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Salish Sea Ecosystem Conference

2018 Salish Sea Ecosystem Conference  
(Seattle, Wash.)

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Apr 6th, 10:45 AM - 11:00 AM

## Skokomish estuary restoration monitoring

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Belleveau, Lisa, "Skokomish estuary restoration monitoring" (2018). *Salish Sea Ecosystem Conference*. 506.

<https://cedar.wwu.edu/ssec/2018ssec/allsessions/506>

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# Skokomish Estuary Restoration Monitoring

Skokomish Tribe Natural Resource Department  
Lisa Belleveau  
Habitat Biologist



# Location



# What is an Estuary?



# Unique Habitat



# Nurseries



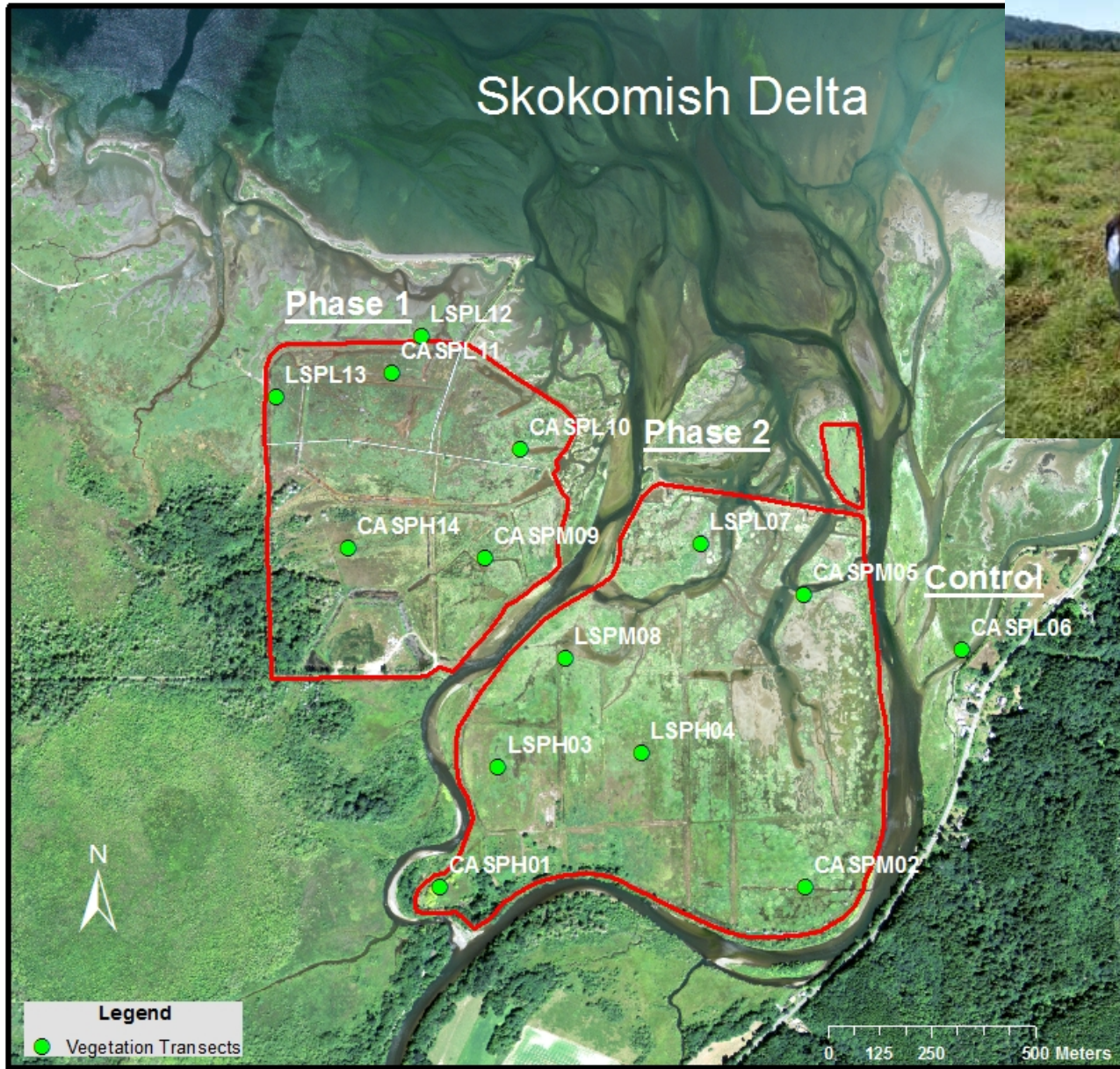


