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Skokomish Delta Survey June 21-26, 2013 Followup

1 message

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Mon, Jul 1, 2013 at 8:49 AM

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Thank you Team Skokomish!

Thank you WADNR for your assistance, Rose, Meg, and Geoff really helped out and big thanks to Shannon and Arthur for help navigating the river, and Chad for your help over the weekend!

Although we asked Shannon for weather like this weekend, a few lightning and thunder storms didn't slow us down. Splitting into 3 teams, we managed to sample 60 sites for substrate in triplicate which will be analyzed in our USGS sediment lab for particle size, carbon and epi/ifaunal invertebrates (see attached). At most sites we took landscape photos and many have photos from a mastpole erected up 20 feet. Twelve sites along three transects stratified by 0.5m elevation intervals were coordinated with Chris Eardley, Skokomish shellfish biologist, to help monitor changes in sedimentation affecting oyster nourishment. At 10 of these sites sediment accretion grids were emplaced to monitor sedimentation rates. Along with the substrate sampling we also mapped the outer edge of the eelgrass with a 900 KHz sidescan sonar and tested a new single beam sonar operating at 280 KHz that images the seafloor depth and eelgrass cover and canopy height well.

We deployed 4 Acoustic Doppler Current Meters to measure currents and tides continuously every 5 minutes for the entire week to quantify the tidal prism across the estuary and the partitioning of river flow and tidal flow through the east and west distributaries. We supplemented these with cross-channel measurements at a range of tidal heights so we can now extrapolate into the future based on water level. While measuring river and tidal flow we also measured the salt wedge with a CTD to examine the extent of landward intrusion, thickness, and phasing of the salt wedge with flood and ebb tide. The salt wedge reached to about 300m of the southern tip of Nalley's Island and we observed and video taped a lot of jellyfish swept along with the salt-wedge intrusion up into the river!

We also mapped the elevation of several distributaries crossing the tidal flats which may have been filled with water when we had our last topographic LiDAR survey flown. These data will clarify the depth and morphology of these channels and be used to monitor channel migration, incision/erosion, and habitat volume in response to restoration, changes in fluvial sediment delivery with river restoration and climate change. While mapping the distributaries we noticed large 20-30 cm tall sand waves moving (see photo) and significant suspended sediment in flux despite pretty low flows. We measured the currents, video taped the sandwaves and sampled them with a bedload sampler. We witnessed sandwaves bury 15-cm of a PVC pipe I placed for the video within about 10-minutes and initial estimates of the bedload indicate that an extensive amount of sediment rich in organic matter is constantly in transport across the tidal flats making its way to the depths of Hood Canal each day.

I was struck by how diverse the Skokomish Delta is in terms of morphology, substrate, vegetation, and hydrodynamics and suspect that the high flux of sediment with a significant coarse fraction provides for a lot of important habitat complexity. This habitat complexity might turn out to be very important for biodiversity and resilience.

Thank you again for all of your support.

