Recommendations from Coastal Ecological Flows Working Group

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NC Coastal Waters Downstream of DWR's OASIS Basin Models
Working Group Membership

- Bob Christian ECU
- Eban Bean ECU
- Dean Carpenter APNEP
- Scott Ensign Aquaco Consulting
- Mike Griffin ECU
- Kevin Hart NC DMF
- Mike O'Driscoll ECU
- Mike Piehler UNC IMS
- Judy Ratcliffe Natural Heritage
- Fritz Rhode NOAA
- Bennett Wynne NC Wildlife Resources

- With aid of Stan Riggs and Dorothea Ames
Overall Objectives

• Assess applicability of previous coastal work
  – Other states
  – Greenville
• Develop stream typology
• Advance spatial modeling and mapping
• Establish relevant ecological and biological dependencies on flow
• Develop frameworks for potential coastal EF criteria and protocols if possible
• Identify factors limiting EF protocols and needed research within coastal systems
GEOMORPHIC TYPOLOGY AND ASSOCIATED IN-STREAM HABITATS

coastal rivers

by Scott Ensign
1st cut recommended designations
(Eban Bean and Mike Griffin)

• Origin by reach
• Evaluation of medium vs low slope cutoff
  – Medium => 2.51 mm/m
  – Low <= 2.50 mm/m
• Tidal effect is below 1 m elevation
from Eban Bean and Mike Griffin

Slope mm/m
- Piedmont Origin Medium Slope
- CP Origin Medium Slope >= 2.51 mm/m
- CP Origin Low Slope <= 2.5 mm/m
- CP Origin Tidal

Legend:
- North (N)
- Miles
- Kilometers
## Link of Stream Typology & Potential EF Determination

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<th>Origin</th>
<th>Slope</th>
<th>EF determinant</th>
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Research Needs

1. Determine correspondence of known discharge patterns with nearby coastal plain stream flow, stage and floodplain inundation patterns.
2. Evaluate juvenile abundance indices vs. flow and salinity/conductivity.
4. Determine the upper-most extent of tidal influence across coastal plain.
5. Quantify stream typology classes.
6. Evaluate Roanoke slabshell and other mussel distributions and abundance as informative of salinity and flow patterns.
7. Determine hydrologic metrics and characteristics of coastal streams.
8. Determine reference flow regimes for each river basin.
9. Assess the balance of withdrawals from and discharges to coastal streams.