# Monitoring



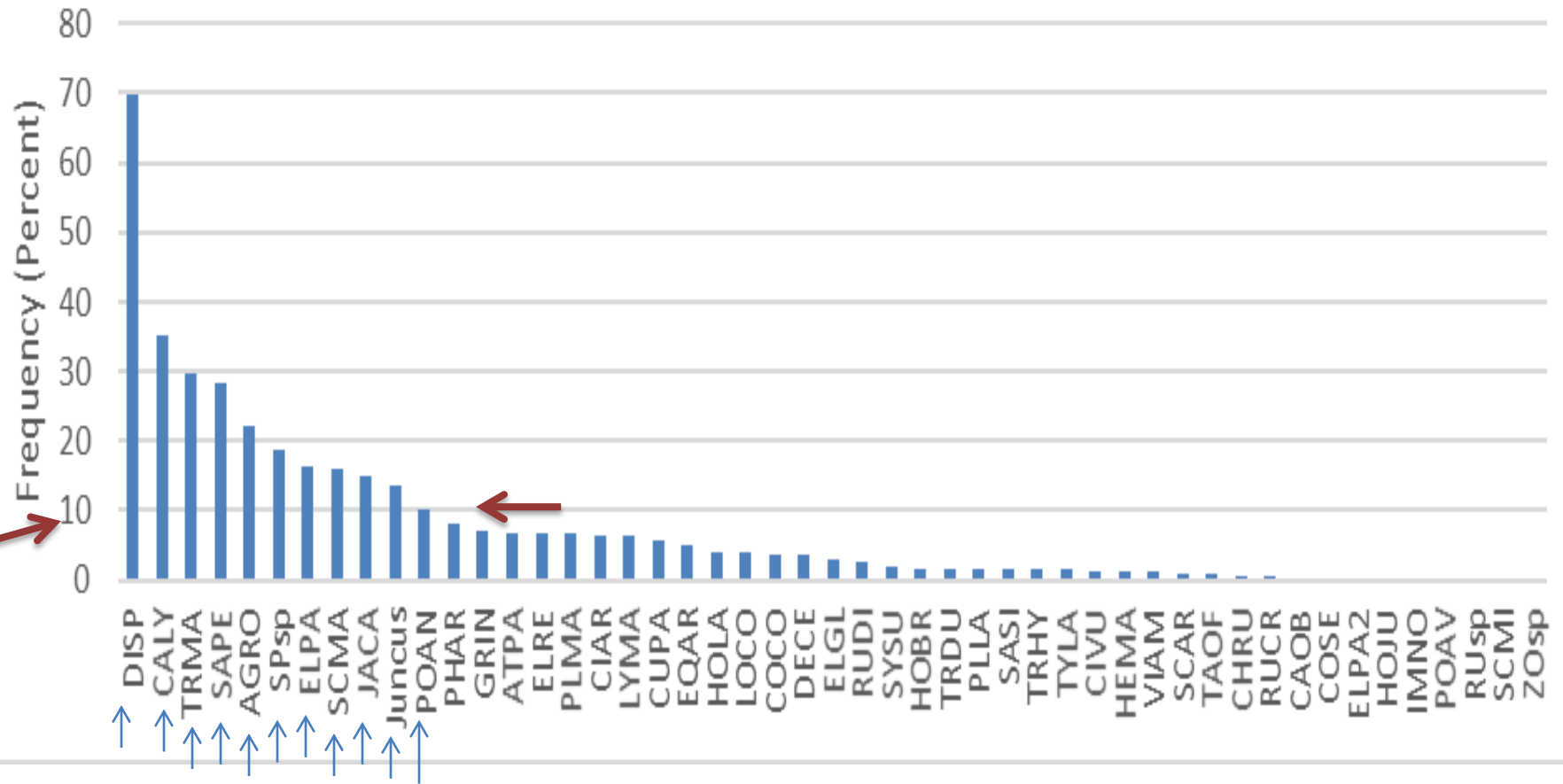


# Monitoring - Vegetation



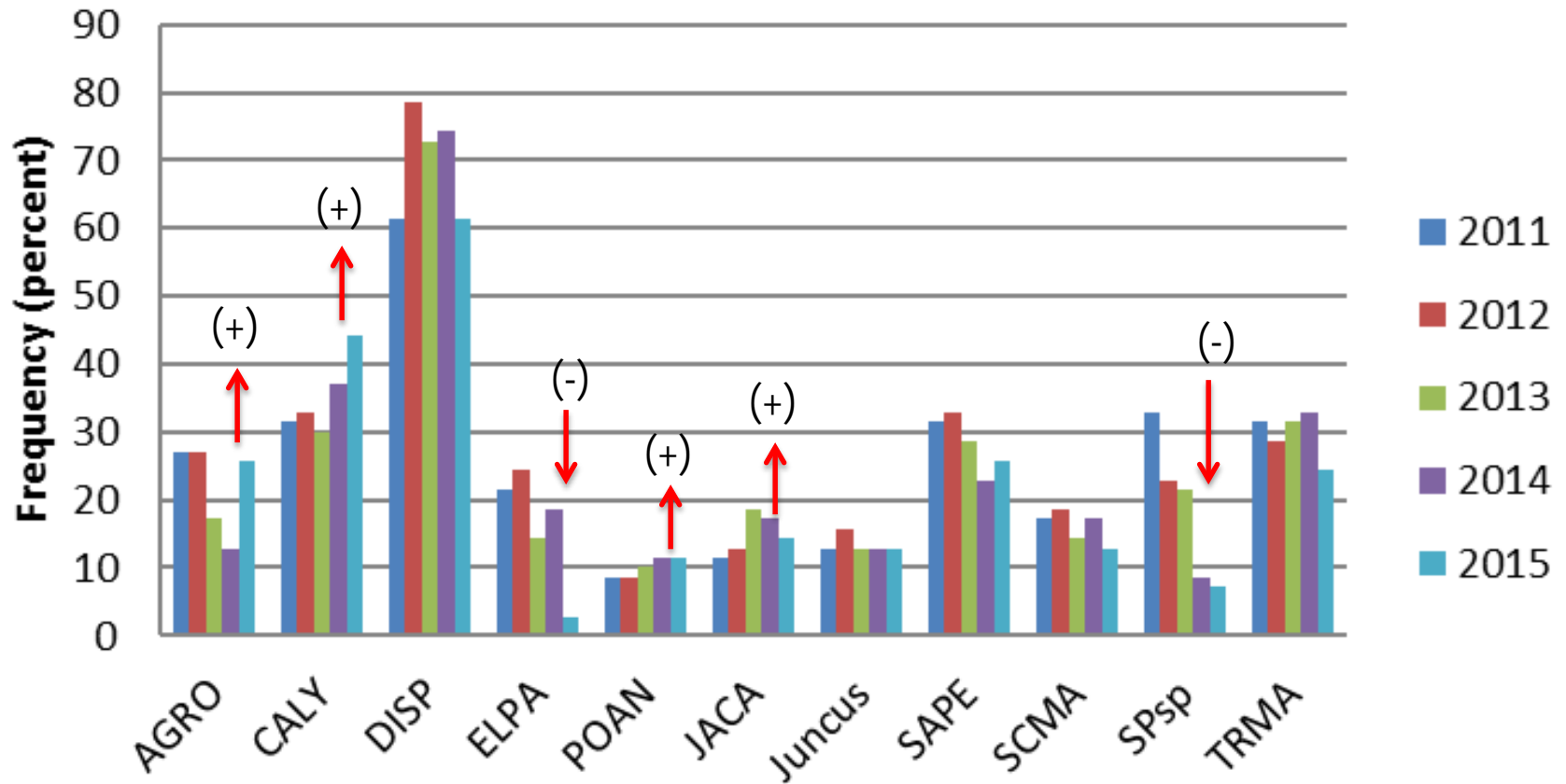
# Monitoring - Vegetation

Species Observation Frequency

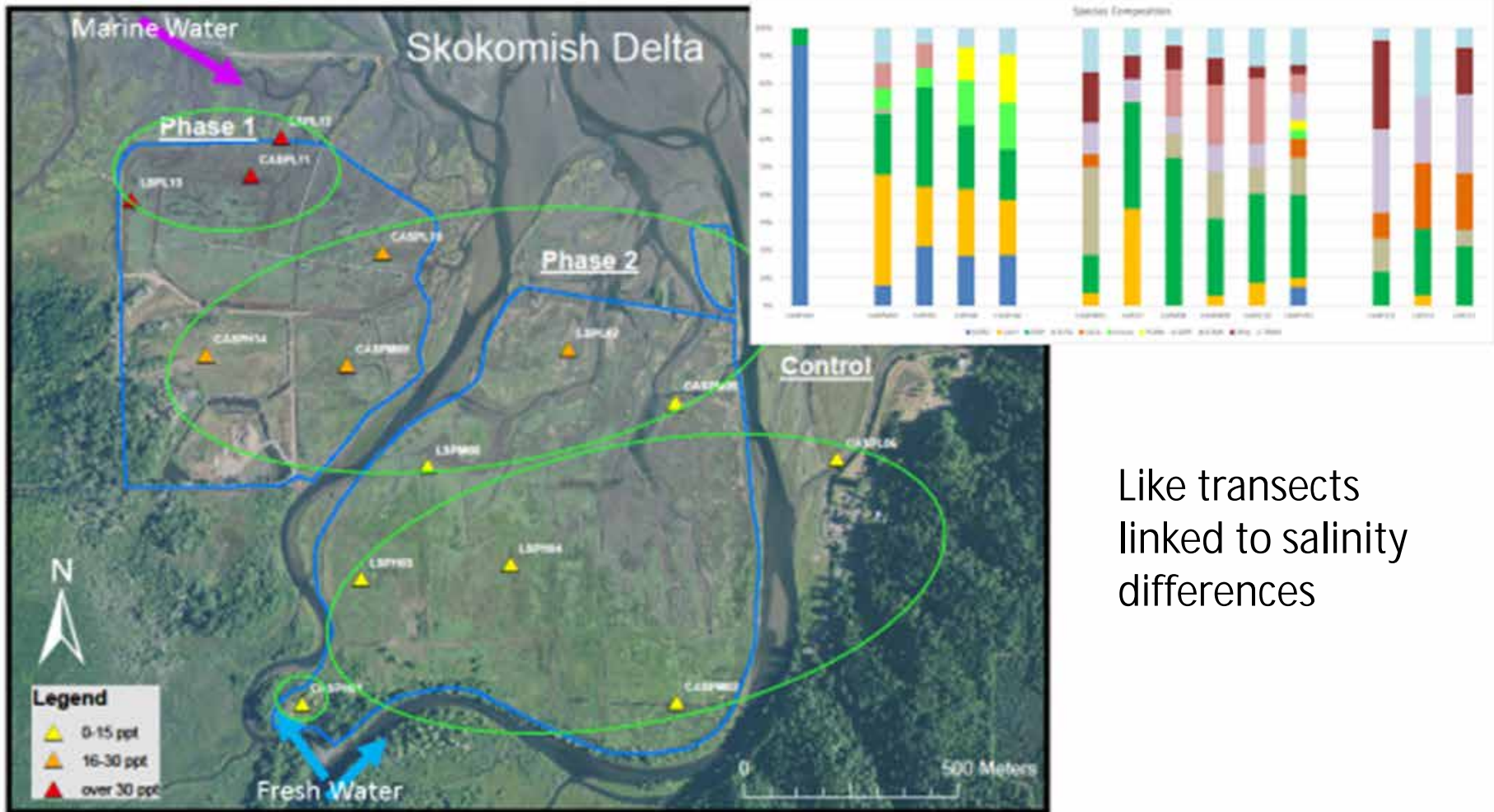


# Monitoring - Vegetation

## Dominant Species Frequency by Year



# Monitoring - Vegetation

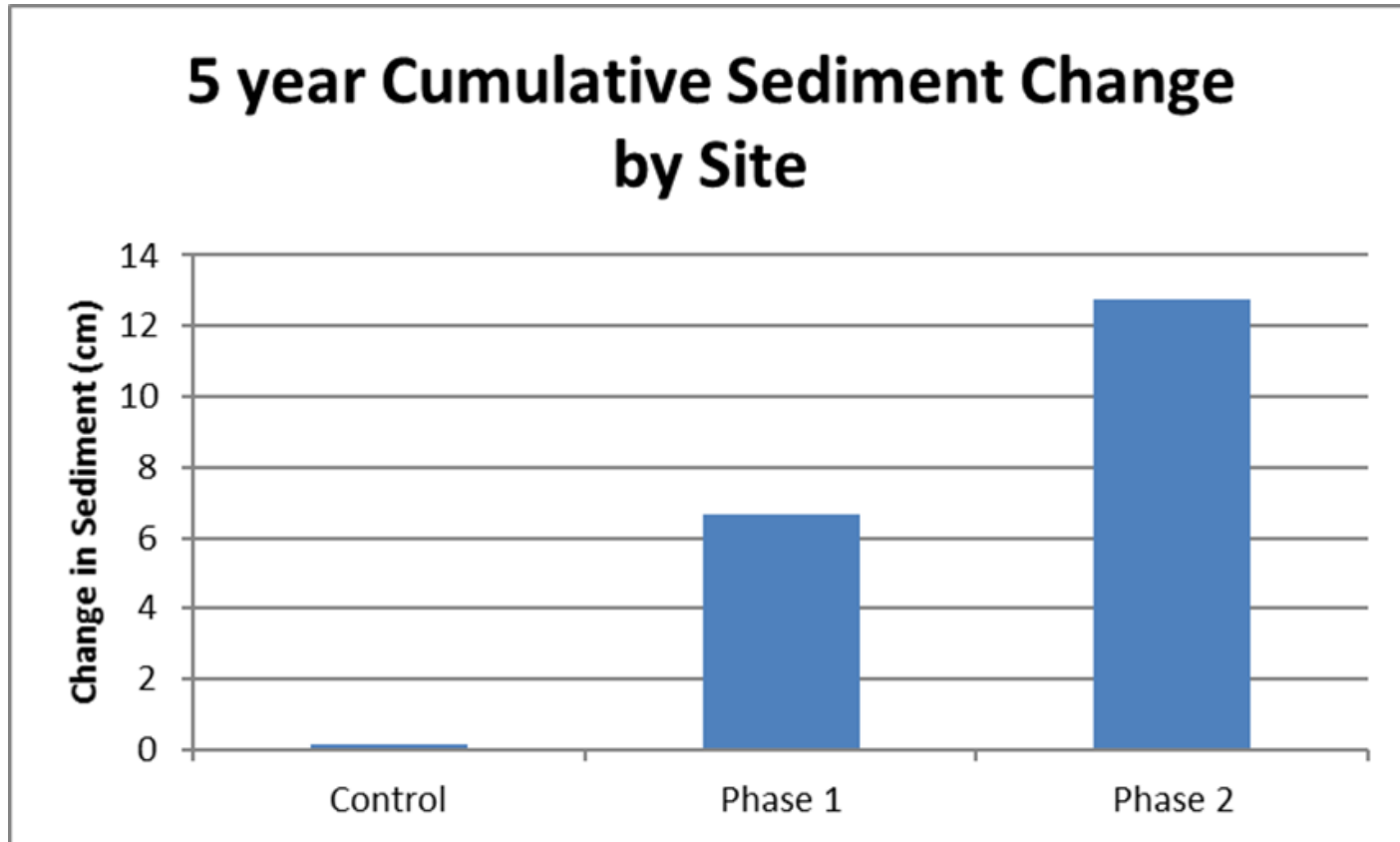


Like transects  
linked to salinity  
differences

# Monitoring - Sediment



# Monitoring - Sediment



- Control site remains at equilibrium as expected
- Over time restoration sites should move towards equilibrium
- Phase 2: taller vegetation and proximity to river help trap more sediment
- 5yr total accretion 19.54cm

