RFP: Eelgrass Seed Dispersal Restoration Initiative

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Long Island Sound Study
A Partnership to Restore and Protect the Sound

New FY24 Supplemental Proposal Funded

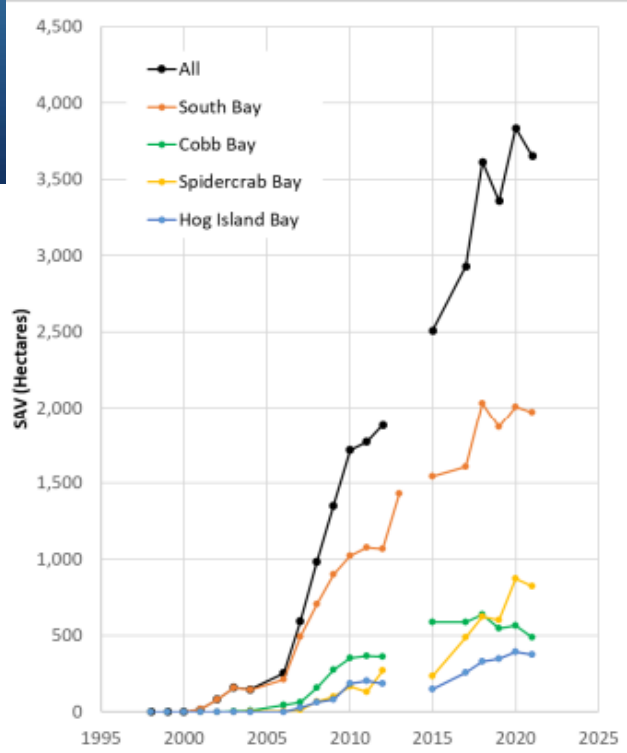
Long Island Sound Study
A Partnership to Restore and Protect the Sound

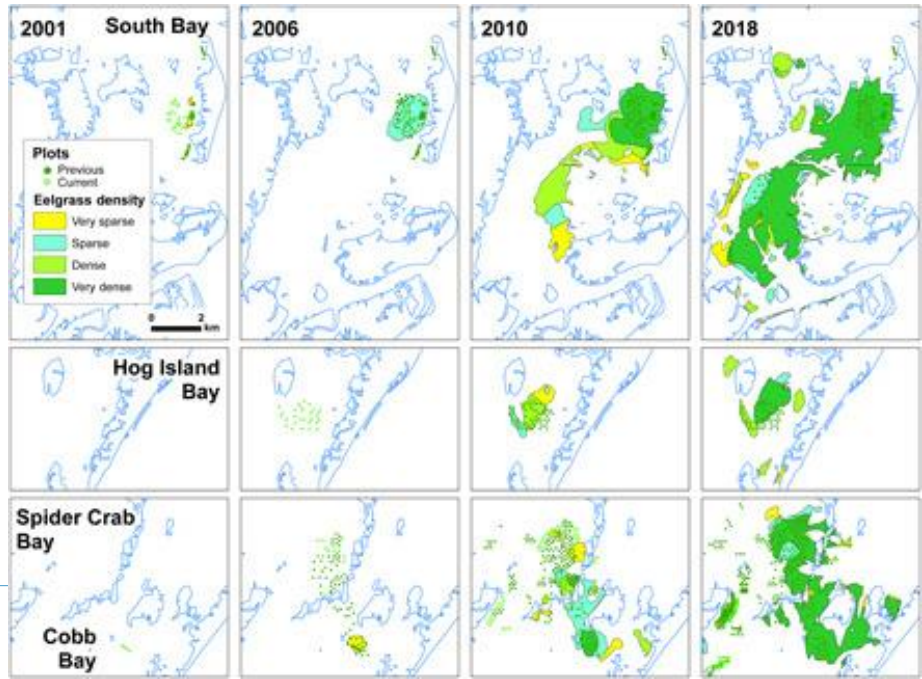
- **Request for Proposals: Initiate and Develop a Long-Term Targeted and Large-Scale Eelgrass Seed Dispersal Restoration Initiative**
- **Organization: NEIWPCC/EPA**
- **Project Period: October 1, 2024-September 30, 2028**
  (RFP to be released January 2 or 3, 2025)
- **Project Cost: $1,500,000 (for 3 years)**
- **Objectives: The objective of this proposal is to develop and release a Request for Proposals (RFP) to initiate a long-term targeted and large-scale eelgrass seed dispersal restoration initiative. The amount requested would support the program's set up as well as 3 years of seed dispersal restoration. The project leads will continue to develop and refine the RFP, but some key components to be highlighted in the RFP are:**
  - Expanding acreage in well-establish eelgrass meadows
  - Piloting establishment of eelgrass meadows in areas where there is currently no eelgrass but suitability is high
  - Increasing the gene flow/genetic diversity in eelgrass meadows
  - Piloting innovative approaches to broadcast eelgrass seeds
  - Coupling other restoration techniques with seed broadcasting (i.e., building off Long Island Sound Research Grant Program)
  - Post-dispersal monitoring

