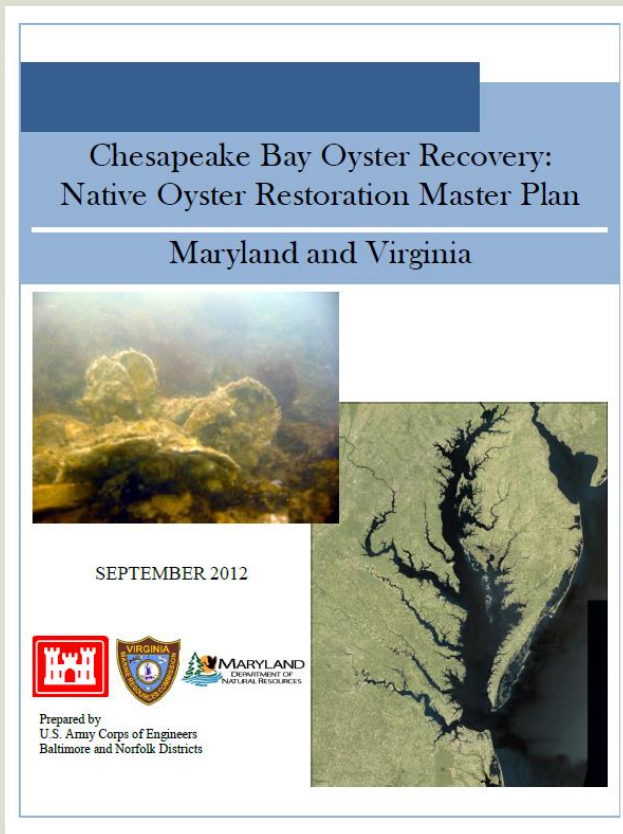


Oyster Restoration Tributary Selection Criteria

Criteria Used To Select Previous Restoration Tributaries

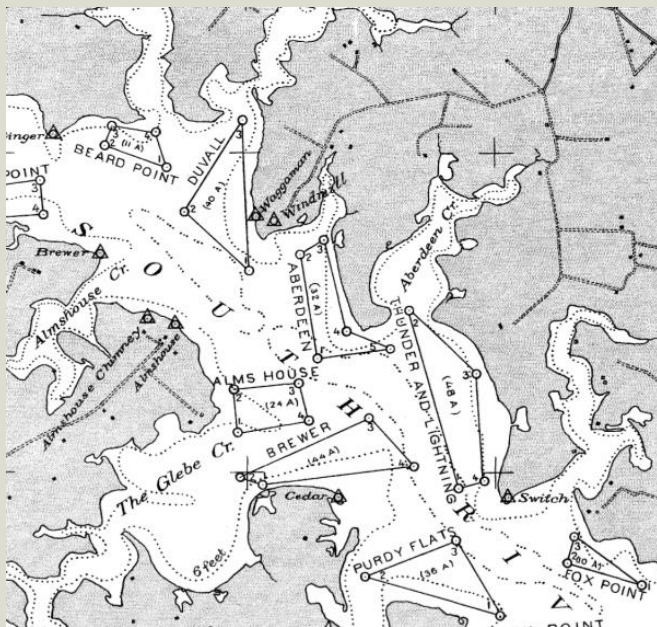
USACE Native Oyster Restoration Master Plan



1. Salinity (12-14 ppt)
2. Dissolved oxygen (≥ 5 mg/l summer)
3. Depth (<20 ft)
4. Potential for larval retention
5. Presence of historic oyster bars
6. Historic spat set

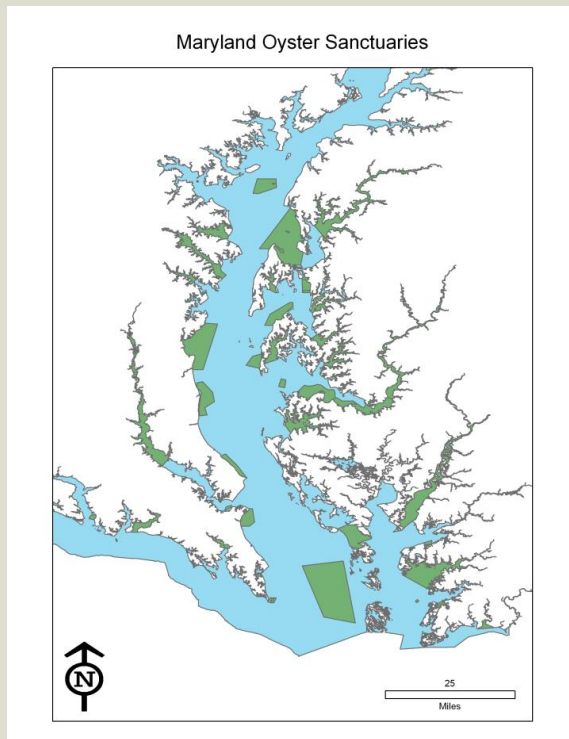
Criteria Used To Select Previous Restoration Tributaries

