

COASTAL PLANT RESTORATION



Eelgrass *Zostera marina*



- ✓ Our local seagrass species that is critical nursery habitat as well as foraging grounds
- ✓ Important foraging and nesting habitat for our fish and waterfowl
- ✓ Helps protect shorelines from erosion, absorb nutrients

Eelgrass Restoration via the "Buoy Deployed Seeding"



a. Buoy grid arranged at restoration site in June



b. Wild seeds in Shinnecock Bay are monitored for development in June



c. Eelgrass Flower shoots containing seeds are collected at peak (late June-early July)



d. Volunteers event scheduled for collection day to help fill nets with shoots + sew back together



e. CCE's Habitat team deploys nets on pre-arranged grid



f. Nets are removed after 3-4 weeks; monitoring for seed germination spring of following yr.

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Eelgrass Restoration via the "Tortilla Method"



a. Marine Meadows Workshops engage the public in this work



b. Eelgrass "tortillas" are assembled by volunteers



c. New holding system at Tiana Bayside to enhance restoration efforts



d. Tortillas being transported just prior to planting



e. CCE's divers hand plant each tortilla



f. Eelgrass plantings are monitored for survival and species utilization

COASTAL PLANT RESTORATION



Smooth Cordgrass *Sporobolus alterniflorus*



- ✓ Inundated by the tides, this species serves as a critical buffer between land and sea
- ✓ Helps absorb nutrients and pollutants from land-based runoff
- ✓ Important foraging and nesting habitat for our fish and waterfowl



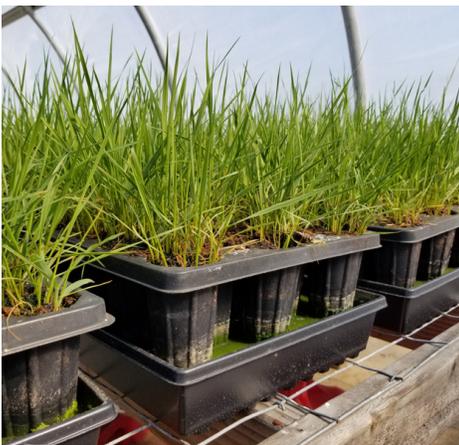
a. Local seed is collected in the fall during a carefully monitored collection window



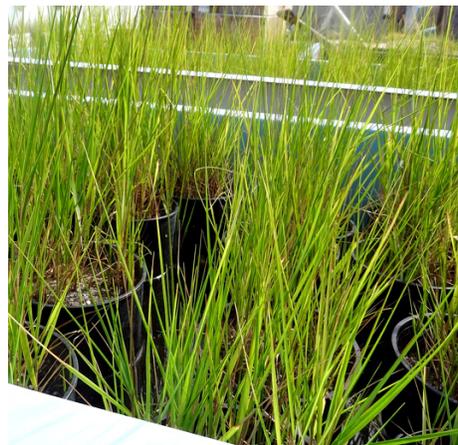
b. After winter stratification, a seed mix is prepared based on germination trials



c. Plug trays begin to germinate and root expansion takes place



d. Plant propagation begins once plugs become root bound



e. Each plug will be split and up-potted a total of 4 times, making up to 16 planting units



f. Plants will be transported from Tiana Bayside nursery to the restoration site and planted based on guidelines

COASTAL PLANT RESTORATION



Beach Grass

Ammophila breviligulata



- ✓ Dune-forming species, trapping and accumulating sand
- ✓ Critical for erosion protection during storms
- ✓ Its presence is required for many beach nesting birds



a. Existing Coastal Plant Nursery at Tiana Bayside Facility will be expanded



b. Culms are harvested from nursery and separated for restoration planting



c. Individual culms being planted ~8" deep and 1' on center



d. Marked frames keep spacing; habitat team planting



e. With the help of snow fencing, individual shoots clone and spread rapidly



f. The Coastal Plant Nursery also serves as an important educational tool at the Tiana Bayside Facility

HATCHERY OPERATION



Algae Production + Shellfish Spawning

All shellfish produced for this project will begin at CCE's state-of-the-art Shellfish Hatchery in Southold. Algae production, spawning, and care of shellfish will be conducted at this site before animals are transported for grow out at the Tiana Bayside Facility Shellfish Nursery.



a. Algae is produced in order to feed shellfish in hatchery



b. Scallops, clams, and oysters are spawned here



c. Shellfish are fed microalgae produced by CCE



d. Spat-on-shell oysters are produced by setting larvae on recycled shell in large holding tanks



e. Clams and single oysters are grown out in FLUPSYS until large enough for seeding in Town waters



f. Bay scallops are moved to nursery site for grow out and will be planted in Town waters

SHELLFISH RESTORATION



Bay Scallop Nursery *Argopectin irradians*



- ✓ CCE has lead local bay scallop restoration efforts for over 15yrs.
- ✓ Bay scallops are economically important to the region
- ✓ Tiana Bayside Facility hosts the first and only successful scallop nursery in Shinnecock Bay



a. Bay scallops are spawned in CCE's Hatchery



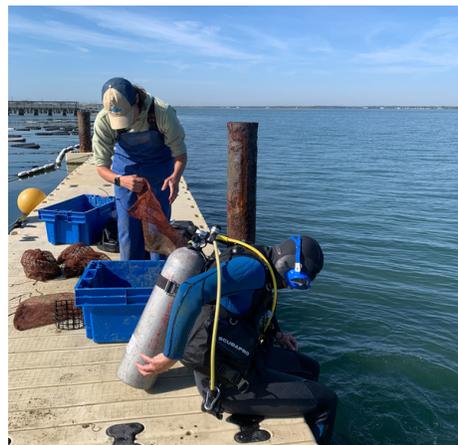
b. Scallops are cared for in a nursery setting to encourage growth and increase survival



c. A new floating nursery cage system will be installed and maintained at Tiana Bayside



d. View of bay scallops, protected from predators, in lantern nets



e. Scallops are serviced using CCE staff and vessels



f. Bay scallops will be planted in Town waters once they reach 40+mm

SHELLFISH RESTORATION



Oyster Spat-on-Shell
Crassostrea virginica



- ✓ Spat-on-shell oysters are used to form oyster reefs
- ✓ Oysters are effective filter feeders and improve water quality
- ✓ Oyster reefs also serve as important habitat



a. Oysters are spawned in CCE's hatchery



b. Recycled shell substrate is cleaned and prepared



c. Oyster larvae is added to the circulation tanks



d. Larvae sets on shell, becoming spat-on-shell



e. Spat-on-shell oysters continue to grow until ready to plant at suitable restoration site



f. CCE Marine staff and volunteers deploy spat-on-shell to form new oyster reefs site