

# Resilience of Soft-Sediment Communities after Geoduck Harvest in Samish Bay, Washington

Micah Horwith, Department of Biology, University of Washington



Fisk Bar



Vancouver




Surrey

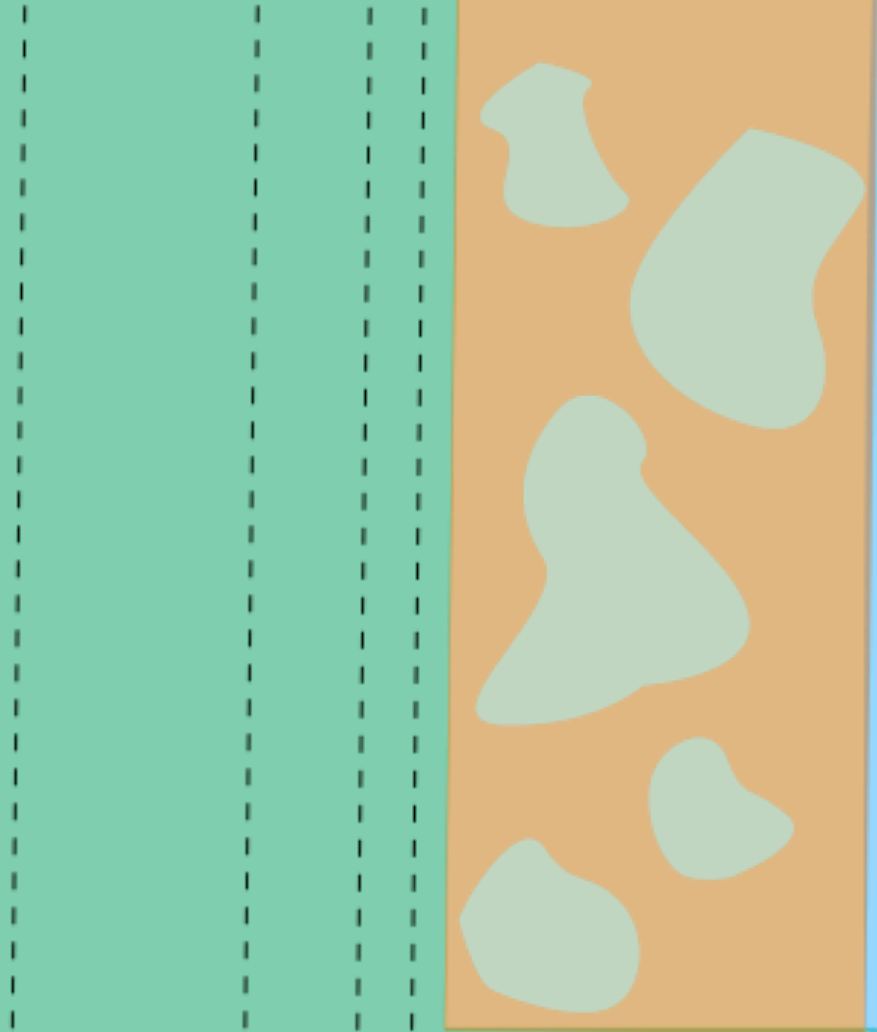
Victoria

Seattle



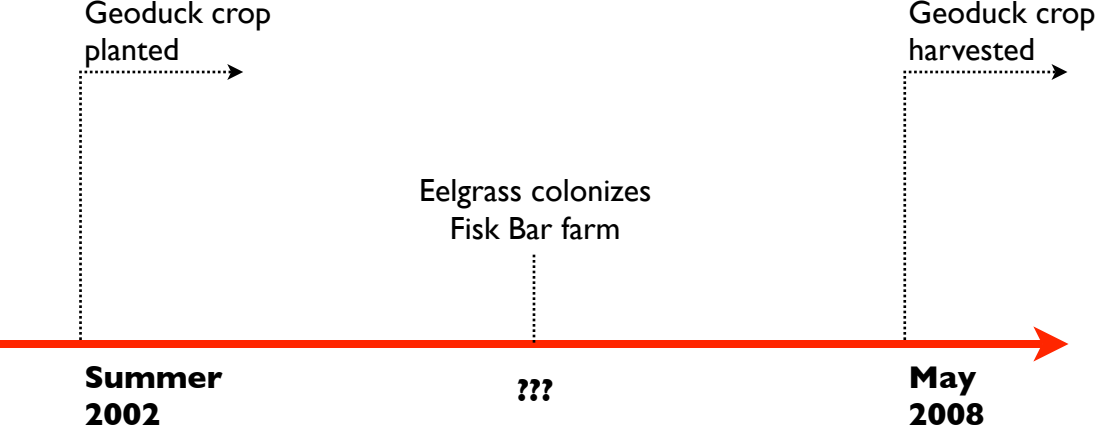
# Fisk Bar

-  = Eelgrass
-  = Bare
-  = Channel



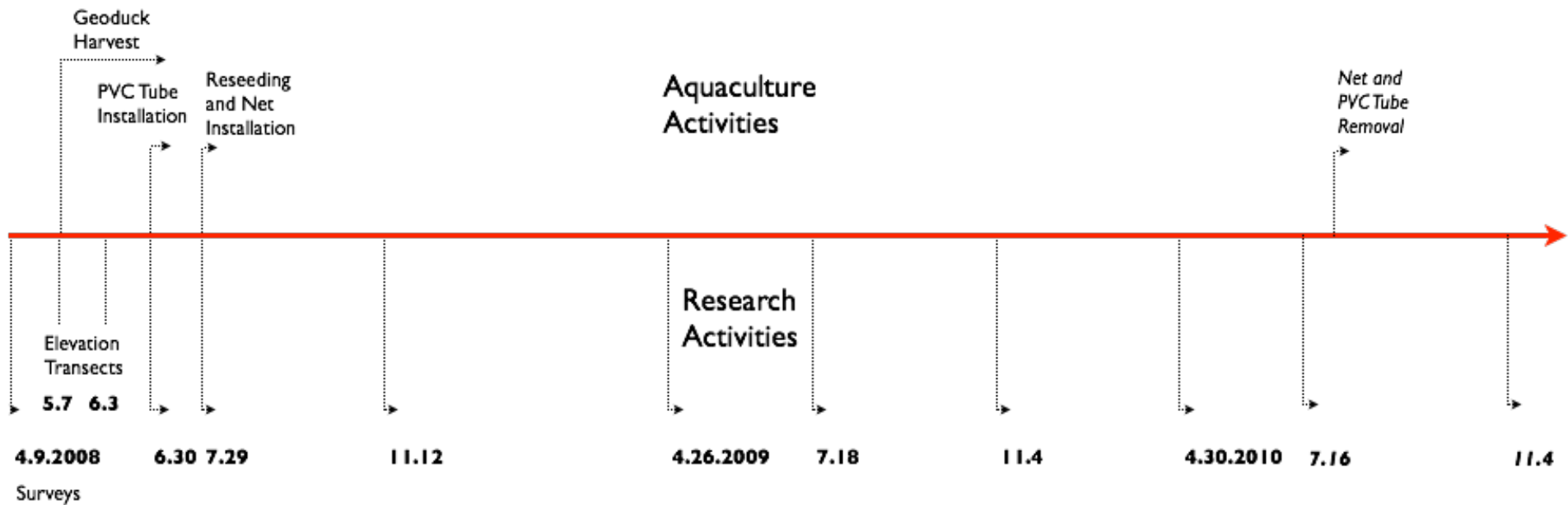
# Timeline

I - Pre-harvest



# Timeline

- 1 - Pre-harvest
- 2 - Post-harvest



# Geoduck harvest

May 2008





# Tube installation

June 2008





# Net installation

July 2008





How does geoduck farming affect eelgrass?