Additional Criteria



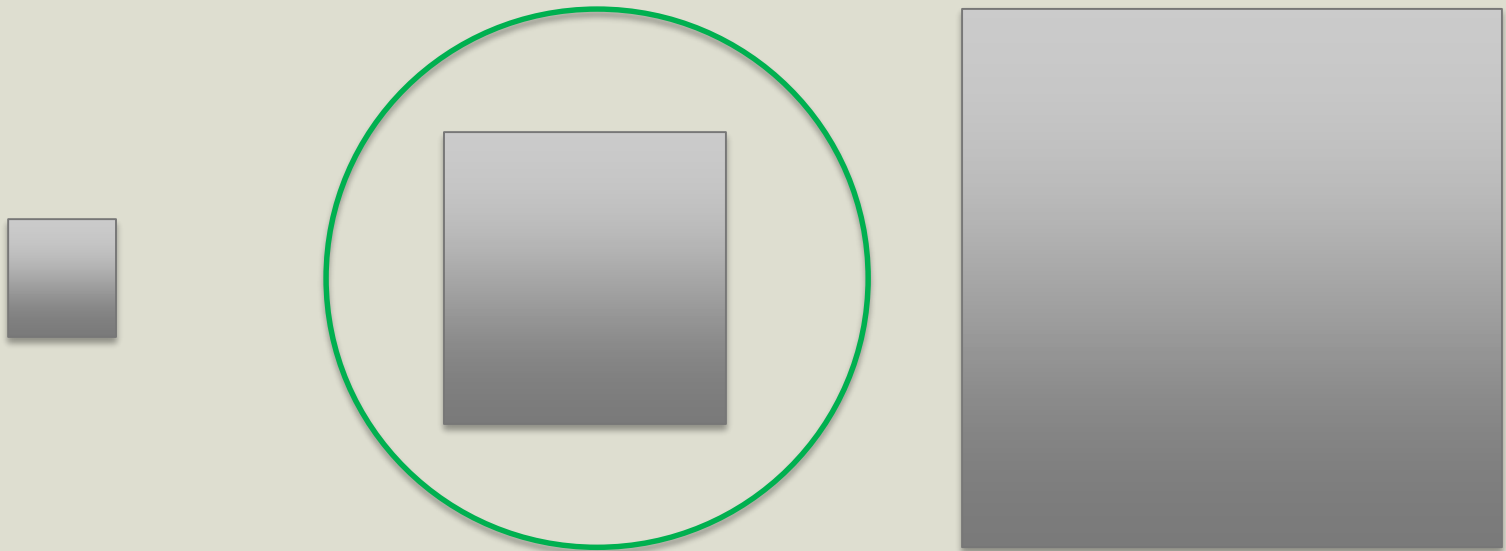
1. Sanctuary status
2. Amount of restorable bottom >8% of historic bottom
3. Meaningful but tractable size (creeks and small rivers, 3.861-200 square miles)

Requests from Secretary Belton



- A. Not in the middle Eastern Shore
- B. Requires little investment to meet restoration goals (areas needing little substrate and/or spat)
- C. Area already a sanctuary

For the next two tributaries:



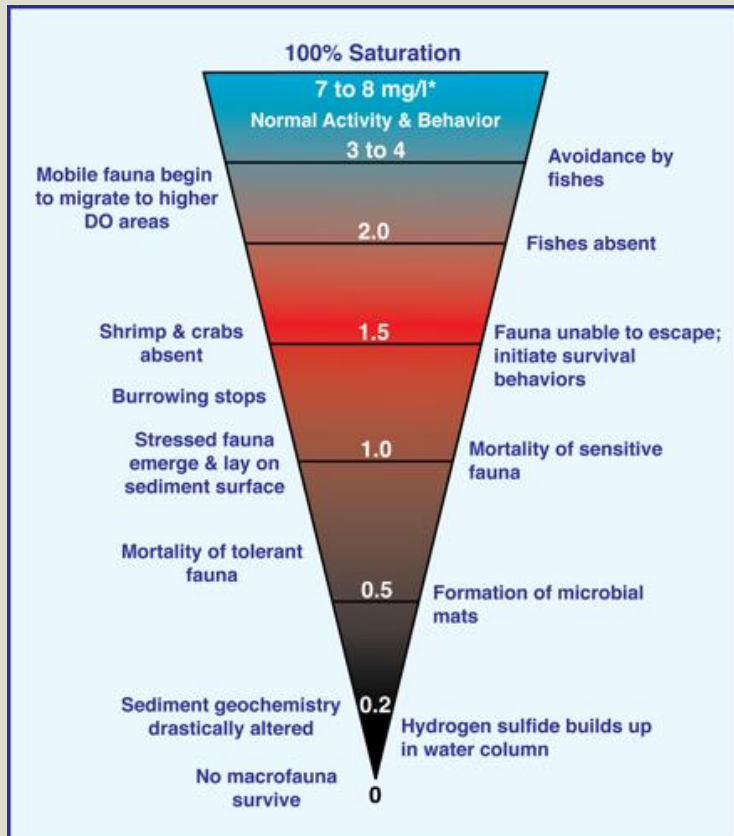
Meaningful but tractable size (creek or small river
with 175-1000 acres of restorable bottom)

Salinity



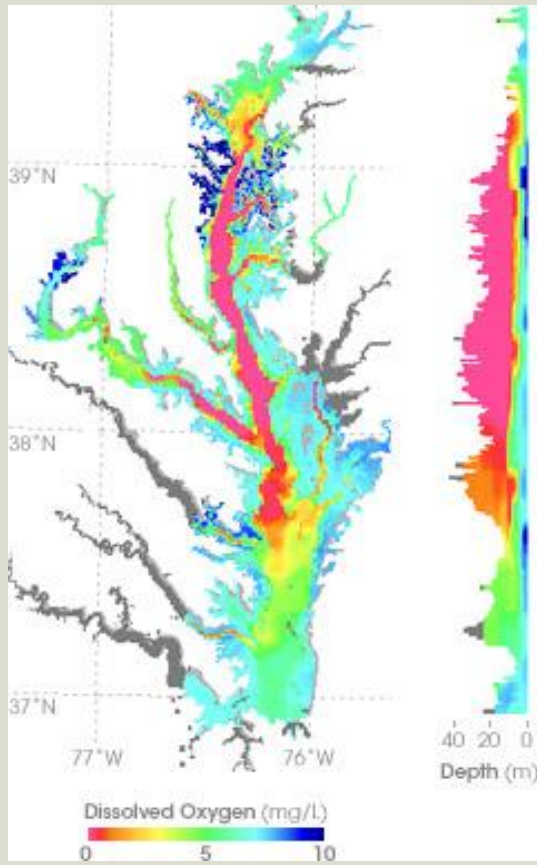
- USACE recommends >5 ppt
- Reproduction increases with increasing salinity
- Dermo optimum salinity 10-20 ppt
- MSX optimum salinity 15-30 ppt

