projects that are beneficial and reduce local climate risks and impacts such as wetlands restoration and NBS projects receive expedited review through MEPA. We appreciate the modifications to the MEPA regulations that you adopted in 2023 for restoration projects and are interested in exploring further opportunities for improvements in that regard.

Wetland restoration projects encounter significant barriers to implementation due to the extensive permitting required, encompassing up to a dozen different and sometimes duplicative permits (see attached report). The permitting process for these projects can take up to two years and cost tens of thousands of dollars. The Commonwealth has ambitious goals for restoration including removal of hundreds of dams, upgrading of hundreds of culverts, and restoration of thousands of acres of salt marshes, cranberry bogs, riparian borders, shorelines, and floodplains. Since the MEPA process already provides a venue for all applicable agencies to comment on projects requiring state permits, once MEPA review is concluded projects should have a rapid and smooth path through permitting. MEPA submission and review requirements for restoration projects should be practicable and clearly connected to measures necessary to ensure project success and avoidance of unintended negative impacts.

Several other states have successfully reformed their permitting systems to accelerate the pace of wetlands restoration.[3] Mass Audubon encourages the Executive Office of Energy and Environmental Affairs to work with MEPA and state environmental permitting agencies and programs to ease the time and costs of permitting for beneficial restoration projects.

Thank you for this opportunity to provide input. We look forward to continuing to work with you to further integrate the Commonwealth's climate, biodiversity, and EJ goals and plans into the MEPA process.

Sincerely,

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[3] www.policyinnovation.org/publications/funding-nature-not-paperwork-policy-and-programmatic-pathways-to-speed-restoration-permitting

Barriers to Wetlands Restoration and Nature-based Solutions Projects in Massachusetts
Research Memo: Survey and Interview Findings
February 2024

Introduction

Massachusetts is a leader in coastal and inland wetlands restoration[1] and the application of nature-based solutions (NBS)[2] projects. However, practitioners have increasingly recognized that permitting and regulatory systems designed to minimize impacts of development on natural resources can be counterproductive to supporting critical projects that benefit the environment and communities. This issue is made all the more urgent due to sea level rise, increasing storm intensities, and other rapidly increasing impacts of the climate crisis. NBS projects are critically needed to help adapt to these climate impacts, and action is needed now to revitalize remaining salt marshes, wetlands, and other natural resources before they are irreversibly lost. NBS projects also serve as a favorable alternative to hard-engineered structures (like sea walls) that further degrade and harm our natural resource areas.

To better understand these challenges and possible solutions, CLF and Mass Audubon conducted research on regulatory and other barriers to these projects in Massachusetts. Our objective was to identify real and perceived barriers to permitting and constructing wetlands restoration and NBS projects to understand what statutory, regulatory, or policy changes are needed to streamline and accelerate this beneficial work. Between May and August 2023 we collected information in an online survey that received 139 responses, conducted ten practitioner interviews, and gathered additional background research.

This document details our findings from this research effort. It includes each question as it was asked in the survey and a summary of the survey responses, and is supplemented with additional information gathered during the interviews. It is important to note that for many questions in the survey, respondents could select multiple answers, so numbers in the charts will often not add up to the total

[1] We refer to a definition of wetlands restoration that is derived from the state Wetlands Protection Act regulations at 310 CMR 10.05: *Wetlands Ecological Restoration Project means a project whose primary purpose is to restore or otherwise improve the natural capacity of a Wetland Resource Area(s) to protect and sustain the interests identified in M.G.L. c. 131, § 40, when such interests have been degraded or destroyed by anthropogenic influences. The term Wetlands Ecological Restoration Project shall not include projects specifically intended to provide mitigation for the alteration of a Resource Area authorized by other state permits other than projects implemented pursuant to a US Army Corps of Engineers approved in-lien fee program.* This is a process-based definition that focuses on restoring previously destroyed or impaired systems so that they can provide functions with little to no ongoing human intervention.