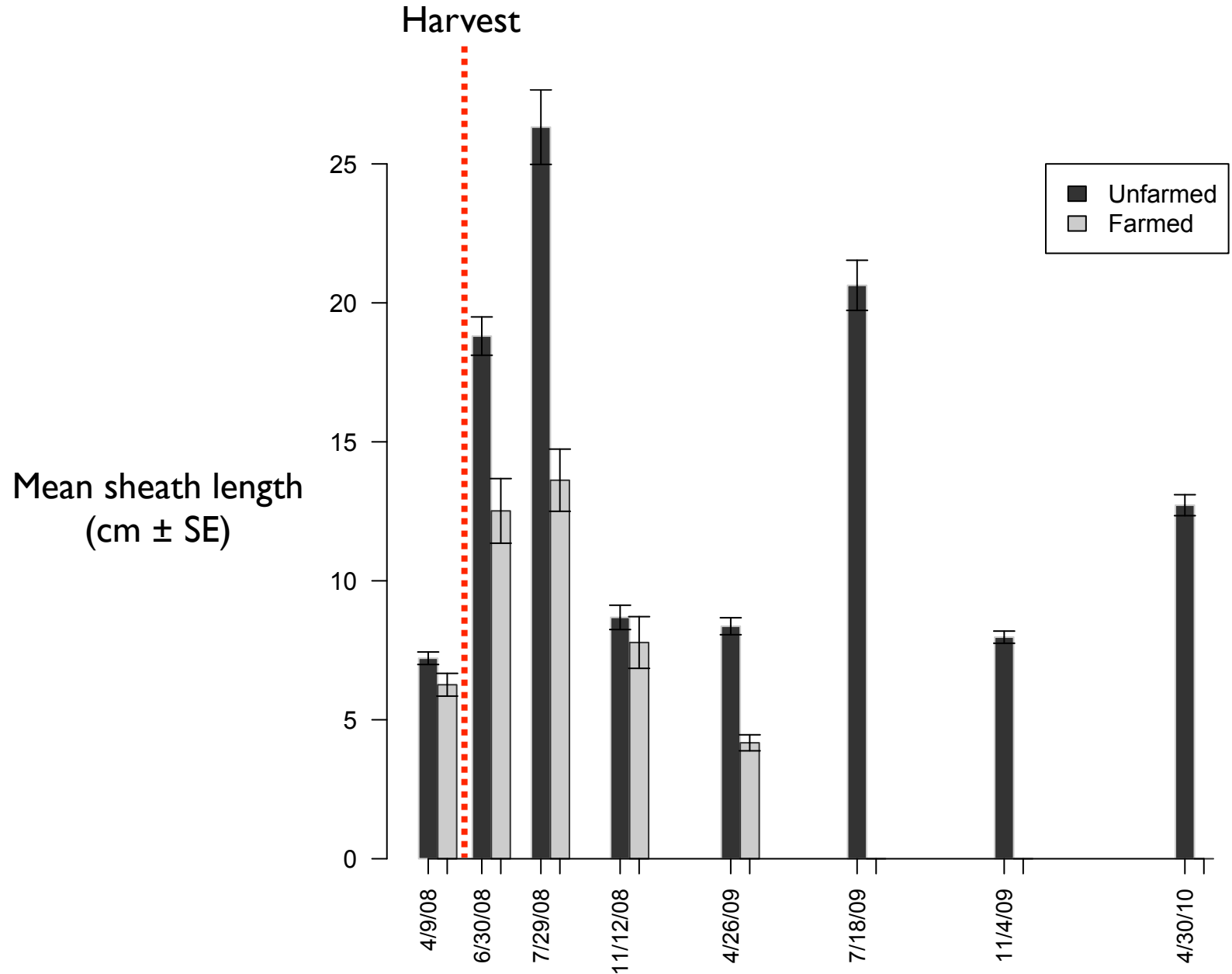
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I - Reduced size



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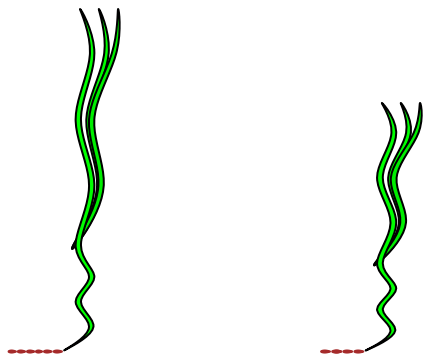
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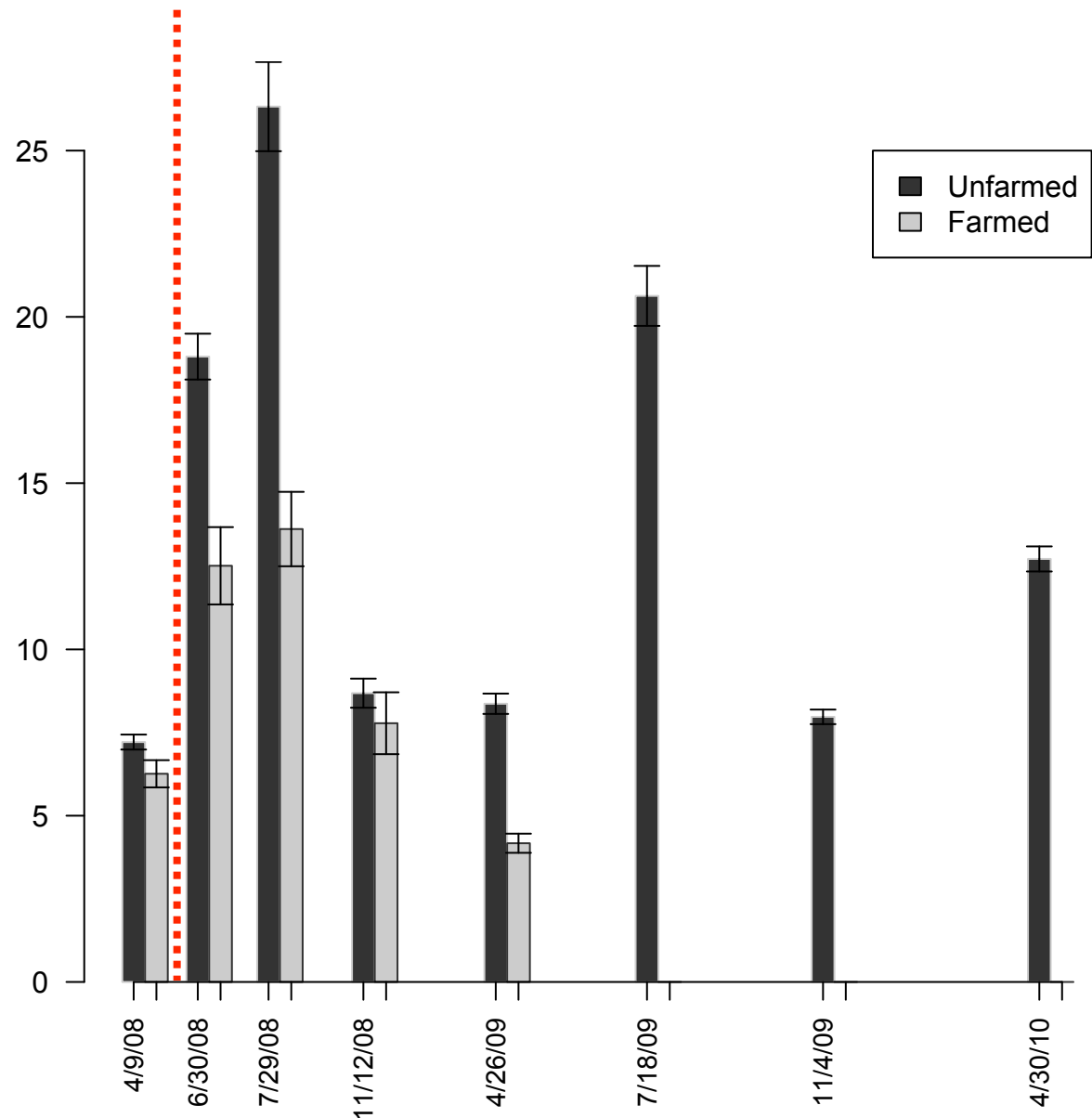
I - Reduced size