Dissolved Oxygen



- USACE recommends ≥ 5 mg/l summer
- < 2 mg/l is considered hypoxic

Depth

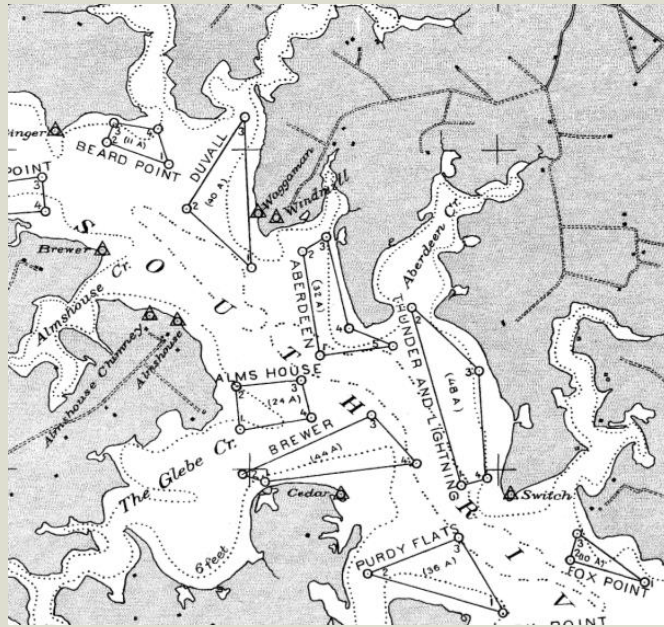


DO July 15-30,2004

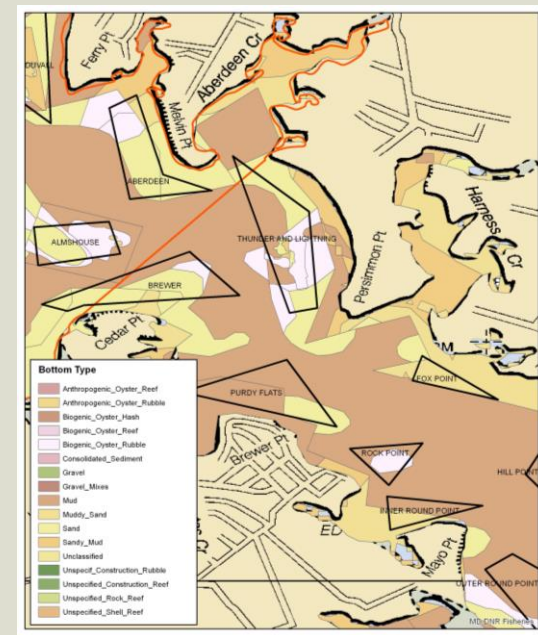
Map from Chesapeake Bay Program

- Related to dissolved oxygen
- USACE recommends <20 feet

Amount of Hard Bottom



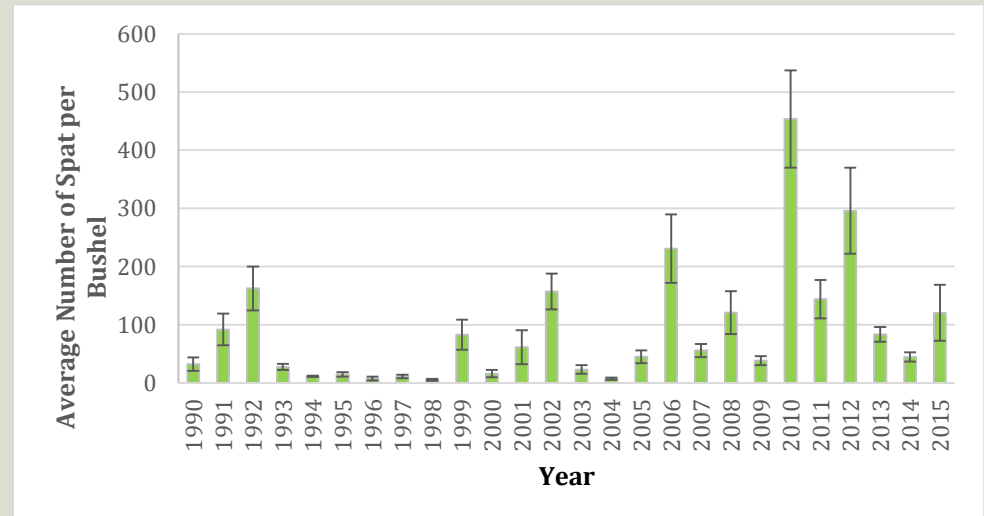
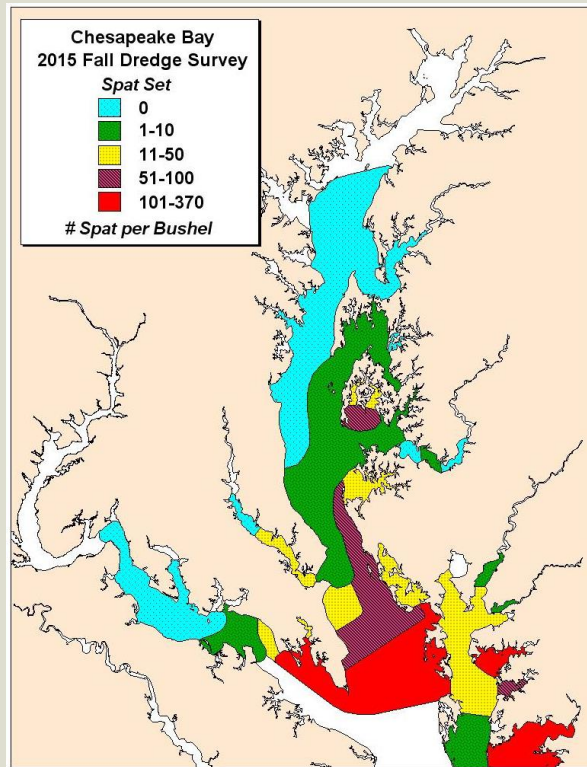
1907