Eric

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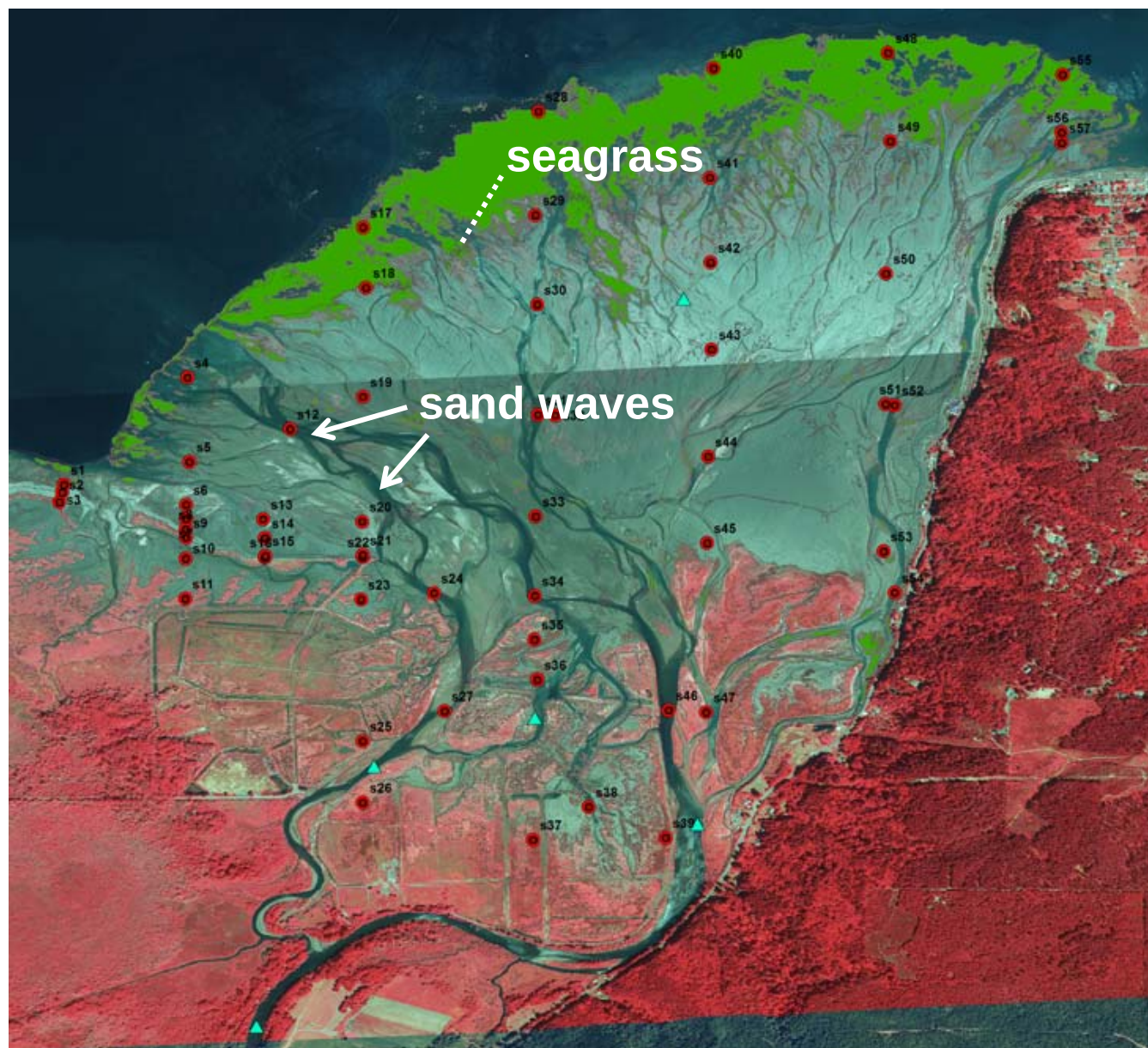
ooooo EXCUSE ME I DON'T MEAN TO IMPOSE, BUT I AM THE OCEAN ooooo