Unfarmed      Farmed



**April 2008**

Harvest

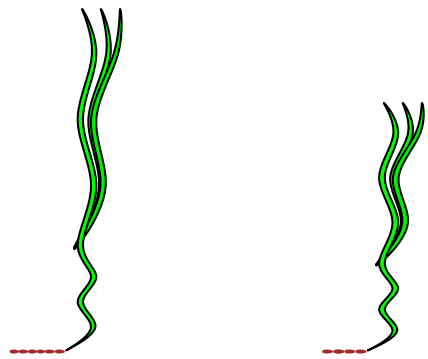




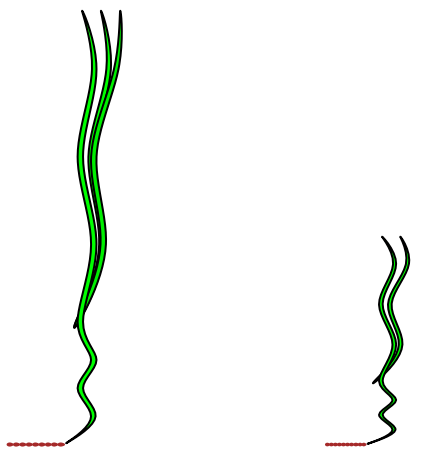
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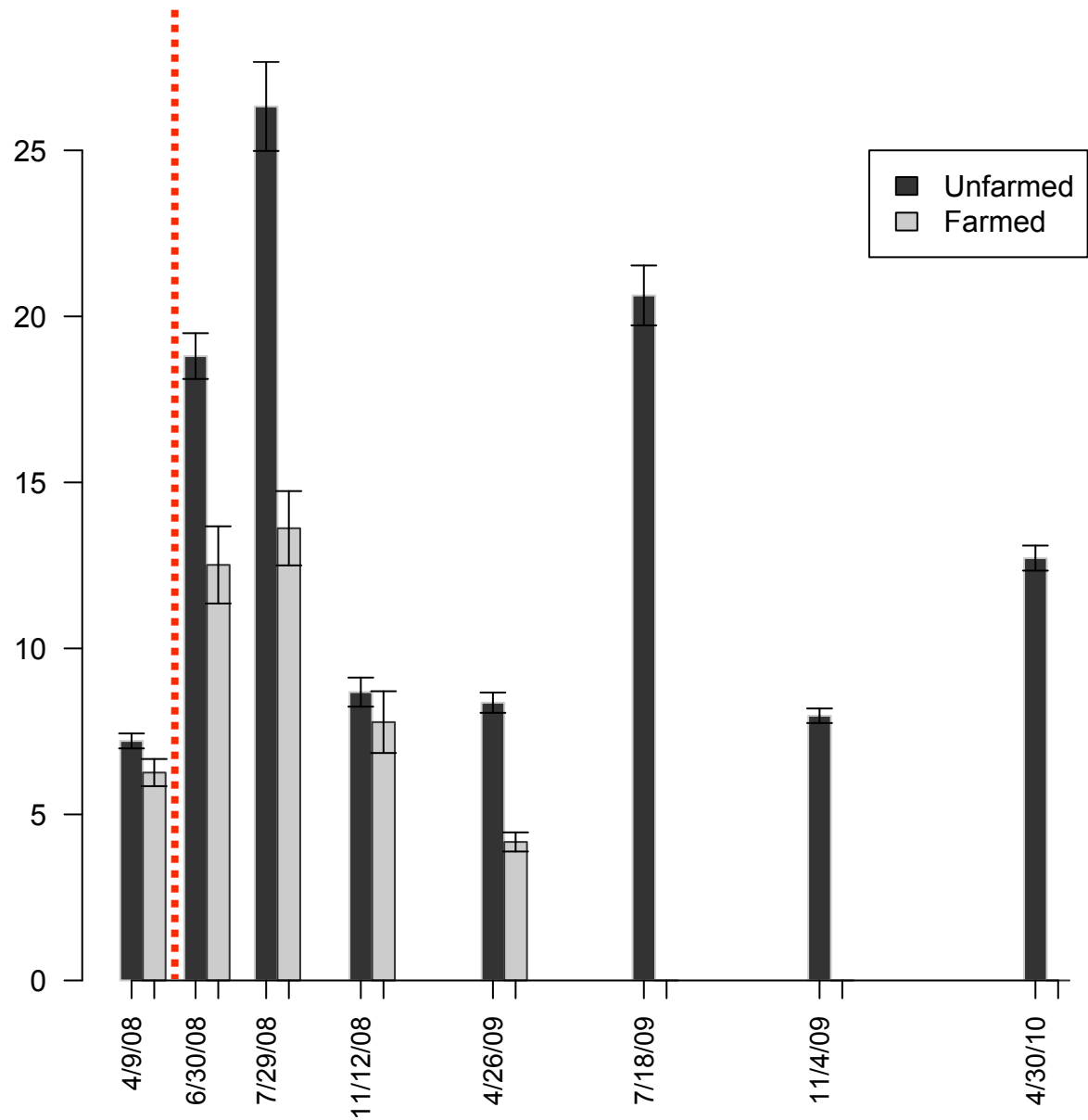


**April 2008**



**April 2009**

Harvest



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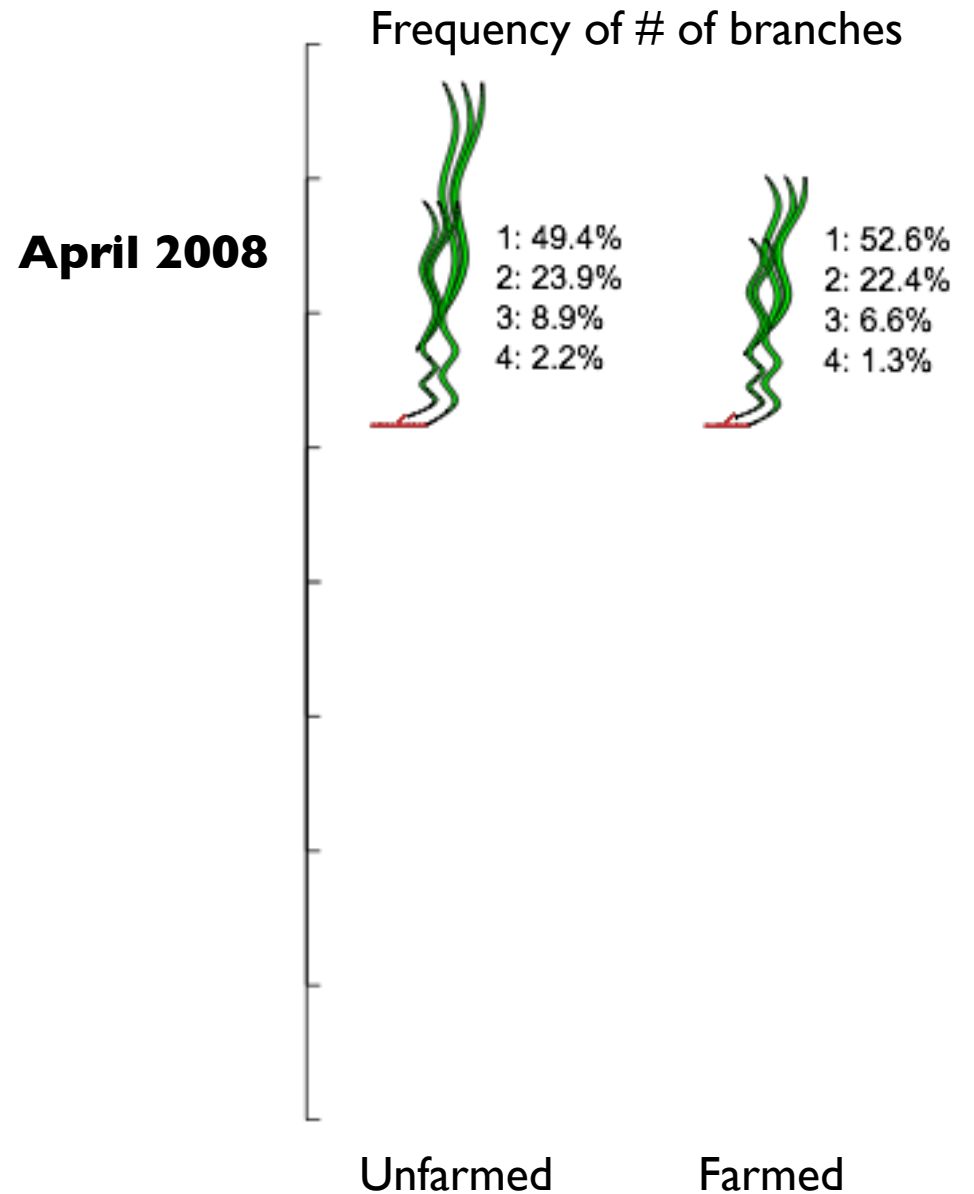
2 - Reduced reproductive activity