[2] A working definition of nature-based solutions that we used throughout this research process is: *Nature-based solutions are strategies that rely on ecological processes to achieve climate resilience objectives. They restore, protect, and/or manage natural systems and/or mimic natural processes to address hazards like flooding, erosion, drought, and heat islands in ways that are cost-effective, low maintenance, and multi-beneficial for public health, safety, and well-being.* NBS may include wetlands restoration as well as additional, broader types of projects, including constructed features. We did not provide a definition of NBS in the survey, but did ask respondents if they had one (page 7).

number of respondents. We also include a section summarizing research into how other states have approached these permitting questions. At a high level, our research identified the following challenges:

Regulatory challenges:

- Overall, applying the same requirements to restoration and NBS as to development is counterproductive.
- The definition and interpretation of "fill" and how it is treated under the Wetlands Protection Act (and to a lesser extent Chapter 91) can be either prohibitive or unclear.
- The list of project types that are eligible for the Ecological Restoration Project Order of Conditions is too narrow and should be expanded.
- The Area of Critical Environmental Concern (ACEC) designation often restricts or complicates permitting of projects that would have positive effects.

Other permitting challenges:

- Inconsistency in agency interpretation and application of regulations can lead to confusion and added time and cost in the permitting process.
- Some restoration and NBS projects include innovative techniques that regulators are less familiar with and may be hesitant to permit.
- Grant timelines are often misaligned with permitting timelines, making it difficult to fund this work.
- Multiple permits required for the same restoration work increases time, cost, and complexity for both applicants and regulatory agencies.

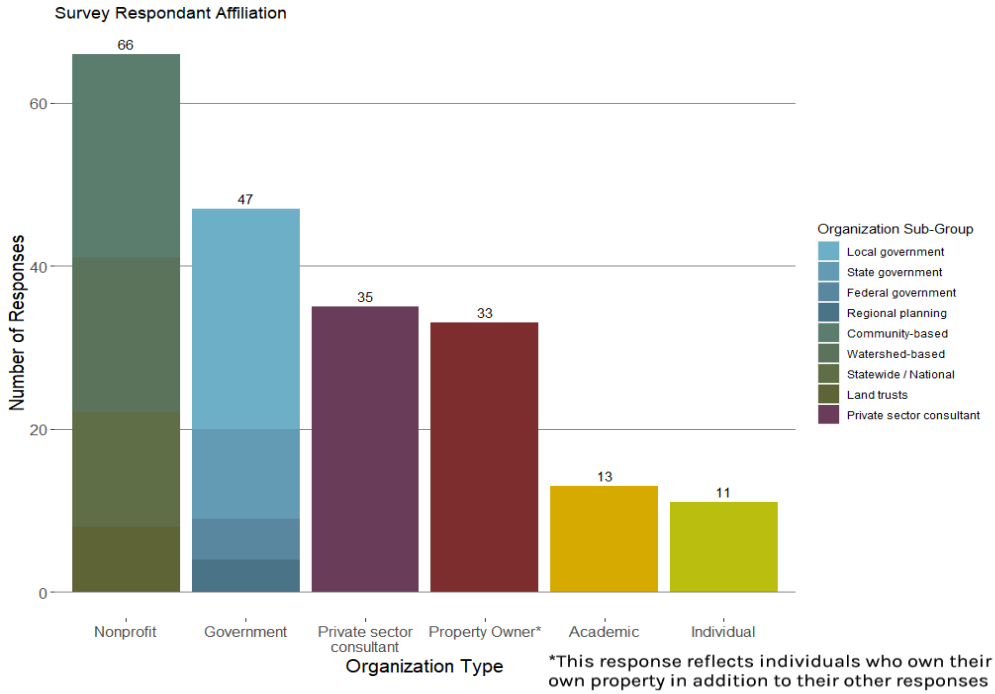
Research Findings

What type of stakeholder do you identify as?

The survey had 139 responses in total, representing 112 individual organizations or agencies.[3] Respondents could select multiple stakeholder types, and many did (Figure 1). We also asked for specific affiliation (i.e. name of organization). We further interviewed 10 stakeholders who represented NGOs, conservation commissions, state and federal agencies, and the private sector.

[3] Some respondents were unaffiliated.

