EMP Habitat Monitoring 2018-2019

Lower Columbia Estuary Partnership

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October 2018 Science Work Group

Franz Lake Slough 2018

2018-19 Habitat Sampling

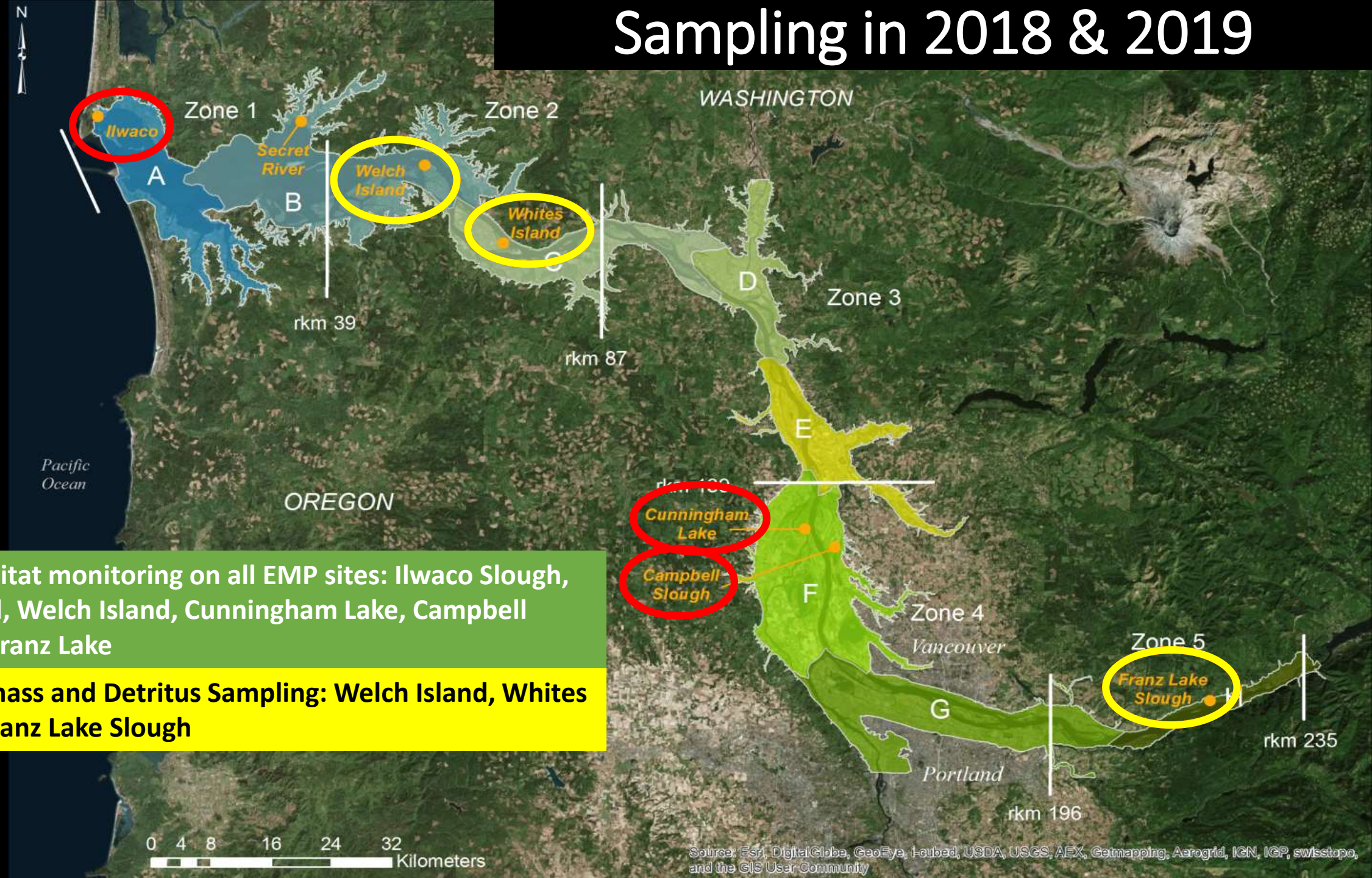
- *Vegetation Survey, Water Surface Elevation, Sed-Bench Monitoring*: **All Sites**
- Illwaco Slough
- Whites Island
- Welch Island
- Campbell Slough/Cunningham Lake
- Franz Lake