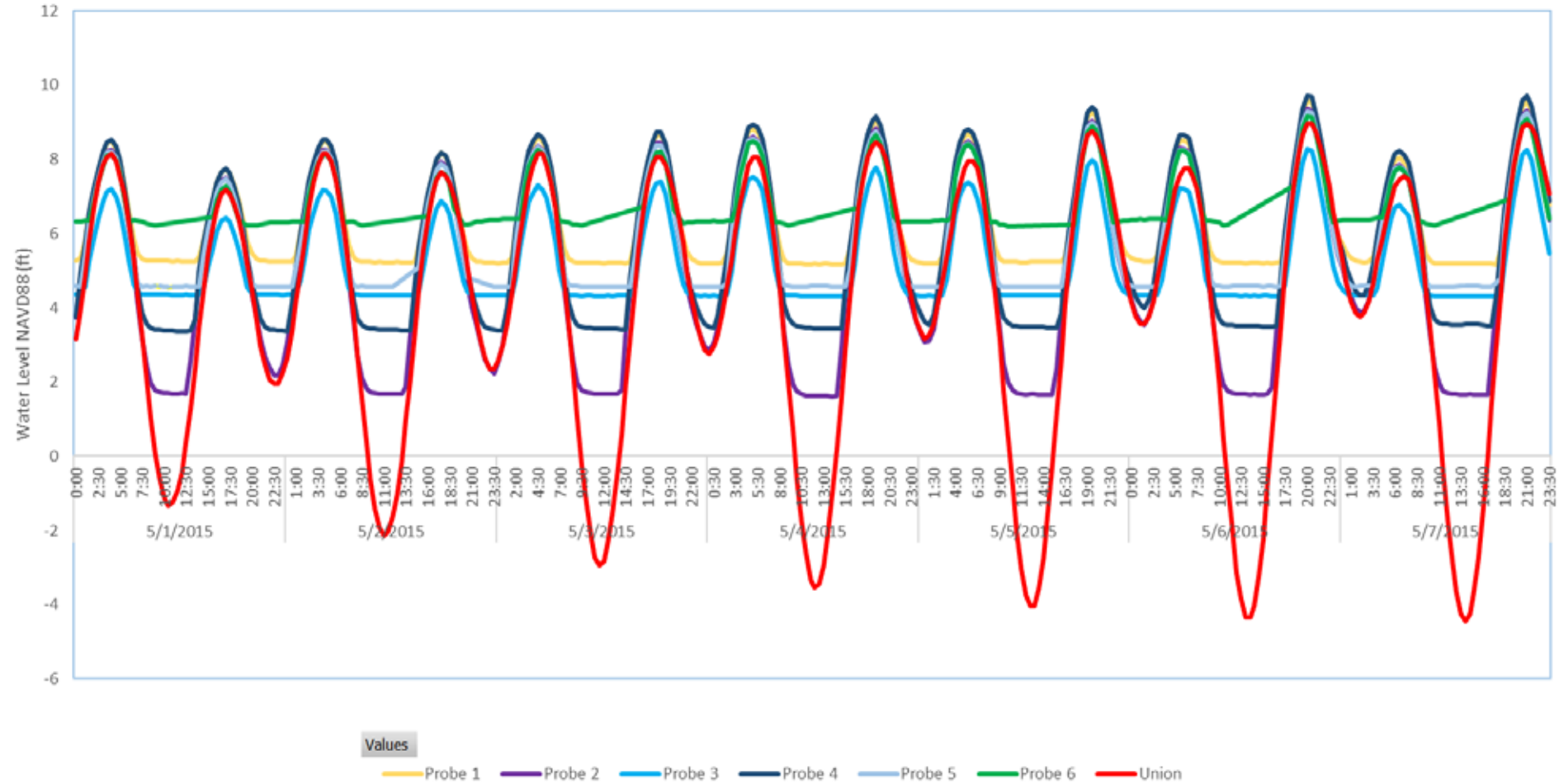
# Monitoring – Water Probes



# Monitoring – Water Probes

Probe 1 Probe 2 Probe 3 Probe 4 Probe 5 Probe 6 Union

logger compare



