



Large-Scale, Seed-Based Eelgrass Restoration

Challenge

Eelgrass meadows provide important habitat for many species of commercially and recreationally important finfish and shellfish. Unfortunately, a great deal of eelgrass habitat has been lost in recent years. Restoration of eelgrass can be successful, however, techniques of transplanting whole plants are costly and potentially disruptive to healthy donor beds. This project is developing methods to use eelgrass seeds as a practical and affordable alternative to present restoration techniques and to develop a mechanized underwater seed planter capable of efficiently planting large areas with eelgrass seed.



Science

Seed Research

Tank and field experiments indicate that:

- Eelgrass seeds can be held for a short period of time allowing the planting time to be flexible.
- Planting seeds below the surface increases germination.
- Seeds planted just below the surface to a depth of 2.5 cm show similar germination while seeds planted below 2.5 cm showed hindered germination.
- Increasing seeding density had a negative effect on lateral shoot development.
- Increasing sediment organic content had a positive effect on lateral shoot development.
- Seeding 1,000 - 2,000 seeds per square meter may be optimal.
- When planted, seeds yield viable seedling which persist for at least 2 years.



Mechanized Underwater Seed Planter

- The system is comprised of a sled, which travels over the sediment, and a pump, which pushes the eelgrass seeds into the estuary bottom. The seeds are mixed into a negatively buoyant gel matrix, which helps to prevent the seeds from being displaced after planting. Researchers are currently testing the impact of non-organic vs. organic gels on restoration success.



Application

First Large-Scale Field Application

The United States Navy has hired project researchers to restore a 0.25 acre eelgrass meadow at McAllister Point, Rhode Island. During the fall of 2001, divers collected 1.5 million eelgrass seeds, and planting began shortly thereafter.

How-To Manuals

As part of this CICEET project, researchers will prepare two pamphlets. The first will deal with the most efficient methods for the collection and storage of eelgrass seeds, and will be available by the summer of 2002. The second pamphlet will offer details on the design, construction and deployment of the underwater seed planting machine.



Project Essentials

Title: Density-Dependent Effect on Grazing and Success of Seed Generated Seagrass Plants

Project Coordinator: Scott Nixon University of Rhode Island
(401) 874-6803
snixon@gso.uri.edu

Start - End Date: 09/01/1998 - 09/01/2001

NERR Reserve(s): Narragansett Bay, RI

CICEET Contact: Kalle Matso (603) 862-3508
kalle.matso@unh.edu