- *Biomass and Macrodetritus Sampling*

18' Winter, Spring: Whites, Welch
Summer: Whites, Welch, Franz

19' Winter & Summer: Whites, Welch, Franz

Sampling in 2018 & 2019



Continue habitat monitoring on all EMP sites: Ilwaco Slough, Whites Island, Welch Island, Cunningham Lake, Campbell Slough, and Franz Lake

Focused Biomass and Detritus Sampling: Welch Island, Whites Island, and Franz Lake Slough

Habitat Data Status and Trends Analysis Plan

Water Surface Elevation and Temperature

- Evaluate differences in growing season and daily marsh inundation among the sites across years
- Calculate salmon habitat opportunity (using depth & temp data) across sites and years

Vegetation

- Compare species abundances, diversity, and similarity across sites and years

Biomass

- Compare summer and winter biomass across sites and years, identify biomass export
- Evaluate detritus and biomass quality and quantity (collected seasonally 2017-18)

Sediment accretion and erosion

- Calculate the accretion and erosion rates across the sites by year

Overview analysis

- **Continue to identify relationships between plant community, biomass production, and annual shifts in growing season and hydrology**

2018-19 Habitat Sampling

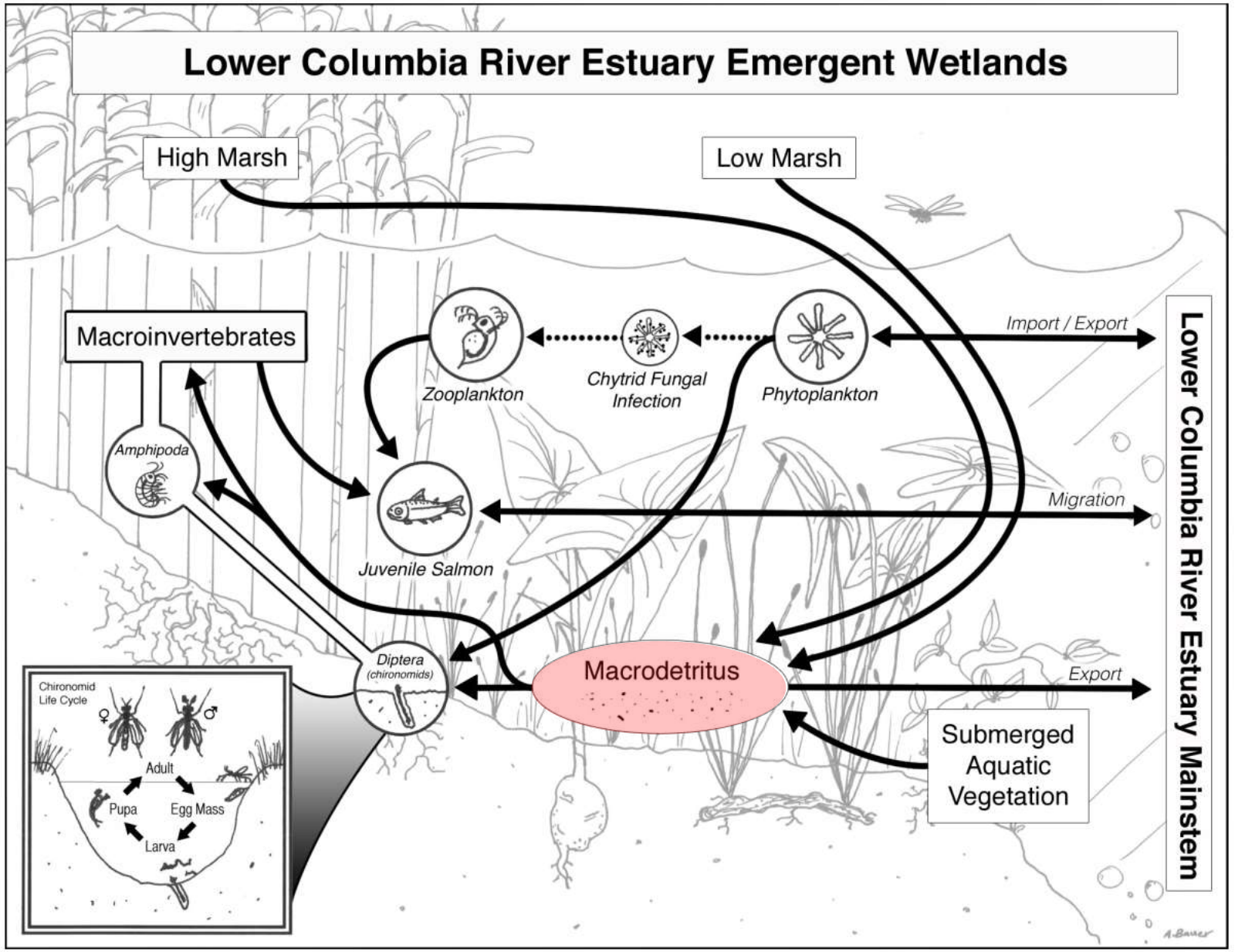
- Long-term biomass and macrodetritus question:
  - How does the abundance and quality of wetland biomass and macrodetritus (decaying wetland plant biomass) vary seasonally, annually, and by dominant species within these estuary wetlands?

