

PSNERP-Nearshore Science Team (NST)

Monthly Meeting Synthesis

14-15 March 2007

Venue: Room 314 FSH SCI, University of Washington, Seattle, WA

Attendance: Si Simenstad (Co-Chair; UW), Fred Goetz (Co-Chair; USACE), Hugh Shipman (DOE), Tom Mumford (DOE), Megan Dethier (UW), Miles Logsdon (UW), Curtis Tanner (USFWS), Guy Gelfenbaum (USGS), Kurt Fresh (NOAA Fisheries), Jan Newton (UW), Bernie Hargraves (USACE)

Guests: Miriam Gilmur (USACE)

Primary Meeting Topics:

- (1) Functional subdivisions of Puget Sound
- (2) ESRP Special Considerations
- (3) Monitoring and Change Analysis updates
- (4) Science Morning: SCALE (Megan Dethier)

Functional Subdivisions of Puget Sound:

- NST endorses subdivisions of Puget Sound that are based on physicochemical or ecological processes rather than administrative (e.g., county) or 'salmon' watersheds (e.g., WRIA).
- Proposed subdivisions based on basin bathymetry, water masses, mixing, etc. are reasonable given not other alternative; advocate merging Strait of Juan de Fuca with eastern Strait subdivision and not sure there is justification for finer PSAT separations of southern Puget Sound and western (central basin) inlets.

ESRP Special Considerations:

- NST needs a consensus policy that defines conflict of interest (COI), for ESRP and any future situations where either real or perceived COI might be interpreted; Si will draft both NST definition and policy for NST consideration and forwarding to PMT.
- Draft language: "Nearshore Partnership is interested in developing demonstration projects to advance Science Plan" referencing Science Plan appendix.
- Candidate priorities: (a) restore beach processes; (b) looking for cumulative/interactive actions; and (c) overwater structure removal (involving eelgrass).
- Further discussion scheduled for 5/18 NST meeting if ESRP RFP is delayed.
- Purpose:

Monitoring and Change Analysis Updates:

- Preview of Friday, March 16, CA/IT WG workshop on "AUbyAUflyby" review of how WRIA9 change analysis process determined historic-current shoreform change and interpretation of shoreline (alterations), buffer and drainage unit attributes at AU scale.
- Intended products = refined "storylines" describing what changes we can derive (and believe) from our change analysis procedures, and categorization of the restorability of these changes; by-products = recommendations of what procedures to drop or modify in our change analysis methodology for scaling up to Sound-wide application in order to maximize our ability to analytically document the storylines with the least uncertainty
- The questions that we would sequentially address as we "fly by" each AU:
 - What are the shoreform and other (attribute) changes documented for this AU?
 - (for each) Is this change logical and apparently "real"?
 - Could this be a natural (variable) change? Is it obviously an anthropogenic (driven) change? Is the source of the change too ambiguous to determine?
 - What is the most likely cause of the anthropogenic changes?
 - Is this change reversible?

Science Morning: Monitoring for Change Detection in the Marine Environment--The "SCALE" Program and Subsequent Experimental Stuff; Megan Dethier

- **Shoreline Classification and Landscape Extrapolation:** Megan Dethier, Carl Schoch, The WA Dept of Natural Resources Nearshore Habitat gang, especially Helen Berry
- Because natural communities are incredibly variable in both space and time, detection of ecological change must involve: (a) extracting signal from the noise; (b) factoring out environmental variables; and, (c) being clear about the scales in space and time being studied. Thus, need to know: if we study a community in one place or time, when is it valid to extrapolate those results to other areas and times?
- Hypothesis: Within a basin, area, and site, we should be able to extrapolate the character of the biota from one segment to another (but the farther away you go, and with greater differences in physical conditions, the more different the biota will be)
- Approach: Use sampling protocol that allows comparative analyses of nearshore community structure across various scales of space and time
- Methodology: (a) partition a shoreline into spatially nested, physically uniform segments; (b) gather quantitative data on physical attributes of each; and, (c) cluster these data, and choose replicate beaches from within geophysically similar clusters. Annual sampling 1997-2001 to monitoring intertidal communities at 5 regions of pebble-sand beaches, from southern (Budd, Case & Carr inlets), south-central (Browns Pt., Redondo, Normandy Pk.), central (Seahurst, Brace Pt., Alki Pt.), north-central (West, Carkeek, Wells), and northern PS basin (Edmonds, Possession, Double Bluff); usually June; 3 beaches per site; at each beach, 50 m transect at MLLW, 10 quadrats per transect for epibiota, 10 cores per transect for infauna, sieved to 2 mm; taxa identified to species when possible
- Results: (a) greater distance leads to more different communities, even within one substrate type, where intertidal biodiversity and biomass are much higher at the oceanic end of the Puget Sound estuary; (b) where sites done multiple (3-5) years, consistent pattern among sites
- Subsequent Washington Sea Grant study: Linking Nearshore Processes with Intertidal Diversity in Puget Sound: Megan plus Jennifer Ruesink (UW), the DNR gang (Helen Berry, Amy Glaub, and Blain Reeves), Carl Schoch and many others
- Approach and methods: Testing hypotheses about processes controlling the biodiversity patterns, at three sites: Budd Inlet, Browns Pt., and Carkeek Park.
- Hypothesis 1: Growth rates are higher at the marine (north) end, leading to more food for the whole food web; Result = growth rates of seaweeds and oysters do not follow this trend
- Recruitment of diverse organisms is as high or higher at the estuarine end of the Sound
- Hypothesis 2: Recruitment rates are higher to the north; Result = predator-caused mortality of recruits is low and cannot explain trends in survival
- Hypothesis 3: predation on recruits (including clams) is higher in the south, resulting in fewer numbers and species of juvenile (and adult) individuals there; Results =
- Conclusion: It appears that relatively subtle differences in physical factors, especially temperature (higher and more variable in the south) and salinity (lower and more variable in the south), may cause high mortality of young plants and animals in the estuarine end relative to the marine end of the Sound
- It's better to be at the marine end, i.e. nearer the San Juans!

Miscellaneous

- NST meeting schedule:
 - June 27-28: Seattle
 - July 19; Olympia
 - August 22-23; Seattle
 - September 12-13; Seattle
 - October 24-25; Olympia
 - November 28-29; Seattle
 - December 20; Seattle