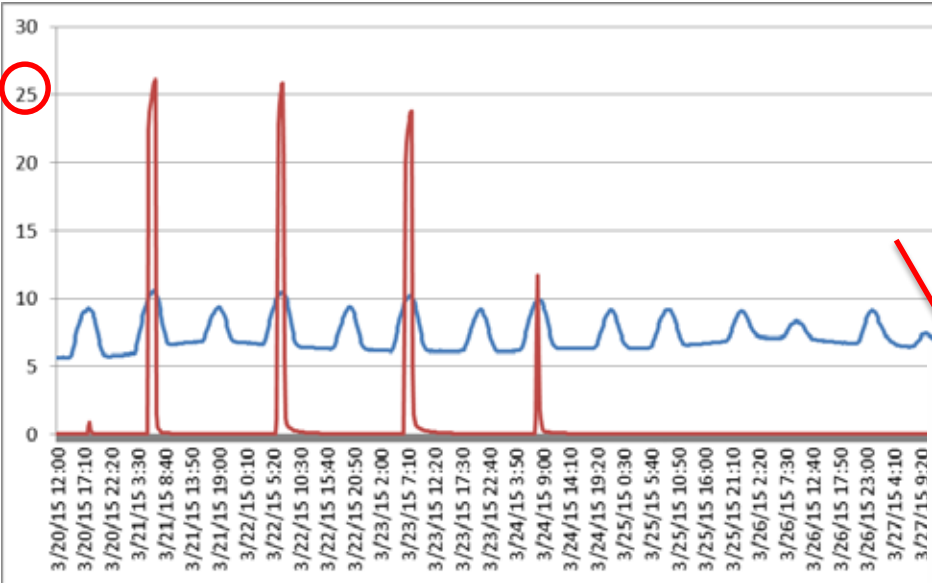
Values

Probe 1 Probe 2 Probe 3 Probe 4 Probe 5 Probe 6 Union

date time

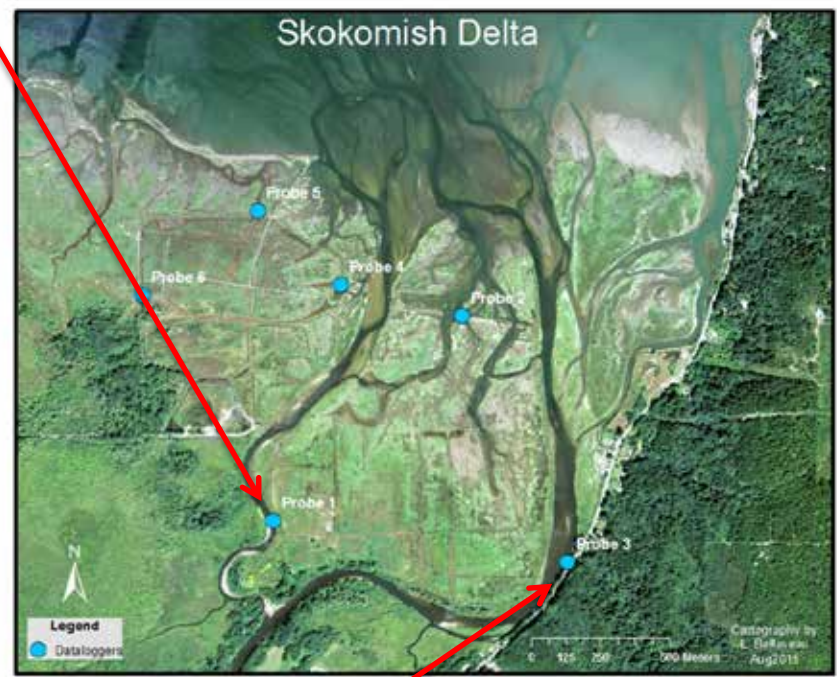
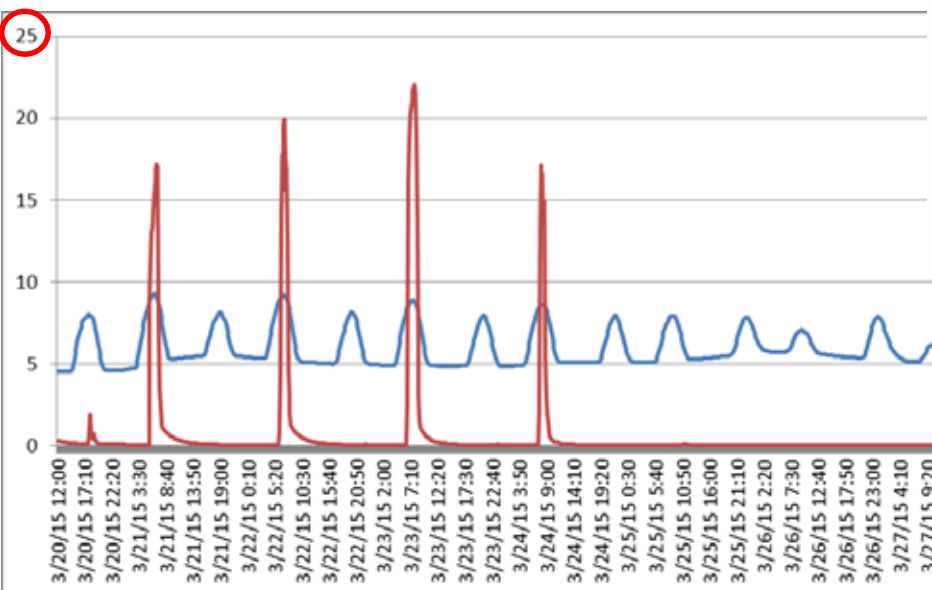
+ -