This new evaluation is based off of the results of the Reed Canarygrass study (Hanson et al. 2016) which highlighted potential important macrodetritus ***production and quality differences*** *between Reed canarygrass and Carex lyngbyei in the estuary.*

Reed Canarygrass on Whites Island July 2017

Why do we care?

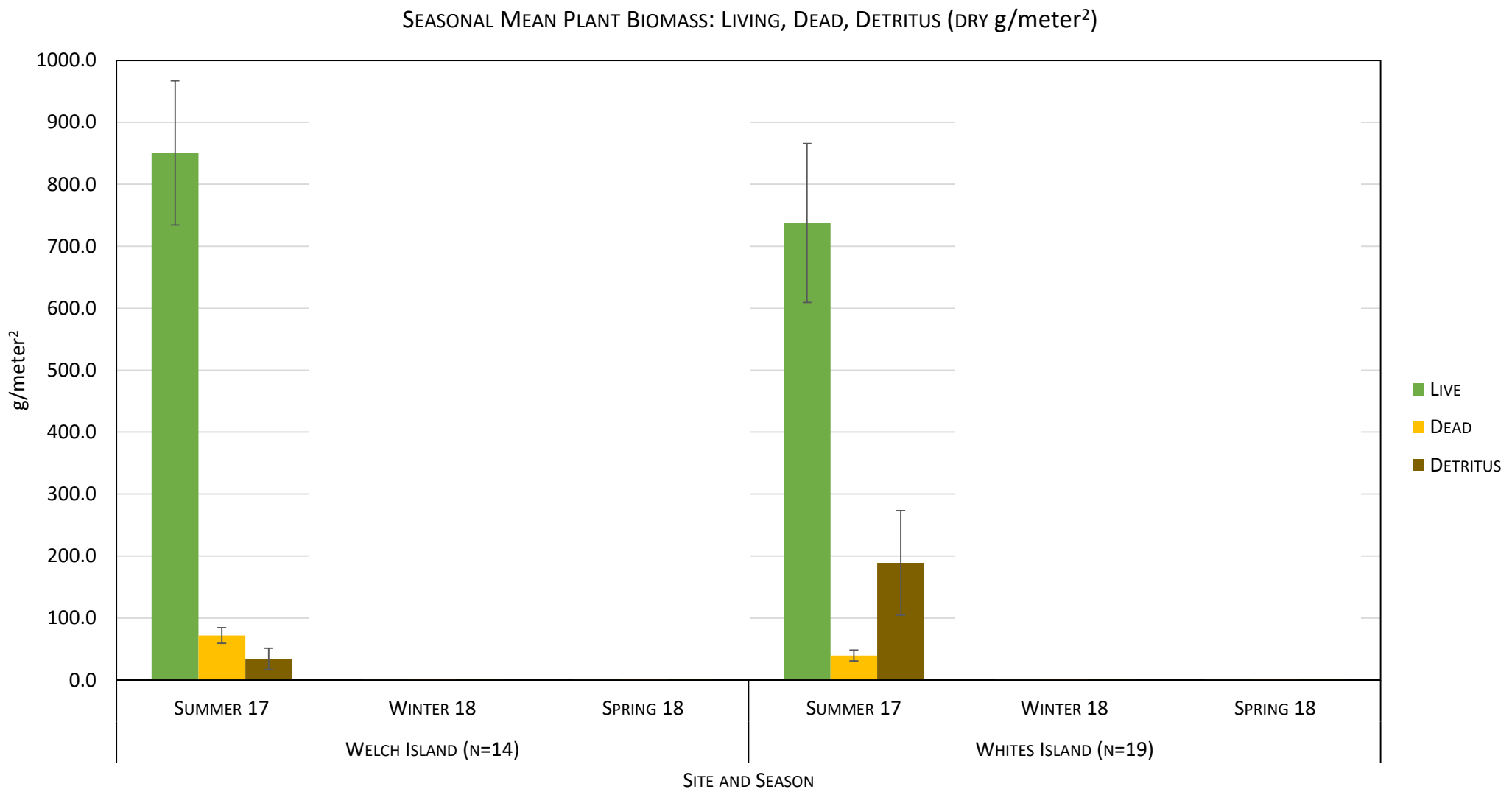
Understanding **wetland biomass and macrodetritus** dynamics will help us determine how these wetlands and their plant communities contribute to the **seasonal detrital pool** which forms the base of the **salmonid food web.**



(Also see Maier and Simenstad 2009)