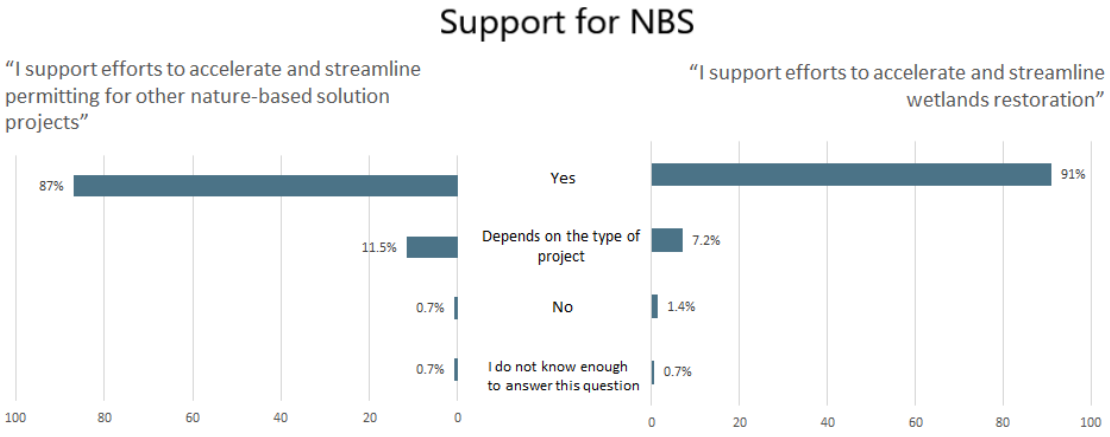
Figure 1.



I support efforts to accelerate and streamline permitting for wetlands restoration/other types of nature-based solutions.

The responses to this question clearly illustrate that NBS and restoration work is widely conducted and supported throughout the state (Figure 2). The NBS version of the question had slightly more variation in responses, which likely reflects the lack of clear understanding about what constitutes NBS work. See page 8 for further discussion of defining NBS.

Figure 2.



What kind of nature-based solution projects do you work on or support?
Survey respondents were asked what type of projects they work on or generally support, and could select multiple answers. It is useful to group projects by type as shown in Figures 3-6 below. Wetlands restoration, both coastal/salt marsh and inland, ranked highly as common answers. Vegetation management, particularly invasive plant removal, was the most common response overall. The responses also included projects that are not common right now due to regulatory restrictions but that nonetheless ranked highly and therefore seem to reflect a need and desire for this kind of work. For example, despite being the second most common type of coastal restoration project identified, living shorelines can be difficult to permit because of the complexity of using fill under the Wetlands Protection Act, Section 401 and 404 permits.

Figure 3.

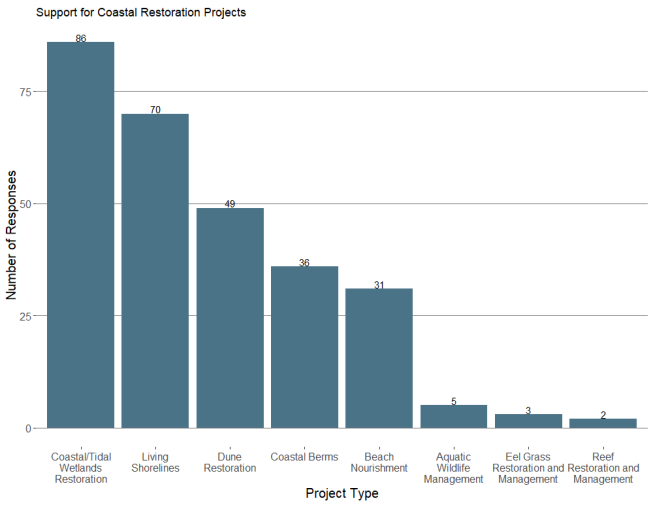


Figure 4.

