

1-14-2015

2015 AQ Summit: Mussels Sub-sector Update

Carter R. Newell

Pemaquid Oyster Company, musselsandoysters@gmail.com

Follow this and additional works at: https://digitalcommons.library.umaine.edu/ari_rd-ed



Part of the [Aquaculture and Fisheries Commons](#)

Repository Citation

Newell, Carter R., "2015 AQ Summit: Mussels Sub-sector Update" (2015). *Annual Maine Aquaculture R&D and Education Summits*. 18.

https://digitalcommons.library.umaine.edu/ari_rd-ed/18

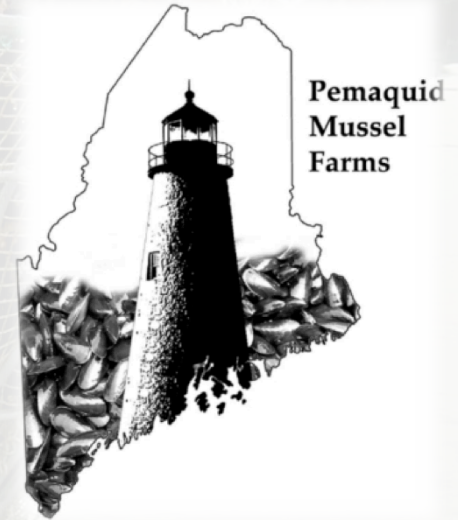
This Presentation is brought to you for free and open access by DigitalCommons@UMaine. It has been accepted for inclusion in Annual Maine Aquaculture R&D and Education Summits by an authorized administrator of DigitalCommons@UMaine. For more information, please contact um.library.technical.services@maine.edu.

Maine Mussel Farming

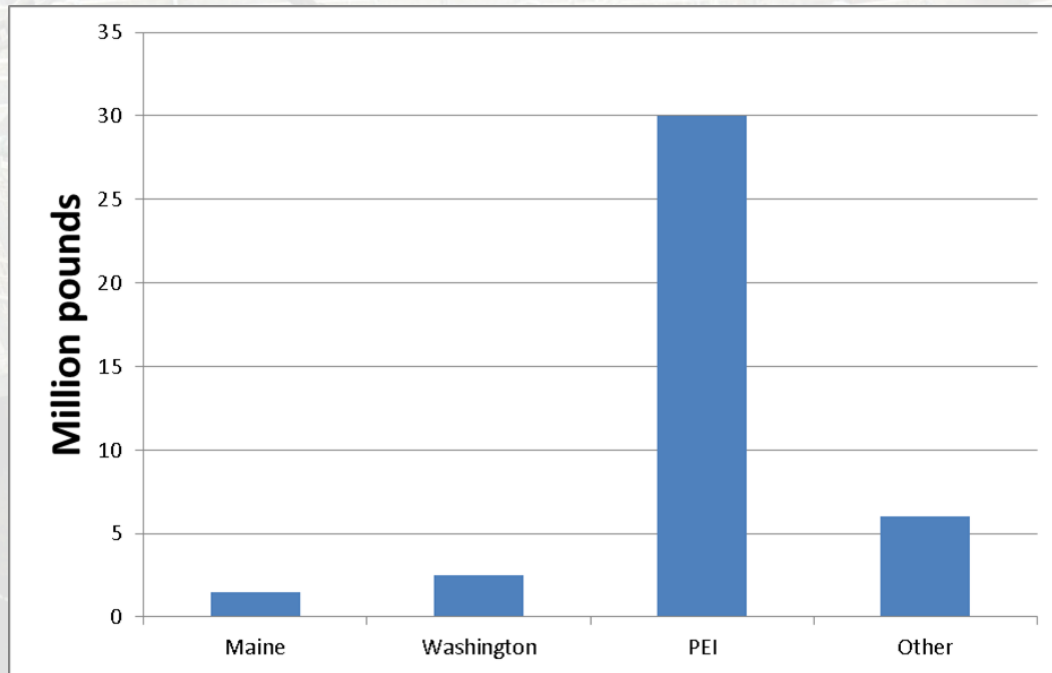
Carter Newell, Ph.D, President, Pemaquid Mussel Farms, Pemaquid Oyster Company, Adjunct faculty UM Marine Sciences, Civil Engineering

Industry, value, production technology, bottlenecks

- Maine and U.S. mussel production and consumption
- Culture technology: site selection, seed collection, harvesting, processing
 - How the big boys do it
- Improving aquaculture equipment
 - Bottlenecks
 - Future directions



Maine and U.S. mussel production and consumption



Culture technology



Bottom culture

(limited wild seed dragged off wild beds – low cost high volume – eider ducks – starfish - conflicts with clambers, wild fisheries and worm diggers)