Preliminary Results –Biomass and Detritus Sampling

Examining the potential export of plant biomass throughout the seasons



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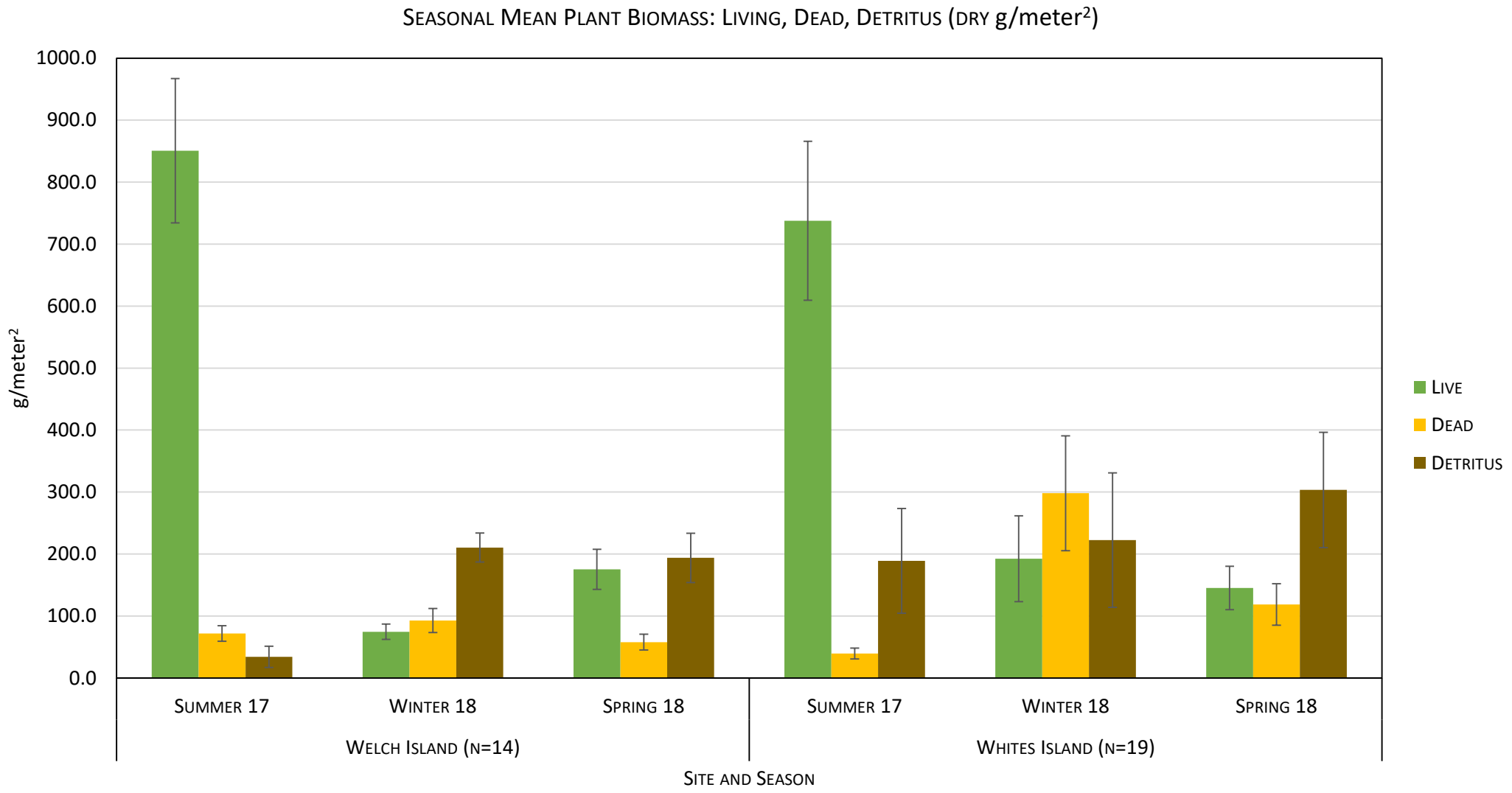

