<u>Post-Planting Assessment Report</u> – IL17 Nantucket Eelgrass Restoration

Nantucket Land Council
Submitted: December 2022

Summarize the performance standards established in the approved mitigation plan, any modifications that may be required based on the actual implementation of the project, and the short-term level of attainment of trend toward attainment of the performance standards.

<u>Summary of Efforts</u>

In June 2022, we collected 21,000 reproductive eelgrass shoots (with a total of 300,000 seeds) from ten sites in Nantucket Harbor (Figure 1).

Figure 1. Map showing locations where reproductive shoots were harvested for the restoration at both sites.

Restoration Site A, located near Monomoy, is a sandy location within/adjacent to an area where NLC has been actively transplanting since the fall of 2017. Eelgrass at this site completely disappeared during a shoaling event in 2012. Transplanting at this location has been successful and expansion of eelgrass within and around the site is notable. In Fall 2022, we evenly dispersed 250,000 seeds within the remaining 0.25-acre plot located in the eastern section of the restoration site (Figure 2). Assuming 10% of the seeds successfully germinate, our restoration efforts at Monomoy are complete and we will begin the monitoring phase of our 0.5 acre site next summer.

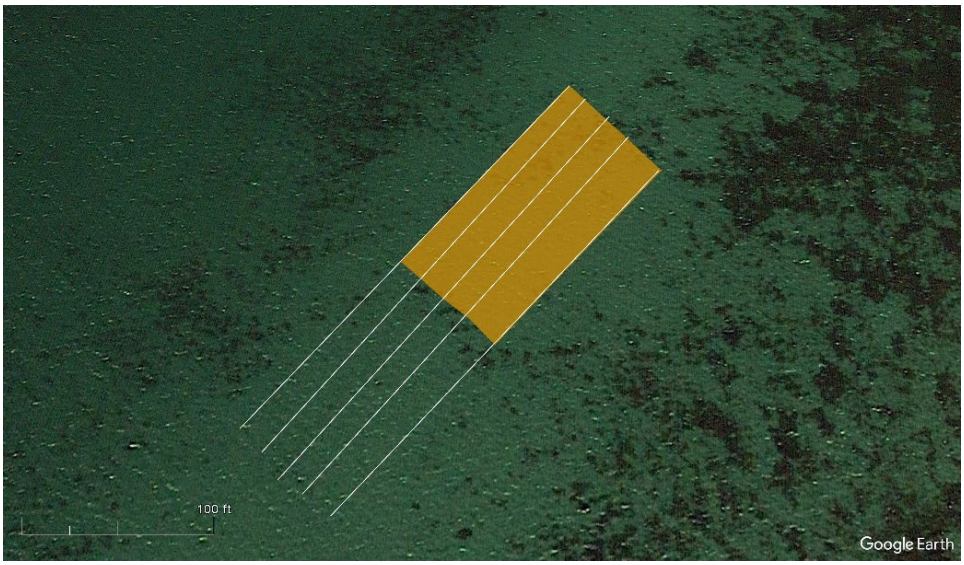

Figure 2. Map showing area planted with seeds at Monomoy in Fall 2022 (denoted in orange).

At Restoration Site B, located at 5th bend near Coatue, we deployed 50,000 seeds along with 5,000 vegetative shoots within a 0.16-acre plot. The seeds and shoots were placed along five 30-meter transect lines using an experimental design containing six treatment levels to assess if a specific transplantation method/pattern affects success rates (Vegetative shoots only, Control-No vegetation or seeds, Vegetative shoots and High-density seeds, Vegetative shoots and Low-density seeds, High-density seeds, and Low-density seeds; Figure 3). Assuming 15% survival of seeds and transplants, 1/3 of our transplantation goal has been completed at this location.