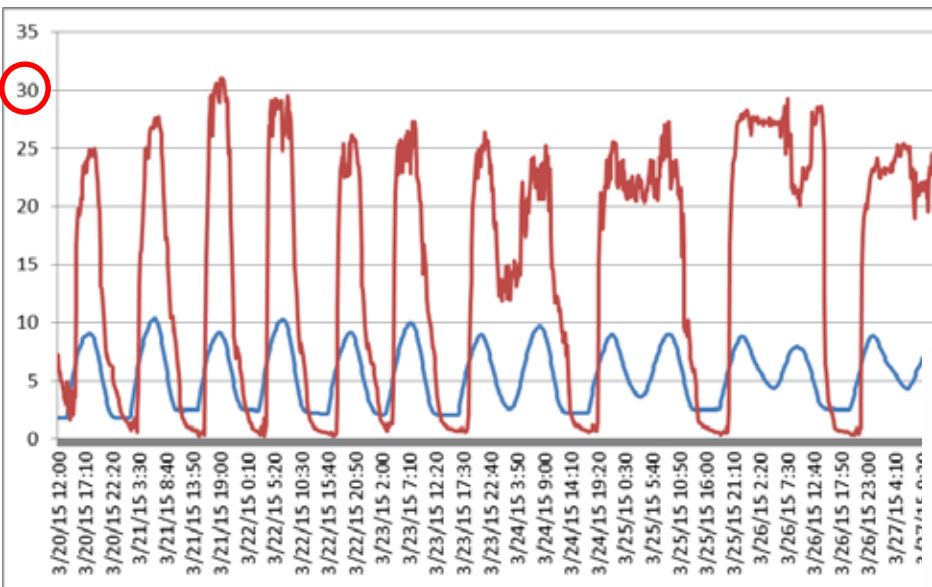


Salinity peaks at 10' tide or above

# Freshwater Probes



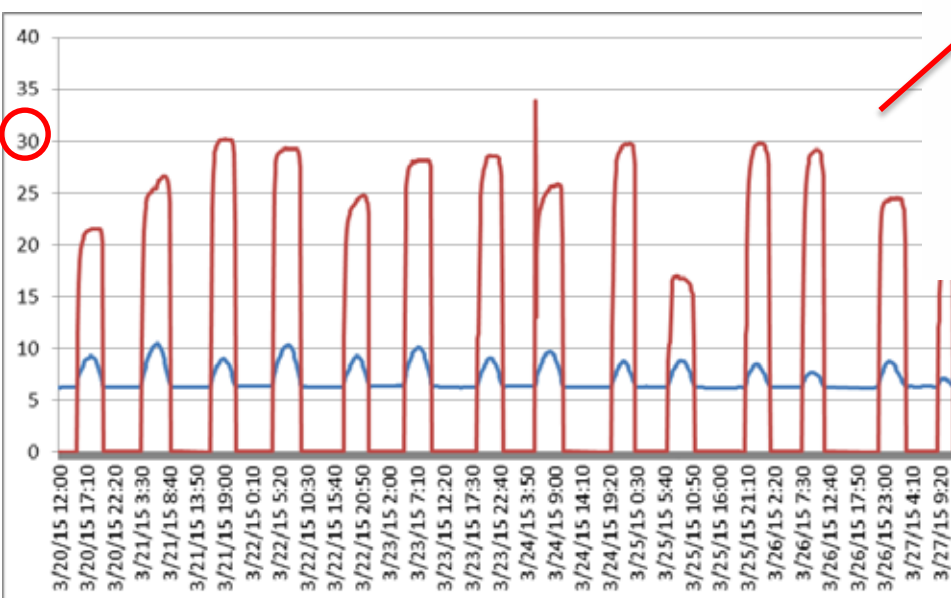
Probe 3 more river influence shown by lower salinity peak



