

# State of the Estuary: Water quality changes and eelgrass die-off in South Slough National Estuarine Research Reserve

Caitlin Magel<sup>1</sup>, Sally Hacker<sup>1</sup>, Francis Chan<sup>1</sup>, & Ali Helms<sup>2</sup>

<sup>1</sup>Oregon State University, Dept. of Integrative Biology; <sup>2</sup>South Slough NERR

## SOUTH SLOUGH, COOS BAY, OREGON

First of 29 National Estuarine Research Reserves in the U.S.

Long-term water quality and biological monitoring (15+ years)



## SEAGRASS: CRITICAL FOR STRUCTURE AND FUNCTIONING

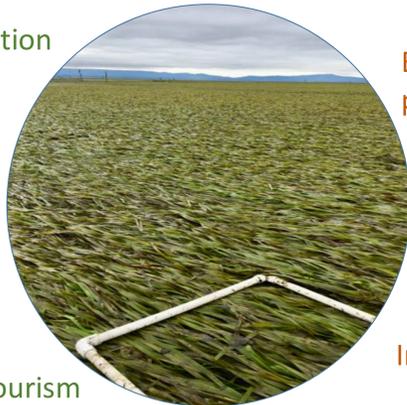
Seagrasses provide “ecosystem services” – benefits that people obtain from natural ecosystem functions

> Globally, seagrasses have declined 30% in the past century

> *Zostera marina* (native eelgrass), is common in most PNW estuaries

### Benefits

- Coastal protection
- Erosion control
- Nursery habitat
- Filter nutrients & pollutants
- Carbon burial
- Mitigate low pH
- Recreation & tourism



### Threats

- Excess nutrients & pollutants
- Increased sediments
- Changing climate
- Damage from boats
- Invasive species

## WHAT'S HAPPENING WITH EELGRASS AT SOUTH SLOUGH?

2001: abundant eelgrass & algae present

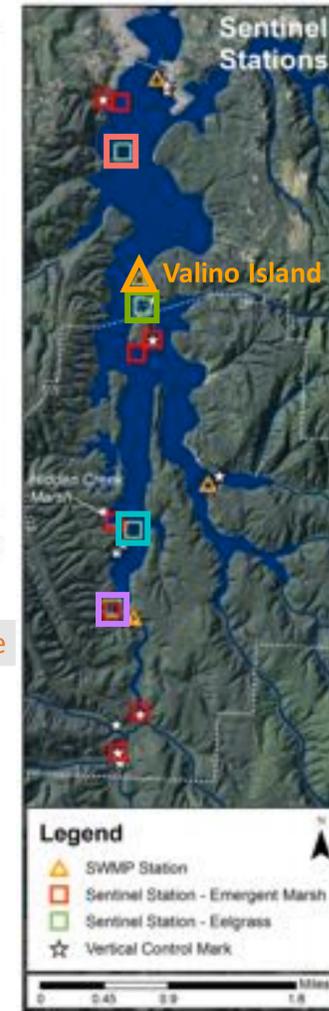
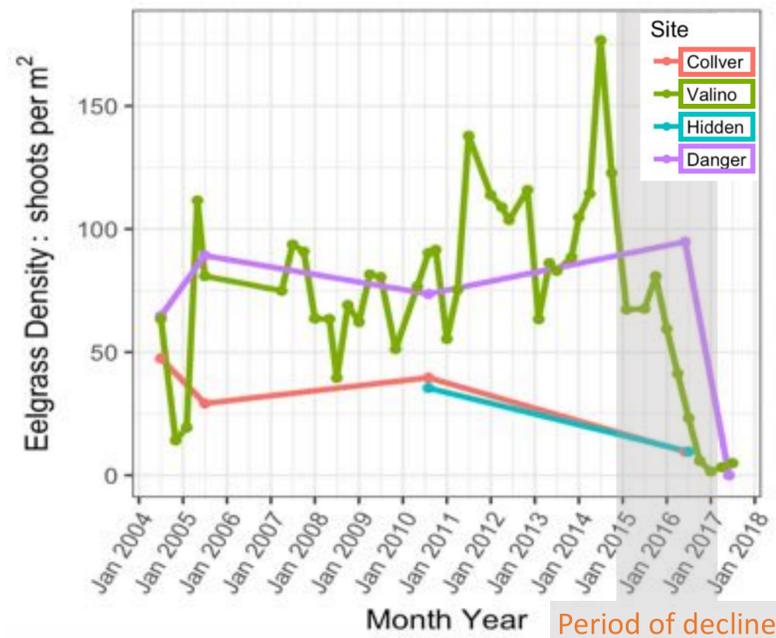