2010

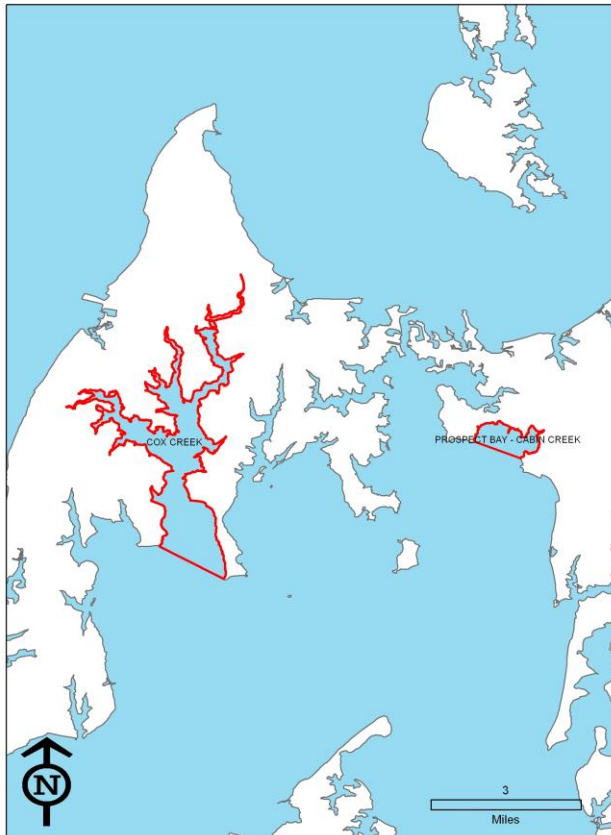
Amount of restorable bottom >8% of historic bottom