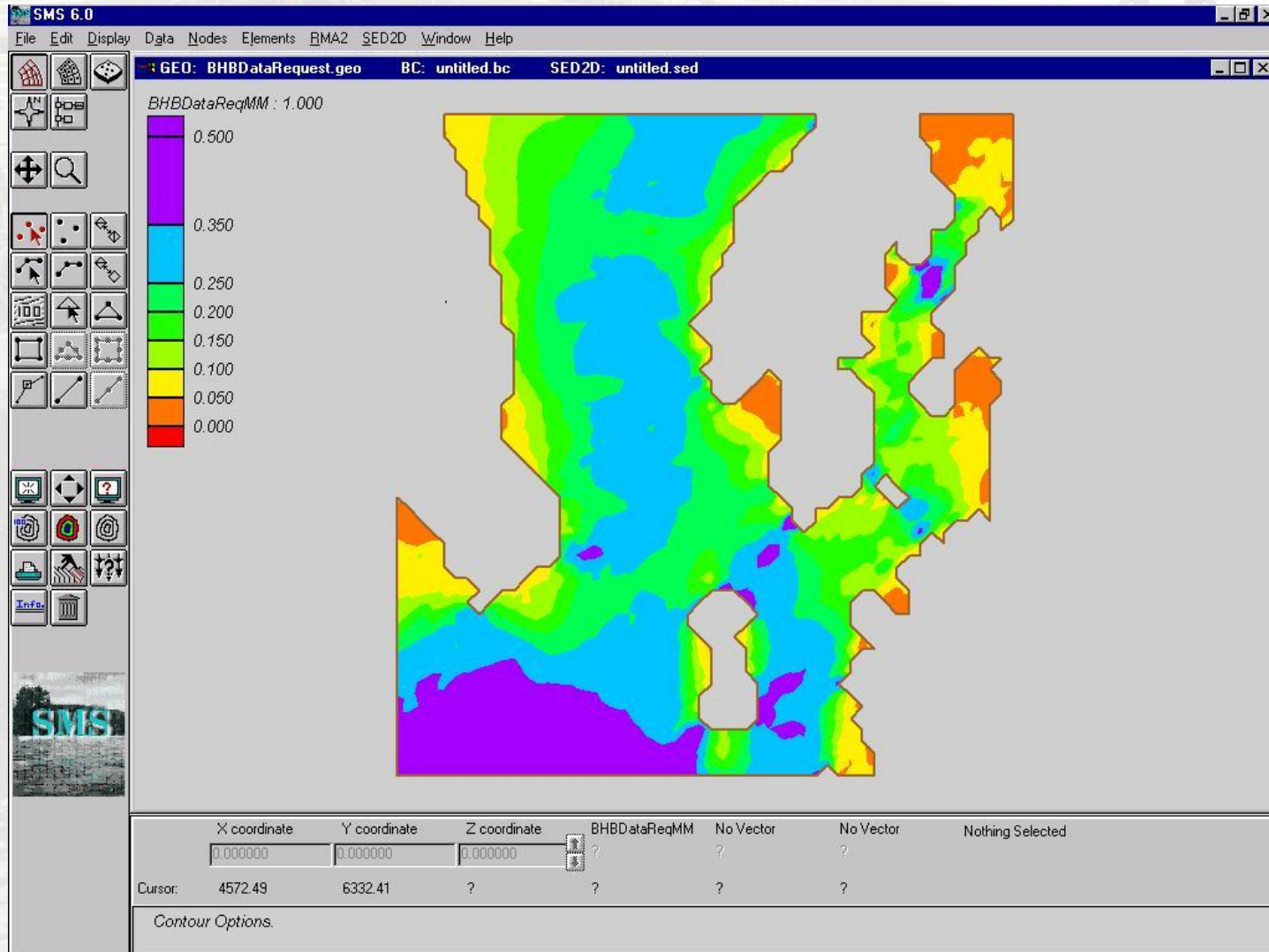
Raft culture

(abundant natural seed – high cost of gear – risk of storm damage – eider ducks – starfish)

Longline culture

(most efficient – can be used offshore – exposed to duck predation)

Site Selection: Currents can't be too high or too low

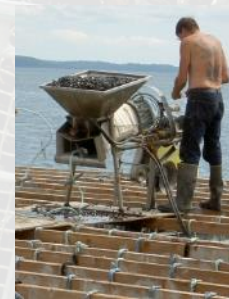


Mussel raft culture processes: Seed Collection

- Right density on rope – 2-5,000 per foot of collector
- Right timing of rope deployment: late June
- Right temperature and food for growth to seed size: ½ inch to 1 inch long.
- MAIC study: not all sites are good for seed collection. Starfish also a big factor. Coiled ropes collect more seed.
- Can collect it from predator nets and harvest lines.
- Seed attached to lines using biodegradable cotton
- Some people are experimenting with hatcheries but the final value of a mussel (\$.10 each) makes it cost prohibitive currently



Mussel raft culture processes: harvesting, processing.