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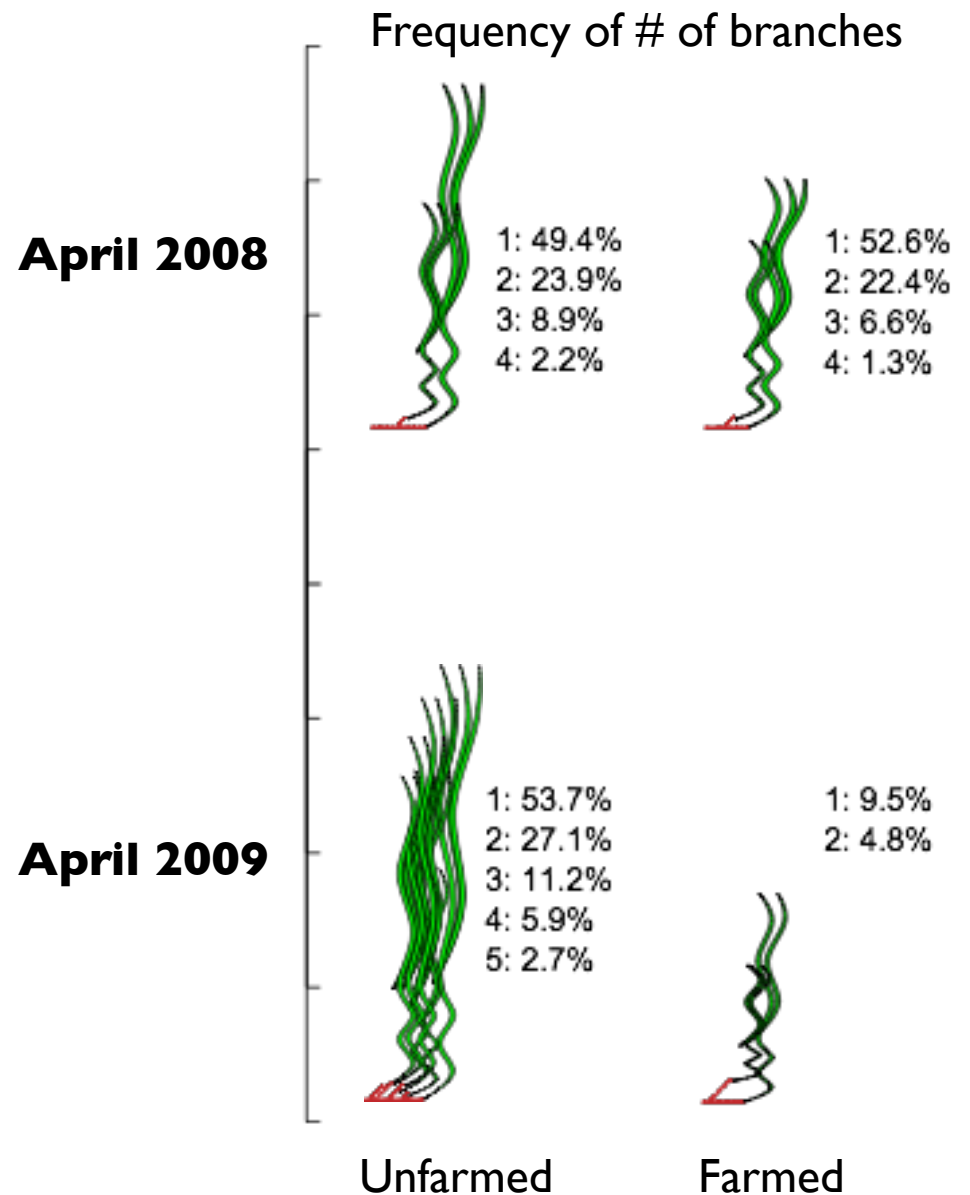
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# How does geoduck farming affect eelgrass?

1 - Reduced size

2 - Reduced reproductive activity



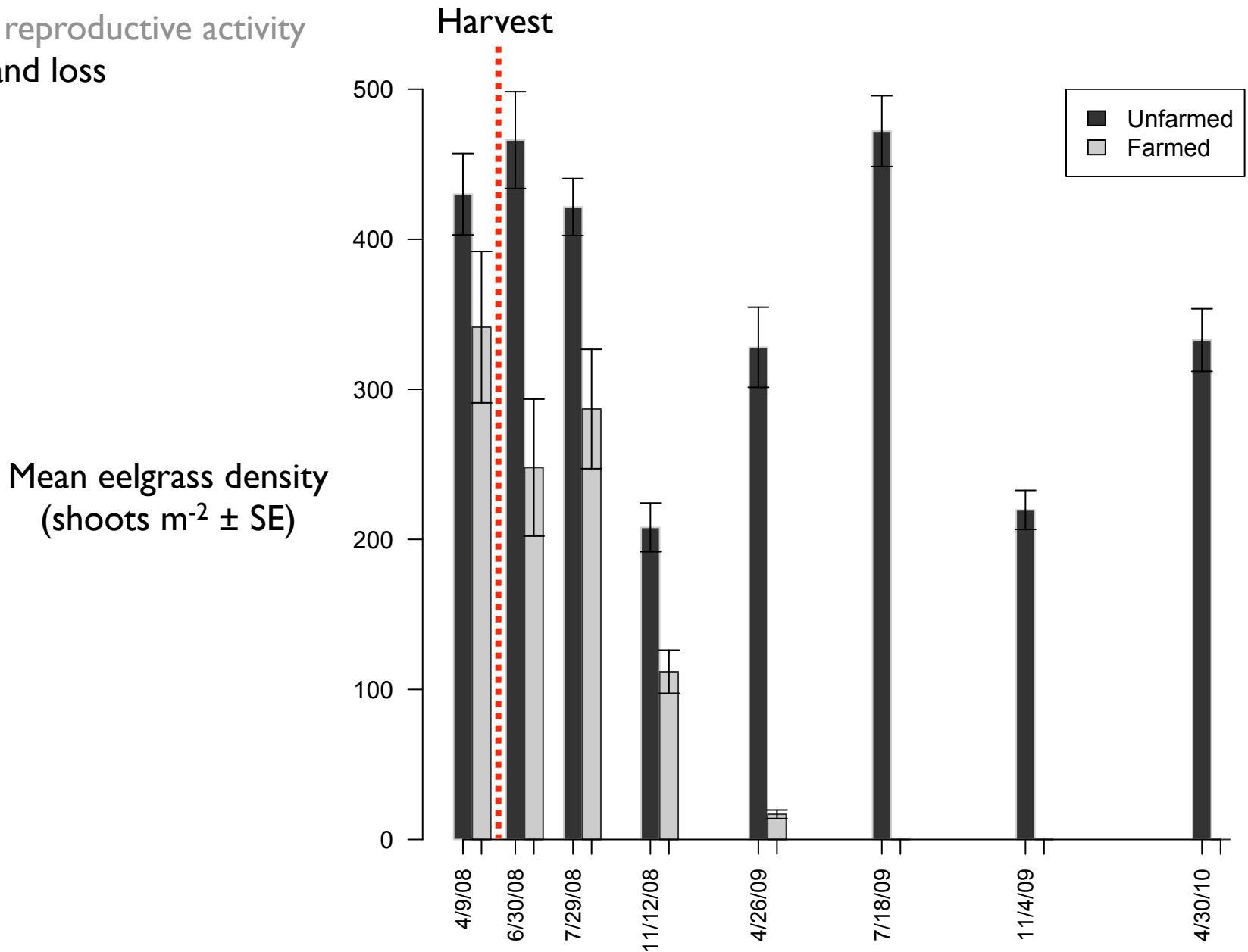
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- 1 - Reduced size
- 2 - Reduced reproductive activity
- 3 - Decline and loss**



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How does geoduck farming affect sediment?