— Average of Water level NAVD88 (ft)\_2  
 — Average of Salinity (ppt)\_2

Salinity peaks with every tide

# Saltwater Probes



— Average of Water level NAVD88 (ft)\_6  
 — Average of Salinity (ppt)\_6

Additional probe to detect extent of saltwater intrusion into Phase 1

# Monitoring - Fish



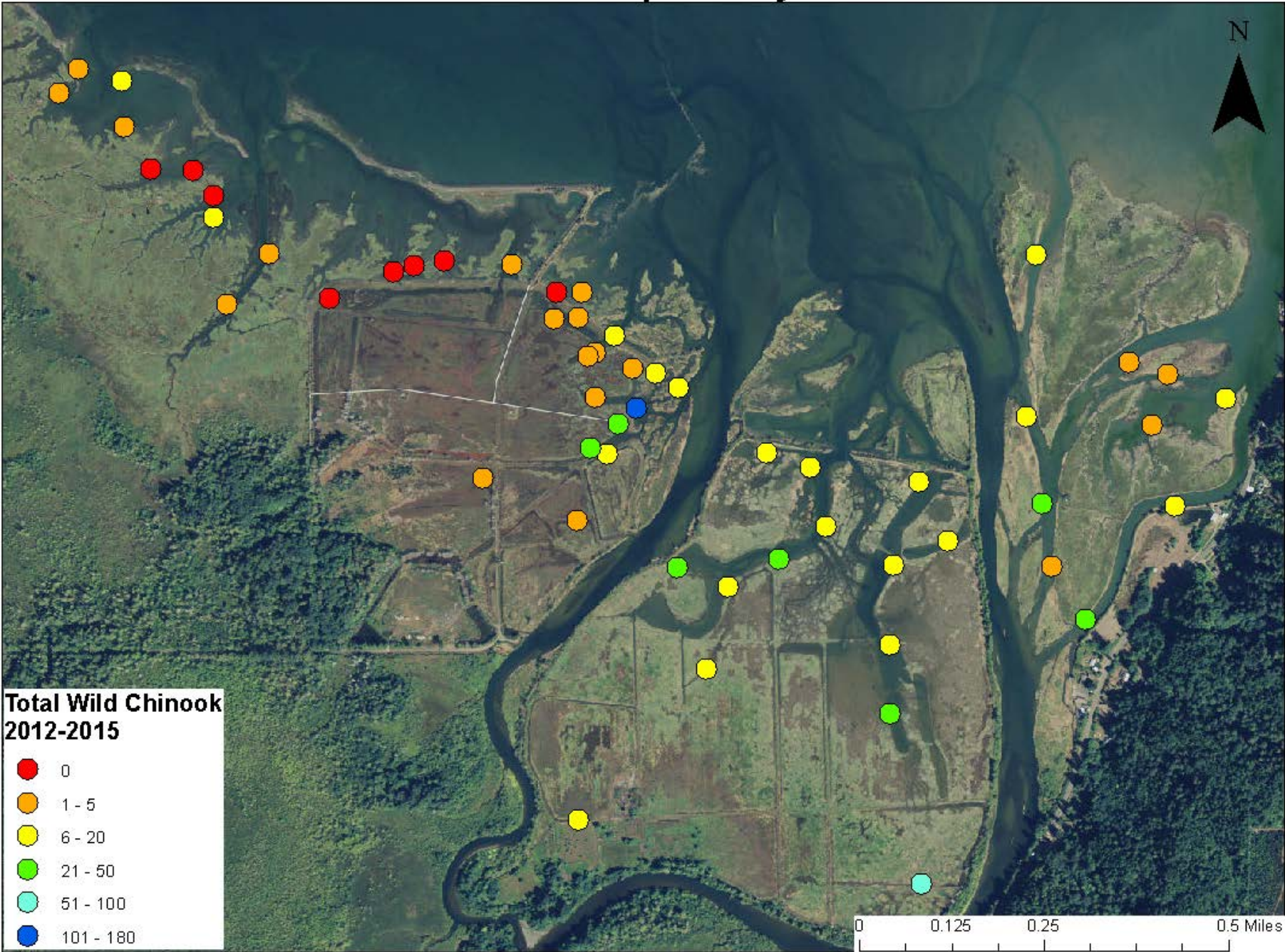
- Monthly Beach Seining



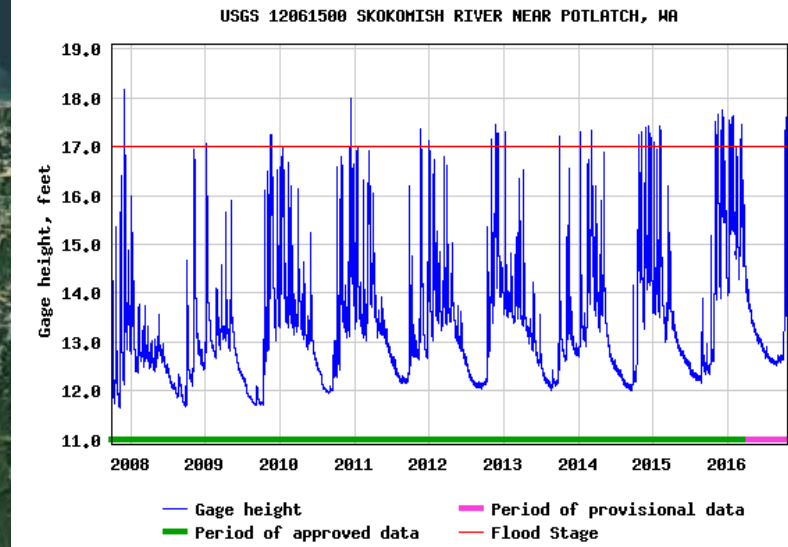
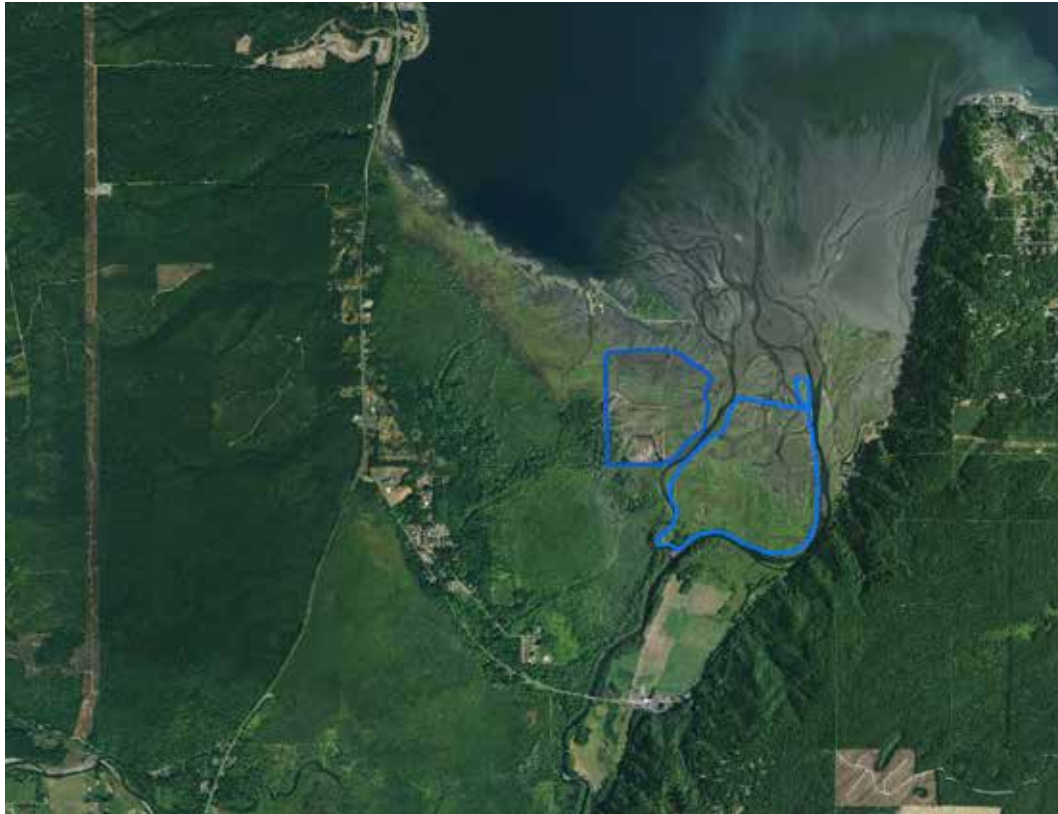
# 2012 Presence of Wild Chinook in Area by Month

Month	Restoration 1	Restoration 2	Control 1	Control 2
January	Yes	Yes	Yes	No
February	Yes	Yes	Yes	No
March	Yes	Yes	Yes	Yes
April	Yes	Yes	No	Yes
May	Yes	No	No	No
June	Yes	Yes	No	Yes
July	Yes	No	No	No
August	No	No	No	No
September	No	No	No	No
October	No	No	No	No
November	No	No	No	No
December	No	Yes	Yes	No
<b>Total Months Present</b>	<b>7</b>	<b>6</b>	<b>4</b>	<b>3</b>

# Wild Chinook Captured by Site



# Reduced Flooding



# Skokomish Estuary Restoration Successes

- Increased estuarine habitat by almost 1000 acres
- Native salt marsh vegetation increasing
- Overall sediment accreting
- Water probes establishing baselines to track changes and impacts due to SLR
- Endangered Chinook utilizing the restoring habitat
- Reduced flooding impacts to the local community