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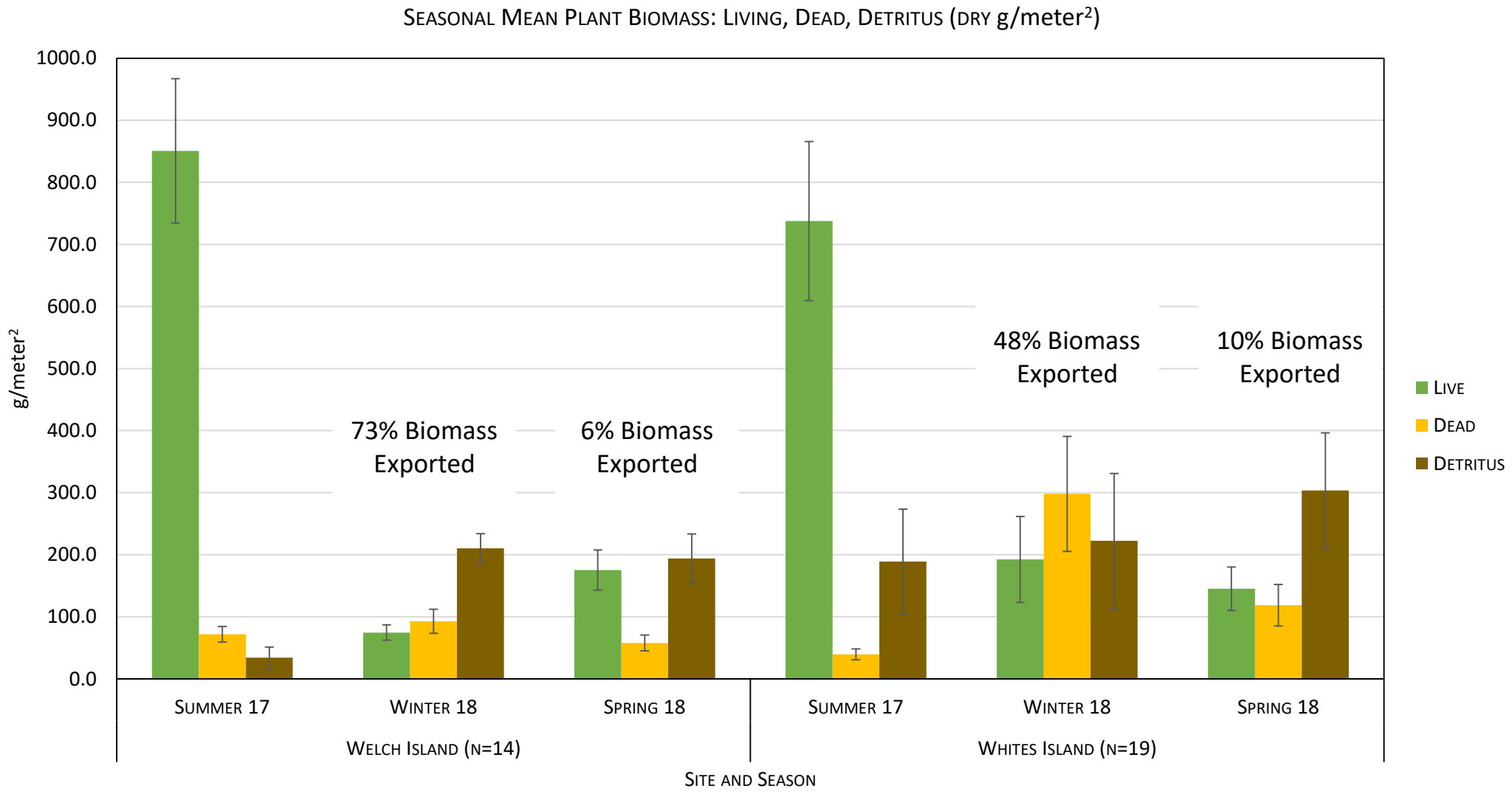

