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Review of NY & CT Agency Guidance for LIS Eelgrass Seed Transport: Understanding a Bi-State Approach to Eelgrass Restoration

I. INTRODUCTION

a. Background and the Need to Understand Agency Guidance

Seagrasses provide a unique and important habitat for aquatic species and are a foundation for food chains in coastal waters. Eelgrass is one type of seagrass and is considered especially important as a nursery area for many fish and shellfish, providing food, shelter, and protection from predators.[1] Eelgrass can also buffer the impacts of ocean acidification through their photosynthetic activity and can sequester and bury carbon.[2] They also stabilize sediments, take up nutrients, and improve water clarity. While eelgrass protects shorelines from coastal erosion, these habitats are themselves actively threatened by climate change. Rising water temperatures stress eelgrass growth rates, shift its distribution, and change its patterns of sexual reproduction. In addition, these critical habitats are experiencing losses due to nutrient pollution, dredging, and disease.[3]

The Long Island Sound Study (LISS) Comprehensive Conservation Management Plan recognizes the need for better management, restoration and protection of eelgrass habitat. Since 2002, eelgrass meadows have been intermittently monitored through U.S. Fish and Wildlife Service aerial surveys. The most recent aerial survey in 2017 showed a decline of nearly 25% in eelgrass extent since 2012 (from 1,893 to 1,465 acres) with eelgrass now mostly limited to areas in eastern Long Island Sound (LIS) and Fishers Island Sound. In response, the LISS convened a group of local experts in 2022 to develop a *Long Island Sound Eelgrass Management and Restoration Strategy*.[4] This document provides guidance for short- and long-term actions that should be taken to manage and restore LIS eelgrass meadows and acts as a resource for other estuaries in the region facing similar issues.

The Long Island Sound (LIS) Eelgrass Collaborative formed in 2023 as a bi-state initiative between Connecticut and New York to implement elements of this Strategy. Funded by LISS and facilitated by the Connecticut National Estuarine Research Reserve (CT NERR), the Collaborative convenes regular meetings of managers and restoration practitioners to help achieve the LISS goal to restore and maintain an additional 2,000 acres of eelgrass by 2035.[5] This target goal may be achieved through a combination of water quality improvements, protection of existing eelgrass beds, and strategic

[1] Edward B. Barbier et al., "The Value of Estuarine and Coastal Ecosystem Services," *Ecological Monographs* 81, no. 2 (May 1, 2011): 169–93, https://doi.org/10.1890/10-1510.1.
[2] James W. Fourqurean et al., "Seagrass Ecosystems as a Globally Significant Carbon Stock," *Nature Geoscience* 5, no. 7 (July 1, 2012): 505–9, https://doi.org/10.1038/ngeo1477; Stephen R. Pacella et al., "Seagrass Habitat Metabolism Increases Short-Term Extremes and Long-Term Offset of CO2 under Future Ocean Acidification," *Proceedings of the National Academy of Sciences* 115, no. 15 (April 10, 2018): 3870–75, https://doi.org/10.1073/pnas.1703445115.
[3] New York State Seagrass Task Force, "Final Report of the New York State Seagrass Task Force: Recommendations to the New York State Governor and Legislature," December 2009.
[4] The Long Island Sound Study et al., "Long Island Sound Eelgrass Management and Restoration Strategy" Version 1.0 (2022): 60.
[5] The Long Island Sound Study et al., 2022

restoration approaches. New survey products being released in 2025 will help identify areas with additional eelgrass decline and others where re-growth and expansion has occurred (e.g. waters in Groton and Stonington, CT where eelgrass area expanded in 2023-24 compared to 2017 survey results). Since restoration efforts have struggled to offset losses in eelgrass habitat, new approaches will likely need to break from the status quo and be informed by population genetics and climate models in an effort to expedite a resilient LIS eelgrass population.[6]

Eelgrass seed based restoration is becoming a more strategically feasible approach to broader restoration efforts aimed at improving the resiliency of existing LIS populations. However under certain circumstances, state agency staff express caution regarding the movement of eelgrass seed from one region to another. Without an existing regulatory or formal policy framework for interstate seed transport, staff from the CT NERR developed this white paper on behalf of the LIS Eelgrass Collaborative to better understand existing New York and Connecticut agency guidance for eelgrass seed based restoration. Primary audiences include both agency staff and restoration practitioners to: 1) collect information on this emerging topic with a bi-state approach, and 2) clarify agency guidance and the need for best management practices.

