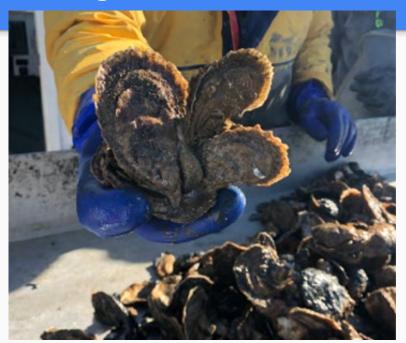
Science Needs for the Oyster Action Team

Bruce Vogt

Current Needs That Are Being Addressed:

- Pre-restoration data collection and analysis
 - Benthic habitat surveys complete in all 10 tributaries
 - GIS analysis of biological conditions and human use complete (ex: water quality; benthic habitat; SAV; oyster management regime; aids to navigation; pipeline crossings; etc)
 - These served as the basis for all 10 Oyster Restoration Blueprints, which are now complete

- Restoration Progress Tracking
 - Partners have established a GIS-based process for tracking collective progress
 - Key elements tracked are tributaries completed, acres restored, in-water restoration costs spent; summary report published annually.



Current Needs That Are Being Addressed (continued):

- Monitoring of Restored Reefs
 - Reefs are monitored 3 and 6 years post restoration
 - 96% of monitored reefs are meeting pre-established
 'Oyster Metrics' success criteria

- Developing Streamlined Monitoring Protocol
 - Current monitoring is effective but cumbersome and arguably over sampled.



Current Needs That Are Being Addressed (continued):

- Quantifying ecosystem services and economic impact
 - The large-scale restoration can continue to serve as living labs to understand ecosystem services
 - 7- year 'Oyster Reef Ecosystem Services' project complete
 - The Economic Impacts of Oyster Restoration and Seagrass Habitats of the Middle Peninsula, Virginia (Ihde, Knoche)
- Monitoring performance of restored reefs
 - Developing Rapid Assessment Protocol (RAP)- video and image scoring
- Oyster restoration BMP
 - In situ methods and quantification of denitrification rates by restored reefs over a range of Bay conditions

Emerging Science Needs

Climate Change

- Evaluating how and where oyster restoration can contribute to shoreline resilience
- Understanding impacts of climate and weather change on oyster restoration and productivity (ex: OA, salinity and temp changes, etc)

Refining restoration approaches

- Modeling and mapping larval source/sink dynamics
- Analyzing reef performance to inform future restoration
- Evaluating if tributary-based, large scale restoration is the appropriate scale to develop self sustaining reefs that are resilient to seasonal and interannual stressors
- Spatial analysis informing ways to best link restoration, wild harvest, and aquaculture at a tributary scale