Historic Spat Set



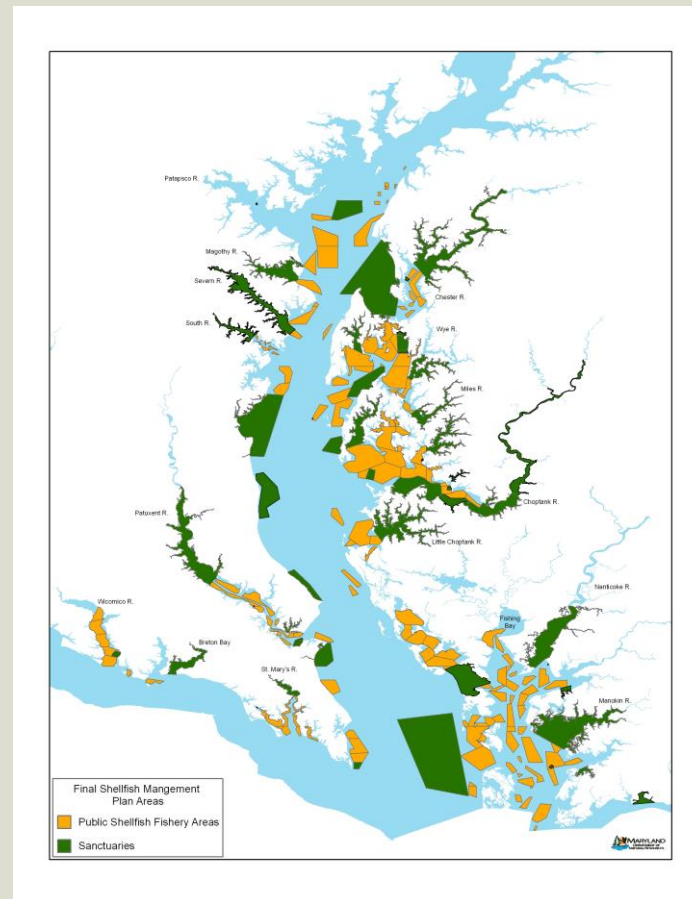
Sample Spat Data

Potential for Larval Retention

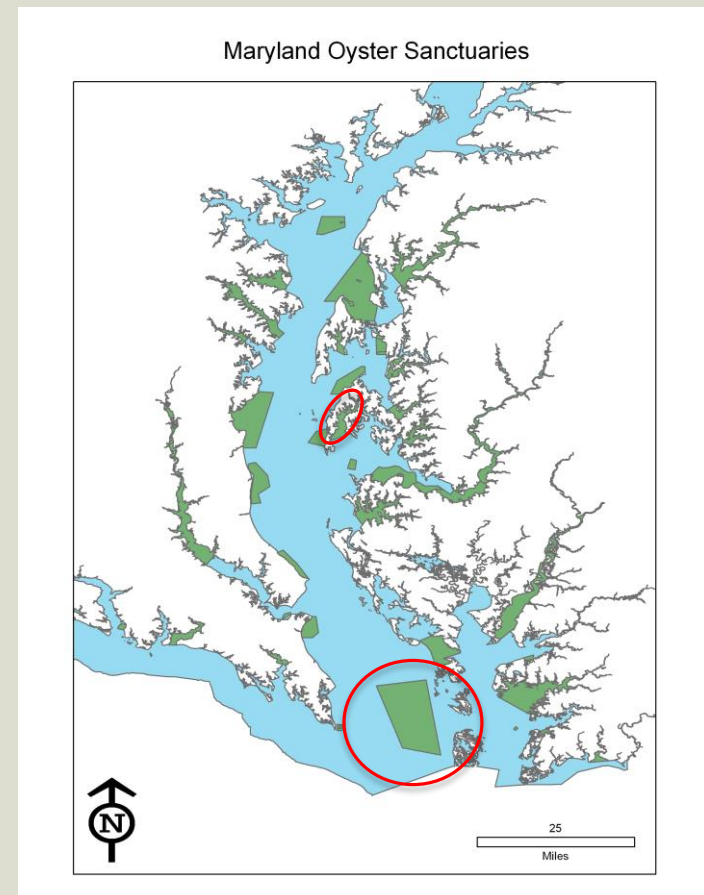


- Tidal flushing time
- Tributary shape

Proximity to Fished Areas

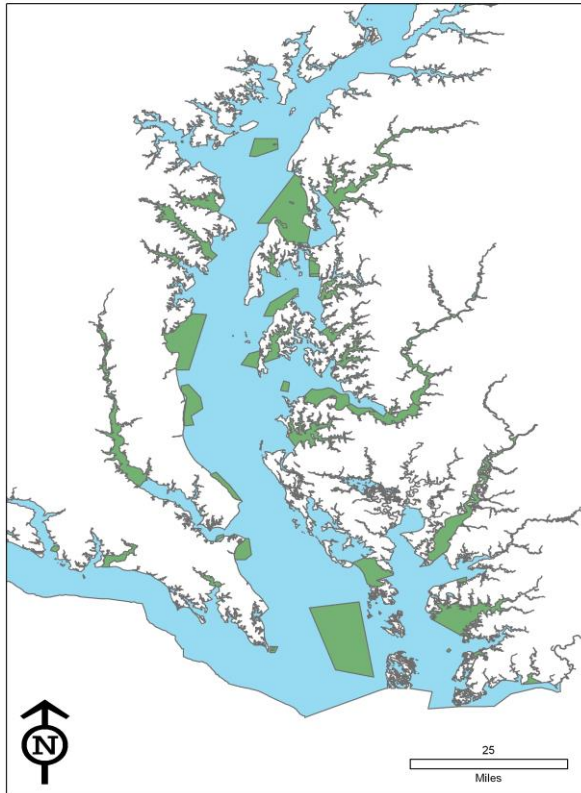


