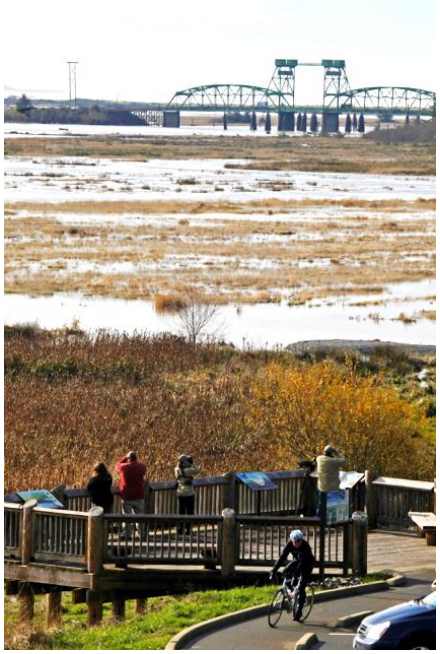


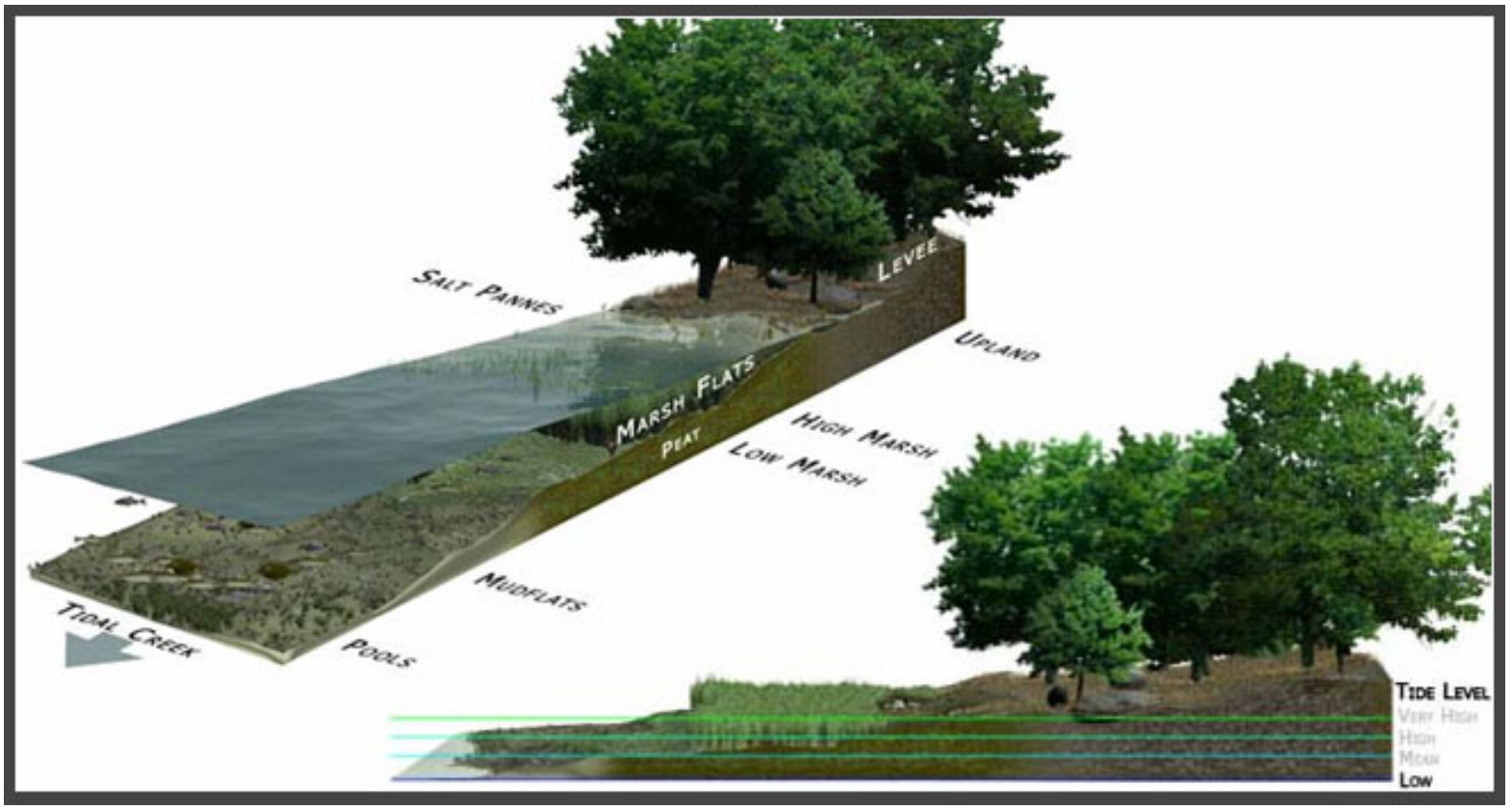
Soil and Vegetation Responses to Increased Flooding in Oregon Salt Marshes