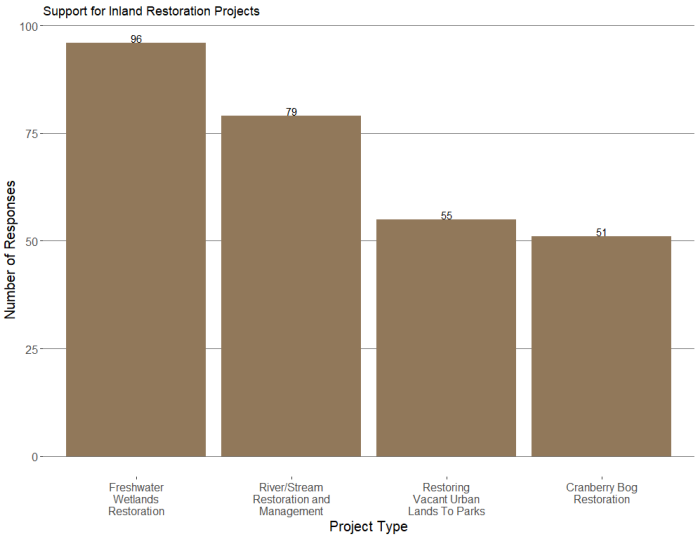


Figure 5.

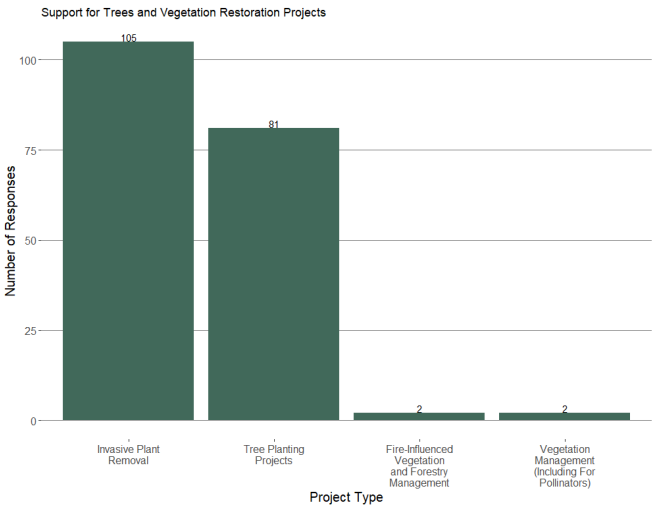
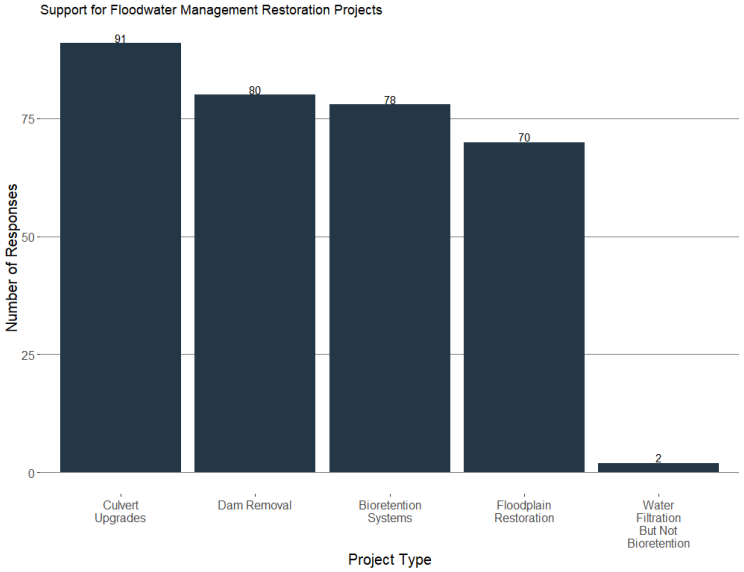


Figure 6.