- **First Year(s) Priority: Stand-Up the Initiative**
- Infrastructure Set-Up/Upgrades
- Initiate restoration program
- Ongoing discussions about next steps
- **Future Years: Scaling Up**
- Ideal: Collect 1,000,000 seeds (25,000 shoots) – needs to incorporate seeds outside of Long Island Sound
- Incorporation of other restoration components:
  - Example: VIMS was awarded over $2 million to incorporate scallop restoration into their SAV restoration program

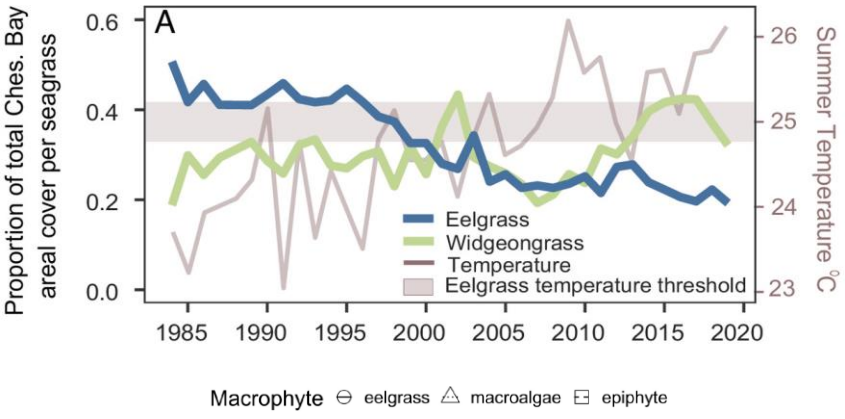
Why shift to seed-based restoration?

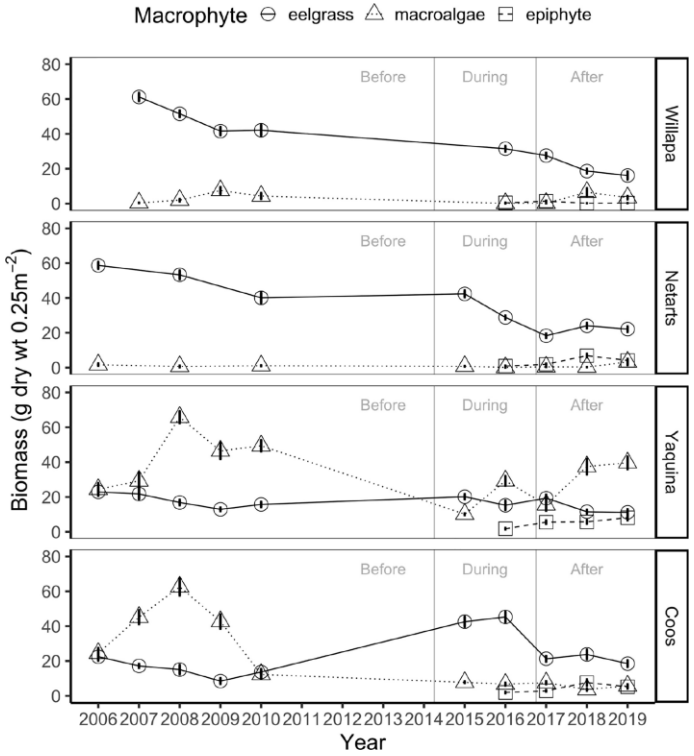
- **Advantages**
  - Reduce/eliminate need for scuba
  - Rapid recovery
  - With minimal training, anyone can do it
  - Easier to scale up
- **Disadvantages**
  - Potentially high predation rates
  - Seeds can be washed away
  - Infrastructure needs