By Vanessa Robertson-Rojas

Outline

- Introduction
- Background
- Objectives
- Methods
- Results
- Conclusions
- Acknowledgements

Introduction: Salt Marshes

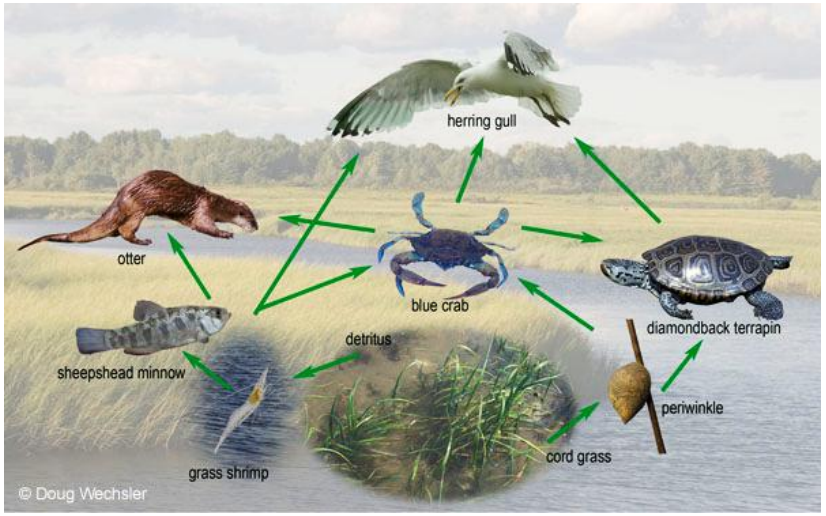


Salt Marsh Dynamics
Effects of Seal Level Rise

Introduction: Ecosystem Value

- Coastline protection
- Highly productive habitats
- Unique ecological functions and processes
- Groundwater recharge
- Carbon Storage

(King and Lester 1995)