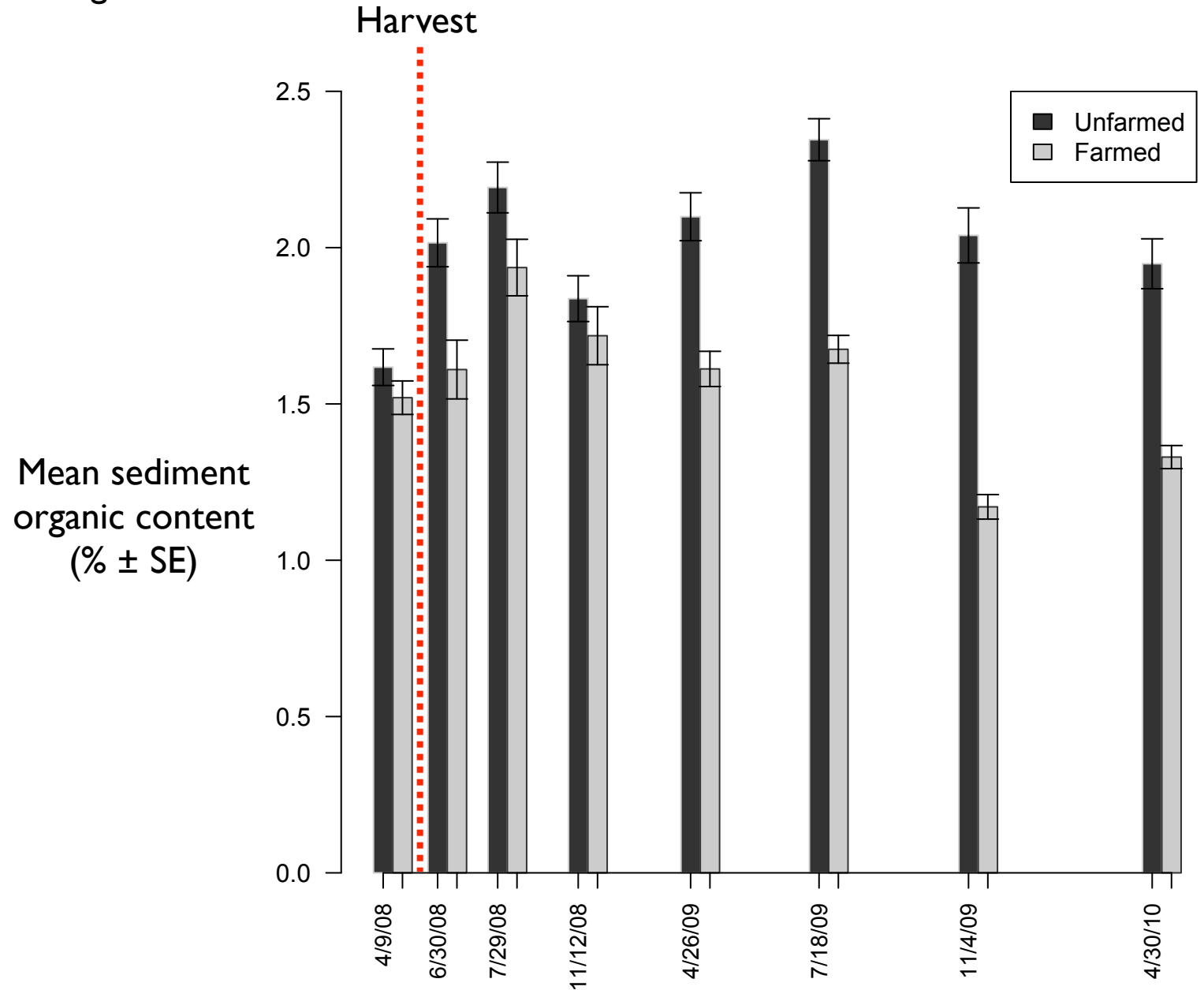
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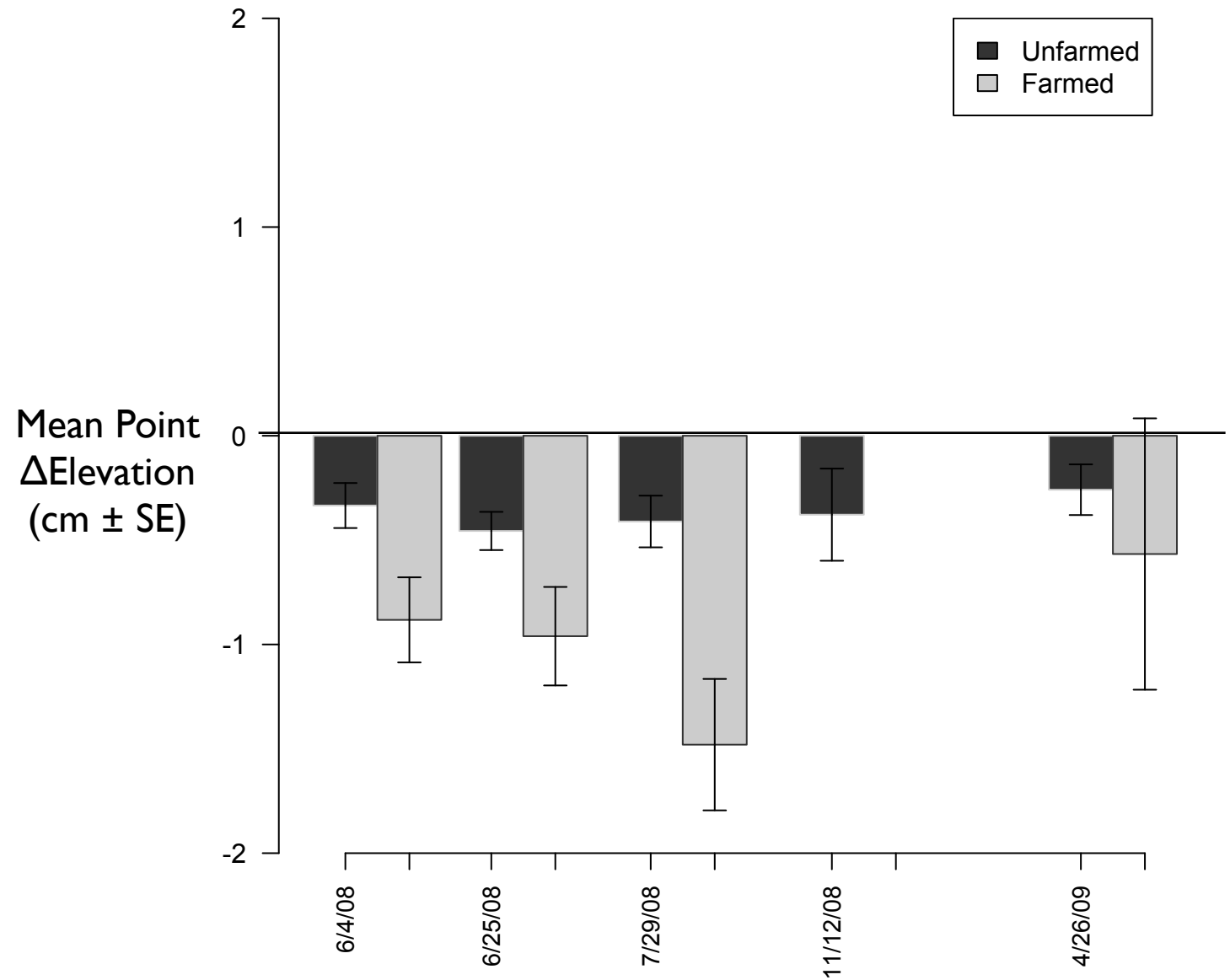


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- 1 - Reduced sediment organic content
- 2 - Elevation loss and recovery

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Does geoduck farming have 'spillover' effects?





