Oyster BMP

Oyster BMP Stakeholder Session

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Hoopers Island Oyster Aquaculture Co.

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Purpose

- The use of physical and water quality parameters to spatially target the use of oysters as a BMP for nutrient abatement
- The role of commercial aquaculture in the implementation of a oyster BMP program to both benefit the environment and economy

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Spatial Context

Impaired Waters

- 2014 Integrated Report of Surface Water Quality (Category 4a)
- Chesapeake Bay Segmentation Scheme as amended in 2008

Habitat Suitability

- Salinity
- Temperature
- Water currents
- Nutrition
- Water column placement

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Salinity

- Survival Range (5 to 30ppt)
- Optimal growth (15 to 27ppt)
- Variability

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Temperature

- Pumping rates increase steadily as temperature rise from 8° to 28° C
- Maximum pumping rates were observed between 20° to 25° C
- Above 34° C began to show signs of stress

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Water currents

- Exert a strong influence on removal of biodeposits (feces and pseudofeces)
- Prevention of silting of bottom reefs
- Positive effect on filtering rate

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Nutrition

- Algal specie composition
  - Diatoms / Flagellates
- Concentration
- Percentage of inorganic sediments

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Water Column Placement

- Availability of Food
- Disease and Predation
- Cultch Availability
- Access / Maintenance
- Habitat Value

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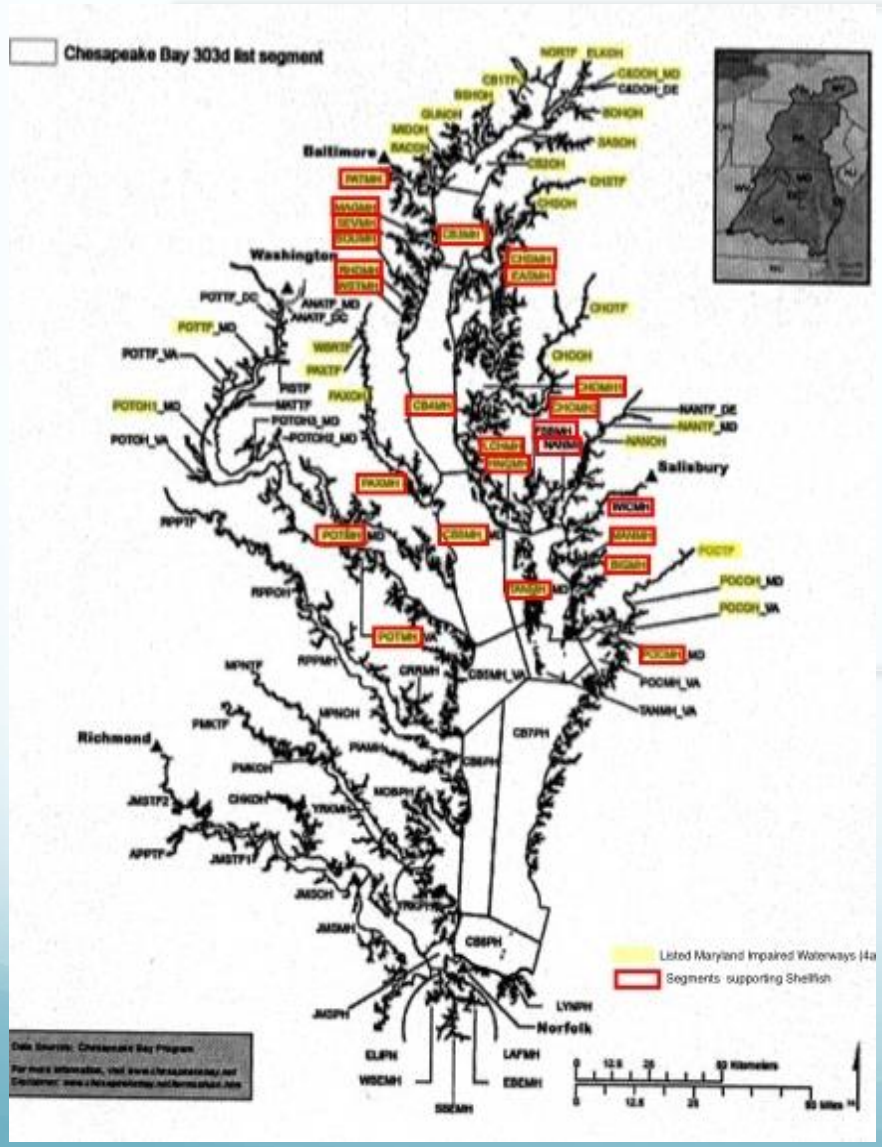

Maryland Portion

56 Total Segments

25 Oyster Suitable (5 to 30ppt)

- 22 Impaired (2014 IR)

31 Non-suitable (0 to 5ppt)

- 25 Impaired (2014 IR)

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A Plan of Implementation: Factors to Consider

- Suitable oyster stock
- Monitoring
- Maintenance
- Security
- Protocols

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Oyster Stock

$CR = aW^b$

CR= maximum clearance rate

W = dry tissue weight

b = weight exponent

- Thus the gill area is not directly proportional to tissue weight
- Weight exponent is less than unity (typically .67)
- Weight-specific maximum clearance rate is higher for small bivalves than for larger ones

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Proposed Implementation Plan

- Use of surface or sub-surface cages
- Stock with 1 inch seed oysters set on micro cultch
- Require periodic cage cleaning during growing season
- Maintain records on growth
- Set-up real time water quality monitoring stations
- Change out oysters after an average of 3 inches
- Replace cages as required

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The Role of Commercial Oyster Aquaculture

- Supply required equipment and seed
- Train personnel on maintenance and monitoring
- Set up regional co-ops

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Post Harvest Use

- Market Consumption
  - Direct (approved shellfishable waters)
  - Post Harvest Processing or Relay (non-approved waters)
- Oyster Reef Restoration / Creation

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Benefits

- Environmental and Economic
- Research and Development
- Training

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