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Persistence of Dermo (*Perkinsus marinus*) in Sun-Cured Eastern Oysters (*Crassostrea virginica*)

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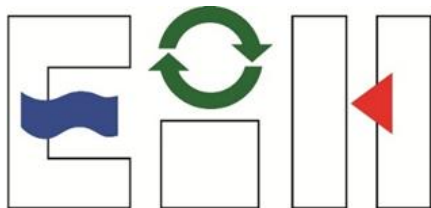
Texas Chapter of the American Fisheries Society

Corpus Christi, TX

February 25, 2023



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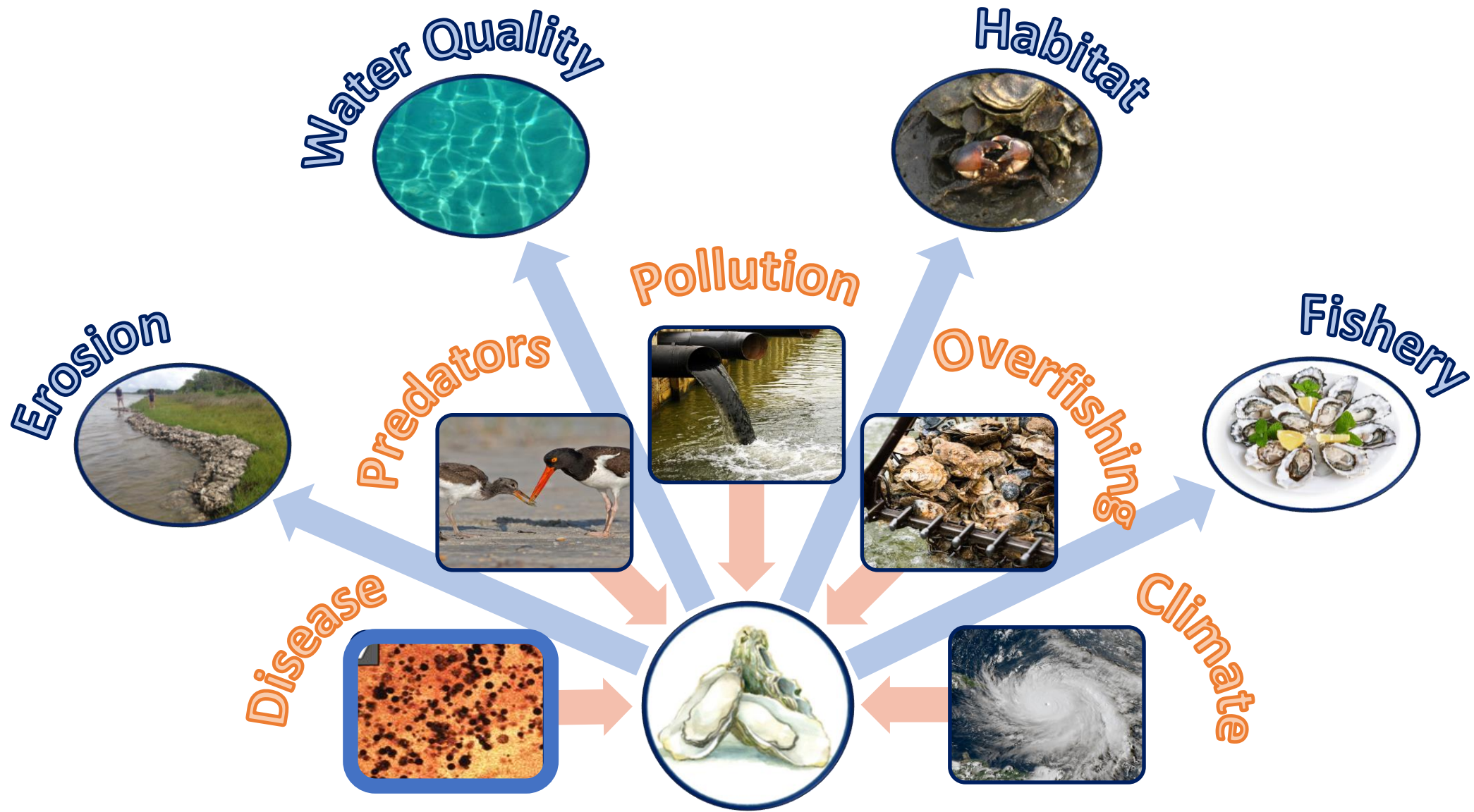


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OYSTER SHELL RECYCLING PROGRAM



Shell
Collection



Sun
Curing



New Life!