Background: Previous Research

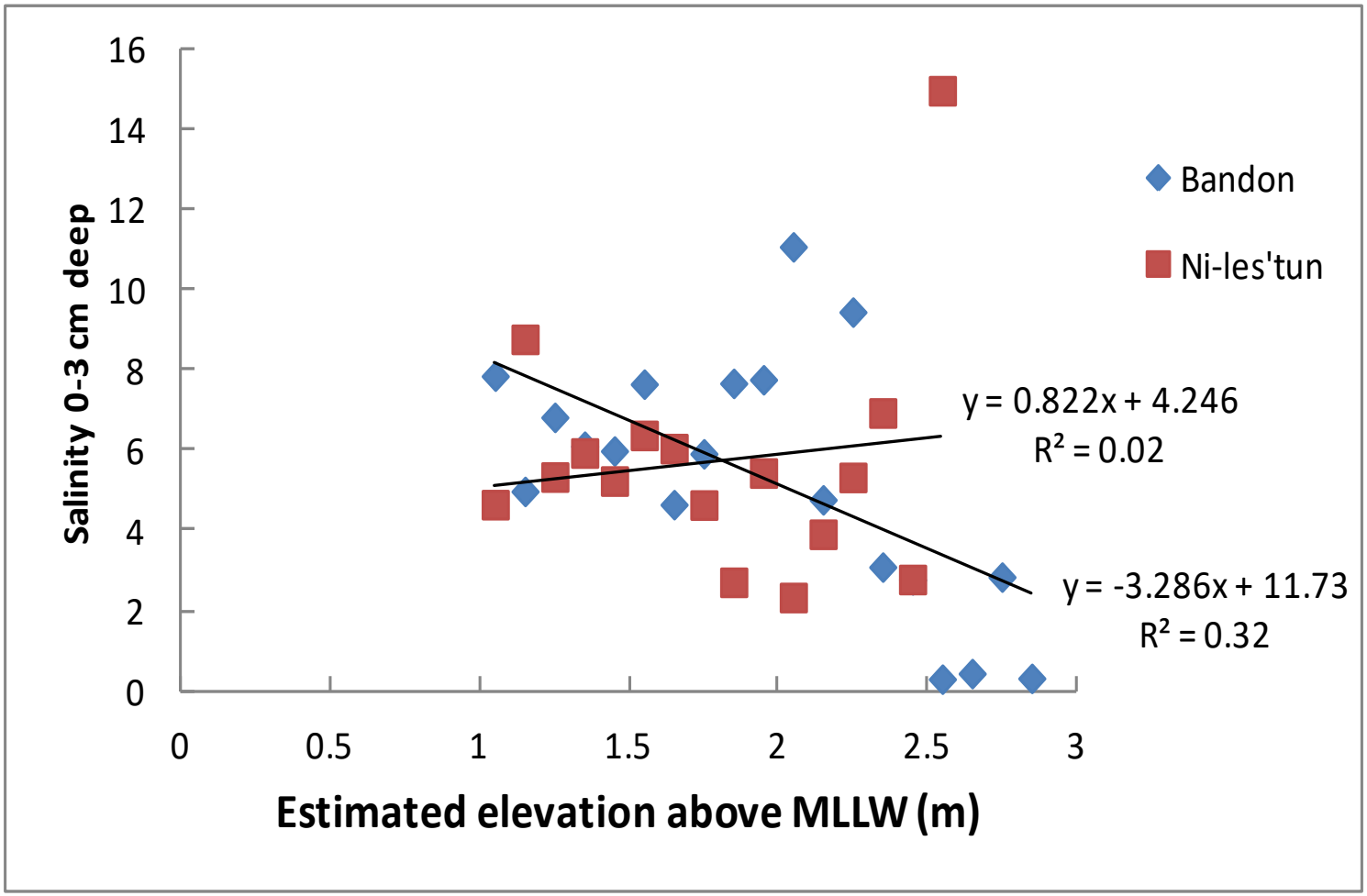
Shifting Habitat Mosaics

•2012: Sampling in Bandon Wildlife Refuge

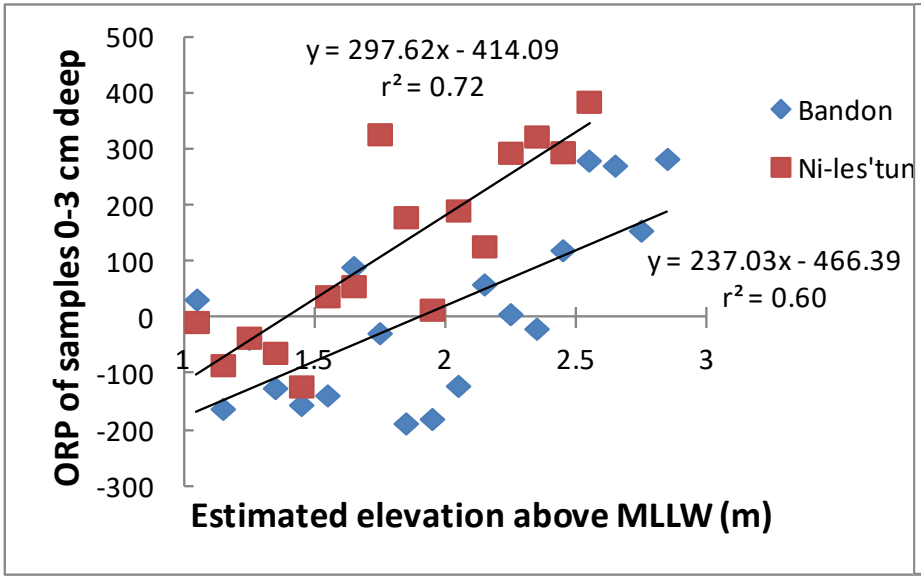
•2013: Resample

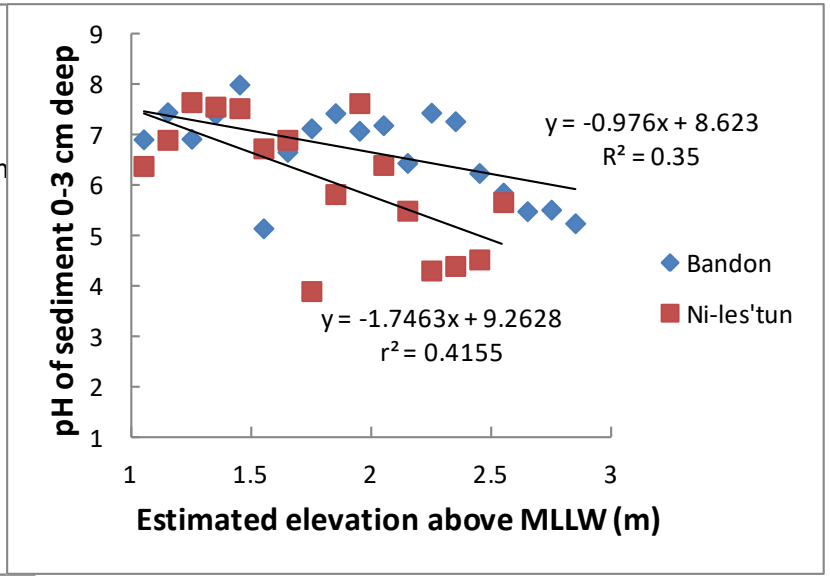
Lafrenz, de Rivera, and Eppley

