Project Final Report
Martha's Vineyard Shellfish Group, Inc.
Subaward #11705-Z5551009
August 2016

Title: *There is Gold in Them Thar Mussels; Testing the Feasibility of Golden Mussel Culture for Branding and Market Expansion of Farmed New England Mussels*

Objective 1: ***To produce both golden and blue shelled mussel seed in the hatchery and to compare larval*** *competence and growth through at least 1 mm in size.*

We have spawn, set and grown both blue and gold mussels to at least 3mm in shell length, and have not seen a difference in larval setting time or growth. However, we noticed that mussel growth is greatly arrested in tanks inside the hatchery, so it was hard to measure growth rates.

Objective 2: ***To deploy gold and blue mussel seed produced in the hatchery, onto the offshore mussel farm in the town waters of Chilmark, MA.***

This objective has been fulfilled, but not in the manner originally envisioned. We raised both gold and blue seed in the hatchery, set them on seed rope or transferred them onto seed rope from conventional setting screens. They were deployed onto the mussel farm in Chilmark, however recovery of the seed has been minimal. During this project period the mussel farm changed owners so maintenance of the lines was minimal for a long period. We are continuing to work and collaborate with Stanley Larsen, the new operator of the farm. During additional trips onto the mussel farm in 2016 we were not able to locate the gold seed we deployed in the summer of 2015.

Objective 3: ***To survey the response of seafood dealers and/or local chefs to a color branded aquaculture product.***

This objective has been introduced to the target audience through newspaper articles that have been met with interest. We have not produced any market sized golden mussels for them to actually sell or cook with.

Important things we learned about gold mussels

1. Mussel broodstock with only gold highlights towards the umbo, do not produce reliably gold offspring.
2. Many seed are gold as a smaller size but many darken with time/size.
3. Very gold mussels can be produced by using choice, gold broodstock.
4. There is no apparent difference in growth or survival between gold and blue larvae, post-sets or juvenile mussels

Valuable general knowledge about growing mussels in the hatchery

1. Large numbers of larvae are better set directly on some type of rope rather than conventional screens.
2. However, if set on screens, small seed maybe manipulated to byss to appropriate ropes.
3. A very low proportion of mussels are ripe to spawn at any given time, so large numbers are helpful for a successful spawn.
4. Using thermal stimulation of over 30C will likely kill mussels on the spawning table.

Illustrated summary of spawning and observations

Successful spawn #1- 6/24/2014

These broodstock were spawned at the Marine Biological Lab, and the larvae were raised at the MVSG hatchery.

Offspring from spawn #1 ranged in color. Some was separated by hand to monitor color change with time and size. Unfortunately, over time, both groups were blue and no gold shells could be found.

Successful (sponteneous) spawn #2 - 5/21/16

These broodstock (24 in total) were being held in chilled water when they spawned in their tank. Fertilized eggs were recovered and cultured as usual.

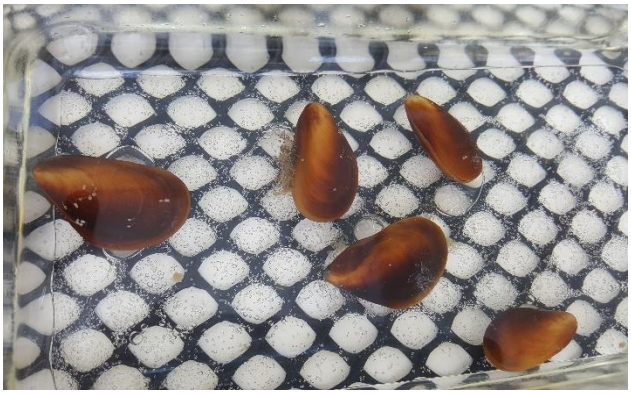
White seed rope with many small loops, was wrapped around a PVC frame and lowered into a larvae tank with eyed mussel larvae, for them to set onto.

Small, white seed rope on a nylon setting screen with golden mussel seed. These small loops were good for setting larvae and took up little space.

The small, white, hatchery rope was wound around large looped rope and covered with cotton socking. A few were hung off the MVSG hatchery dock and many were planted on the offshore mussel farm in Chilmark.

In summer 2016 the lines from the dock had grown 1 – 1.5” mussels, many of which were very gold in color. We have not been able to locate the lines from the mussel farm.

Mussels were stripped from the rope and sorted into 3 color categories. We were very pleased to see the good proportion of very gold animals.



There was an unsuccessful attempt to spawn about 50 gold broodstock in August 2016.