SkokomishSurvey-June2013_Followup.pptx

3287K

Skokomish Delta Survey Highlights



3 teams, 10 participants

● 60 Sed/Inverts, photo quadrats

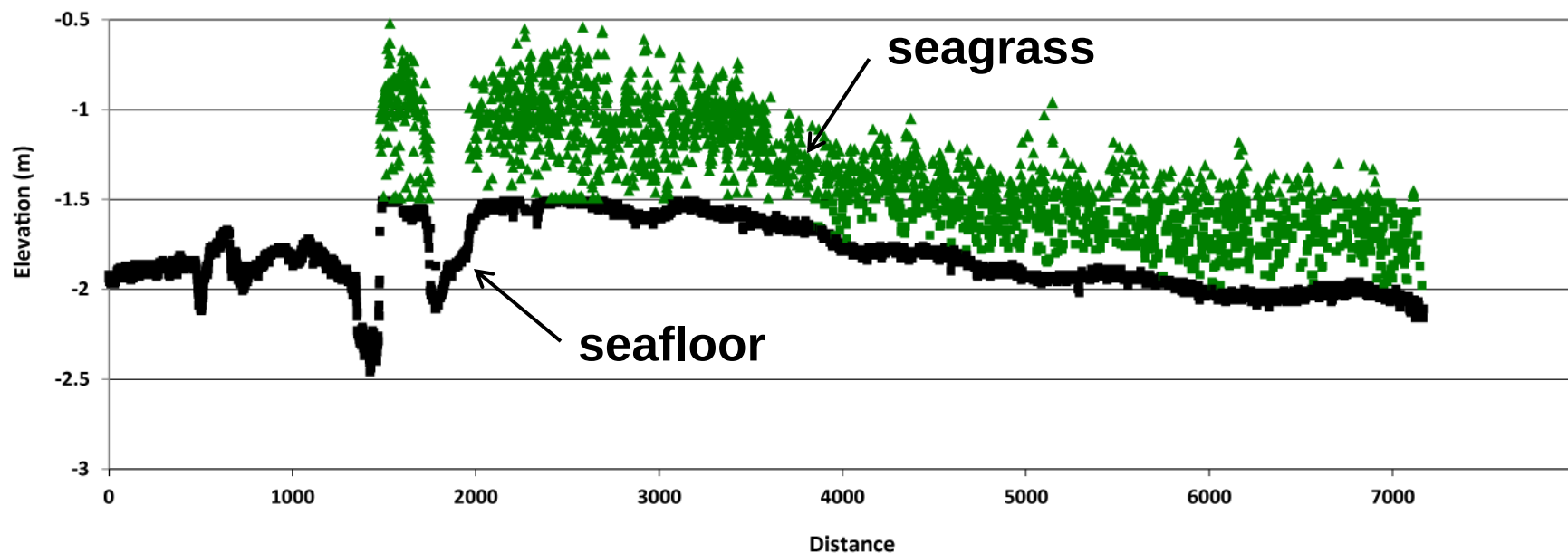
▲ ADCP deployments (n=4), cross-channel measurements (n=14), CTD (n=60) for currents, flux, partitioning and salt wedge intrusion

10 sediment accretion grids

⋯ Example eelgrass map transect (slide2)

↘ Sand wave, bedload measurements (slide3)