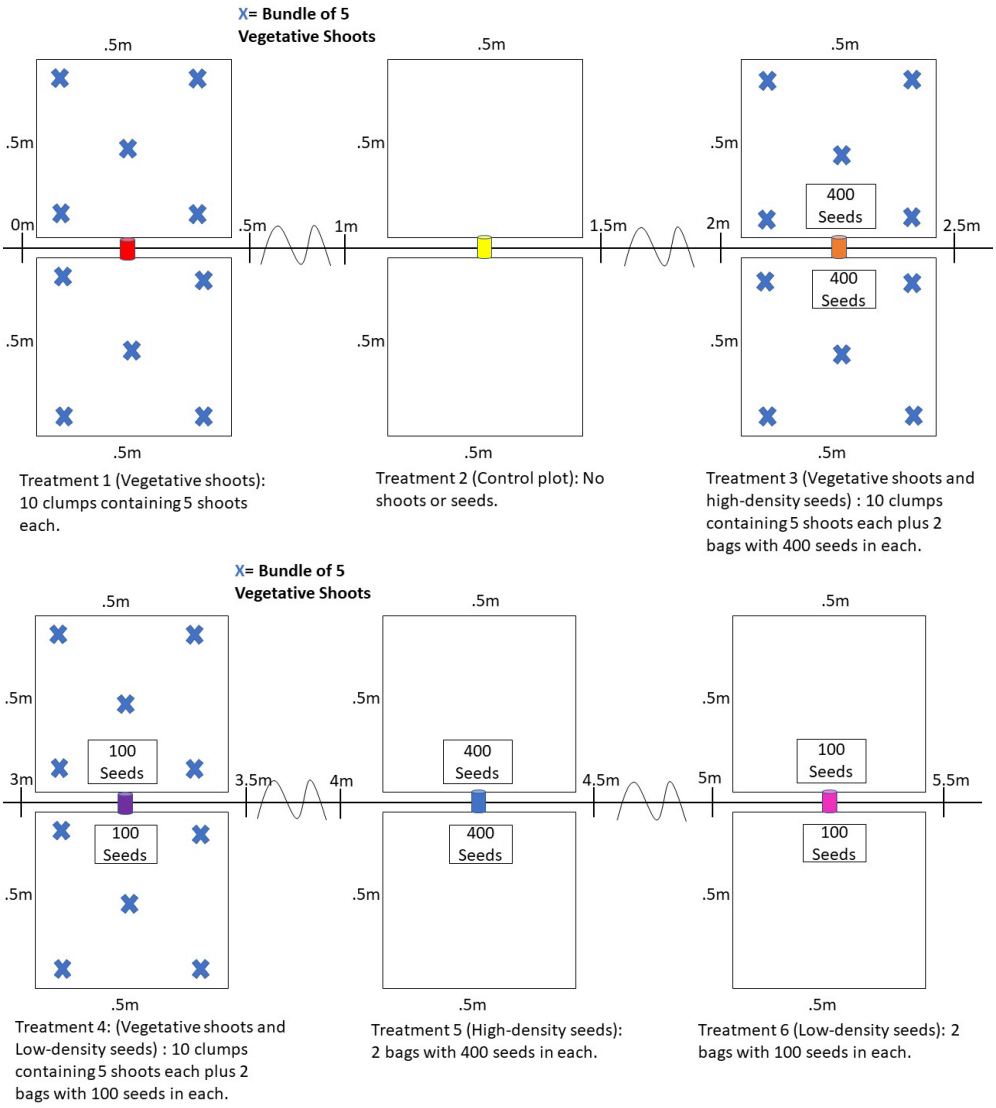

Figure 3. Graphic showing the treatment plots at 5th bend.

Describe any significant problems encountered during construction and how they were resolved.

Overall, the project encountered no significant issues. On land, we had issues with aeration in the tanks. If tanks and bags were not continuously cleaned, we had a build-up of anoxic material. To help resolve this issue, we installed an additional aeration system in late August that will be used for next summer's efforts.

At the 5th bend restoration site we had issues with our underwater markers becoming rapidly fouled. This meant that when it was time to plant in September and October, benthic organisms had covered

the color coordination that was intended to be a guide during planting. This caused slower planting, and some of the plots needed to be replanted due to mistakes. Next summer, a numbering system will be used with metal tags instead of PVC piping with coloring, making each plot easier to identify underwater.

Identify any programmatic or agency procedures or policies that encumbered implementation of the mitigation plan. Specifically, note procedures or policies that contributed to less effectiveness than anticipated in the implementation of the mitigation plan.

We did not have any programmatic, agency procedures, or policies that encumbered the implementation of our project. We reached our target of planting 0.25 acres at Monomoy and 0.16 acres at 5th Bend.

Recommend measures to improve the efficiency, reduce the cost, or improve the effectiveness of similar projects in the future.

The primary measure that would improve the efficiency of the project would be to increase human resources when diving and sorting reproductive shoots and seeds. Harvesting of reproductive shoots continued past the optimal window of harvesting due to two factors. The first was that the start of the optimal harvesting window was missed by around a week. The second reason was that there wasn't a consistent ability to SCUBA dive to collect shoots. Dive partners were limited, and the collection of shoots by diving, which is the most effective method, was limited to around once a week. If there were consistent access to divers and the ability to dive 2-3 times a week, then the total number of shoots collected has the potential to be doubled. The lack of human resources also slowed down the trimming and seed-sorting process. For most of the summer, there were primarily 1-3 people sorting and trimming grass. Trimming grass was the most time-intensive part of the work, and only having a few people every day to sort caused the sorting process to take six weeks. Being able to trim faster would allow for there to be less dead or decaying biomass in the bags. This, in turn, would allow for less of a chance for anoxic material to develop in the bags. We have noted these issues and are in the process of finding additional technicians and volunteers for 2023.