Interview respondents further discussed the following project types and techniques:

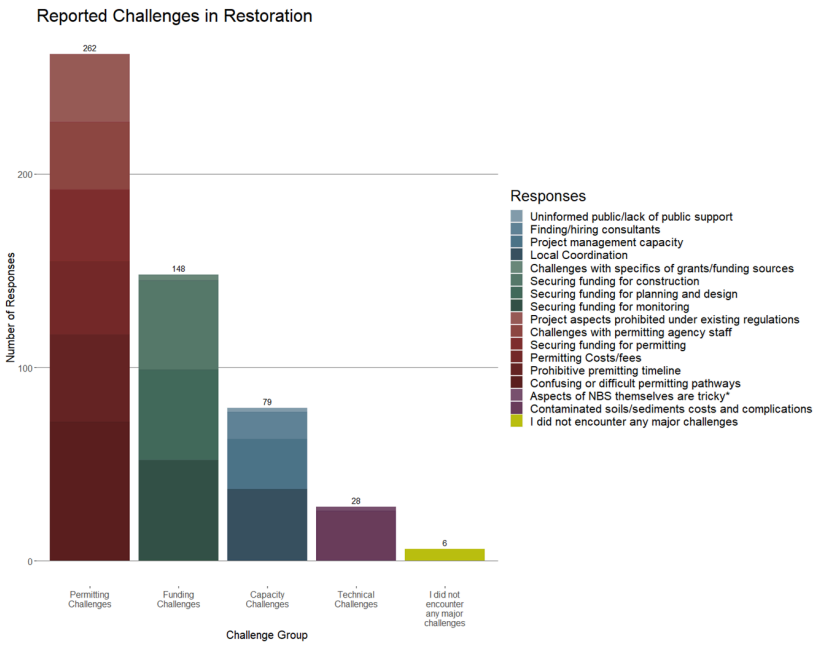
- Salt marsh restoration
- Dam removal
- Vegetation management
- Erosion control (at freshwater ponds)
- Cranberry bogs
- Calcareous fens
- Living levies
- Floodplain restoration
- Runneling, micro-runneling
- Ditch remediation
- Micro-topography
- Chop-and-drop
- Thin layer placement/deposition
- Herbicides

In the interviews, we also asked what kind of NBS projects respondents saw as top priorities or the most important kinds of projects to advance quickly or scale up. Most of the interviewees (6 out of 10) specifically identified salt marsh restoration as a type of project that is most important to advance, given the Metonic cycle and the short window of opportunity to repair damage and head off further destruction. Dam removal and cranberry bogs were other common project types cited by interviewees, and many interviewees expressed a need to focus on inland NBS and restoration projects as well as coastal. Another common response given by interviewees was the need to scale up newer or less common techniques that are innovative and cost-effective. Some examples specifically referenced by interviewees include “chop-and-drop” for river restoration – allowing trees to fall into rivers to direct the flow of water and help build up sediment – and runneling and ditch remediation for salt marsh restoration.

If you have experience working on one or more nature-based solution projects, what were the challenges you encountered? Check all that apply.

In the survey, more than half of the respondents identified “confusing or difficult permitting pathways” as a challenge; this was the most common answer and was also reflected in the following open-ended question where we asked respondents what their single biggest challenge was.

Over a third of respondents identified securing funding for various project stages as a challenge. This too was highlighted in the response to the open-ended question, as exemplified in one response which read *“Possibly the biggest challenge is funding - especially if it needs to be secured from multiple sources which may have their own timelines and restrictions (eg. cannot use*



mitigation funds, requires X% match, what format that match can be).”

Other themes that appeared in the responses to this question are around coordinating between agencies, challenges at the local level (i.e. resource and capacity challenges, challenges working with conservation commissions), and needing to educate both the general public and regulators.

The interviews corroborated these survey findings. We asked respondents to walk us through the permitting process for specific projects, which highlighted challenges related to the length of time and funding for projects. Based on our interview findings, it can take two or more years just to receive all necessary permits for a project, and there is significant variation in how long it can take even similar projects to move through the permitting process. It is rarely clear when starting a project just how long it will take, and this can lead to significant funding challenges since these projects are often funded by grants that must be spent down by a certain time.

