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Using surface elevation tables and marker horizons to evaluate resiliency and trajectories of tidal marshes and restoration projects in the Snohomish River estuary

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Using Surface Elevation Tables and Marker Horizons to evaluate resiliency and trajectories of tidal marshes and restoration projects in the Snohomish River Estuary

Robinson, Devin³, Joshua Chamberlin¹, Jason Hall¹, Casimir Rice¹, Todd Zackey²

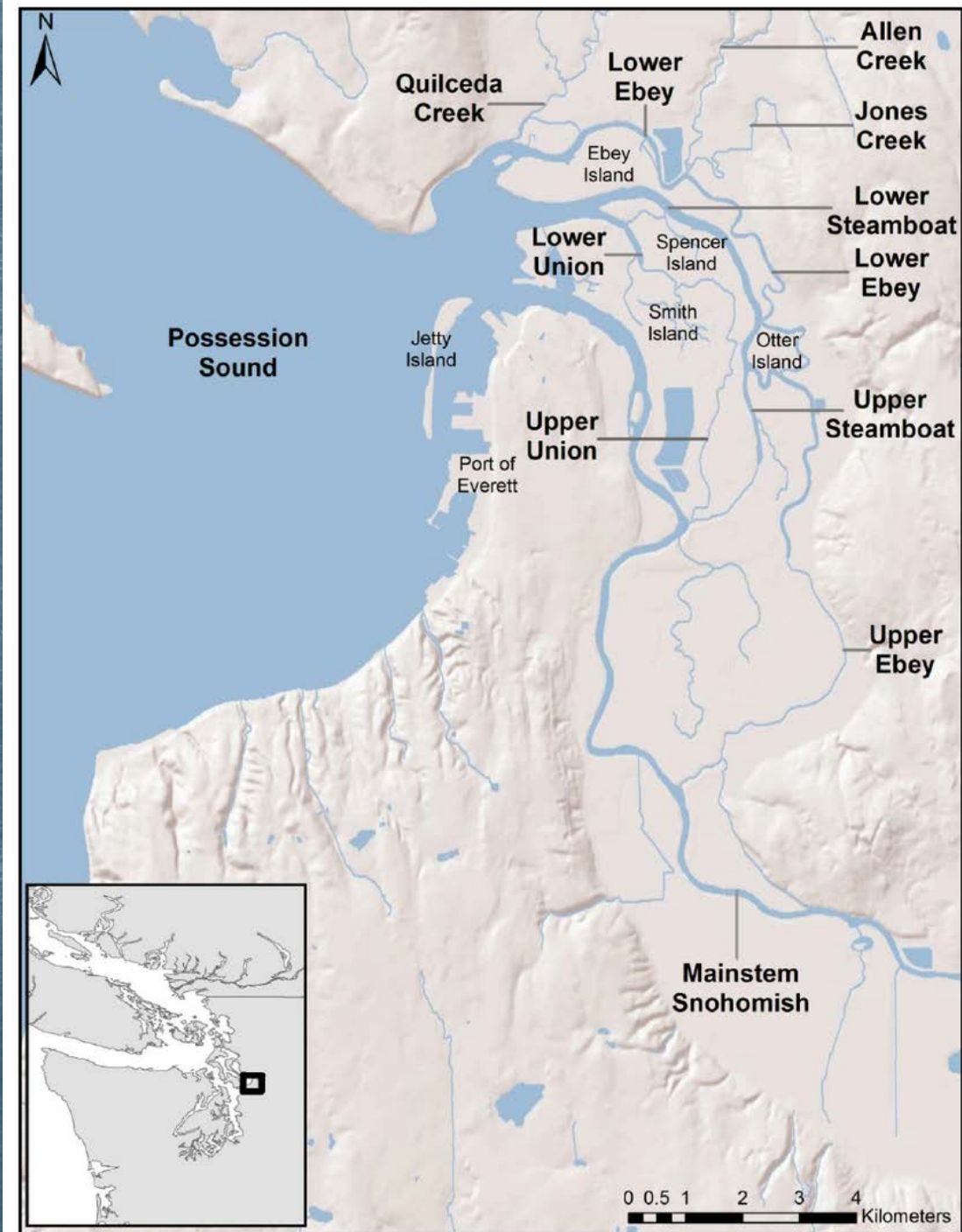
¹ NOAA Fisheries, NWFSC, Mukilteo Field Station