II. WHITE PAPER RESEARCH APPROACH

To understand the regulatory landscape on this topic, CT NERR staff began by compiling and reviewing existing legislation and regulations pertaining to eelgrass habitat in Connecticut and New York.[7] While Connecticut and New York both have statues related to the protection and restoration of eelgrass beds, there are no existing regulations that pertain specifically to eelgrass restoration involving seed transport both within and from outside LIS.

Next, other types of interstate biological material (e.g. kelp spores and bivalve seed) transport processes were identified. Since topics most akin to eelgrass seed transport are kelp and bivalve seed movement, practitioners with expertise on these two topics were consulted about the permitting process and agency guidance. However, it became clear that there is a crucial difference between kelp/bivalves and eelgrass seed transport; kelp and bivalves are part of the aquaculture industry. Meaning, the legal authority for regulation of kelp and bivalves derives from their commercial use in food and other products.[8] Eelgrass seed collection and movement is purely for habitat restoration purposes and has no cultivation or use in agricultural practices or in commercial/food industries. Thus, while the policy and regulations surrounding kelp and bivalve seed transport provide valuable insight about risk, they cannot be used as a basis for eelgrass seed transport guidance.

To aid in understanding this topic further from a bi-state perspective, CT NERR staff collected information and feedback through phone calls and email exchanges with restoration practitioners and agency staff in Divisions and Bureaus in both CT and NY (see Acknowledgement section for a full list of staff consulted). While agency staff are supportive of restoration projects and practitioners do not have an

[6] Starke, Adam, TNC, Personal Communication, December 3, 2024.
[7] Emily Watling and Katie Lund, "Federal Laws, Regulations and Resources as Related to LIS Eelgrass Habitat," April 14, 2024.
[8] Getchis, Tessa, CT Sea Grant, Personal Communication, June 25, 2024; Bailey, Dave, GreenWave, Personal Communication, June 25, 2024.

appetite for new regulation surrounding eelgrass seed transport, it is clear that a common understanding of agency project review protocols and guidance is needed. A summary from this correspondence is reflected below.

III. CURRENT GUIDANCE FOR INTERSTATE EELGRASS SEED TRANSPORT AND RESTORATION

There are state statutes in Connecticut and New York that address the protection (i.e., mooring area and shellfish regulations) and the restoration of eelgrass beds. For example: the Commissioner of the Connecticut Department of Energy and Environmental Protection (CT DEEP) is authorized to promulgate regulations to protect and *restore* eelgrass beds under Conn. Gen. Stat. § 26-316.[9] The 2012 Seagrass Protection Act[10] gives the New York State Department of Environmental Conservation (NYSDEC) statutory authority to manage seagrass restoration efforts through a Seagrass Coordinator. However, while statutory authority does exist in Connecticut and New York, no regulations, policy, or guidance have yet been written for seed based restoration practices, except when the use of structures is involved (e.g. shell deployment or use of buoys). For the purposes of this white paper, a summary of agency guidance for restoration practitioners is described in in the following sections: (1) seed based restoration with the use of structure and (2) seed based restoration without the use of structure involving transport of seed both inside (between CT and NY) and from outside Long Island Sound (from the south side of Long Island).