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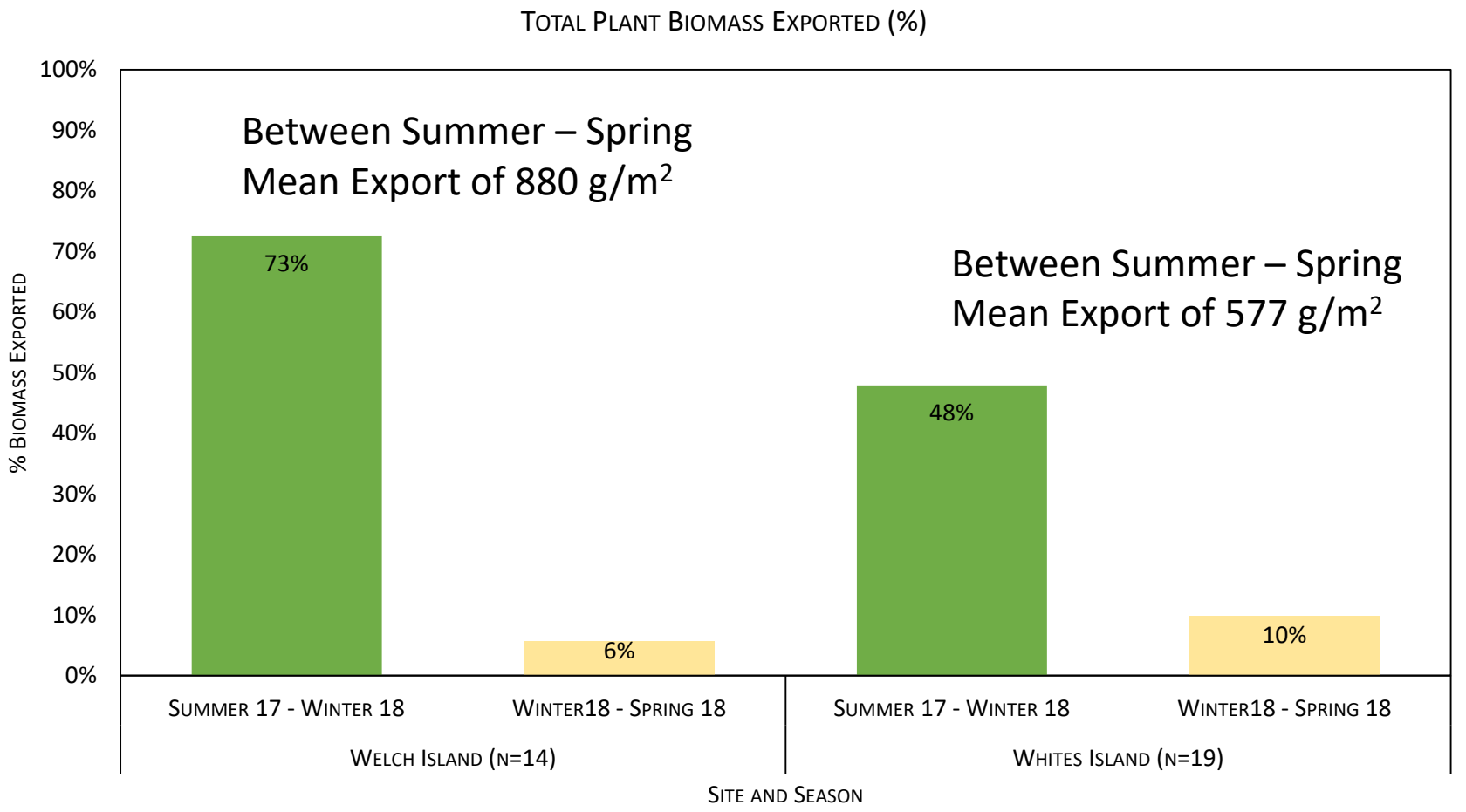