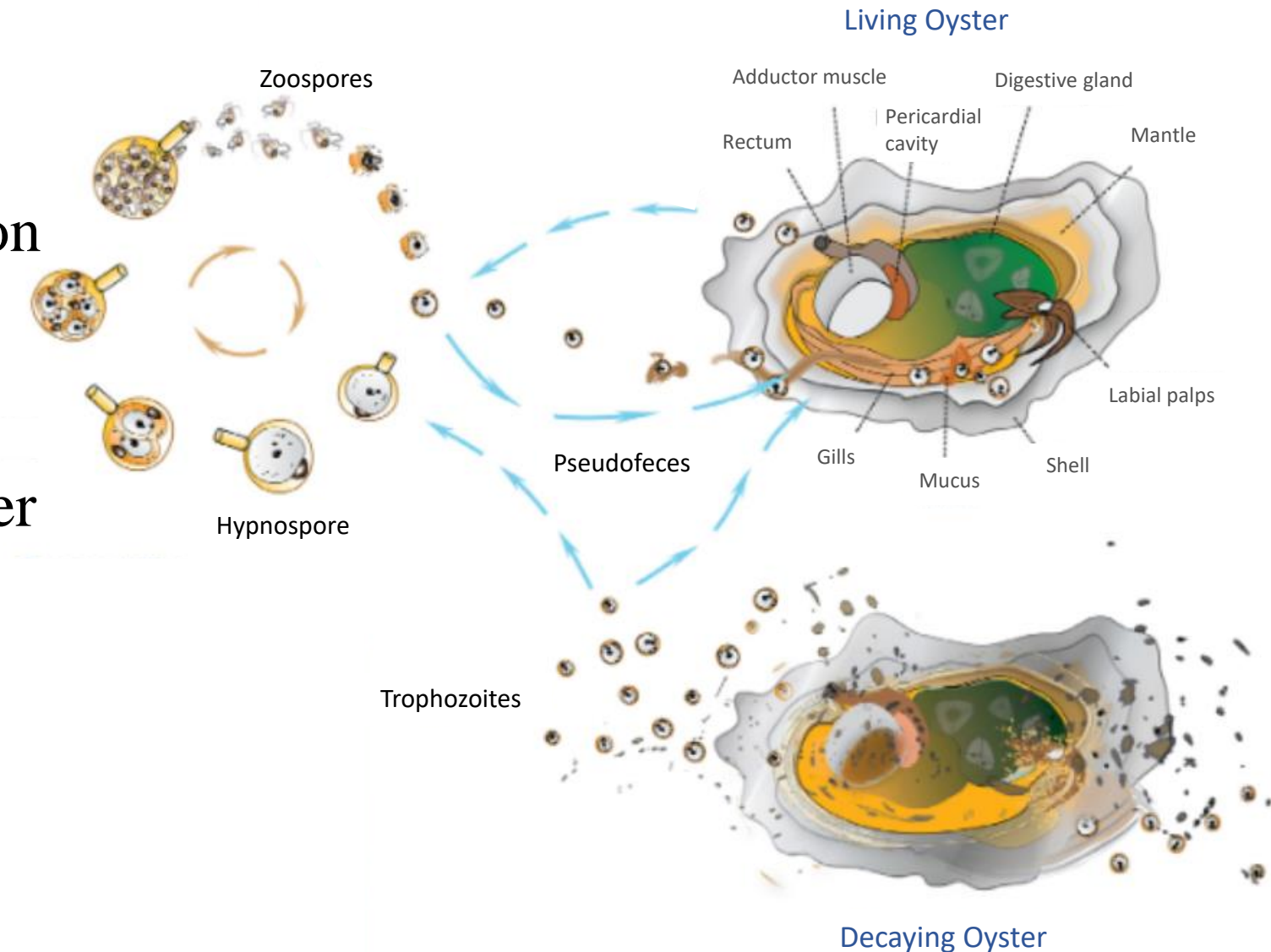
Oyster Reef
Restoration

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Dermo (*Perkinsus marinus*)

- Spore forming protozoan
- Infection occurs with ingestion
- Proliferates in vivo
- Highest prevalence in Summer
 - Warm temp
 - High salinity
- Impair fitness → mortality



Objectives

1. Track Dermo presence, prevalence, and intensity in sun-cured oysters.
2. Evaluate influence of location of oysters within curing pile on Dermo presence, prevalence, and intensity.
3. Evaluate impact from wildlife on the curing process.