² Natural Resources, Tulalip Tribes

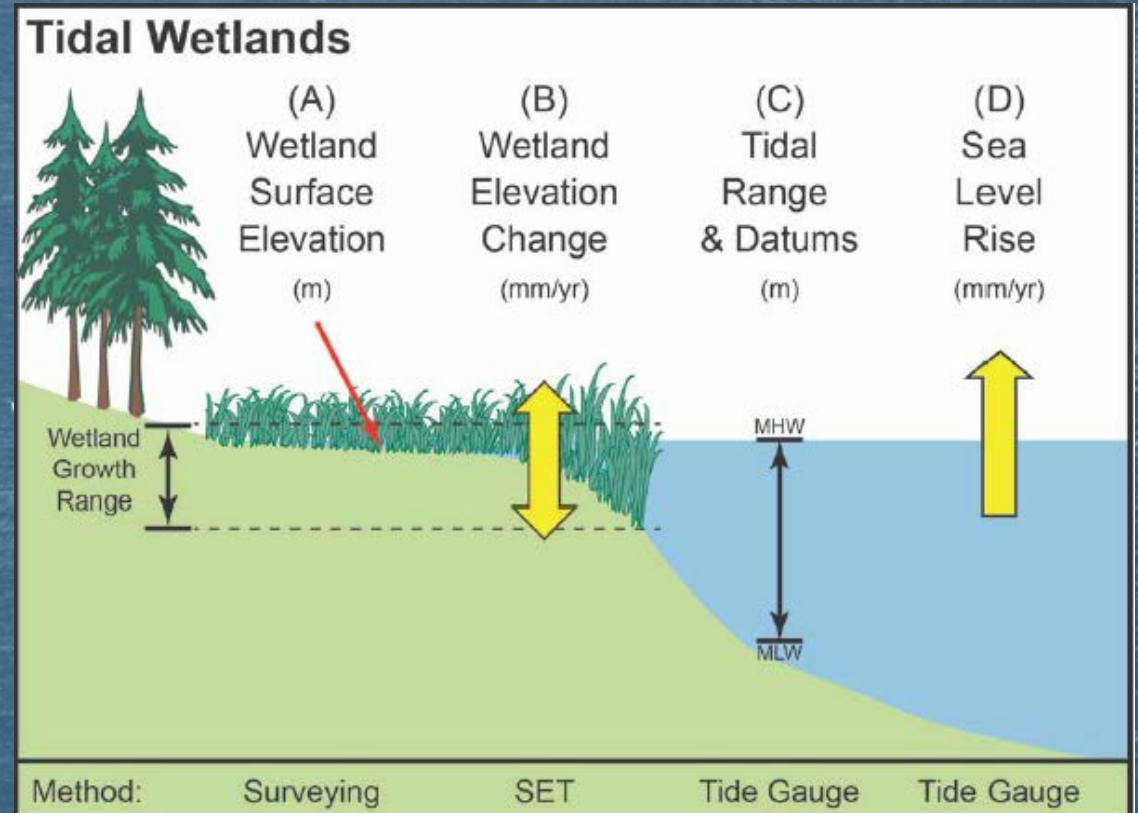
³ Veterans Conservations Corps

The Snohomish River Estuary

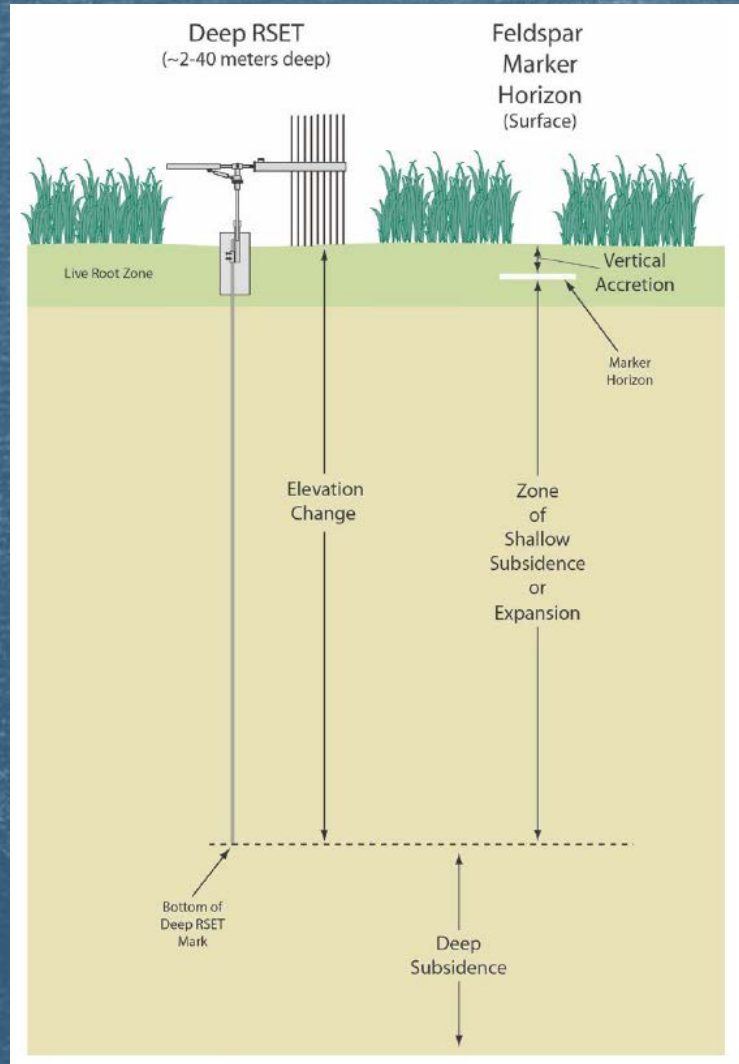
- Second largest Estuary in the Puget Sound.
- Focus of major estuary restoration efforts in recent years.
- Only 17% of intact estuary area remains in the Snohomish River delta due to extensive diking and tide gates.