Soil salinity across elevations

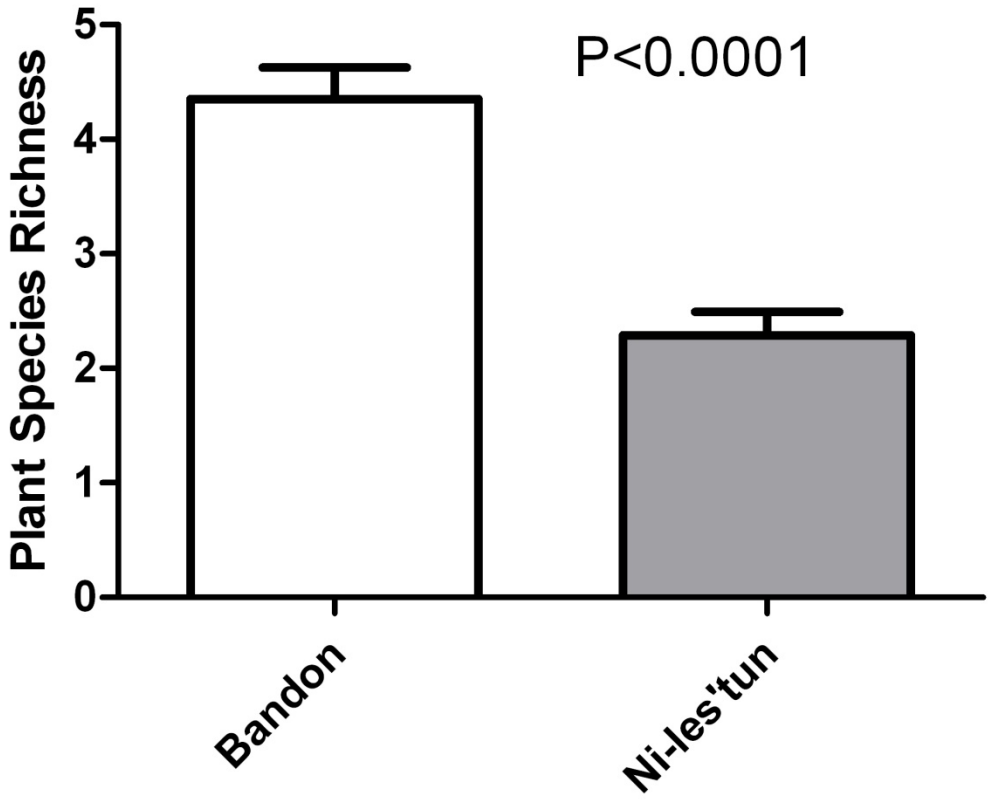


pH and Redox Potential (ORP)





Plant species richness



Objective: Testing my Hypothesis

- Areas in lower elevations will have lower C/N, less organic material (OM), higher salinity, higher pH, and lower ORP.

