

PSNERP-Nearshore Science Team (NST)

Monthly Meeting Synthesis

23-24 May 2007

Venue: WDFW Offices, Olympia, WA

Attendance: Si Simenstad (Chair; UW), Fred Goetz (USACE), Justin Boevers (UW), Hugh Shipman (DOE), Tom Mumford (DOE), Megan Dethier (UW), Miles Logsdon (UW), Curtis Tanner (USFWS), Tom Leschine (UW), Jen Burke (UW), Bernie Hargraves (USACE), and Jan Newton (UW; conf. phone),

Guests: Greg Hood (SRSC), Doug Meyers (PSAT), Blaine Ebert (USACE), Miriam Gilmur (USACE)

Primary Meeting Topics:

- Science Morning: Greg Hood, SRSC: *Developing a Strategy for Monitoring Skagit Delta Habitat Restoration*
- NST Case Study “Beauty Pageant” to develop a targeted case study proposal
- NCER2 Conference “lessons learned”
- Future Without Project, Change Analysis and Monitoring working groups updates

NST Case Study “Beauty Pageant”:

- Seven formal case studies proposed:
 1. Megan: study how armoring has affected beach profiles and biota composition, site dependent; no sites suggested. Concern: still difficult to draw conclusions from armoring and changes in shoreform.
 2. Si: compare emergent marshes and tidal channel systems and how they differ from dike breach and dike removal restoration compared to reference sites. Candidate sites: Elk River, Nisqually, Skagit, Willapa Bay. Concern that there are few great examples of dike breaches in Puget Sound
 3. TomM: study Point Wilson, Harstene Island, Case Inlet to document history of bulkheading along 3 ½ mile drift cell; use historical knowledge and local anecdotes to document changes. Strong social science element to this study. Aside question is how do you package information to property owners to demonstrate the affects from armoring?
 4. Hugh: study sediment transport north of Hood Canal Bridge, where sediment drift appears to have reversed since bridge construction. Concern: not necessarily a restoration focus, but would increase understanding of beach processes.
 5. Guy: addresses need to better understand temporal aspects of shoreline change, most understanding is spatially based. Need case studies for each Puget Sound nearshore environment (Rivers deltas/estuaries, bluff-backed beaches). A comprehensive analysis, site TBD.
 6. Fred: study beach nourishment as a management measure case study for effects on cross-shore and long-shore process & structure. Large social science implications for this measure, can study biological impact on beaches from nourishment. Nourishment is not a ‘fix the process’ approach. Until it is studied it will still be used as a management measure.
 7. Curtis: establish a change analysis data integration. Is there value added by studying change analysis at a higher resolution? PSNERP analysis is too coarse for site scale restoration.
- General discussion revolved around whether the NST should create hybrid case studies by combining some of these proposals, e.g., merge Megan and TomM’s cases and add TomL; refine Hugh’s study; and, take Si’s project add Guy and refine. General agreement that NST needs specific criteria for case studies to move forward.
- A lengthy discussion of shoreline armoring converged on a recommendation that the NST establish armoring as a major PSNERP research study, but acknowledge that research would obviously be longer than the development of the GI. Guy and Hugh will debrief NST on armoring conference they attended. Guy and Hugh will co-lead an armoring workgroup that will both help the GI and establish a long-term research focus for impacts of armoring.

NCER2 Conference Lessons Learned:

- Bernie: USACE Illinois River report is appropriate for NST. Should NST science morning with PhD candidate Heida Deifenderfer’s dissertation on cumulative effects monitoring. Very few

large USACE completed projects (~8); but, very little clear benefits to the nation by funding these large projects. Need to monitor to evaluate performance measures. Successful programs use collaboration

- TomM: Stakeholder involvement is needed from the start, time constraints prevent adaptive management experiments, NST needs capacity and infrastructure, , NST should establish a national peer review committee.
- Doug: OMB letter requiring detail on projects doesn't allow for adaptive management
- Si: Time and time again heard "Incorporate stakeholders into process...from the onset!" restoration was increasingly defined, designed and assessed from ecosystem *process* rather than *structure* basis; and, need to get beyond "plastic words" (and concepts) of adaptive management
- Curtis: Buzzwords of partnership is being replaced by adaptive management. Adaptive Management is used to imply fixing things that don't work; there is a disconnect between USACE policy and realities of restoration.
- Discussion: Can there be a more systematic approach to learning? PSNERP should have a greater presence at this conference (next time in SF '09). PSNERP should start sharing lessons learned with restoration community.

Science Morning: Greg Hood, SRSC:

- Traditional monitoring: compare one site with one or more reference sites, determine rate of change using indices of similarity. Problems: hard to find reference sites, endless variations of comparisons, high noise:signal, hypotheses not very specific, cost:benefit high – must prioritize.
- Effectiveness Monitoring: determines whether implementation of restoration actions resulted in anticipated conditions. Anticipation is an implicit hypothesis, but prediction is an explicit hypothesis. Restoration science needs predictive models, monitoring should test predictive models.
- Hypothesis based monitoring: prioritizes parameters, facilitates development and testing of models, can sometimes result in stronger tests of predictions, model can substitute for reference sites, more likely to result in learning.
- Need to test predictive models: Why: to develop effective planning, design, and management; inform policy; improve basic understanding of ecosystems; provided examples of (1) vegetation prediction – probability of encountering a certain species at a certain elevation based on what was collected at the reference site. Model weakness: Skagit central, needs to include other variables such as soil salinity, sediment grain size, competition, etc... Model Goals: Generality & Regional utility.
- Also described (2) climate change impacts model for Skagit, where monitoring three scenarios among vulnerable vs. resilient sites; benefit: early warning of ecosystem change; (3) tidal channel prediction model based on channel hydraulic geometry; problems with traditional approach: drainage basins difficult to delineate, vegetation affects flow velocity/direction; instead the approach delineated islands. Model weakness: Skagit centric, spatial variation, broad confidence intervals, anthropogenic influences in reference sites; (4) fish habitat use prediction – research advantages and differences in channel geometry, where there are large differences in habitat usage of depositional banks vs. cut banks; and, (5) salmon population response prediction (work of Eric Beemer and Correigh Greene) – juvenile Chinook density dependence in the tidal area; study predictive effects of restoration (current pathways vs. restored pathways), and qualitative reporting was used in predicting effects.
- Perspective on cumulative effects: non-linear effects (e.g., threshold, spatial pattern effects) are 'more interesting' than linear/additive effects. System-scale cumulative response variables from Beemer and Greene model include distributaries, marsh area species habitat, sediment routing, detritus production, and indirect effects. Variables selected on what can be viewed at system-scale. Take home message at site scale – research that has established relationships argues that geomorphology metrics might be of more use than counting fish; much monitoring doesn't test relationships between geomorphology and vegetation, fish, etc.