Many interviewees also discussed challenges related to lack of coordination and consistency on the part of agencies. For example, multiple respondents referenced having a project successfully move through permitting in one part of the state, but having a similar project denied by the DEP office in another region of the state due to different interpretation of the regulations (most often the Wetlands Protection Act and Chapter 91). For example:

- *“I know that there is variability within the state among the different regions and how things are approached and that can be a significant factor, so there's not always consensus between the various DEP regions on approaches. Even among the section chiefs in the northeast and southeast regions…they don't always apply the same standards the same way.”*
- *“Chapter 91 is the same way, where Western region DEP interprets navigable waters very differently.”*
- *“I've also noticed that in terms of…understanding the goals of restoration and wanting to to make restoration projects go forward, it seems like the on the ground staff like the circuit riders in the regions of DEP, are very different in terms of how they approach that than the top folks at DEP are.”*
- *“Each DEP District is a little bit different and the real difficulty that we're finding…is each Conservation Commission is different.”*

Interview respondents also highlighted the fact that some NBS and restoration techniques (i.e. ditch remediation) may be innovative, less well-established approaches, and that these are often difficult to permit, due to regulators being unfamiliar with the work.

What is the single biggest challenge you face in working on nature-based solutions projects?
In an effort to hone in on the most pressing challenges, the survey asked respondents in an open-ended question about the single biggest challenge they face in working on NBS and restoration projects. Most answers discussed permitting, funding, and regulations; the words “permitting” or “permit” were used 28 times, “regulations” or “regulatory” 17 times, and words like "funding,” “fund,” and “cost” were also used 17 times.

There was also an evident theme around a lack of education and awareness of NBS, and how this related to challenges. Some answers to the "single biggest challenge" question that highlighted this theme include:

- *"…public perception regarding restoration (negative views of seeing landscapes change, even if the change is an ecological improvement)"*
- *"Permitting authorities don't know much about NBS, and are more likely to say no to something they haven't seen (i.e., some reviewers treat NBS, Green Infrastructure, and restorative projects as if they are development to be mitigated). Seems like the "luck of the draw" with respect to who is reviewing and what pre-knowledge they have of nature-based solutions."*
- *"Not enough technical expertise in nonprofits and small towns who are most often the groups able to drive decision making"*

If you have experience working on or supporting one or more nature-based solution projects, which of the following regulatory structures have posed a barrier? If you indicated that any specific regulatory structure above posed a barrier to your project, please provide us with more information about the challenges you encountered.

In the survey, the Wetlands Protection Act was identified as the regulatory framework that poses the most challenges to proponents. Chapter 91 was the second most commonly identified, closely followed by local bylaws/ordinances. MEPA and federal regulations were also identified as challenges.

Table 1. Regulatory frameworks ranked by which respondents found most challenging.

Type	Count	Percent
Wetlands Protection Act	56	50.0%
Chapter 91/tidelands	37	33.0%
Local bylaws/ordinances	36	32.1%
Massachusetts Environmental Policy Act (MEPA)	32	28.6%
Federal laws/regulations (including Army Corp permits)	32	28.6%
Areas of Critical Environmental Concern (ACEC)	22	19.6%
Massachusetts Endangered Species Act	17	15.2%
Historic preservation requirements	17	15.2%
Designated Port Area (DPA) regulations	5	4.5%
401 Water Quality Certification	4	3.6%
Article 97	2	1.8%
Pesticides	1	0.9%
NHESP (Natural Heritage and Endangered Species Program)	1	0.9%

We asked a different version of this question in the interviews ("Can you talk about what kind of projects, in your experience, are tricky/onerous to permit?") to hone in on more specific challenges. Among interviewees, the most common responses were salt marsh projects, work in ACECs, and dam removals. Respondents said that any project involving a salt marsh or within an ACEC was likely to be challenging to permit because of Wetlands Protection Act restrictions on activity in these areas. Dam

removals were also mentioned, because of the complexity and number of permits involved, particularly if contaminated sediment is present. Further challenges identified in the interviews are discussed below, organized by regulatory framework.

401 Water Quality Certification

- The 401 Water Quality Certification was identified by a few people as a process that was particularly unclear. There was confusion as to what information needed to be submitted, and also inconsistency and changes in agency interpretation due to staff turnover ("There's been a changeover in staff recently [and] we've really encountered some challenges recently in the 401 process that we thought were put to bed.")

Areas of Critical Environmental Concern (ACEC)s

- Multiple interviewees described challenges with working on projects in ACECs. The challenge seems to primarily be with the Wetlands Protection Act regulations on activities within ACECs, rather than with the ACEC regulations (301 CMR 12), and proponents found that nearly all activity in ACECs is effectively prohibited, even when the purpose is restoration or protection of the resource.