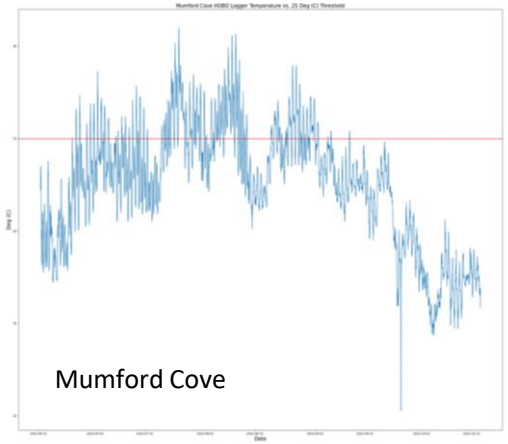


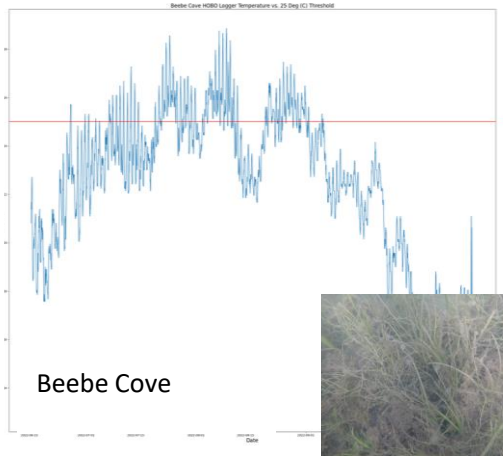


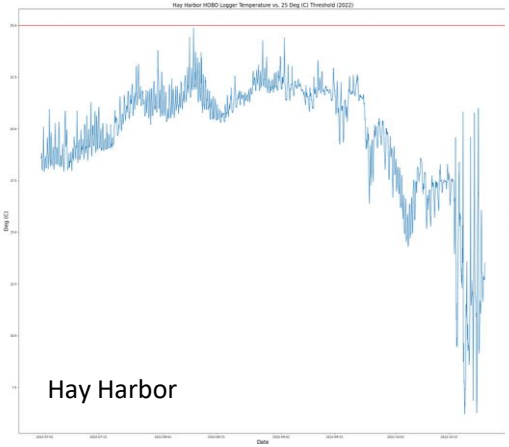
https://estuarineresearchreserve-center.media.uconn.edu/wp-content/uploads/sites/3556/2024/03/LIS_Eelgrass_Chris-Patrick-presentation.pdf

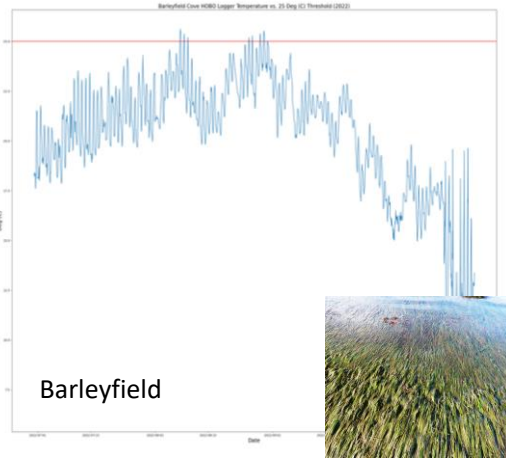

A
Proportion of total Ches. Bay areal cover per seagrass
Summer Temperature °C
Eelgrass
Widgeongrass
Temperature
Eelgrass temperature threshold
0.0
0.2
0.4
0.6
23
24
25
26
1985
1990
1995
2000
2005
2010
2015
2020


Macrophyte eelgrass macroalgae epiphyte
Biomass (g dry wt 0.25m^{-2})
Before
During
After
Willapa
Netarts
Yaquina
Coos
0
20
40
60
80
2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019
Year