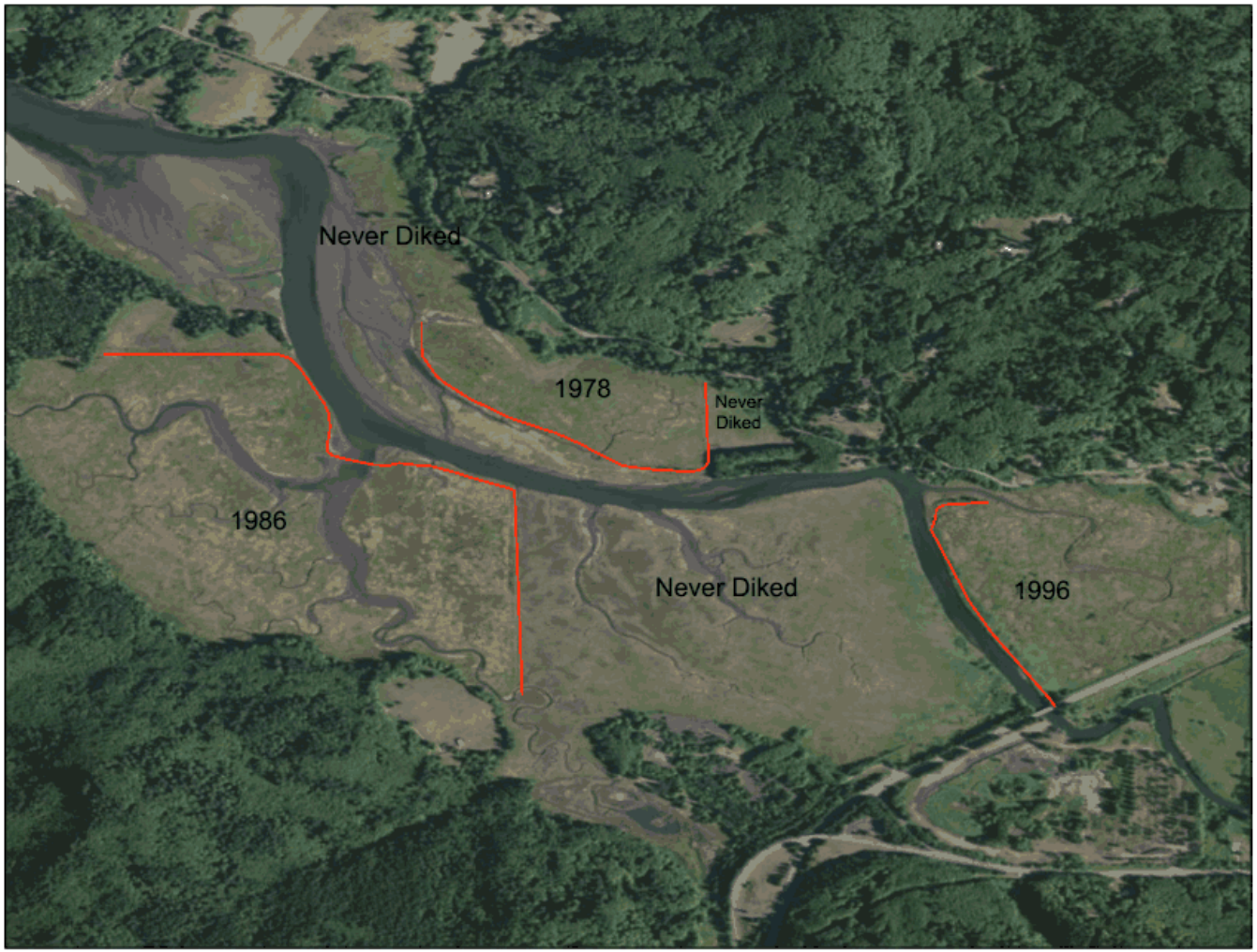
- Vegetation will have less root density, depth, and diversity at lower elevations

- **Areas with dike removal will be more variable**

Methods: Bandon Wildlife Refuge Site

Lafrenz, de Rivera, and Eppley

Methods: Salmon River Site



Methods: Sampling

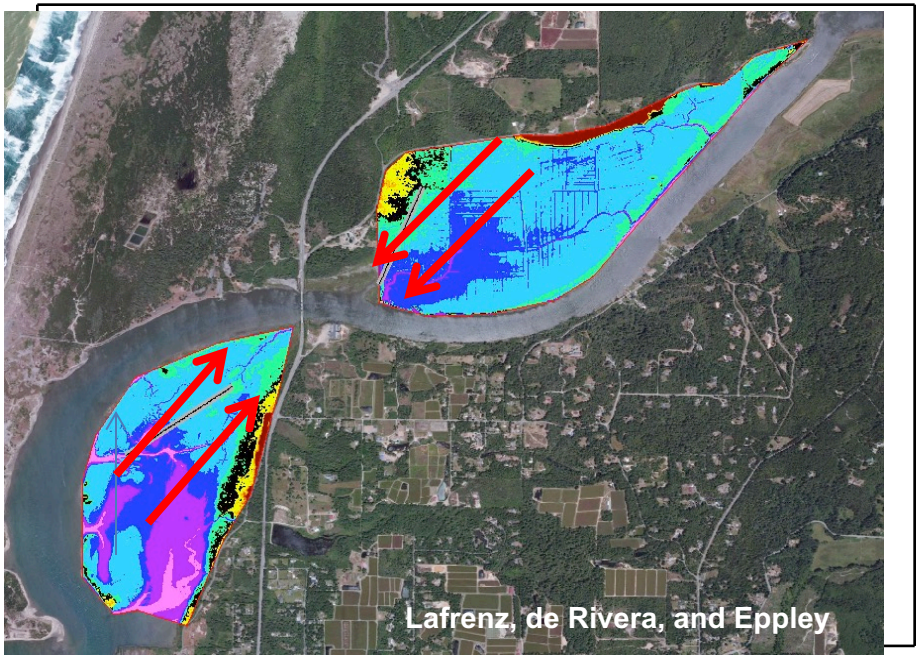
2 different sample sites:

- •2 transects at each site
- • 1quadrat at each 10 cm change in elevation

Each quadrat:

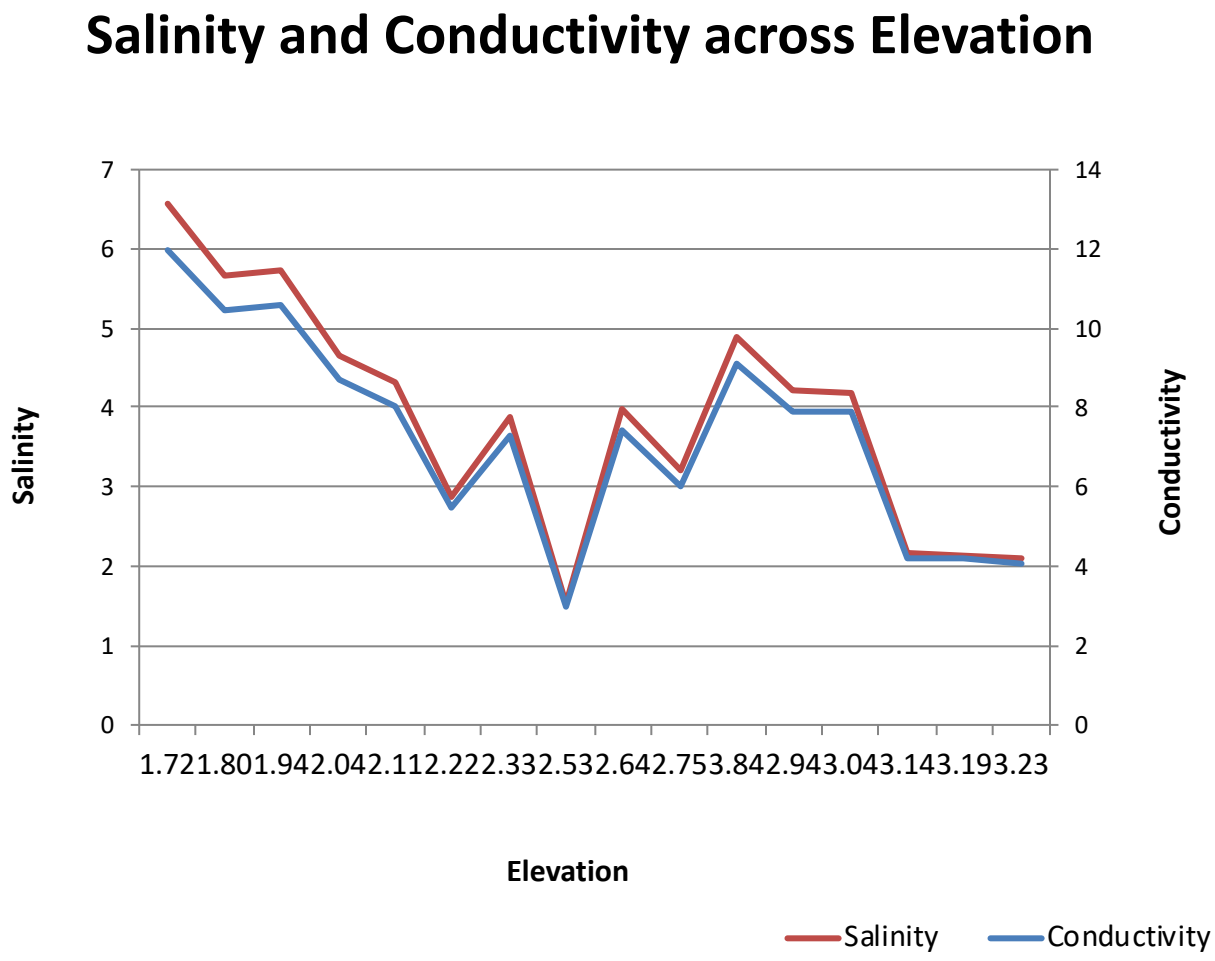
- •1 soil core 6 cm deep

  -analyze for OM. pH, ORP, salinity, and C/N (After Craft 1988)

