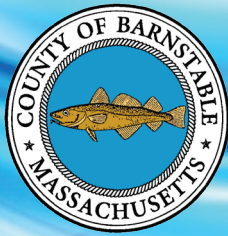


# 1998 MINI GRANT PROGRAM SUMMARY

SEM

SOUTHEASTERN  
MASSACHUSETTS  
AQUACULTURE  
CENTER



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The mission of the Southeastern Massachusetts Aquaculture Center (SEMAC) is to foster the sustainable development of private and public aquaculture endeavors within the southeastern region. This is accomplished by providing technical and economic assistance, supporting research, and developing best management practices and demonstration projects. Since 1998 SEMAC has administered a grant program designed to support projects that advance the aquaculture industry or address an industry problem. In 2011 fifteen grant applications were received and seven were chosen based on clarity, collaboration, outreach, degree of innovation, responsiveness to the listed priorities, applicability of results to the aquaculture industry, ability of the applicant to complete the work proposed, proper permits, technical and economic feasibility, appropriate budget, matching funds, and leveraging of other resources. A progress report and a final report were required from each awardee. This report includes the 1998 project summaries.

## MOTORIZED MESH CLEANER

Private Shellfish Grower, Wellfleet

The goal of this project was to develop a motorized method of cleaning aquaculture mesh using simple technology and reasonably priced materials. Most quahog growers on the Cape utilize plastic mesh as a predator barrier. At some point during the grow-out cycle, this mesh becomes fouled and must either be replaced or cleaned. Cleaning the mesh by hand is strenuous and time consuming and, if left in place, juvenile stock can experience reduced growth rates and increased risk of mortality. Replacing the mesh requires additional costs of new mesh and disposal fees plus a considerable expenditure of labor. This grower created a few prototypes and then completed a motorized brush. He tested it in a series of timed trials and found that he was able to remove mesh fouling species regardless of thickness of growth, and that using it he can clean nets more efficiently than by hand.



## RAISING SURF CLAMS ON THE BREWSTER FLATS

Brewster Flats Aquaculture

The goal of this project was to test the feasibility of growing surf clams (*Spisula solidus*) on the tidal flats of Brewster using ADPI bags. In March 5,000 8-10mm clams were planted and in June 22,000 more were planted. The clams planted in March had a 90% survival rate and grew up to 22mm

by August. The clams planted in June had very low survival. The grower concluded that the clams that did well liked cold water and did best when kept in cages. The overall survival was 70-80%.



## NAUSET MUSSEL MOTIVATION

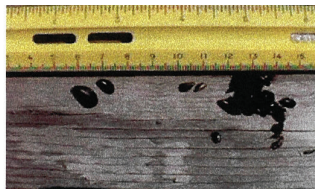
Town of Eastham



The goal of this project was to explore the use of various aquaculture methods to enhance cultivation and survival of newly set blue mussels (*Mytilus edulis*) in the Nauset Marsh estuary system. The Town of Eastham wanted to explore expanding the number of species that aquaculturalists could grow in order to reduce overall risk, and to create a more sustainable supply of mussels for sale to markets since wild mussel set and harvest of adults is variable. The projects evaluated several types of setting material at 6 sites. Issues with fouling were experienced and recruitment was variable across the sites. They learned that spawning events occur periodically throughout the year. The seed was relayed to grow out sites and they observed only 2% survival in sites where no netting or caging was deployed, and survival of 90% in sites where protection was provided. Crabs were the main predators. The relayed mussels grew to 25mm in less than 6 months and no significant differences were observed between mussels grown in floating vs intertidal sites, or those protected by fine mesh vs coarse mesh. Although they explored several methods, they concluded that removal of seed from mussel rope is an inefficient process. They concluded that future efforts should concentrate on growing the animals to a size suitable for direct relay to other growing containers.



Town Cove recruitment representative sample, the Mussel Rope setting media is barely visible at the left edge of the photo; it remains buried under the seed on the right side.



Relative size of a representative sample of seed from Town Cove site

## NET RECYCLING & SEED PROPAGATION PROJECT

Private Shellfish Grower, Wellfleet

A grower in Wellfleet designed and tested 2 novel ways to catch oyster spat (*Crossostrea Americana*) – using recycled mesh netting and a lime, sand, and cement mixture, and plastic pipe ‘hats’ with lime mixture. The goal for the oyster spat collectors was to create a method that is superior to the traditional “Chinese hats” that have a high cost, limited life span, and have to be ordered many months in advance. The grower observed that the recycled mesh netting did collect spat, but not as much as a nearby Chinese hat and that the plastic pipe hats collected slightly more spat than the Chinese hat. He offered several ideas for improving both prototype designs. The grower concluded that the project demonstrated that plastic pipe stands are a viable alternative for collection of wild oyster spat in Wellfleet Harbor.

## REMOTE SENSING OF OYSTERS UPON PRACTICAL CULTCHES FOR INDEPENDENT GROWERS

Private Shellfish Grower, Brewster

The grower proposed to test three different substrates – oyster shells, a lime mixture on ‘Chinese hats’, and textured PVC - for the settling of oyster larvae. Results were not obtained.

## UPWELLERS & ALTERNATE GROW-OUT SYSTEMS

Town of Marion & Tabor Academy, Marion

The objective was to test different materials for growing quahaugs, soft shell clams, and oysters in the water column instead of bottom culture, and to teach Tabor Academy students about aquaculture. They experienced issues with early mortality and fouling by tunicate species.