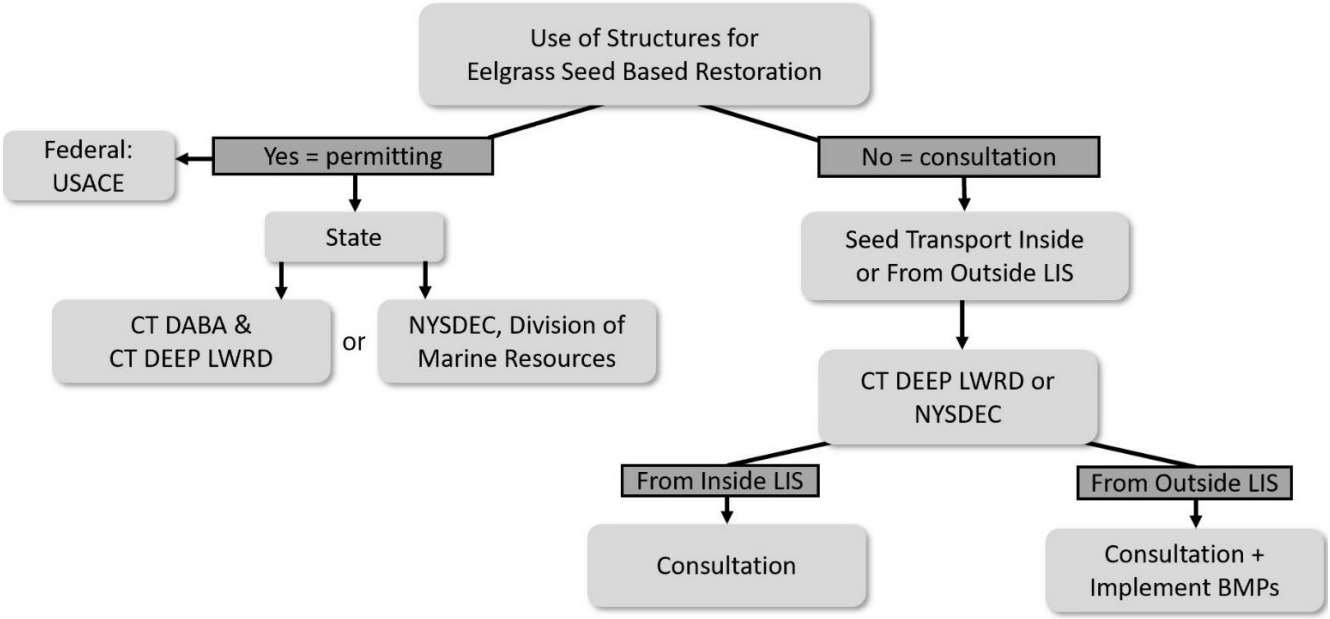

Figure 1. Flow chart depicting guidance for different seed based restoration practices

[9] Connecticut General Statutes, "Eelgrass Beds," Title 2-Fisheries and Game; Chapter 495-Endangered Species § 26-316 (2023).
[10] New York State Senate Environmental Conservation Law, "New York Seagrass Protection Act," Title 7; Chapter 43-B, Article 13 § 13-0701 to 13-0705 (2012).

a. Eelgrass Seed Based Restoration Using Structures

There is a clear regulatory process in place for eelgrass seed based restoration using structures. Use of structures requires permits from the U.S. Army Corps of Engineers (USACE) and respective state agencies to ensure the restoration project complies with the New York Coastal Management Program and the Connecticut Coastal Management Act. Two innovative eelgrass restoration techniques that use structures include: (1) gluing eelgrass seeds to bivalve shells, and (2) using buoy deployed systems.

Restoration using bivalves involves gluing eelgrass seed to clams, which triggers the permitting process of the CT Department of Agriculture, Bureau of Aquaculture (CT DABA) and NY State Department of Environmental Conservation (NYSDEC), Division of Marine Resources Shellfish Management Unit (Figure 1). For this restoration activity, practitioners glue eelgrass seeds to bivalves and release the shellfish into a restoration area. The shellfish then burrow into the sediment and the eelgrass seeds are effectively "planted".[11] CT DABA and NYSDEC have authority, in their respective states, over these restoration processes due to the use of shellfish as structures because of the overlap in aquaculture practices, which require permits.[12]

- In CT, restoration practitioners first contact CT DABA, which reviews existing lease information to determine that a project will be sited only in areas closed to shellfish harvest.[13] Since CT DABA does not have authority over the eelgrass restoration itself (only the use of bivalves in the restoration process) their agency staff consult with CT DEEP Land and Water Resource Division (LWRD) regarding the restoration elements of a project.
- In New York, any use of shellfish in a restoration context, including as a structure to glue eelgrass seeds for planting, requires the practitioner to first obtain a DEC License to Collect or Possess. When DEC's Shellfish Management Unit is contacted about permitting, they will consult with DEC's Division of Marine Resources Bureau of Marine Habitat Protection's Seagrass Coordinator to ensure they are aware and also have the opportunity to review and comment on the project.[14]