Single beam sonar images eelgrass well

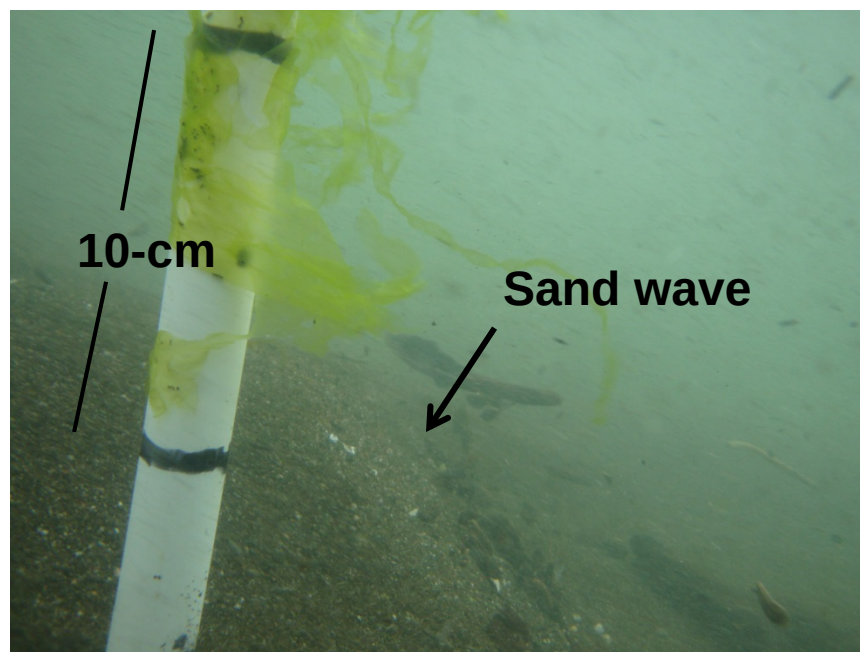


Active sediment transport being exported from delta to nearshore

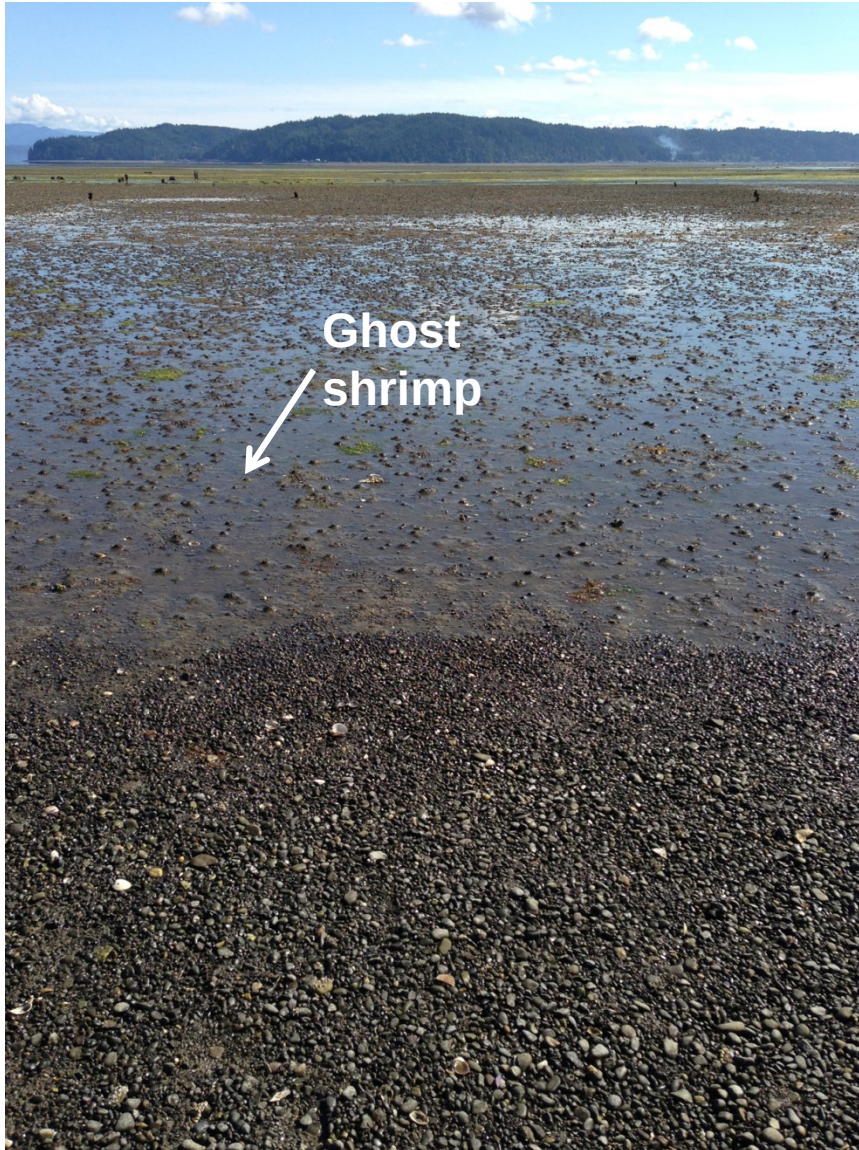
Cross-channel current velocity and flux measurements at ADCP deployment site



Sand wave (~30-cm tall) burying PVC along west distributary where bedload measurements made



Mixed sediment beaches/tidal flat



Complex habitat and diversity



Time lapse – low tide



Time lapse – flood tide



Site photos – telescoping mast



Complex inundation patterns