Estuaries and Climate Change



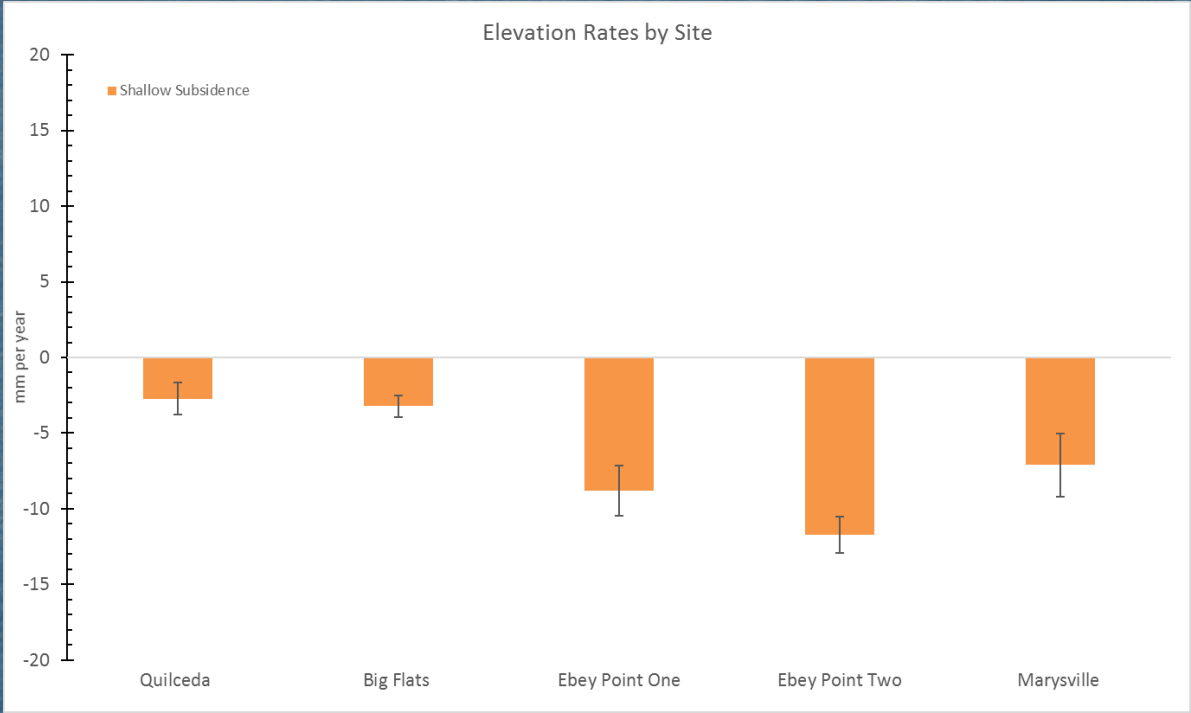
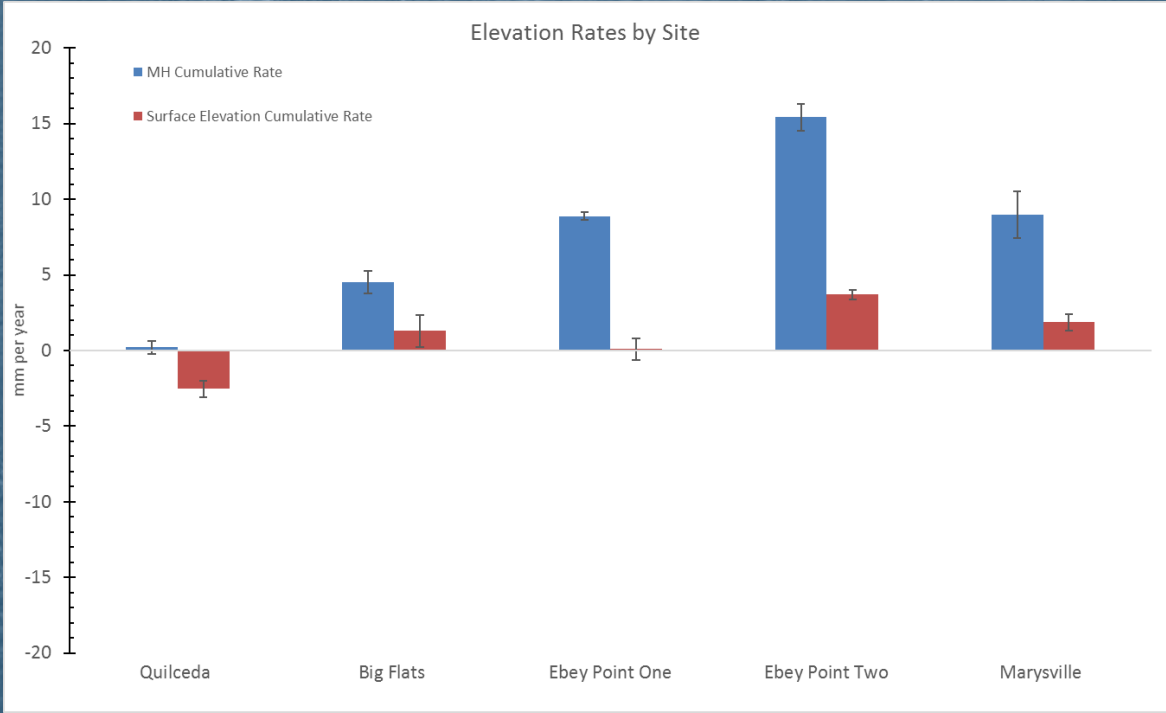
Surface Elevation Tables