Chapter 91

- A major barrier identified relating to Chapter 91 was how fill is defined and treated. "Fill" is defined in Chapter 91 as "any unconsolidated material that is confined or expected to remain in place in a waterway, except for: material placed by natural processes not caused by the owner or a predecessor in interest; material placed on a beach for beach nourishment purposes; and dredged material placed below the low water mark for purposes of subaqueous disposal." This has been interpreted by DEP, for example, to include even placing salt marsh hay, from the same marsh, into historically dug ditches that were never permitted nor licensed, in order to promote natural healing of the marsh.
- One interviewee said that DEP interpretation of Chapter 91 regulations can vary significantly by region. One specific example given was related to the Chapter 91 definition of "navigable" regarding an exception from Chapter 91 jurisdiction, which excludes "any portion of any such river or stream which is not normally navigable during any season, by any vessel including canoe, kayak, raft, or rowboat."

Wetlands Protection Act

- The definition of fill under the WPA is very broad, it simply reads "Fill means to deposit any material so as to raise an elevation, either temporarily or permanently." A number of interviewees identified the WPA's treatment of fill as a challenge, as it imposes overly onerous permitting requirements on a lot of restoration techniques, such as ditch remediation and microtopography.
- There are only six types of projects that are eligible for a Restoration Order of Conditions under the Ecological Restoration Project criteria. These are dam removal, freshwater stream crossing repair and replacement projects, stream daylighting, tidal restoration, rare species habitat restoration, and restoring fish passageways. A common theme throughout the interviews was that many of the project types that practitioners are working on, and feel are important to

advance quickly or scale up, are not on this list. Specific examples of projects that should be added are salt marsh restoration, river restoration, and cranberry bog restoration.
- As stated above, WPA restrictions on activities relating to ACECs were identified as a current challenge.

We also asked interviewees *"If you could design a wetlands restoration permitting system with a blank slate, what would you suggest that would provide efficiency without reducing environmental protection? Would your suggestions differ if it was a different type of nature-based solution, like a living shoreline?"* In general, there was a common thread among responses that the current regulatory frameworks do need at least some targeted revisions in order to best support restoration and nature-based solutions work. By and large, however, broader frustrations seemed to be with inconsistent agency interpretation of the regulations; lack of availability of clear and consistent early consultation and guidance; and confusion and difficulty with navigating the permitting process. For example, some interviewees emphasized the need for partnership and improved communication and engagement with regulatory agencies, while others suggested adaptations to existing frameworks such as MEPA. Some selected quotes include:

- *"It would be a single unified application … where a decision is issued in three months, or else it's presumptive approval. I think I would use MEPA for the process and just expand it instead of being a permit coordination, they could be the permitting system you already have."*
- *"Quite frankly, it's not just simply tweaking how the regulatory world operates and the applicants work, but more literally a true partnership."*
- *"We need a new model that says we're gonna work together to solve the problem, pool our land pool, our resources, our knowledge."*
- *"The permitting system, the regulatory system needs to allow innovation to proceed, but not just give it a blank check."*

Some key elements that were mentioned were: better adherence to turnaround times; having a review system that was flexible and could accommodate new techniques and project types ("plans should be mostly based on goals and objectives, not strict engineering/design plans"); and having reviewers who were well-versed and experienced in the topics at hand ("having people that are … a little bit more immersed in this world and have an understanding of what needs to happen").

Does your organization have a definition for "nature-based solution" projects and if so what is it?
Very few of the survey respondents provided definitions, and nearly all said their agency or organization does not have a formal or official definition. Some listed project examples but didn't provide a full definition. Those who did provide some form of definition typically had very broad answers, and some acknowledged that their own definitions often changed.