Enforceability



Geographical Placement

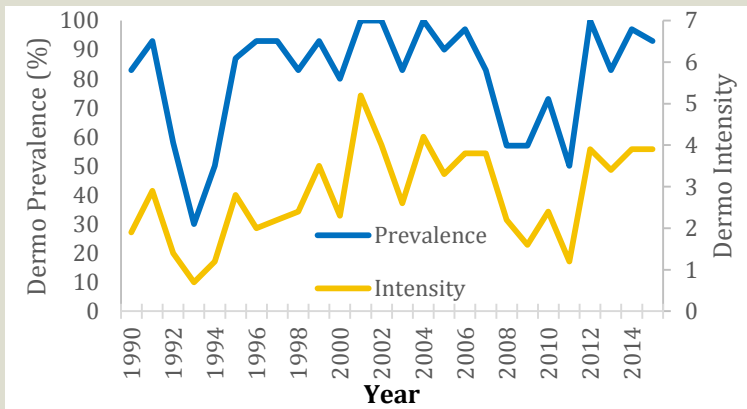
Maryland Oyster Sanctuaries



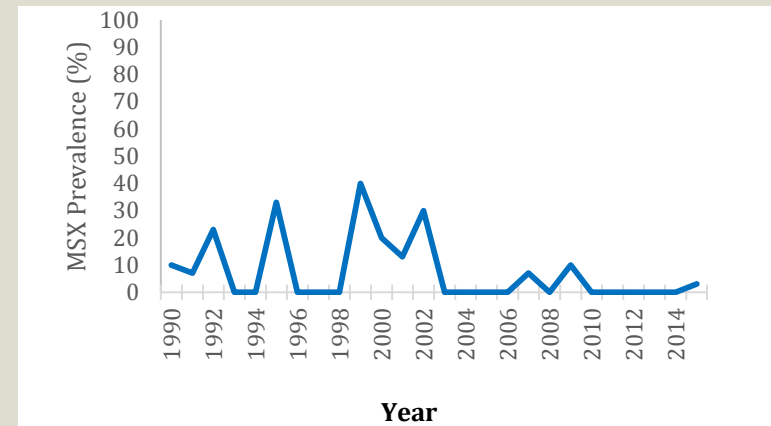
- Different salinity zones
- Spread out larval supply
- Spread out economic impacts

