

Science Needs for the Oyster Action Team

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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