The Buoy Deployed Seeding ("BuDS") technique is another practice that has been used for decades and involves structure that is used by practitioners working to restore LIS eelgrass habitat. This method uses pearl nets filled with seed-containing "spathes", which are attached to a buoy anchored in the substrate so the net sways with the tides. [15] As the seeds develop, they drop to the seafloor and plant

[11] Vasiluth, Robert, SAVE Environmental, Personal Communication, June 27, 2024.
[12] Connecticut General Assembly, "Aquaculture Development: Definitions," Title 22-Agriculture. Domestic Animals; Chapter 422-Department of Agriculture § 22-11c (2011).
[13] Lucey, Bill, Save the Sound, Personal Communication, November 19, 2024.
[14] Carden, Wade, NYSDEC, Personal Communication, November 22, 2024.
[15] Christopher Pickerell, Stephen Schott, and Sandy Wyllie-Echeverria, "Buoy-Deployed Seeding: Demonstration of a New Eelgrass (Zostera Marina L.) Planting Method," *Ecological Engineering* 25 (August 1, 2005): 127–36, https://doi.org/10.1016/j.ecoleng.2005.03.005.

naturally as they mature.[16] Projects using buoy structures also require permits from respective state agencies (Figure 1).

- CT DEEP's LWRD, through the Connecticut Coastal Management Act and the structures dredging and fill statutes, regulates this type of restoration technique.[17] If structures (bottom or floating gear) are being placed in CT waters, then an application for a regulatory marker[18] is also needed.[19]
- In New York, the DEC's Division of Environmental Permits requires review and possible permitting if the project is sited in tidal wetlands jurisdiction (<6'MLW) and approves applications for floating objects, including buoys deployed for eelgrass restoration.[20] DEC's Seagrass Coordinator should also be notified and review the permit application.

From a federal permitting perspective, restoration activities involving structure would also be regulated by the U.S. Army Corps of Engineers (USACE) as "work" (when eelgrass seed is glued to shellfish) or with the use of "structures" (BuDS) under Section 10 of the Rivers & Harbors Act and would be subject to the limitations under CT General Permit 10(b) and the NY Nationwide Permit as either self-verification (SV) or under pre-construction notification (PCN).[21] For example:

- With the practice of gluing eelgrass seed to shellfish, USACE would consider the activity under SV. The activity allowance is 100 ft^2 in existing areas containing SAV, assuming dispersing or placement of individual shellfish throughout a planting area would be well under 100 ft^2 of impact to bottom (as the area of impact will be considered from the shellfish footprint on the benthos and not the entire extent of area in which it is being dispersed). For areas with no SAV currently present, the limit would be a ½ acre of activity.
- Applicants using the BuDs restoration practice should consult their District Corps staff to see if a PCN may be required. The USACE project manager can then coordinate as needed with NOAA NMFS on Essential Fish Habitat for this type of restoration activity. For example, a documented agreement can be made with NOAA that a certain # of buoys may be deployed for eelgrass restoration under SV, provided the buoy line and anchor is not situated within a "functional" (i.e., dense or moderate coverage) eelgrass area.

[16] Anna Ikarashi, "Planting Meadows in the Ocean: Technique May Help Restore Disappearing Seagrass Beds," Mongabay Environmental News, August 11, 2014, https://news.mongabay.com/2014/08/planting-meadows-in-the-ocean-technique-may-help-restore-disappearing-seagrass-beds/.
[17] "Land and Water Resource Division LWRD Applications," CT.gov - Connecticut's Official State Website, accessed September 10, 2024, https://portal.ct.gov/deep/permits-and-licenses/land-and-water-resource-division-lwrd-applications.
[18] CT DEEP Bureau of Outdoor Recreational, Boating Division, "Permit Application for Regulatory or Navigation Marker Permit" (CT DEEP Bureau of Outdoor Recreational, Boating Division, October 30, 2024), https://portal.ct.gov/deep/boating/boating-permits/regulatory-marker-permit.
[19] Cooley, Yolanda, CT DEEP, Personal Communication, November 22, 2024.
[20] "Seagrass Management - NYSDEC," August 6, 2024, https://dec.ny.gov/nature/waterbodies/oceans-estuaries/seagrass-management.
[21] Rose, Cori, USACE, Personal Communication, December 11, 2024.

