A Proposed Framework for Analyzing Water Quality and Habitat Effects on Aquatic Living Resources of Chesapeake Bay

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Why?

• Valued by stakeholders and society
• Ecological/economic efficiency ("reckoning")
• Realistic/feasible targets and goals
• Restoration is costly
• Expectations
• Adaptive management
• Winner and losers
<table>
<thead>
<tr>
<th>Good news</th>
<th>Bad News</th>
</tr>
</thead>
<tbody>
<tr>
<td>• CB is not alone</td>
<td>• Challenging (Everglades)</td>
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<tr>
<td>• We know how to do this</td>
<td>• Answers may not satisfying; false negatives</td>
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<td>• Chesapeake is well studied</td>
<td>• Major effort</td>
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<td>• Long history of monitoring, modeling, and process studies</td>
<td>• Other management occurring to promote stability</td>
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Very Different Situation to “WQ”

• Questions change

• Not specific targets for many living resources

• Not an established set of data or models

• Greater uncertainties
Very Different Situation to “WQ”

• Many critters move

• Affected by many factors in a complex life cycle

• Responses are on longer time scales

• Ability to isolate responses to actions decreases
Framework

- Uses the results of the Watershed and Estuary
  - Types, timing, locations, magnitude
  - WQ and habitat

- Describes translation of these changes into responses of living resources
Foundational Concepts - Examples

- **Classic Stability**
- **Bounded Stability**
- **Episodic Stability**
- **Regime Shift**
- **Shifting Baseline**
Going Forward

• We know the question(s) pretty well

• Incentive (demand?) and ingredients are available

• Leverage existing analyses; identify new analyses
  – CA Delta, Everglades, Coastal LA, NCEAS, NAS, Columbia River

• Follow the framework, we can add analyses:
  – “meta-methods”
  – “meta-results”

• Rigorous and robust assessment

• We present this in early stage and welcome comments, criticisms, and suggestions (krose@umces.edu)
Key Messages

• Doable and messy

• Strategic

• Explained