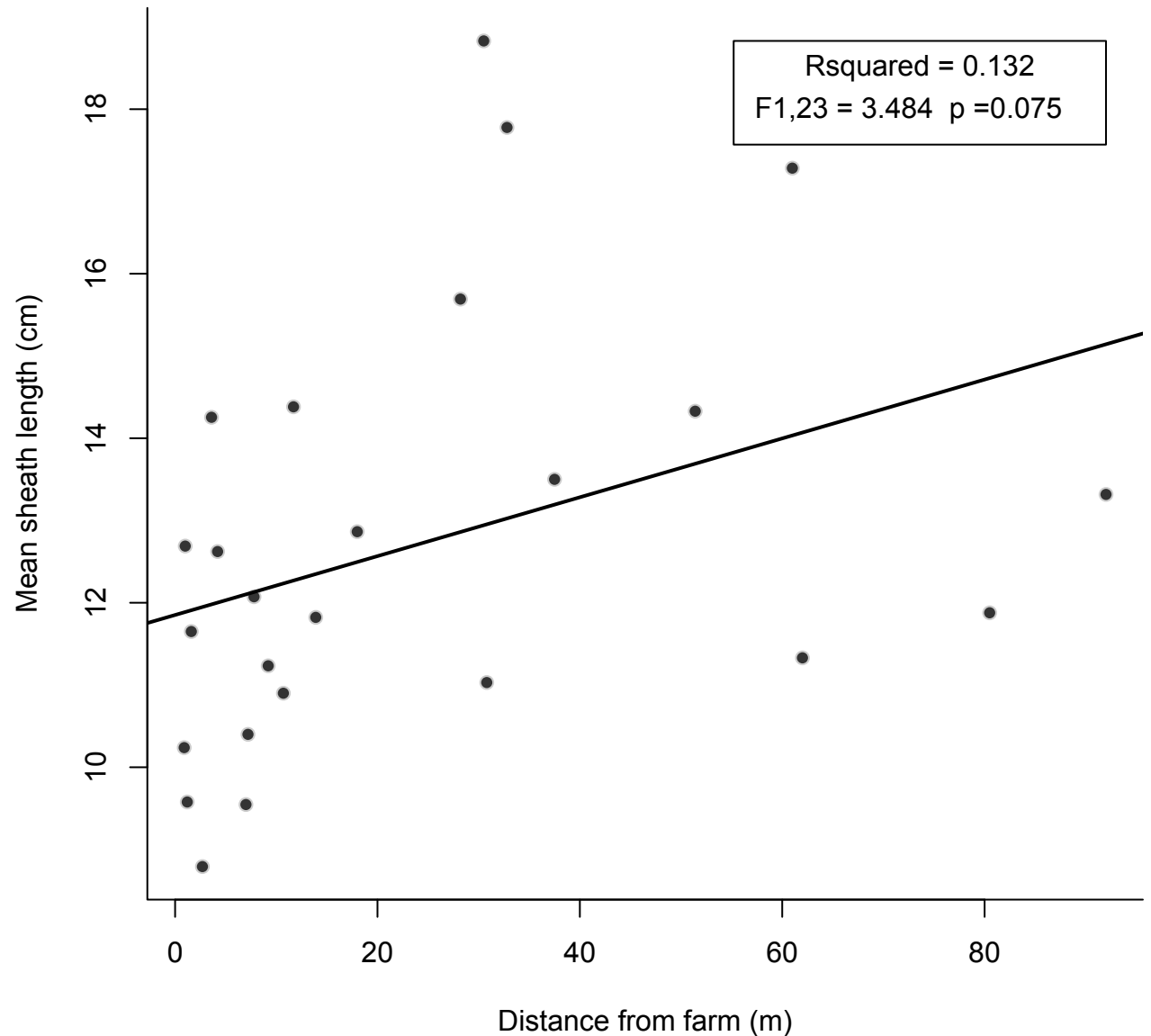
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6/30/08  
**7/29/08**  
11/12/08  
4/26/09  
**7/18/09**  
11/4/09  
**4/30/10**



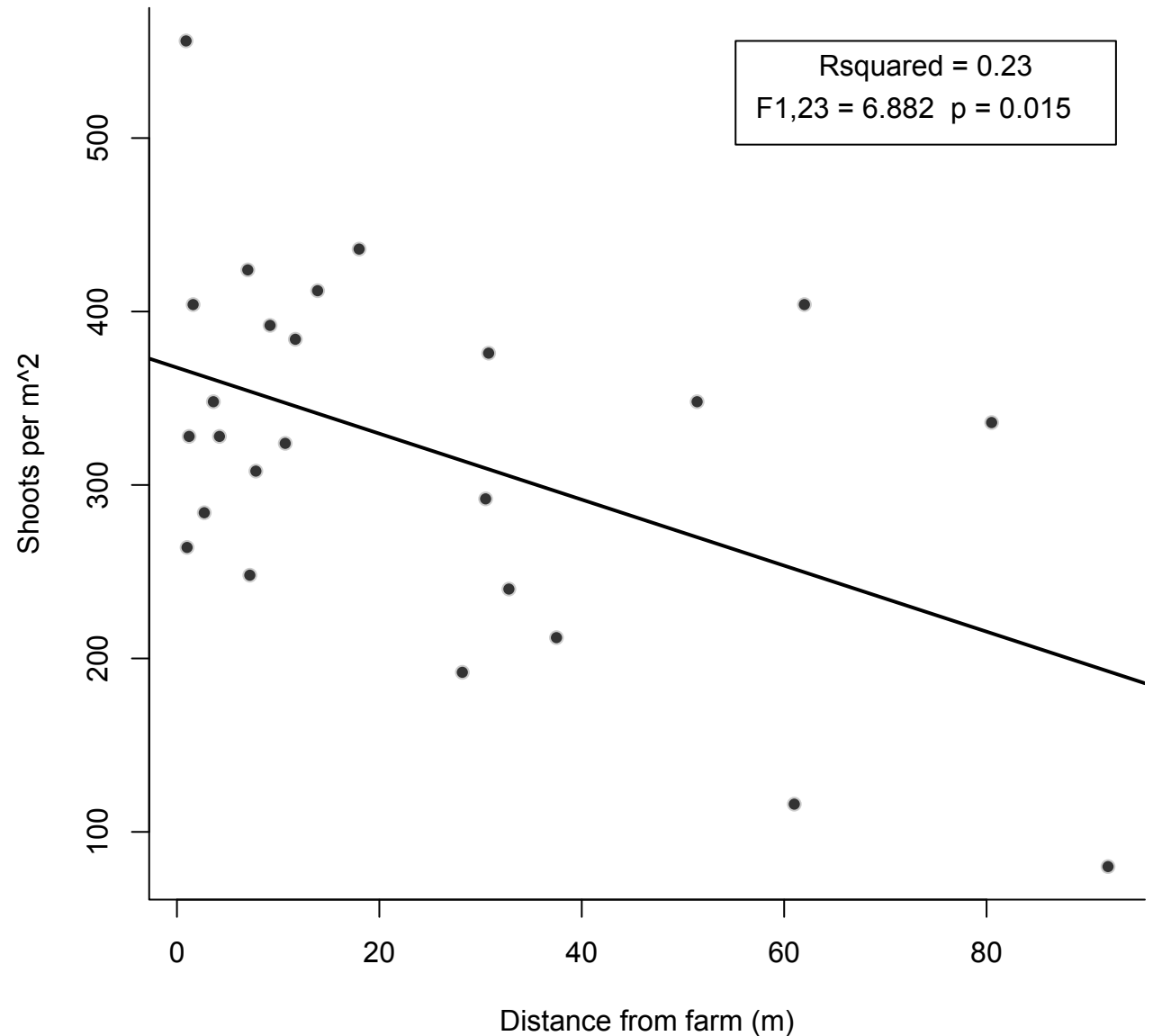
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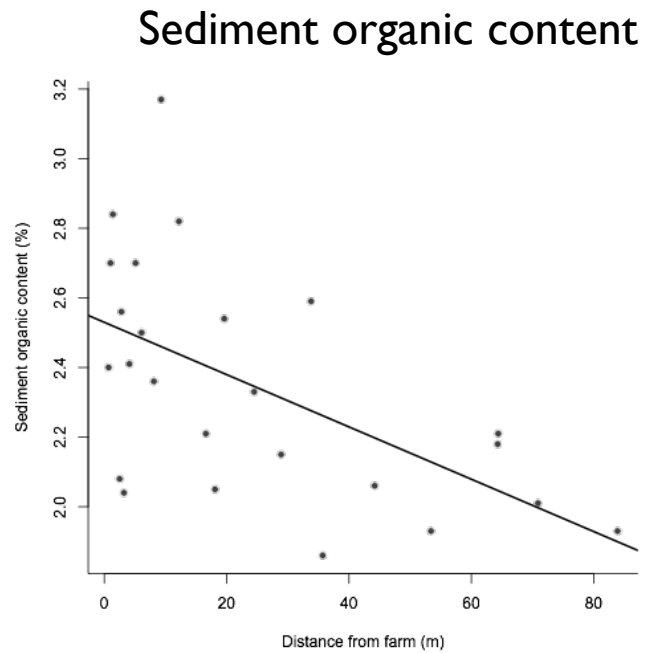
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- 1 - Reduced eelgrass size near farm
- 2 - Increased eelgrass density near farm
- 3 - Possible increased sediment organic content, reduced standing biomass near farm