b. Eelgrass Seed Based Restoration Within Long Island Sound

The method of free-planting eelgrass seeds has been done for several decades, with demonstrated success on the eastern shore of Virginia and off Long Island, NY (e.g. Stony Brook University in Shinnecock Bay and Cornell Cooperative Extension in Peconic Bay).[22] However without the use of structures, no formal regulatory framework or permitting process exists for eelgrass seed based restoration projects that involve collecting seeds from donor meadow vegetation or dispersing and moving seeds both within and from outside LIS. In these cases, informal consultation with state agency staff at CT DEEP and NYSDEC is required. Furthermore, restoration involving seed transport entirely *within LIS* **only requires consultation**, while moving seed from *outside LIS* requires the need for **both consultation and implementation of BMPs**.

Both agency staff and researchers consulted for this white paper indicated that seed movement between the two states within the connected ecosystem of Long Island Sound is of less concern. This is because seeds from within the Sound are thought to be "native" to the estuary, whether they come from the NY side or the CT side of the Sound. Movement of seed happens through natural processes by currents or wildlife dispersal. For example, seed from Fisher's Island, NY moves through these natural processes to adjacent CT waters. Also, birds eat eelgrass seeds that get naturally dispersed in migration.

Furthermore, a 2012 study by Fred Short *et.al* determined eelgrass populations within LIS are genetically similar to each other (Figure 2).[23] These results justify both CT and NY agency determination of minimal harm when moving eelgrass seeds within the controlled area of Long Island Sound. This is also consistent with how kelp and bivalve seed movement within the Sound is considered and allowed by state agencies.[24] Continued research on eelgrass genetics is needed to determine how populations may change through time. Currently, the National Park Service's Northeast Coastal and Barrier Network and partners are leading assisted gene flow research. Genetic samples being taken from east coast National Seashores will help understand how new restoration practices encourage a reverse in declining seagrass meadows.[25]

[22] Heck, Steve, Stony Brook University, Personal Communication, July 2, 2024; RJ Orth et al., "Seed Addition Facilitates Eelgrass Recovery in a Coastal Bay System," *Marine Ecology Progress Series* 448 (2012): 177–95.
[23] Frederick Short et al., "The Eelgrass Resource of Southern New England and New York: Science in Support of Management and Restoration Success," Progress Report Narative Format (NOAA Restoration Center Community-based Restoration Program, August 31, 2012), https://www.conservationgateway.org/ConservationPractices/Marine/HabitatProtectionandRestoration/Pages/Southern-New-England-and-New-York-Seagrass-Research-Initiative.aspx.
[24] Getchis, Tessa, CT Sea Grant, Personal Communication; Bailey, Dave, GreenWave, Personal Communication.
[25] National Park Service, "Bridging Genetic Diversity: Seagrass Resilience and Restoration," Governmental, National Park Service, U.S. Department of the Interior, January 3, 2025, https://www.nps.gov/im/ncbn/bridging-genetic-diversity-seagrass-resilience-and-restoration.htm.