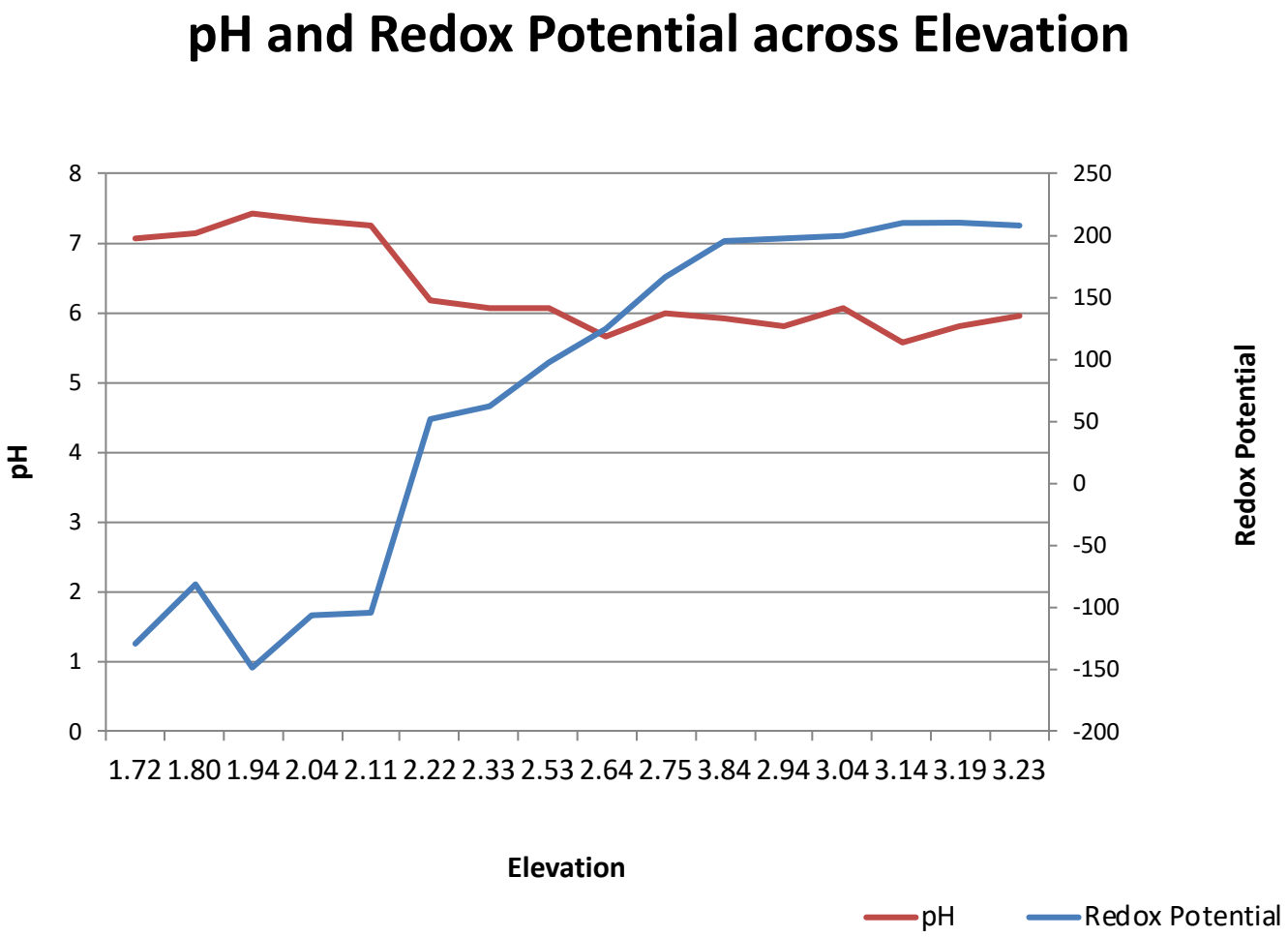


- •Percent cover of dominant species, determine species richness of plot
- •Average root depth (After Beck 2001)
- •Average root density of dominant plants