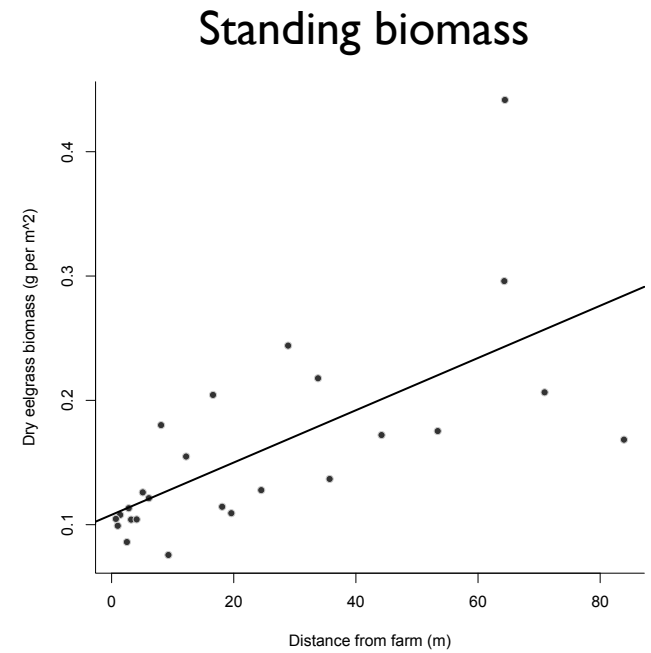
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$R^2 = 0.319$   
 $F_{1,23} = 10.792$   $p = 0.003$



$R^2 = 0.443$   
 $F_{1,23} = 18.27$   $p = 0$

How do predator-exclosure tubes affect eelgrass?