Mumford Cove


Beebe Cove


Hay Harbor


Barleyfield

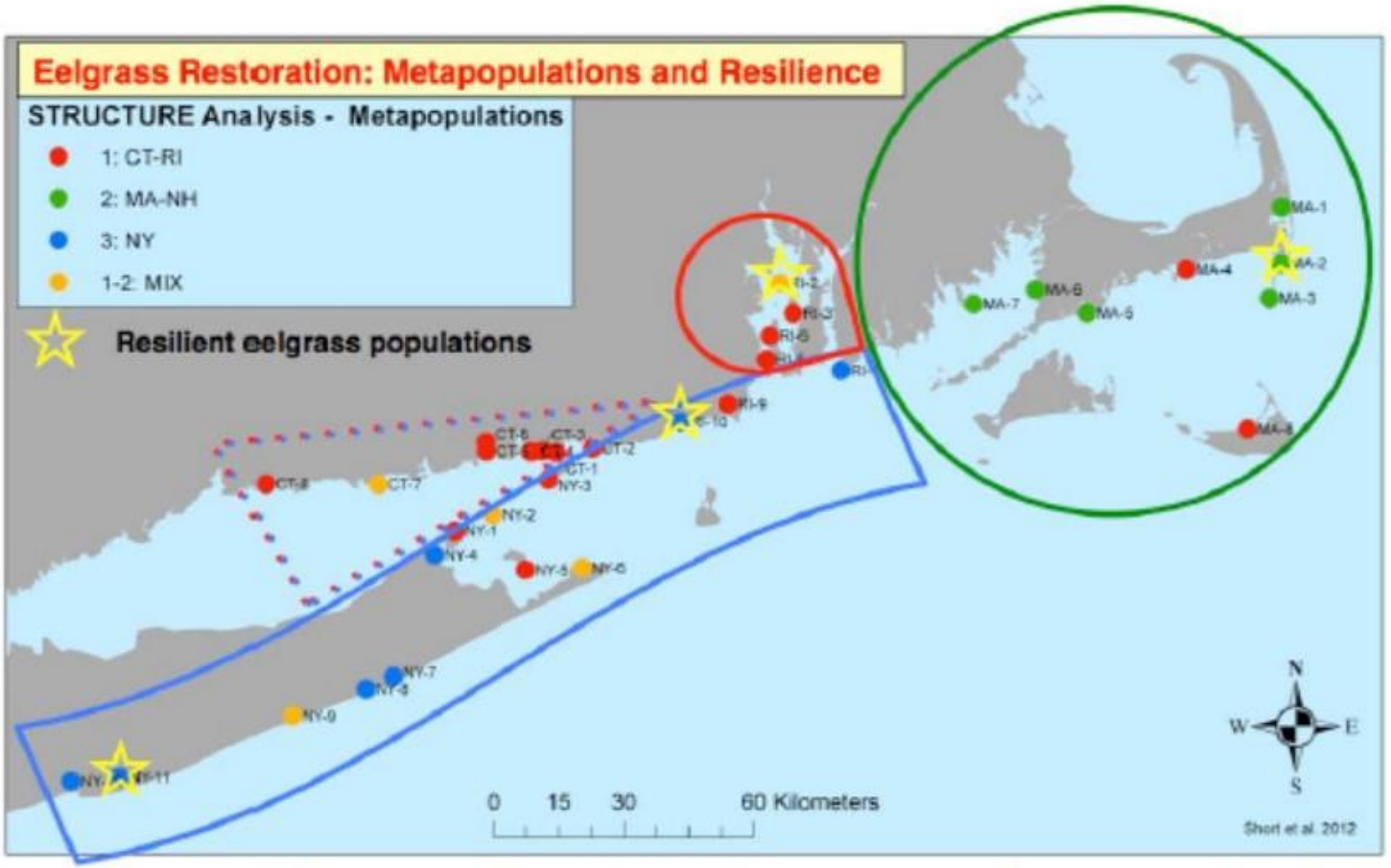
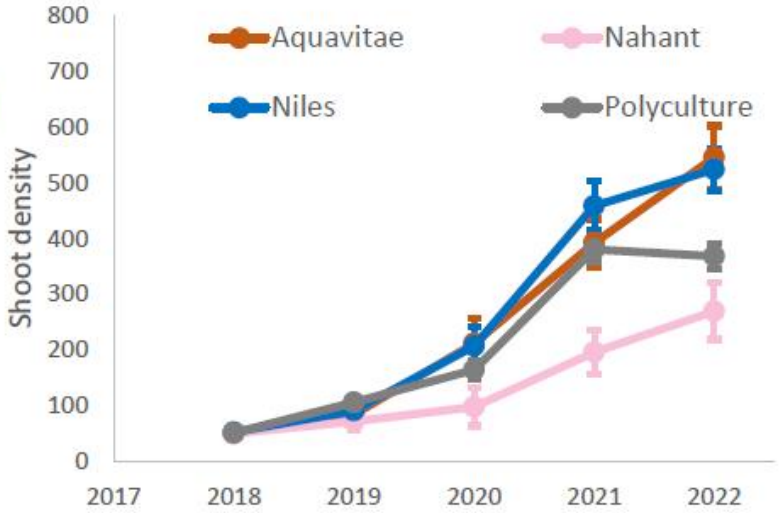
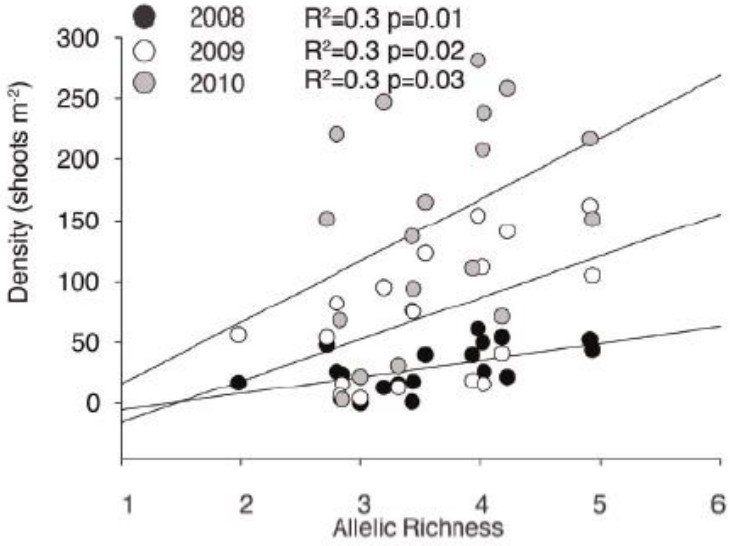