This is a particular challenge for this work moving forward. A working definition that Mass Audubon and CLF have been using is: *"Nature-based solutions are strategies that rely on ecological processes to achieve climate resilience objectives. They restore, protect, and/or manage natural systems and/or mimic natural processes to address hazards like flooding, erosion, drought, and heat islands in ways*

that are cost-effective, low maintenance, and multi-beneficial for public health, safety, and well-being."[4] A specific and encompassing definition of nature-based solutions is needed so that regulatory frameworks like the Wetlands Protection Act and others can be sufficiently protective of the environment while efficiently supporting the expansion of beneficial NBS and restoration work. The existing regulatory definition of wetlands Ecological Restoration projects, focused on restoring damaged or destroyed wetlands for natural functionality, remains valid.

Best practices from other states

In addition to the survey and interviews, we also conducted research into how other states are approaching permitting for NBS and restoration projects. There is an effort underway at the moment to examine this very question at a national level, which is being led by the Environmental Policy Innovation Center (EPIC). EPIC identified five main pathways through which states have been addressing this question: 1) through executive order or state legislation, 2) through categorical exclusion or streamlined permits that allow one analysis to cover all subsequent activities of a project, 3) a programmatic biological option which "streamlines permits for multiple similar actions for a region or for a particular species," 4) the use of nationwide or regional permits such as Army Corps of Engineer general permits being used to streamline permitting for applicable projects under Section 404 of the Clean Water Act, and 5) creating a dedicated or rapid response permit review team.[5] This approach to "Funding Nature not Paperwork" offers many benefits both on the ground and for efficiencies for both regulators and restoration practitioners.

Conclusion

Our findings from this research fit into a few main themes. In the short term, improved coordination is needed to resolve inconsistencies in agency interpretation and application of regulations, provide certainty and clarity, prioritize the use of NBS over hard engineering structures, and reduce time and cost in the permitting process. Agencies should work together and with external experts to streamline the permit application process and eliminate redundancies. In the longer term, agencies should create new or expanded regulatory pathways to best manage NBS and restoration work. This could include support (with appropriate oversight) for new, innovative techniques and the use of general permits for certain eligible NBS projects.

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[4] There is an existing definition of "nature-based solutions" in MGL Chapter 21N which is "*strategies that conserve, create, restore and employ natural resources to enhance climate adaptation, resilience and mitigation to mimic natural processes or work in tandem with man-made engineering approaches to address natural hazards like flooding, erosion, drought and heat islands and to maintain healthy natural cycles to sequester and maintain carbon and other greenhouse gases."* A key difference is that this definition includes engineered structures, whereas we would prefer to focus permit streamlining on techniques that function using natural systems of soils and plants. We do acknowledge that some require engineering for initial design, e.g. coastal vegetated berms or nearshore sills to protect living shorelines from waves.

[5] Environmental Policy Innovation Center, "Funding Nature Not Paperwork - Policy and Programmatic Pathways to Speed Restoration Permitting," available at: https://www.policyinnovation.org/publications/funding-nature-not-paperwork-policy-and-programmatic-pathways-to-speed-restoration-permitting

Throughout this research process, we heard repeatedly from stakeholders that improving the regulatory landscape for NBS and restoration projects, and better supporting this important work, was extremely important to them. The number of survey responses and level of engagement we encountered throughout this work indicates a consensus around just how critical this work is. It is also a matter of urgency given the increasing severity of climate impacts and the brief window of opportunity that exists to protect existing natural resources and strengthen the resiliency of the Commonwealth.

A bold new approach is needed to achieve efficiencies and scale up the work to meet the scope of the needs.[6] This is essential both to fulfill the goals of the ResilientMass Plan and the Executive Order 168 on Biodiversity, and to best prepare the Commonwealth for the impacts of climate change. Incremental improvements could be made in specific programs and specific regulatory provisions through improved consultation opportunities, guidance documents, and regulatory refinements. We recommend that the Commonwealth consider the implications of the findings of this survey and the results being achieved in other states, and consider a high level, comprehensive approach to streamlining wetlands restoration and NBS, coordinated through the Executive Office of Energy and Environmental Affairs.

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[6] 16,000 acres of salt marsh needing restoration; 3,000 dams - many obsolete and in poor repair; 25,000 culverts - with a high percentage not adequate for current storm flows and blocking fish passage; thousands of acres of cranberry bogs no longer in production; 1,500 miles of coastline and thousands of river miles needing natural resiliency features.