decline

2017: primarily algae, little eelgrass



## RAPID LOSS OF EELGRASS: 2015-2017

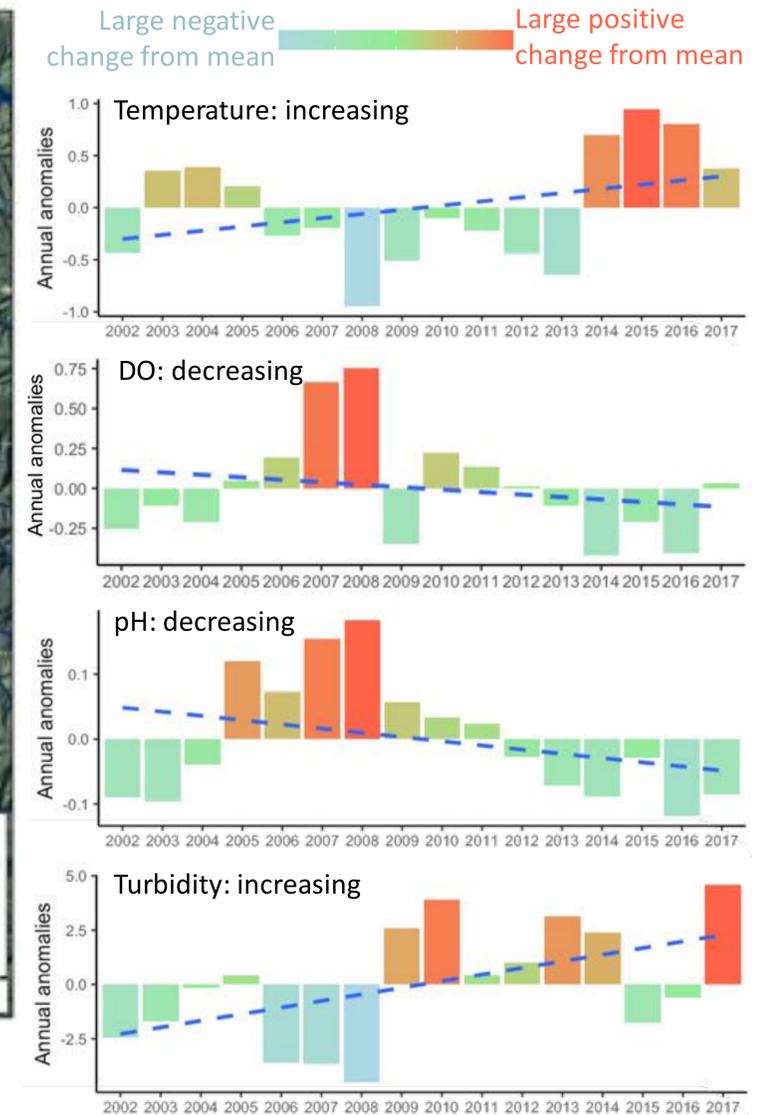


## EELGRASS WASTING DISEASE (EWD)

- > Pathogen that causes lesions on blades
- > Present in South Slough, but its role in the die-off is unknown
- > Outbreaks of EWD can be triggered by changes in water quality



## WATER QUALITY CHANGES: VALINO ISLAND



## PRELIMINARY FINDINGS & IMPLICATIONS

- > Eelgrass decline occurred concurrent with system-wide changes in water quality – could be driver or response
  - Need to focus in further on period of decline (2015-2017)
- > Eelgrass density peaked in 2014, but declined dramatically from 2015 to present
- > Temperature has increased, whereas pH and dissolved oxygen (DO) have declined throughout the estuary
- > Turbidity (cloudiness) has increased, potentially shading eelgrass beds and limiting growth
- > Loss of eelgrass will likely have negative effects on fish, bird, and invertebrate communities in the estuary

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