Figure 31. Groupings of eelgrass metapopulations into potential restoration areas; resilient eelgrass populations should be used for restoration within their metapopulation areas. In Long Island Sound, no resilient eelgrass populations were identified; for restoration efforts in this area, plants should be taken from the resilient populations within the New York (blue) metapopulation. The fifth site of resilient eelgrass (not shown) is Nannies Island, NH and is part of the MA-NH (green) metapopulation. The moderately resilient eelgrass found at North Prudence Island, RI is a long-standing eelgrass population that should be preserved but may not be robust enough to sustainably be used as a donor site.

Multiple sources from different environments can help us hedge our bets





Schenck, Hughes, et al. unpublished, Reynolds et al. 2012 PLoS One

Should We Change Species to Save Them?

When traditional conservation fails, science is using "assisted evolution" to give vulnerable wildlife a chance.

By Emily Anthes Photographs by Chang W. Lee

This story is part of a series on wildlife conservation in Australia, which Emily Anthes reported from New York and Australia, with Chang W. Lee.

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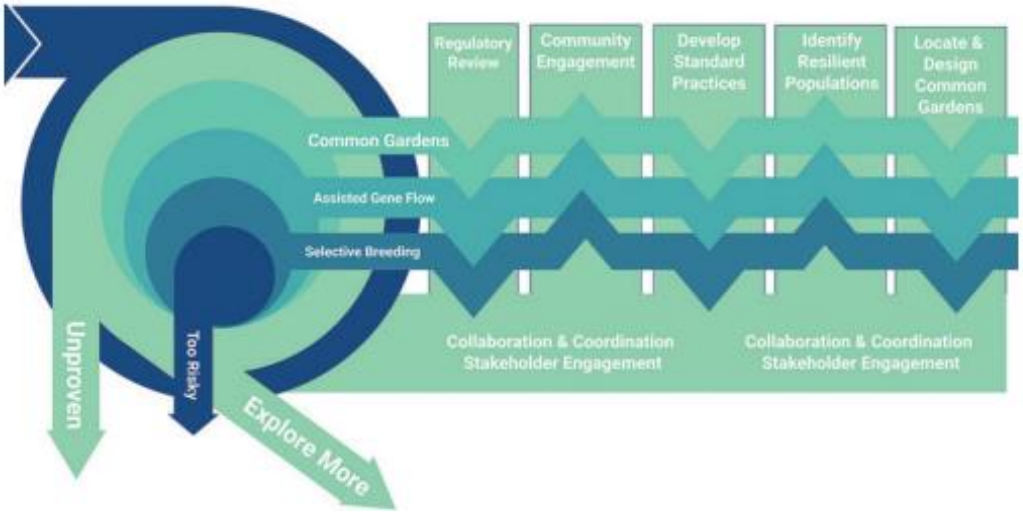
The Nature Conservancy **PROCEEDINGS REPORT 2022**



A PATH FORWARD:

Building Eelgrass Resilience

ALONG THE MID-ATLANTIC AND NEW ENGLAND COAST

Best Management Practices

- **Cornell Cooperative Extension is in the process of drafting a list of best management practices for restoration**
- **Minimizing disease risks are possible**