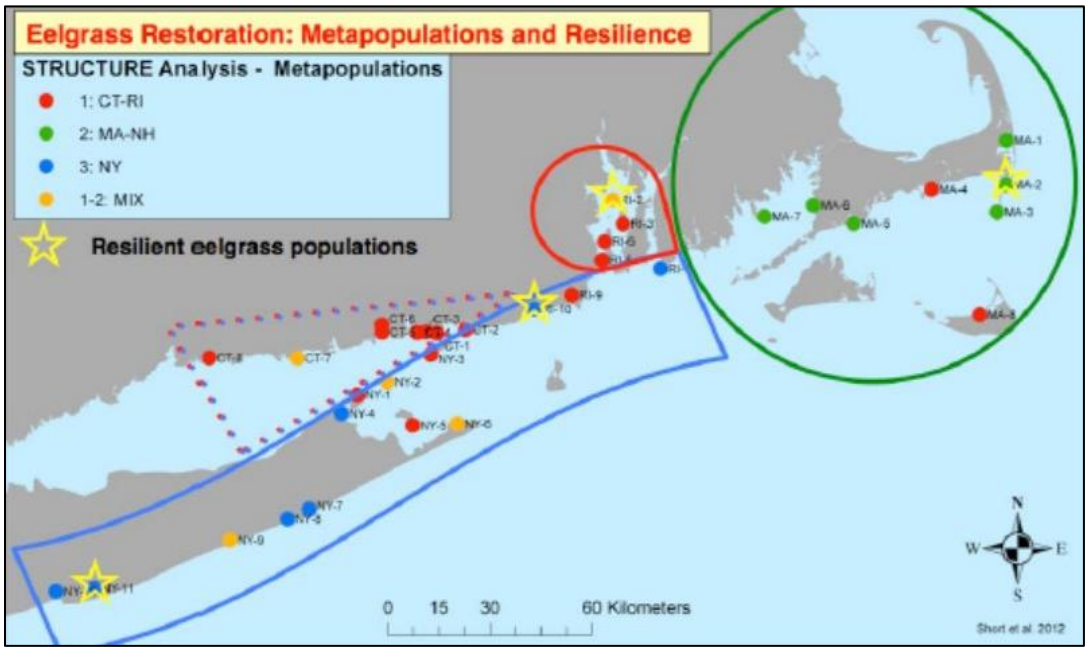

Figure 2: Groupings of eelgrass metapopulations into potential restoration areas as defined by Fred Short et al. Resilient eelgrass populations should be used for restoration within their metapopulation areas. In Long Island Sound, no resilient eelgrass populations were identified; for restoration efforts in this area, plants should be taken from the resilient populations within the New York (blue) metapopulation. [26]

Despite genetic similarities, restoration practitioners who use eelgrass seed from within LIS should still notify CT DEEP LWRD and NYSDEC's Marine Resources Division, Marine Habitat Protection (MHP) staff. Before a project begins, consultation by email or letter about the nature of the project, methods, location, and timing should be sent by restoration practitioners to respective agency staff within their state. This informal consultation is sufficient to ensure researchers are not damaging the ecosystem where they plan to do projects. Both agency officials and practitioners expressed support for this approach to consult and gain approval from agency officials in the proper jurisdictions:

- Within CT DEEP's LWRD Division, either the East or West Regulatory District staff must be consulted as the first point of contact, depending on the geography of the project. [27] While no permits are needed (without the use of structures), District regulatory staff will provide guidance and inform other CT agencies as necessary. Consultation by either email or letter does two things: (1) it informs Regulatory staff that an activity is being planned in a regulated area; and (2) it allows Regulatory staff to look for site specific issues. Contacting CT DEEP about a project also helps staff answer public questions that may arise about the activity. [28]
- The NYSDEC Seagrass Coordinator in the Bureau of Marine Habitat Protection, Division of Marine Resources should be contacted first for any NY based projects. The Division of Marine Resources will issue a letter of approval since like in CT, there is no formal

[26] Short et al., 2012
[27] CT DEEP LWRD, "CT DEEP Land and Water Resources Division Regulatory Districts & Contact Information," January 2023, https://portal.ct.gov/-/media/deep/coastal-resources/coastal_management/lwrdstaffcontacts.pdf.
[28] Yamalis, Harry, CT DEEP, Personal Communication, August 20, 2024.

regulatory or permitting process that covers seagrass restoration efforts in NY. A letter of approval serves as a chance for NYSDEC staff to review the project plan, objectives, and methods before approving the project. The letter of approval gives the researcher or practitioner recourse if anyone challenges their project. Letters of approval from NYSDEC have served as a protective mechanism to shield practitioners from challenges and the agency from legal action. These letters can also benefit applicants receiving project funding since they are a way to meet a grant program's requirements for project approval. [29]

c. Eelgrass Seed Based Restoration Outside of Long Island Sound

To address the emerging need for smaller-scale climate resilience experiments, researchers are sourcing eelgrass seed from populations along the South Shore of Long Island (e.g. Great South Bay or Shinnecock Bay).[30] During a June 2024 LIS Eelgrass Collaborative workshop, researchers indicated that it is not necessary to venture further from this location to source thermally tolerant seed and that there is enough genetic differentiation across small spatial scales that allow preferable traits for climate resilient or "common garden" experiments.[31] Thus, the geographic extent for sourcing thermally tolerant seeds need not run further than Great South Bay on Long Island for small-scale climate experiments. Common garden experiments take plants from different environments and relocate them to a new location so researchers can observe individual plant responses at the new site. In this case, eelgrass seeds are collected from the warmer waters on the south side of Long Island and planted alongside local seeds in the cooler waters of Long Island Sound. Researchers then gauge which varieties "best persist and confer climate resilience".[32]