## SUB-TIDAL SHELLFISH PRODUCTION

Quivet Neck Oyster Company, Dennis

The grower designed and tested a floating cage made of lobster trap wire and PVC pipe tethered to a mooring ball and mushroom anchor with elastic cords for use in the nearshore waters of Nantucket Sound. The hypothesis was that the floating gear would grow oysters faster than a nearby bottom cage because the oysters would be close to food, it would provide predator protection, and the cages would be more accessible for cleaning and harvest than bottom bags. The grower observed heavy fouling on the bags, had to replace the elastic cord with nylon ropes, and received calls from people who thought that the gear was an overturned raft. The grower's final conclusion was that the cage on the bottom produced the same growth rate as the floating cage without the need to clean fouling organisms and without concern from onlookers.

## CLAM PROPAGATION PROJECT- WELLFLEET HARBOR

Seafood Specialists, Wellfleet

This project tested three methods of growing 2mm quahaug seed in Wellfleet Harbor:

Method #1 ADPI suitcases on bottom with 5,000 seed in each

Method #2 4x4 wire cages with 8,000 seed in each elevated grow out

Method #3 4x3 wooden cages slightly elevated with 6,000 seed in each

The grower experienced issues associated with heavy rainfall that may have slowed growth of the quahaugs. Mortality was less than 3% and biofouling and predator infiltration was minimal. The seed grown in the 4x3 wooden cages was largest (15-25mm), the 4x4 cages grew seed ranging from 10-22mm and the ADPI bags had seed ranging from 8-20mm. The grower concluded that a higher growth rate might be achieved by lower density and that the number of seed in methods 1 and 2 should be reduced by 1000.



## GROWING BUTTER CLAMS IN PROVINCETOWN HARBOR

Private Shellfish Grower  
Provincetown

The goal of this project was to determine ways to grow immature sea clams (*Spisula solida*) aka 'butter clams' in Provincetown as an alternative to quahaugs. Difficulty was encountered obtaining seed. Seed was eventually obtained but mussel spat set on it and outgrew the clams.

## RAISING SURF CLAMS IN BARNSTABLE HARBOR

Private Shellfish Grower, Barnstable

The goal of the project was to develop cultivation techniques for surf clam culture in Barnstable Harbor. Surf clam seed ranging from 10.32 to 17mm in length were planted and protected against predation using netting rebar and staples. Unusually high temperatures in May caused total mortality. The grower discovered that soft shell clams set in the area after the mortality event.



## "SOMETHING FISHY"-LLOYD CENTER FEST

Lloyd Center for Environmental Studies, Inc.  
Dartmouth

The Lloyd Center organized and held an event called, "Something Fishy" to celebrate the aquaculture industry in the area and introduce participants to local farm raised seafood products. Attendance was high with 235 participants and the event was considered a success.



The Lloyd Center for Environmental Studies  
Presents



AN  
AQUACULTURE  
FESTIVAL

Taste aquaculture meals  
prepared by local chefs  
(including Steve Worden of Worden's 7 Water Street  
Tim Quinn of Not Your Average Joe's  
Kerry Downey Romaniello of Westport Rivers Vineyard  
Greg Morton of Bridge Street Cafe)

FRIDAY, NOVEMBER 6, 1998

6:00 - 9:00 pm

Greater New Bedford

Regional Vocational Technical High School

Tickets \$15.00

## SHELLFISH MARKET INFRASTRUCTURE

Massachusetts Aquaculture Association, Wellfleet

The MAA created a subcommittee of growers and investigated new markets for hard clams and oysters and participated in "Ag Day" at the Massachusetts State House.

## THE POTENTIAL FOR CRAYFISH PRODUCTION IN MASSACHUSETTS

Coonamesett Farm, Falmouth

The purpose of the project was to develop methods of culturing native crayfish (*Procambarus acutus*) in an economically viable manner. Crayfish were captured from the wild in a nearby cranberry bog and kept at the farm's already established polyculture system. Different stocking densities and feeds were tested as well as ways to minimize lethal and damaging interactions between crayfish. The crayfish were successfully kept alive and spawned in captivity. The crayfish all died when organic fish emulsion was added to the system which probably depleted oxygen levels.

## OFF-BOTTOM OYSTER CULTURE- SEMAC COORDINATED STUDIES

### Poor Boy Fisheries, Wellfleet

The goal of this project was to enhance oyster production in Wellfleet Harbor. Naturally occurring spat was collected on Chinese hats and then transferred to grow out bags. Oysters were then grown "off bottom" in a raised rack and on the bottom for comparison. The grower observed that the oysters in the off bottom raised rack experienced fast growth in terms of length, but did not grow into a wide, deep dishd oyster. The oysters grown on bottom had slow growth in length, but grew wider. The grower concluded that the best way to produce a legal sized deep dishd oyster is to employ both methods.



### West Bay Oyster Company, Cummaquid

The objective of this project was to develop a cost effective oyster nursery system using the Company's two growing sites in Barnstable Harbor and West Bay in Osterville. The project was designed to adhere to the new DMF regulations that prohibit any oysters larger than 2mm to be moved from the south side of the Cape to the north. Three methods were tested for growing 2mm seed in Barnstable Harbor; ADPI bags on rebar racks, ADPI bags on the bottom, and Tenax netting with PVC tenting. The intent was to then transfer these oysters to the grant in West Bay for final growout on bottom within a newly designed 2.0 acre predator exclusion device. The conclusion was that growing seed in ADPI bags placed on bottom nets or low racks is the most effective way to grow oysters in Barnstable Harbor, although there are challenges associated with overwintering because of build up of ice in Barnstable Harbor. Raising of oysters in West Bay became infeasible because of an outbreak of Dermo and a nearby dredging project.

### Private Shellfish Growers, Edgartown

The objective of the project was to attempt to culture oysters over a muddy bottom in 9-12 feet of water in a Katama Bay, Martha's Vineyard. The grower deployed seed in bags within steel cages. The 2mm seed deployed in June grew to 1.5 inches by February. Success was anticipated.