Innovative Techniques for Large-scale Seagrass Restoration Using *Zostera marina* (eelgrass) Seeds

Scott R. Marion, Robert J. Orth

Seed selection and storage with nano-silver and copper as potential antibacterial agents for the seagrass *Zostera marina*: implications for habitat restoration

Shaochun Xu, Yi Zhou, Shuai Xu, Ruiting Gu, Shidong Yue, Yu Zhang & Xiaomei Zhang

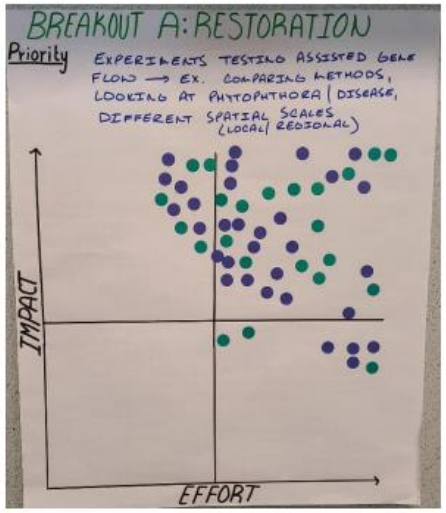
Copper treatment during storage reduces *Phytophthora* and *Halophytophthora* infection of *Zostera marina* seeds used for restoration

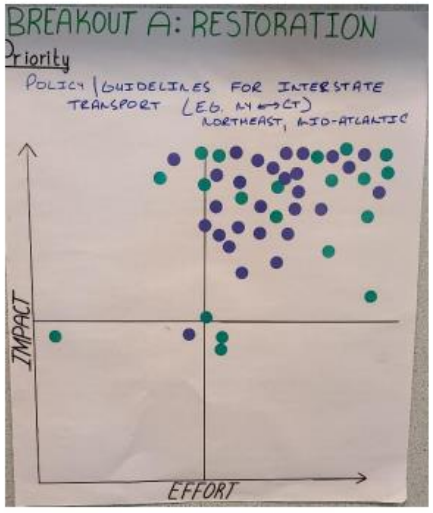
Laura L. Govers, Els M. van der Zee, Johan P. Meffert, Patricia C. J. van Rijswick, Willem A. Man in 't Veld, Jannes H. T. Heusinkveld & Tjisse van der Heide

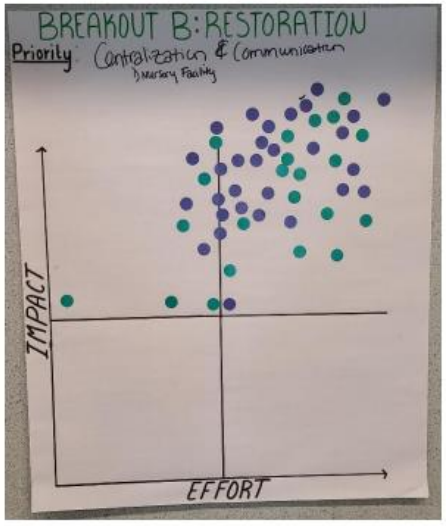
Copper sulphate treatment induces *Heterozostera* seed germination and improves seedling growth rates

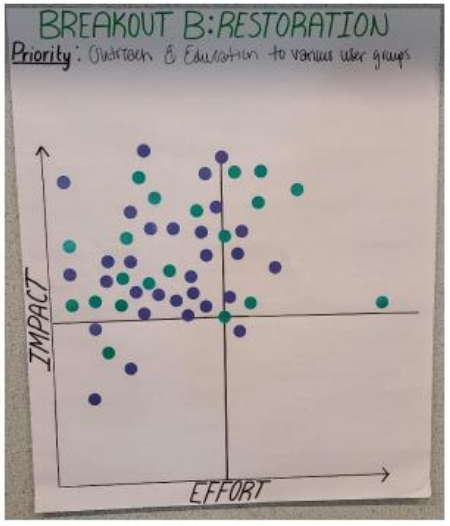
Brooke K. Sullivan [a 1], Michael Keough [a], Laura L. Govers [b c]

Restoration Breakout Priorities & Workshop Grid Results









Long Island Sound Eelgrass Restoration Initiative

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Take no more than 10%

Help us restore and manage Long Island Sound's eelgrass
Contact Cayla Sullivan (Sullivan.cayla@epa.gov), CT/NY Coordinators to record eelgrass seed collection

LIS EELGRASS COLLABORATIVE

INPUT