The Short *et.al* 2012 study also examined genetically similar eelgrass populations in New England that are resilient to various environmental stressors, including climate change. This study concluded that there are three eelgrass metapopulations across the southern New England and New York region, two of which are more resilient to these environmental stressors. The two populations that significantly out-performed all other populations are related to eelgrass populations in Cape Cod, Massachusetts and Great South Bay, NY. Within these regions, New York was "identified as having the most resilient eelgrass."[33] However, it is important to note that while Great South Bay eelgrass is resilient to certain stressors it is still a vulnerable population that has experienced substantial decline. Therefore, it

[29] Fournier, Alexa, NYSDEC, Personal Communication, August 13, 2024.
[30] Schott, Steve, Cornell Cooperative Extension, Personal Communication, July 2, 2024; Heck, Steve, Stony Brook University, Personal Communication.
[31] Randall A. Hughes and John J. Stachowicz, "Genetic Diversity Enhances the Resistance of a Seagrass Ecosystem to Disturbance," *Proceedings of the National Academy of Sciences* 101, no. 24 (June 15, 2004): 8998–9002, https://doi.org/10.1073/pnas.0402642101; Randall A. Hughes, John J. Stachowicz, and Susan L. Williams, "Morphological and Physiological Variation among Seagrass (Zostera Marina) Genotypes," *Oecologia* 159, no. 4 (April 1, 2009): 725–33, https://doi.org/10.1007/s00442-008-1251-3; Hughes, Randall A., Professor of Marine and Environmental Sciences, Northeastern University, "Eelgrass Restoration: Source and Genetic Information."
[32] Bradley J. Peterson et al., "A Path Forward: Building Eelgrass Resilience Along the Mid-Atlantic and New England Coast," The Nature Conservancy Proceedings Report, Proceedings of the Building Eelgrass Resilience in Mid-Atlantic and New England Workshop Series (The Nature Conservancy, June 2022), https://www.nature.org/content/dam/tnc/nature/en/documents/TNC_NY__EelgrassRestorationWorkshop_2022_Report_MidRes.pdf.
[33] Short et al., 2012.

is important to encourage sourcing seeds from a variety of locations/populations not only because it promotes genetic diversity, but also because it prevents unintended stress to a vulnerable population.[34]

However, like seed movement within LIS, there is currently no regulatory framework in Connecticut or New York regarding the transport of eelgrass seeds from outside LIS for restoration or research purposes. Regulators are more concerned about this scenario because the seeds are not native to the Sound and can potentially introduce shellfish pathogens and disease or "bioinvaders" and change habitat structure of the estuary.[35] In addition, since eelgrass plants on the South Shore of Long Island are genetically different from those within Long Island Sound[36], agency staff indicate a desire to protect native populations as a general rule. This is illustrated in similar guidance for movement of bivalves and kelp.[37] It may be possible to expand collection locations further south once methodologies are demonstrated to be sound and best management practices are proven to be effective at local scales.[38]

Agency officials and practitioners consulted for this white paper agreed that seeds coming from outside the Sound should be treated differently than seeds movement within Long Island Sound. When moving seeds from outside the Sound, practitioners should continue consulting the same CT and NY agency staff and also follow best management practices (BMPs) to minimize introduction of pathogens and invasives to ensure biosecurity. While there is currently not an agreed upon set of BMPs for seed transport, the LIS Eelgrass Collaborative is working with Cornell Cooperative Extension staff to circulate a set of draft BMPs for review with agency staff who have authority over eelgrass restoration and research projects. BMPs will include transplant techniques to minimize or eliminate the risk of invasives species introduction (e.g. bleach treatment of seeds followed by distilled water rinse), seed storage, harvesting tips and equipment, and site selection to reduce impacts on donor populations.

