~ Razor Clams ~
they’re not just for shaving anymore!

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Why are we interested in diversifying local shellfish culture opportunities?

- Oyster and quahog are the big TWO in northeast!
- What happens to your business if you should lose a crop due to disease or some other uncontrollable environmental change?
- What other options do we have?
  - Soft shell clam
  - Bay scallop
  - Surf clam
  - European oyster

But....
The more options we develop – the more opportunities we create to sustain a viable business, to make a living, and to expand the aquaculture industry in the northeast!

Razor clam fishery

- Small scale fishery on-going in MA.
- Harvesting methods
  - Spearing
  - Dry digging
  - Pumping
  - Method of choice for harvesting is “salting”
- Landed value has approached $2.00/lb live wt.
- At its best, that translates to between $0.25 to $0.40 per piece.

What about farming them?

Need to consider - biology:

- Preferred habitat
- Population characteristics
- Food
- Growth
- Predation & Disease
- Behavior

Razor Clam habitat

- fine to medium sand – can be muddy sand if without silt
- low intertidal to subtidal
- can live in unstable sand and tolerate dynamic areas
- Prefers areas with moderate water flow
**Food & Growth**

- Suspension feeder and doesn't seem to feed on detritus
- Growth – data derived from studies in the North Sea

**Behavior**

Razor clams are very unique bivalves with respect to their mobility.

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**Behavior**

Razor clams are very unique bivalves with respect to their mobility.

- They dig
- They move on the surface
- They swim!

**What about farming them?**

Need to consider the market:

- Demand for wild product has been steady but low
- One New York buyer said he can move 1,200 lbs daily
- But, he needs consistent supply to develop market
- I identified six buyers between Cape Cod and New York in a phone survey
- Two markets identified
  - Live market
  - Processor market
**What about farming them?**

**Live market (Fulton Fish Market):**
- Formerly (Hoboken) Italian
- Now primarily (New York) Asian
- Product must be high quality – i.e. not sluggish (winter)
- Size acceptability
  - Buyer 1 - minimum 3 inches; not the largest
  - Buyer 2 - minimum 6 inches; only the largest

**What about farming them?**

**Processor market:**
- Grind clam for processed product
- Processors prefer largest sizes
- Couldn’t find anyone to discuss this market – does it exist now?

**Idiosyncrasies & culture considerations**

Need to consider:
- **Lack of knowledge about species** – from basic biology to culture technology
- **Mobility** – have to contain clam from escaping via digging, crawling, and swimming
- **Predators/disease** – protection & prevention
- **Over-wintering mortality** – may be a function of tidal exposure
- **Poor shelf-life** – can they survive up to a week out of sediment?

**Northeast Regional Aquaculture Center**

**Industry development of culture practices for the razor clam**

**The objectives of the project are:**
- Contract with a commercial hatchery to produce 500,000 juvenile (5mm) razor clams
- Solicit proposals from the shellfish culture industry to develop techniques for razor clam culture (ME, MA, RI, NY & NJ)
- Provide selected growers with funds to construct/develop their proposed culture technology
- Provide selected growers with seed razor clams to experimentally culture
- Monitor success of growing razor clams on each farm

**What do you call a one-year old razor clam?**

A little shaver!!!

**Dale Leavitt**

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(Southeastern MA Aquaculture Ctr.)

**Northeast Regional Aquaculture Center**

**Industry development of culture practices for the razor clam**

**Progress (2001):**
- Contract with a commercial hatchery to produce 500,000 juvenile (5mm) razor clams
  - Aquaculture Research Corporation, Dennis, MA
  - Broodstock from Duxbury Harbor & Nauset Marsh.
  - Spawned 4x10^9 razor clam larvae
  - Survival poor through setting and nursery
  - Received app. 150,000 on 24 July 2001 to hold in our upwellers at MMA
Progress (2001):
- Solicit proposals from growers to develop techniques for razor clam culture
  - 16 proposals received on 31 March 2001
  - 11 growers selected
    - MA, RI, CT, NY, & NJ
  - 2 subsequently dropped out

Participants selected to grow seed razor clams

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<thead>
<tr>
<th>PI Name</th>
<th>Company Name</th>
<th>State</th>
<th>Technique summary</th>
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Progress (2001):
- Provide selected growers with funds to construct/develop their proposed culture technology
  - A variety of techniques were tested
    - Bottom netted raceways
    - Boarded raceways
    - Bottom tents
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    - Bottom tents
    - Floating trays
  - Bottom trays
  - Bottom cages
  - Upweller

Progress (2001):
- Evaluate survival and growth in the various nursery systems
  - Survival
    - Ranges from 0 to greater than 100%.
  - Growth
    - Growth interval of app. 3 months.
    - Grew from 21mm at beginning of September to 40-50mm by end of November.

Progress (2001):
- Provide selected growers with funds to construct/develop their proposed culture technology
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    - Bottom netted raceways
    - Boarded raceways
    - Bottom tents
    - Floating trays
    - Bottom trays
    - Bottom cages

Progress (2001):
- Bottom trays in Nangakutan Pond

Progress (2001):
- Razor Clam Growth - Nursery

Provide selected growers with funds to construct/develop their proposed culture technology.
Progress (2001):
- Razor Clam - Nursery: Average Daily Gain

Progress (2002):
- Collected broodstock
- Distributed to:
  - ARC (commercial hatchery)
  - Rutgers University (research hatchery)
  - Mass. Maritime Academy (research hatchery)

Progress (2002):
- Hatchery attempts in 2002
  - Spawn in Dec 2001 @ MNA
  - Spawn in Jan 2002 @ MNA
  - Succumb to Vorticella infestation
  - Spawn in Jan 2002 @ ARC
  - Succumb to neglect due to illness of manager
  - Spawn in Feb 2002 @ Rutgers
  - Succumb to unknown factors
  - Spawn in Mar 2002 @ MNA with 1/2 to ARC and a few to EATT
  - Slowly lost due to unknown reasons
  - Water temperature?
- Bottom Line:
  - No razor clam seed for 2002 due to hatchery failure

Status of 2001 seed in 2002:
- New Jersey (nursery lost)
- Seed arrived in poor condition and didn’t survive through nursery
- Connecticut (bottom cage)
  - Doing well – alive & growing
- Rhode Island (bottom clam net)
  - Lost seed during first summer due to emigration problem
- Massachusetts
  - Barnstable (bottom nets)
    - Lost most immediately after deployment = emigration?
  - Wellfleet (bearded raceway)
    - High survival, little emigration & good growth
  - Lost all 2-3 inch razors in intertidal raceways in August 2002
  - Overheated?
  - Martha’s Vineyard (upwellers, floating trays & bottom trays)
    - Alive & doing well

Razor Clam Growth - Growout
The final final word

I am convinced that the razor clam is a viable alternative species for shellfish farmers in the northeast.

- Good price/market
- Encouraging growth rate
- Relatively simple (and common) culture technology
- Still have some bugs to work out in post-sett nursery to achieve adequate seed supply for growers.