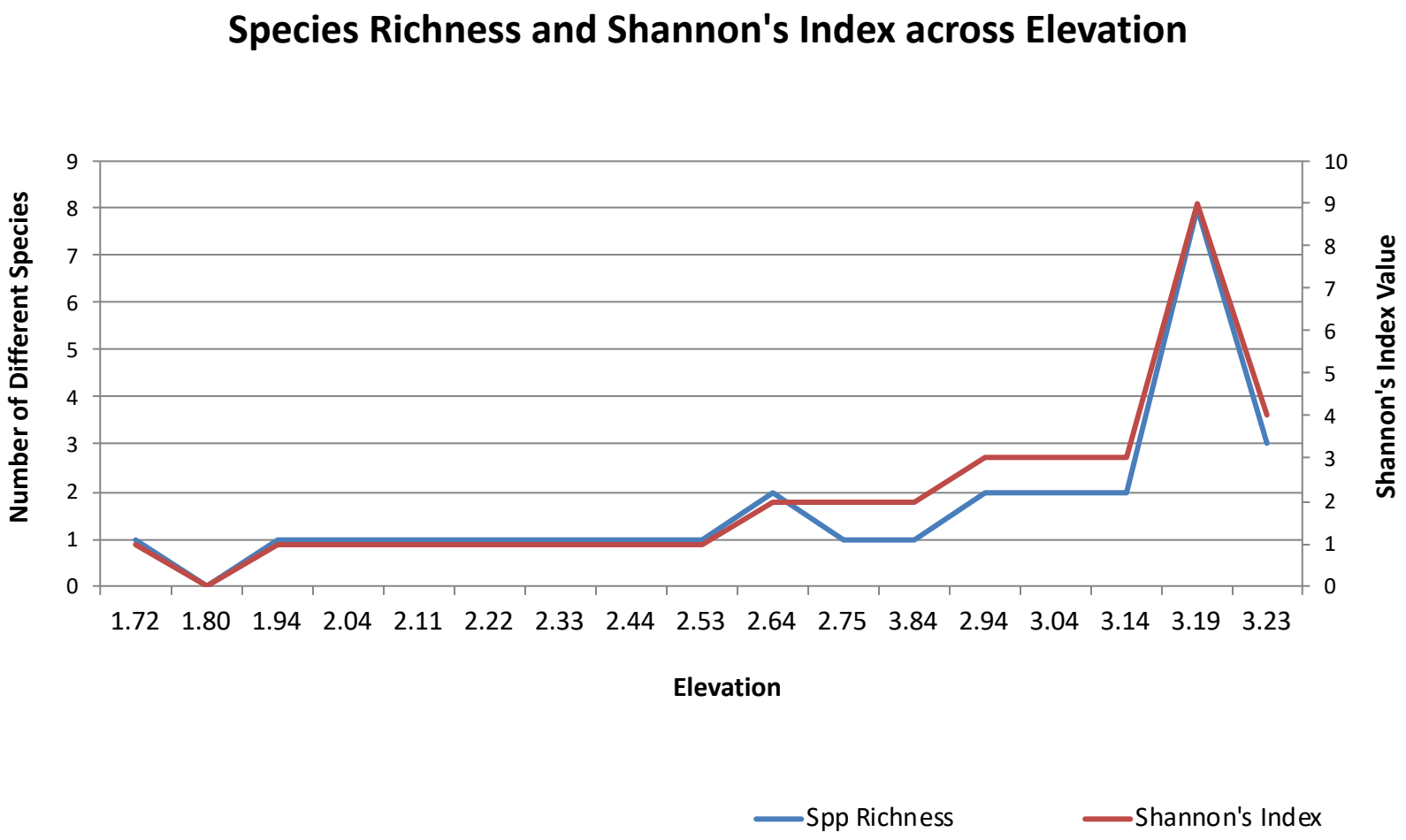
Results


Salinity and Conductivity across Elevation
Salinity
Conductivity
Elevation
0
1
2
3
4
5
6
7
0
2
4
6
8
10
12
14
1.72
1.80
1.94
2.04
2.11
2.22
2.33
2.53
2.64
2.75
3.84
2.94
3.04
3.14
3.19
3.23
Salinity
Conductivity

Results


pH and Redox Potential across Elevation
pH
Redox Potential
Elevation
8
7
6
5
4
3
2
1
0
250
200
150
100
50
0
-50
-100
-150
-200
1.72 1.80 1.94 2.04 2.11 2.22 2.33 2.53 2.64 2.75 3.84 2.94 3.04 3.14 3.19 3.23
pH
Redox Potential

Results


Species Richness and Shannon's Index across Elevation
Number of Different Species
Shannon's Index Value
0
1
2
3
4
5
6
7
8
9
10
1.72
1.80
1.94
2.04
2.11
2.22
2.33
2.44
2.53
2.64
2.75
3.84
2.94
3.04
3.14
3.19
3.23
Elevation
Spp Richness
Shannon's Index

Conclusions:

- pH of Salmon River site similar to that of undisturbed site in Bandon Wildlife Refuge
- Soil conditions are pairing properly
- Plant diversity is greater in upper marsh
- Further sampling needed for comparison and replication

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Questions?