

#### **Bill Walton**

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# SITE SELECTION

- Location, location, location
  - ••••
  - Site comes first! Choose gear second.
- Factors to consider
  - Biological
  - Physical
  - Economic & Regulatory
  - Social





# BIOLOGICAL FACTORS

- You are raising a filter feeding bivalve that requires phytoplankton to grow
  - Your site will need good food quality
    - Not all 'green' is edible
- What is oyster growth and survival at site?





# **BIOLOGICAL FACTORS**

- Predators
  - Crabs, drills, fish, etc.
- Fouling Community
- Disease
  - Dermo or Perkinsus marinus
  - www.oystersentinel.org
- Frequency of harmful algal blooms





# PHYSICAL FACTORS

- Salinity
  - What is the range?
  - Oysters do best above 10 PPT
    - Don't survive below 5 PPT, especially at higher temperatures
  - What is the duration and timing of low salinity events?
  - High salinity is actually fine for oysters but can promote disease & fouling
- Temperature
  - High temperatures cause stress, especially during air drying
  - Low temperatures cause stress especially when oysters are exposed at low tide





# PHYSICAL FACTORS

- Dissolved oxygen
- Water Depth
- Water Current
  - The more flow, the better generally
- Wave Exposure & Storm Protection
- Bottom Type
- Size of Area





# ECONOMIC AND REGULATORY FACTORS

- Required Permits
- Terms of Lease
- Water Quality Classification
  - Frequency and duration of closures?



### ECONOMIC AND REGULATORY FACTORS

- Logistics
  - What are the time/temperature requirements and can you meet them at your site?
  - Boat only access?
  - Duration of trip to farm?
- Security
  - Shared area
  - Cameras
- Marketability of Site



## SOCIAL FACTORS

### Viewshed Concerns

#### Conflicts with Other Stakeholders

- Navigation
- Recreational use
- Fishing

Marine Debris

Be a Good Neighbor!

• Adapt ECSGA BMP is there is a desire



## CULTURE GEAR OPTIONS

- On-Bottom Culture
  - No gear
- Off-Bottom Culture
  - Suspended gear
  - Floating gear
- Other Gear to Consider
  - Boat/work barge
  - Nursery equipment
  - Truck/trailer
  - Sorter/Grader
  - Etc.





# NEED A (COST-EFFECTIVE) PLAN TO CONTROL BIO-FOULING!

- Routine air-drying
- Power washing
- Brine dipping
- Other?



## **GEAR OPTIONS: SUSPENDED**





## GEAR OPTIONS: SUSPENDED

- WWW.EKONEOYSTER.CO
- Μ



# GEAR OPTIONS: SUSPENDED

#### Pros

- Easy handling and inventory control
- Tumbling (esp. in-line arrangement) can shape/clean oysters
- Fouling control accomplished by setting tidal height
- Automated grading and loading equipment available
- Tropical storm strategy

#### Cons

- Limited to narrow tidal range (3'-5.5' or so)
- Needs firm bottom
- Visually obvious
- Labor-intensive gear installation









## GEAR OPTIONS: FLOATING



# GEAR OPTIONS: FLOATING

#### Pros

- Easy handling and inventory control
- Can adapt to variety of water depths
- Tumbling (esp. when flipped or in rough water) can shape/clean oysters
- Fouling control accomplished by flipping
- Gear can be moved around farm easily
- Tropical storm strategy

#### Cons

- Cages get heavy to flip; may require additional labor
- Relatively space-inefficient due to flotation
- Need to be sure of anchors and reduce chafing



#### COMPARISON OF GROW-OUT GEAR (CODDINGTON, 2011) OysterGro™









Photos: Bill Walton, Courtney Coddington, & Julie Davis





### EFFECT OF GEAR ON SURVIVAL













### EFFECT OF GEAR ON OCTOBER CONDITION INDEX





# ADDITIONAL CONSIDERATIONS

- Cost of Gear/Production Costs
- Ease of Use
- Durability
- Ability to Replace/Restock Gear
- Customer Support



### GEAR ARRANGEMENT, INSTALLATION & ASSEMBLY





### ARRANGEMENT

#### Consider

- Wave action
- Exposure to storms
- Water flow
- Getting in and out





## **INSTALLATION**

- Don't skimp on infrastructure
- Consider professional help
- Pilings or no?
  - Jetted in or vibrated in
- Diver or other tools for anchors
- Neatness counts



# AVOID COMMON MISTAKES

- Buying too much seed for too little gear, too little labor
  - Sometimes get better survival by buying fewer seed
- Waiting for a problem to appear before doing something
  - Much, much harder to control established biofouling
- Grow what your customer wants, not what you think they want
  - Find out what your final customer wants