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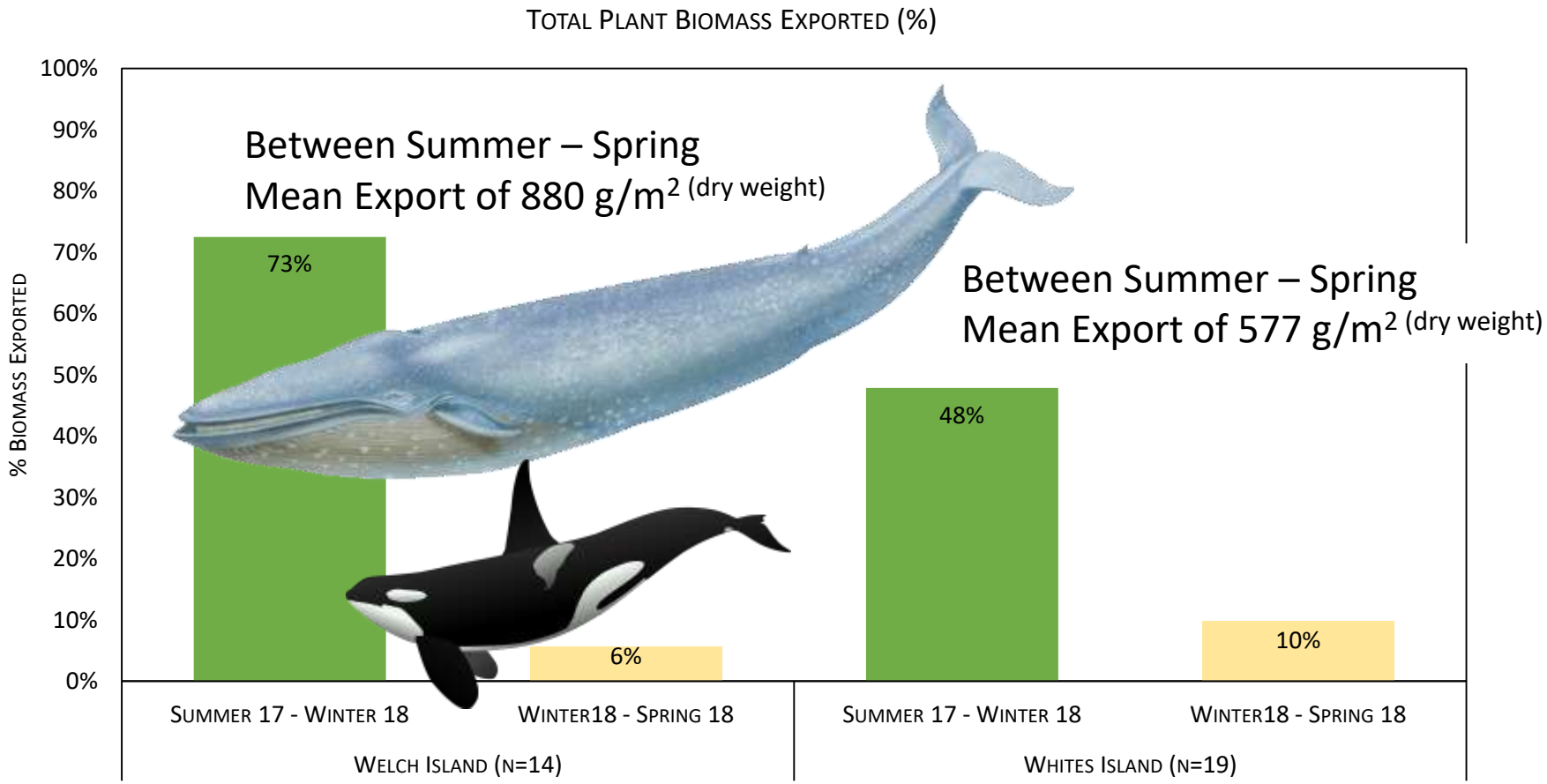

If all tidal wetlands in the estuary export a similar amount of biomass then this (by weight) is equal to about 850 to 560 Blue Whales (1 Blue Whale = 200 tons) or 28,444 to 18,655 Orcas (1 Orca = 6 tons) of biomass annually exported into the estuary!

**estimate based on 2010 landcover data, thanks Niko!*

Next Steps: Digging Deeper into Detritus

- **Continued sampling at Whites Island, Welch Island, and Franz Lake**
- **Closer look at decomposition dynamics and detrital quality of dominant plant communities:**
  - **Evaluation of Lignin, Nitrogen, and Carbon content of Living, Dead, and Macrodetrital plant materials**
  - **Soil conditions: C:N ratio, Bulk Density, ORP, pH, Salinity**
- ***Tying all this back into the larger habitat story…***

Questions?

Many thanks to everyone who assisted with data collection and sample processing and to Amy Borde for her legacy of amazing habitat data!

Abe Lloyd, April Silva, Barry Wendling, Dick Brainerd, Grace Brennan, Katrina Poppe, Matthew Schwartz, Narayan Elasmar, Roger Fuller, Sage, Anna