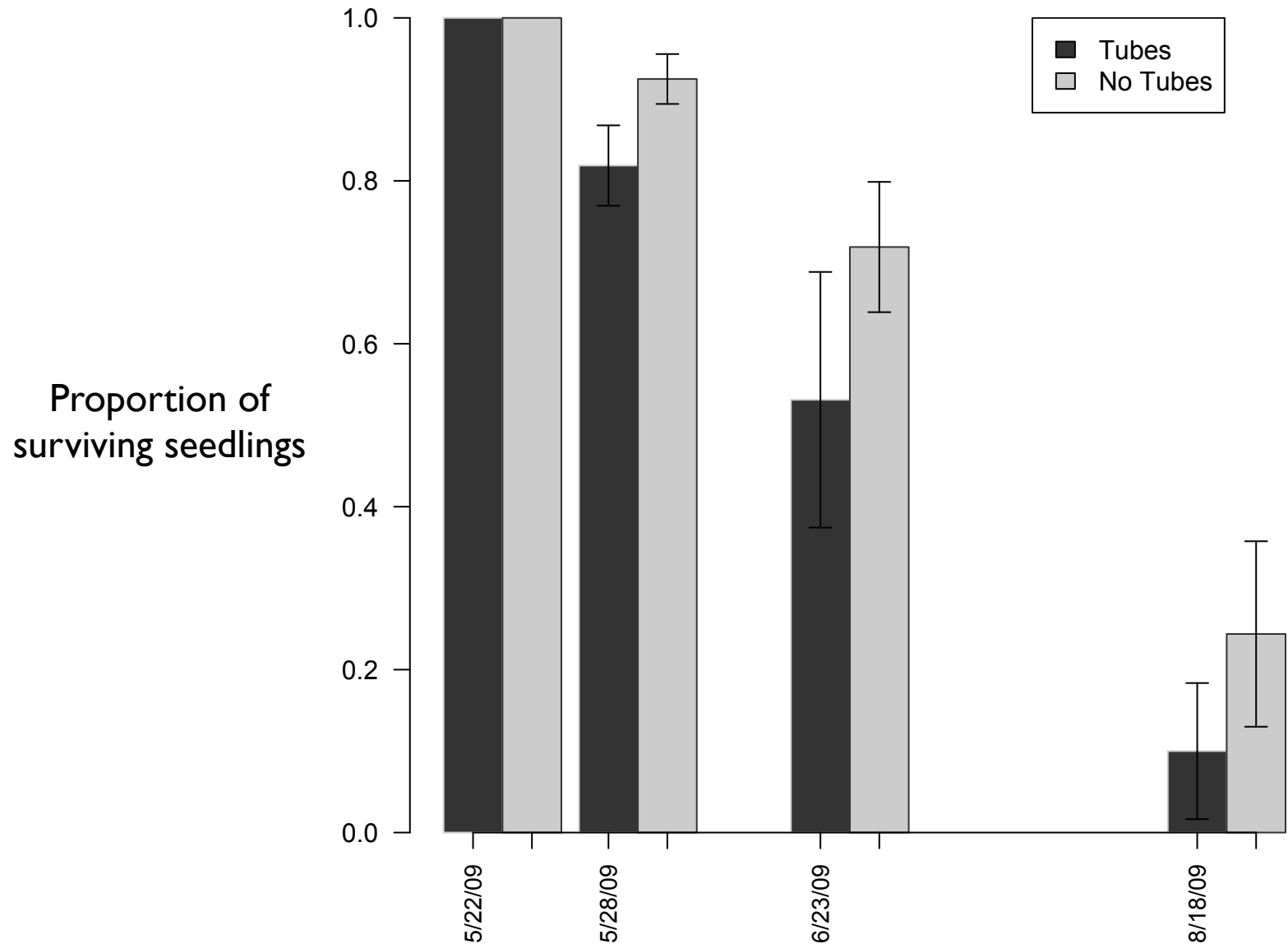


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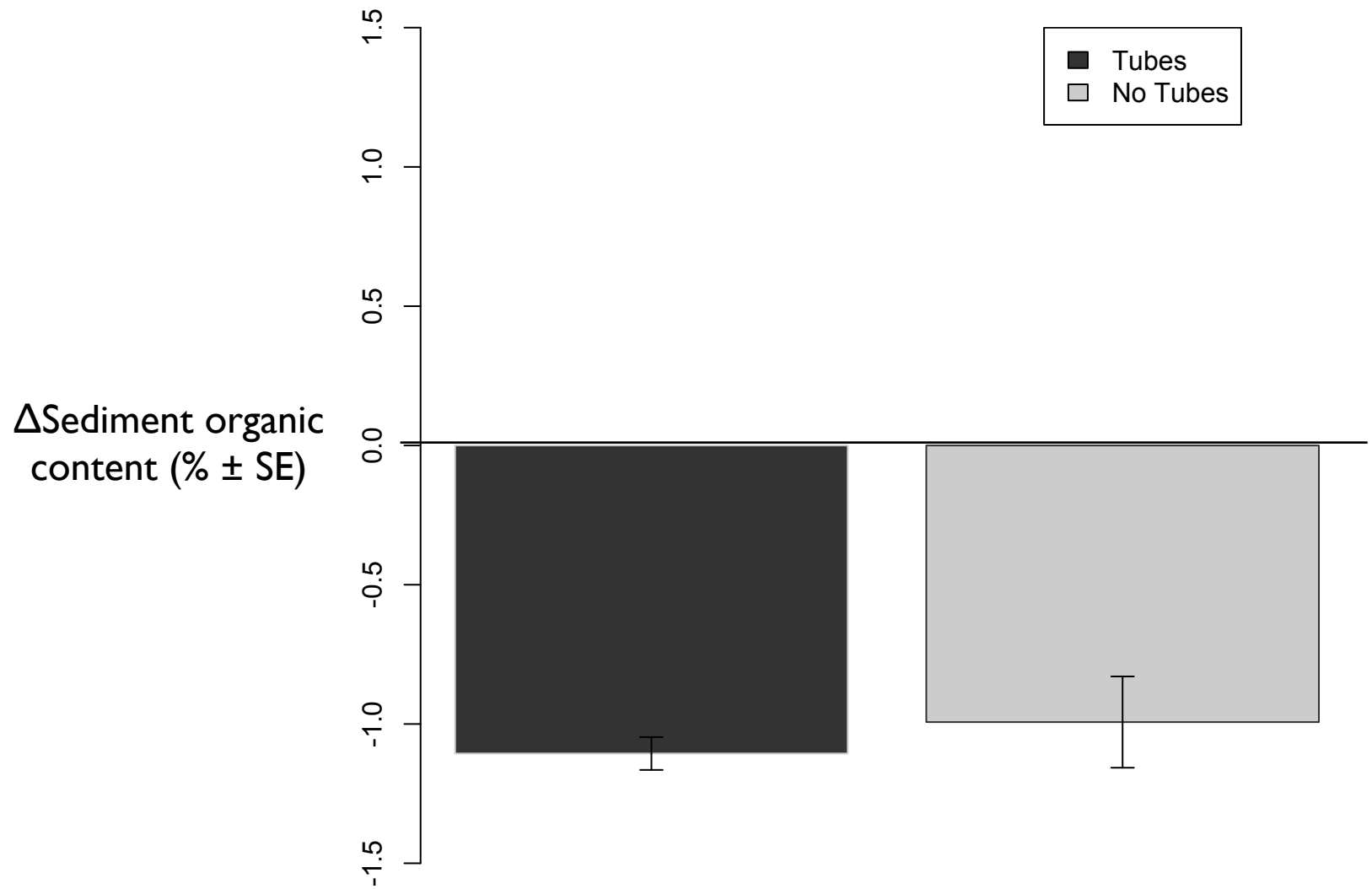


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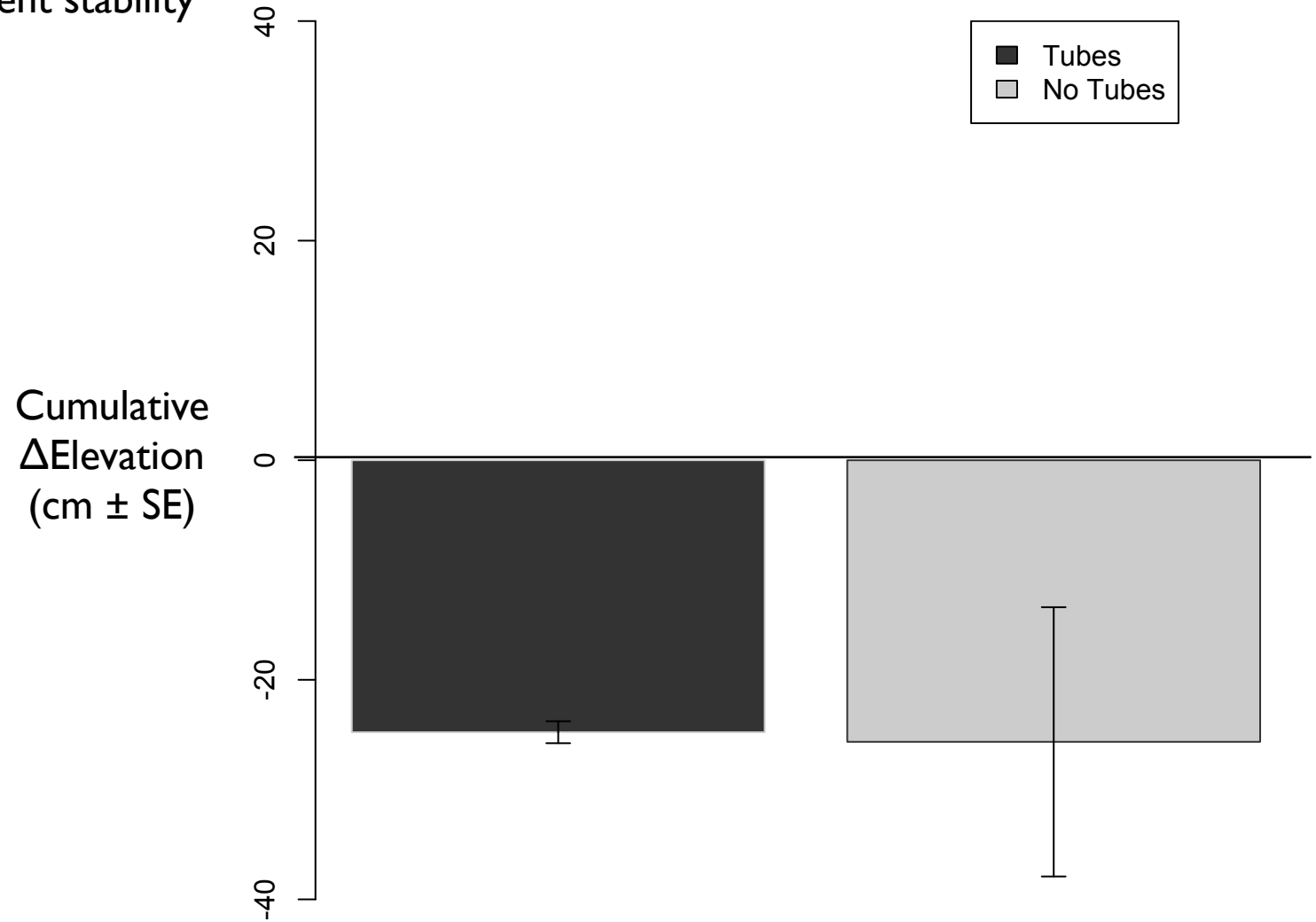


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## Within farm

- Loss of eelgrass
  - Reduced size and reproductive activity prior to loss
- Reduced sediment organic content
- Short-term loss of elevation





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## Within farm

- Loss of eelgrass
  - Reduced size and reproductive activity prior to loss
- Reduced sediment organic content
- Short-term loss of elevation

## Spillover

- Reduced eelgrass size
- Increased eelgrass density
- Possible increase in sediment organic content and decrease in standing biomass





## Support



Washington



## Field Assistance

Julianna Chen

Katie Cochran

Audrey Djunaedi

Giorgio Guerra

Caleb Hecker

Kelsey Hinton

Isaac Horwith

Henry Howes

Sarah Jubinski

Ailene Kane

Satprit Kaur

Max Maliska

Claire Miccio

Gia Nguyen

Julie Nicol

Dr. Fernanda Oyarzun

Emily Palm

Adam Parast

Sascha Troiano

Chaochung Tsai

Chaowei Tsai

Dr. Ursula Valdez

Brady Walkinshaw

Kyle Wataya

Inness Wragg

Sylvia Yang

Dr. Jae-Won Yoo

## Guidance

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Dr. Jennifer Ruesink