Historic Dermo, MSX and Mortality Levels

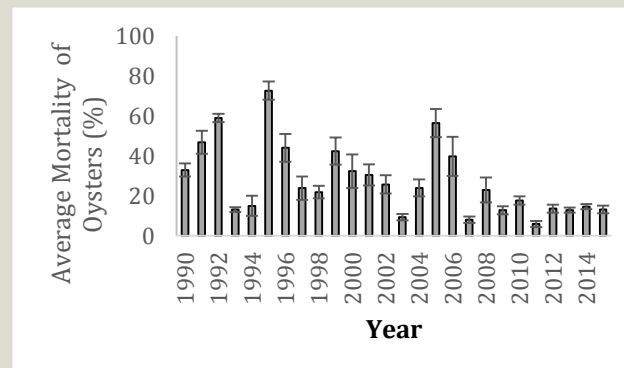
Dermo



MSX

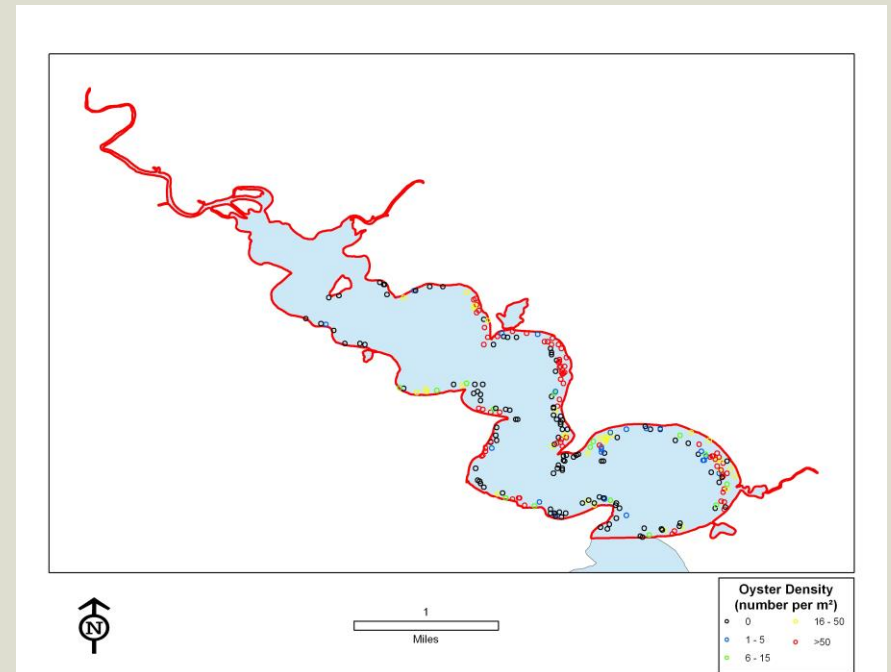
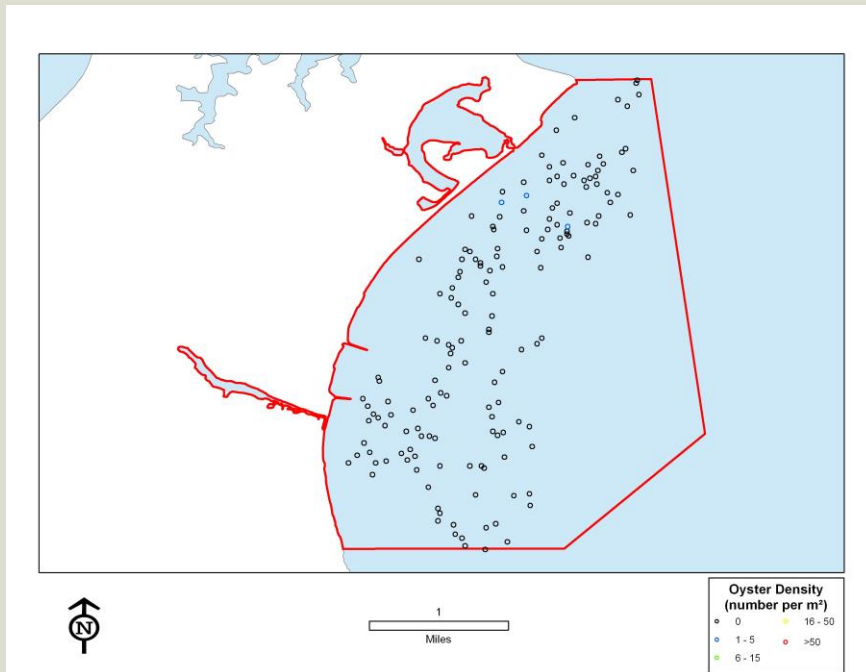


Mortality

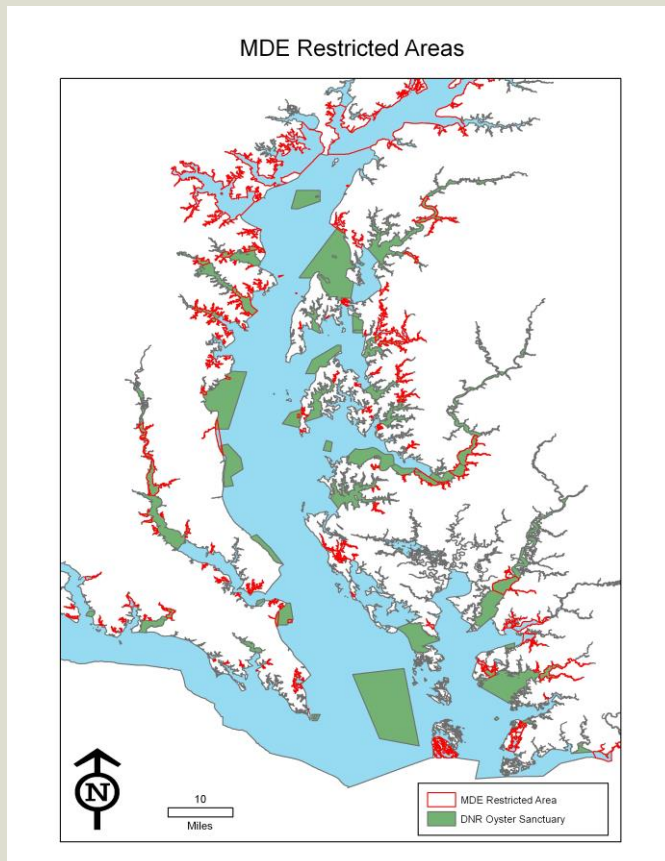


Sample Disease Data

Current Oyster Density



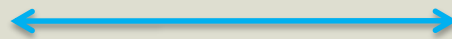
MDE Restricted Areas



- Lower incentive to poach
- May require additional NRP patrols

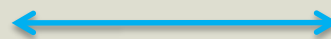
Tradeoffs Among Criteria

Disease



Spat Set

Land Use



MDE Restricted Area

Can't optimize all criteria