Study Area



Current Surface Elevation Trajectories



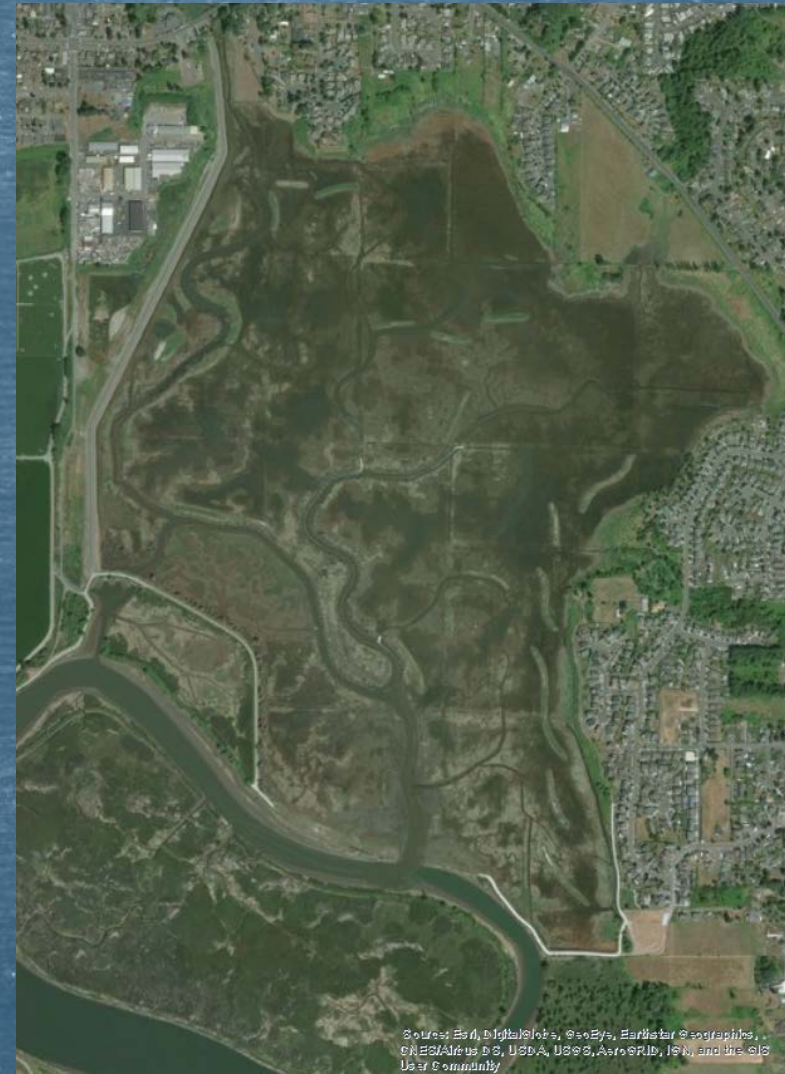
Sea Level Rise Trajectories

	Current Elevation Rates (m)	Projections to 2095 (m)	Sea Level Rise Projections 2095 (m)
Quilceda	-0.00253	-0.19481	1.34
Big Flats	0.001288	0.099176	1.34
Ebey Island One	0.000095	0.007315	1.33
Ebey Island Two	0.003706	0.285362	1.33
Marysville Restoration	0.001864	0.143528	1.36