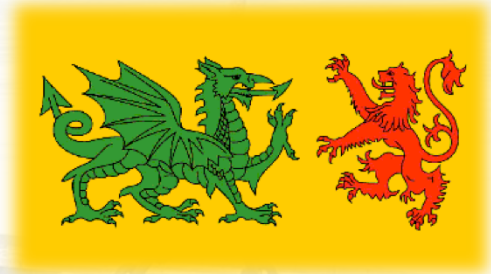


Harvesting and processing at sea: declumping, debysing





How do the BIG BOYS do it! Tech transfer visit to Northwest Spain: Galicia



Annual harvest
300,000 metric
tons



Boats



Basket
stripper

Grading into 3 sizes
mussels moved using
nets



Stripper mounted on
block

Materials Handling: Bulk bags and nets



Mussels
on nets

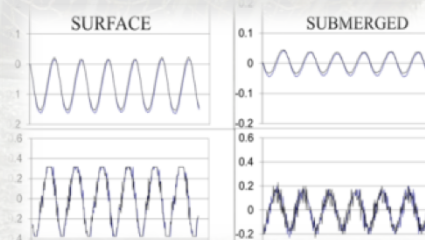
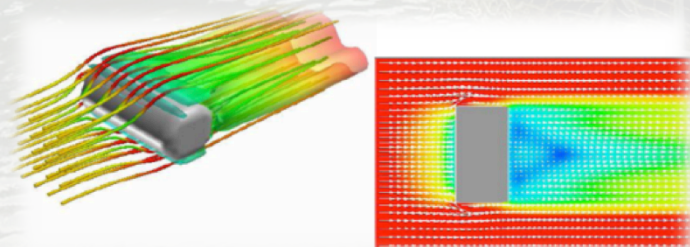
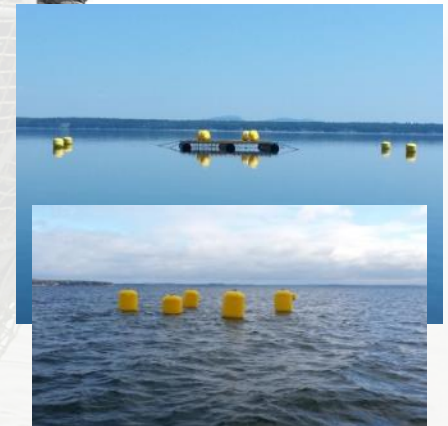
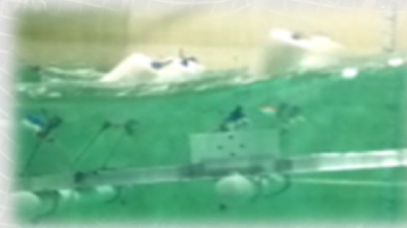
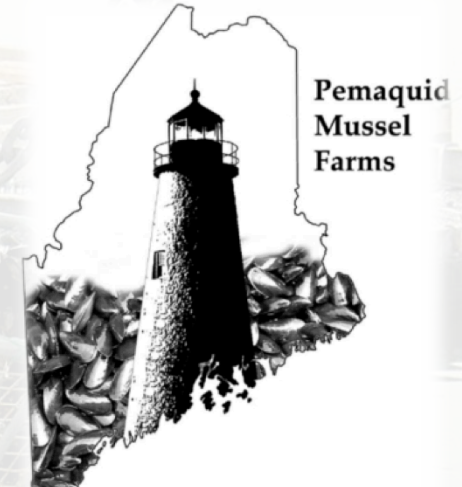
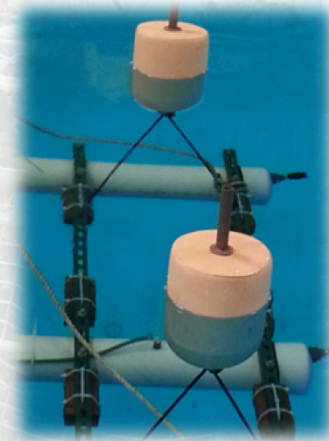


Bulk bag into
retubing machine

Graded seed

New gear design to allow for farming more exposed waters farther from shore

- USDA SBIR Phase II Development of a submersible mussel raft for use in semi-exposed areas and areas subject to drift ice
- Pemaquid Mussel Farms, 2013
- Research Partners: U. Maine AEWC, UNH Ocean Engineering, Blue Hill Hydraulics
- Commercialization partners: E.J.Prescott, Stillwater Metalworks, Subsolve USA, Kenway Corp.
- MTI Phase O, Business Acceleration Grants
- Provisional patent filed March 2014
- First commercial scale 35 ton raft submerged December 2014



Potential 100 jobs created and \$10 million in annual economic activity

Bottlenecks

- Having uniform graded seed available at a low cost in the spring and fall of each year
- Optimal raft culture systems including moorings, cost, efficient predator net handling and maintenance, no storm loss or drop-off of mussels from ropes.
- Processing machinery including harvesting, stripping, declumping (brushes), grading, debyssing, bagging
- Ports to unload at
- New value added products such as modified atmosphere packs or high pressure shucking

Future Directions:

Where do we go from here?

- Reduce risk with improved technology and site selection (submersible rafts for semi-exposed sites, improved mooring systems, ShellGIS, coastal mapping with EPSCoR oceanography)
- Increase efficiency (brush declumpers, seed collection, automation, longline system?)
- Possible co-location of mussel and wind farms offshore (ducks?)
- Technology transfer, extension, food processing (UM test kitchen?)
- Business planning and marketing
- We can grow it, the market is there, what are we waiting for?