V. ADDITIONAL RECOMMENDATIONS & CONCLUSION

To continue advancing eelgrass restoration work in LIS, two specific recommendations are worth noting:

Record Keeping: Records should be kept for tracking restoration/research projects that involve collecting and using eelgrass seed. Before more seed based restoration projects are implemented, it is important for a central entity like the LISS to track seed sourcing and dispersal sites both for traceability and regulatory compliance. Keeping detailed eelgrass seed collection records will help track and better observe changes that occur in collection areas over time, make decisions about when and where to collect, and may illuminate why some seed is performing better than others. Practitioners should record their collection location and GPS coordinates, methods, date, time, tide, water temperature, estimated number of seeds, and general status of the meadow.[39] These records should follow the source from wild collection to out-planting and be organized and publicly accessible so the research community and regulatory agencies can benefit from this knowledge. Not all sites are suitable for seagrass restoration and

[34] Campbell, Della, NYSDEC, Personal Communication, November 26, 2024.
[35] Campbell, Della, NYSDEC, Personal Communication; Carey, David, CT DABA, Personal Communication.
[36] Short et al., 2012.
[37] Getchis, Tessa, CT Sea Grant, Personal Communication.
[38] Schott, Steve, Cornell Cooperative Extension, Personal Communication; Heck, Steve, Stony Brook University, Personal Communication; Carey, David, CT DABA, Personal Communication.
[39] Lucey, Bill, Save the Sound, Personal Communication.

enhancement - multiple parameters determine the viability such as: light, sediment type, water turbidity, temperature, and historical distribution. Thus, having this repository of information could be useful for practitioners to determine the most viable sites for restoration, restrict over seeding plots, and reduce overharvesting of particular donor meadows.[40]

Best Management Practices (BMPs): A set of best management practices (BMPs) driven by the best available science are also important for agencies and research practitioners to agree on. Biosecurity, through proper collection and biosanitation of eelgrass seeds being transported from outside LIS, is perhaps agencies' biggest cause for concern, especially as it relates to potential impacts on the aquaculture industry and habitat. The main concern regarding seed movement from outside LIS is the risk of invasive "hitchhikers". Both CT and NY policy seeks to reduce the risk of invasive species coming into the state, causing ecological or economic harm to the environment. To address this concern, seed collection and sanitation protocols should be drafted and disseminated to practitioners and agency staff for review. This will help ensure consistent restoration practices that will not transport disease or pathogens and will minimize harm to shellfish beds or other aquatic habitats. In addition to concern about disease and invasives, a better understanding is needed about how more resilient, genetically diverse eelgrass populations sourced from warmer waters might change existing LIS habitat structure.[41] Restoration practitioners and agency staff also seek BMPs that address the proper harvesting of seeds from donor beds and standardized limits to ensure that donor beds do not lose reproductive output and experience additional stress from restoration activity.[42] To complement this white paper, staff at Cornell Cooperative Extension (and through their participation in the LIS Eelgrass Collaborative) are currently drafting and getting agency review and input on eelgrass seed based restoration BMPs.

Conclusion: Since there currently is no written agency guidance for practitioners to follow when it comes to seed movement for eelgrass restoration in Connecticut or New York, this can lead to uncertainty in the restoration community about the appropriate steps to follow for project review. With growing interest from practitioners, this white paper seeks to clarify agency authority and guidance. As research into eelgrass bed dynamics and restoration grows, there may be need for more formal agency review that involves science-based regulations and project tracking. However, at this time both regulators and restoration practitioners can greatly benefit from having agency guidance clarified without indication from either group that new regulations are necessary. Should a new regulatory approach be needed in the future, CGS 26-316 gives CT DEEP the authority to promulgate regulations to both protect and *restore* eelgrass beds. Similarly, NY state law Title 7, Seagrass Protection Act gives NYSDEC authority to adopt rules and regulations for coastal and marine activities that threaten seagrass beds or seagrass *restoration* efforts. Thus, while regulations have not been adopted for seed transport activity to date, the statutory authority exists in both states if there is a need to do so.

[40] Heck, Steve, Stony Brook University, Personal Communication.
[41] Carey, David, CT DABA, Personal Communication, July 18, 2024.
[42] Campbell, Della, NYSDEC, Personal Communication.

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