Qwulooft Restoration Site



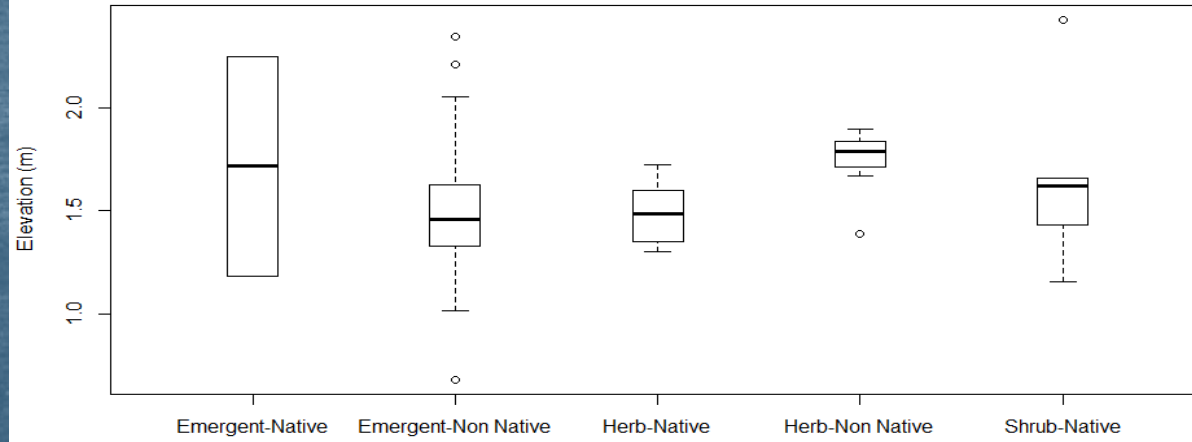
Before



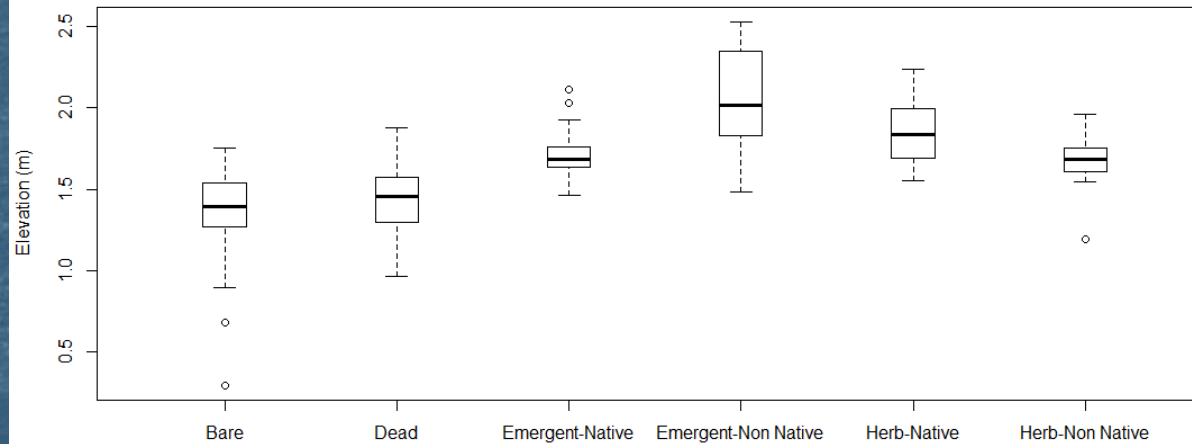
After

Elevation and Vegetation Communities

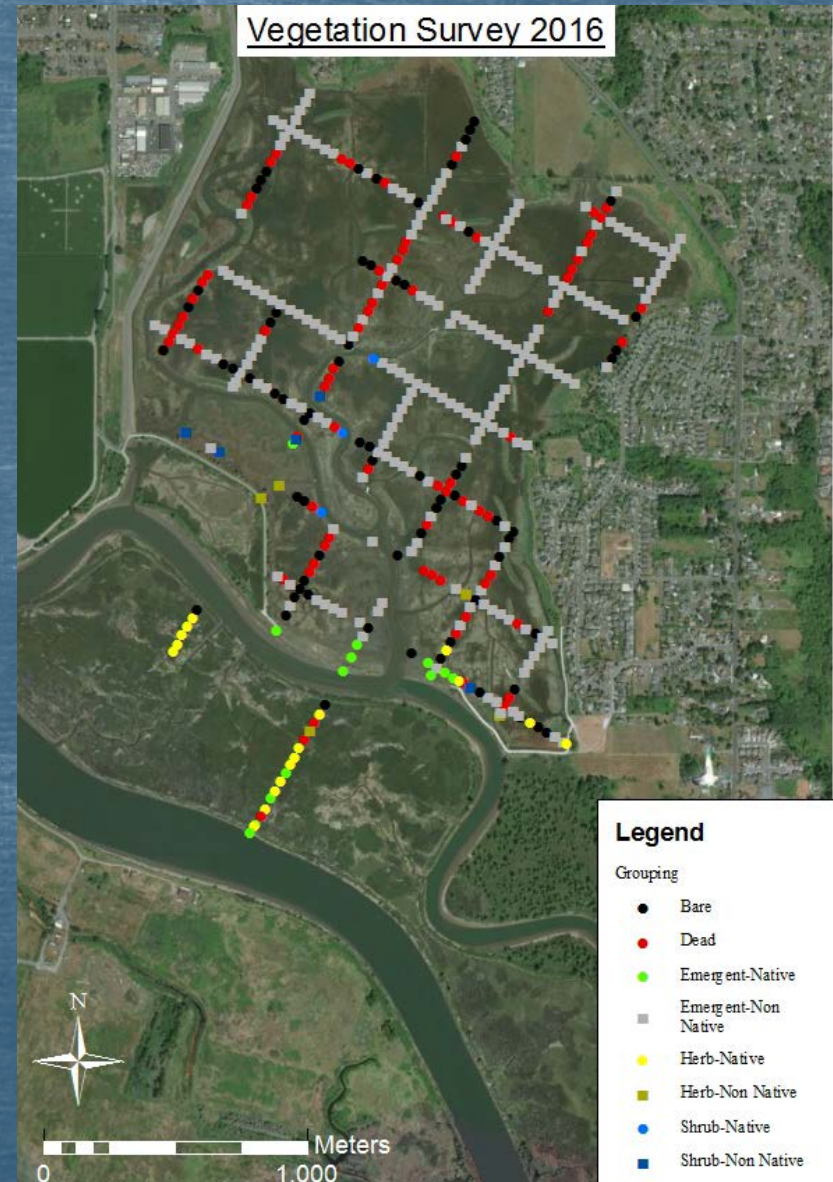
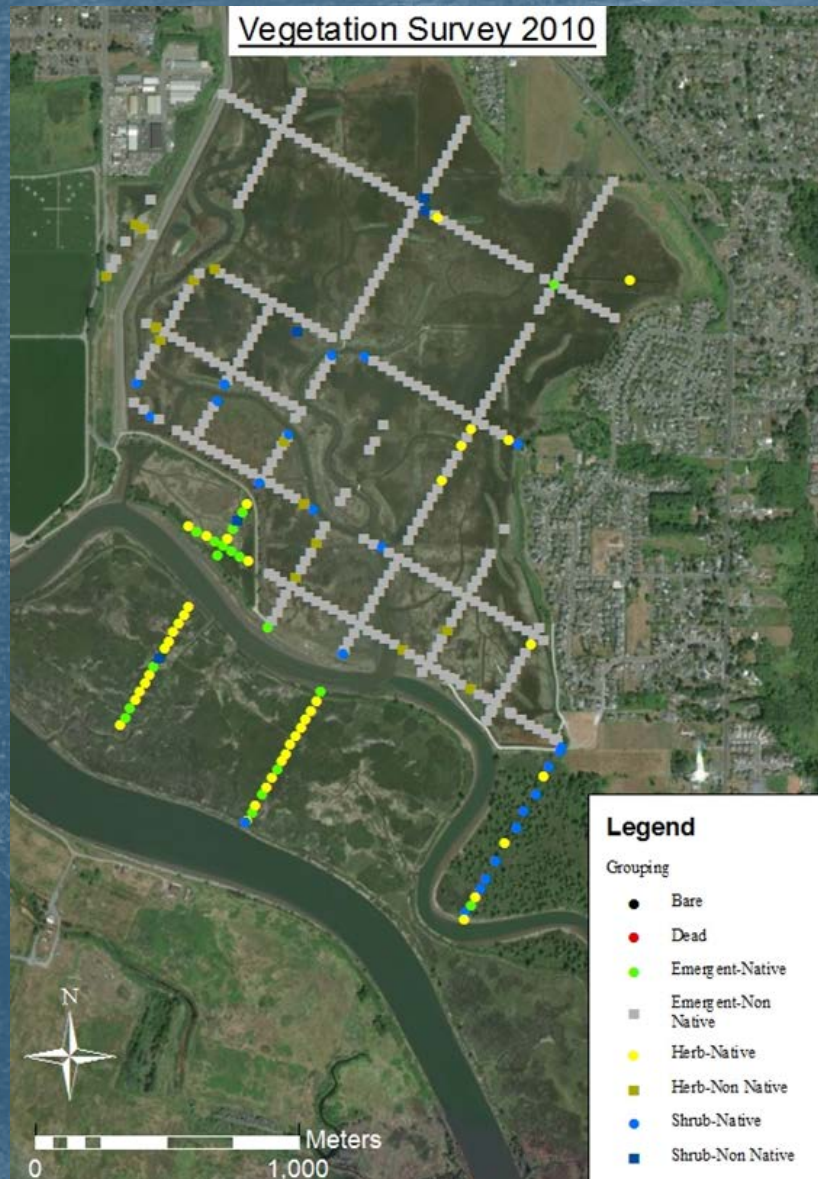
Elevation and Vegetation Communities in 2010



Elevation and Vegetation Communities in 2017



Connection with Vegetation Communities



Conclusion

- Variability of accretion and subsidence rates within our study area.
- Long Term Monitoring key to gain a better understanding of the estuary
- Need to further understand sediment availability and seasonal distributions.



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Veterans Conservation Corps
Pacific Northwest National
Laboratory