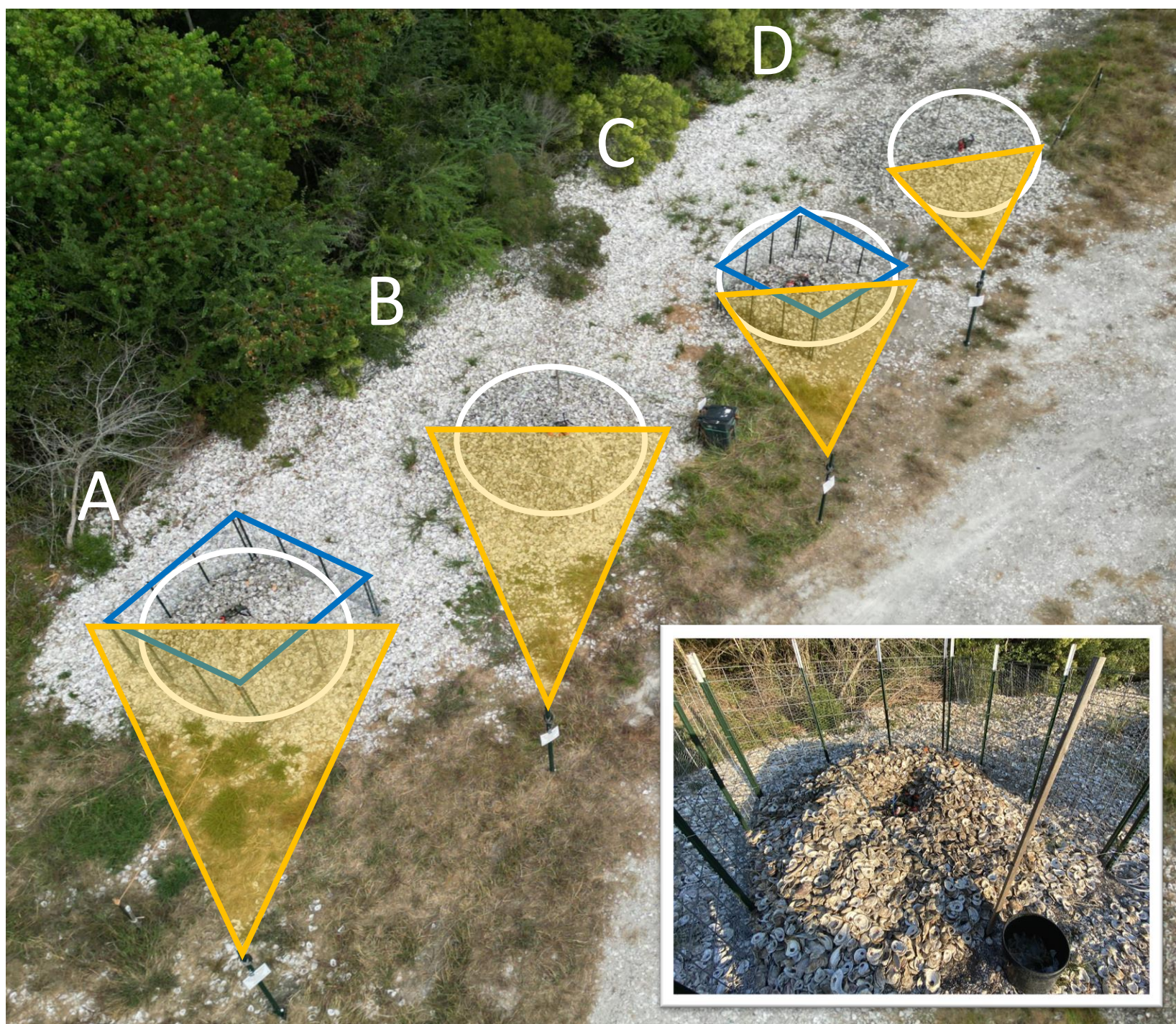
Study Design

- Red Bluff Curing Site



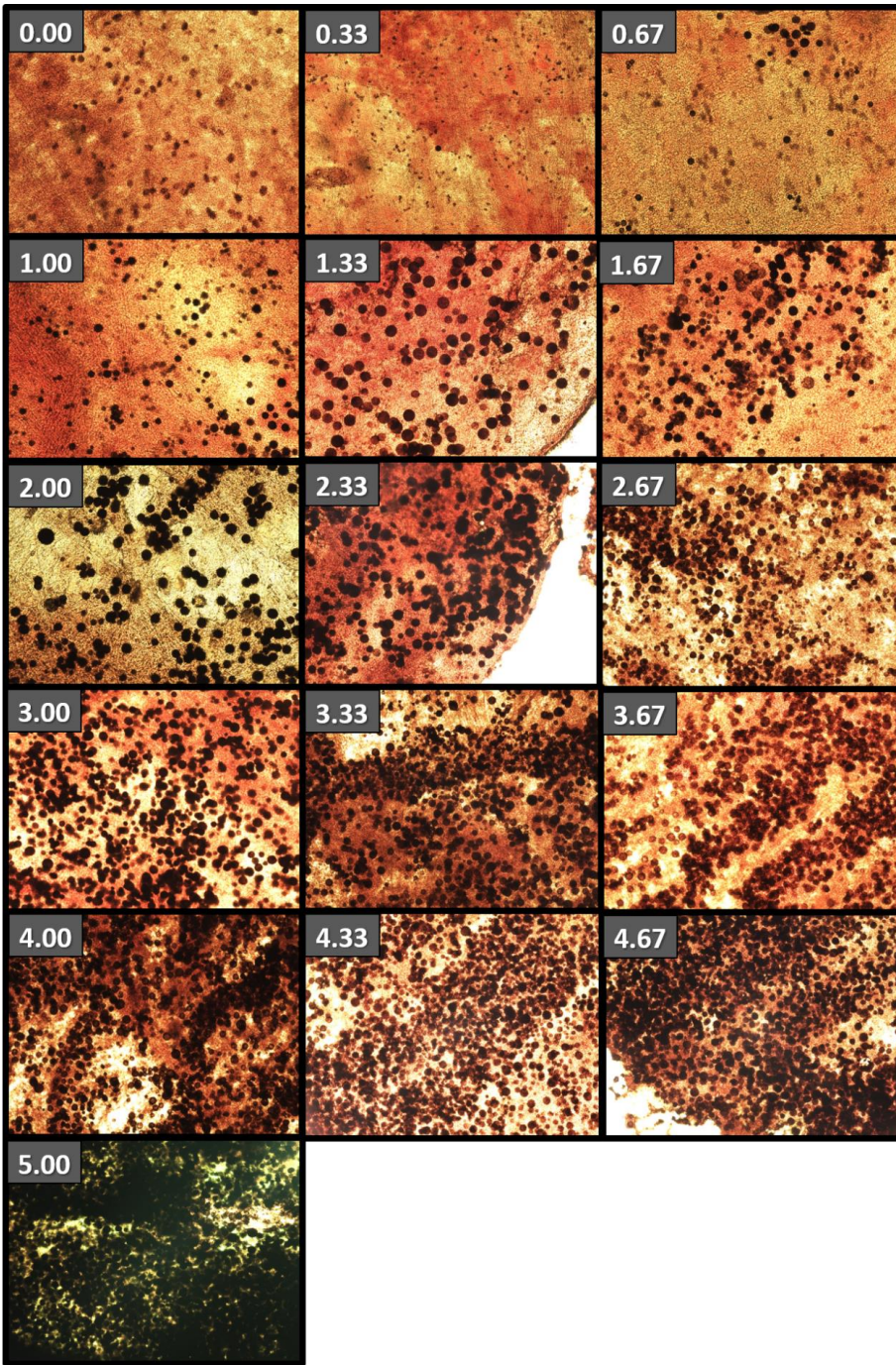
Study Design

- Red Bluff Curing Site
- 4 piles (6' x 3')
- 2 fenced, 2 unfenced
- Game cameras
- 2 deployments/pile
 - Top
 - 5 oysters – Dermo
 - 5 oysters – Tissue
 - Interior
 - 5 oysters – Dermo
 - 5 oysters – Tissue
- Co-located Temp and Humidity Sensors
- Sample weekly → 6 weeks
- Sample every 2 weeks → no more Dermo



Dermo Intensity

- Follow individual oysters
- Ray's Fluid Thioglycollate Method
 - Sacrifices oyster
 - 5mm sample of mantle tissue
 - Incubates for 7 days
 - Macerate tissue
 - Stain (Lugol's solution)
 - Assign intensity rating





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Oyster Tissue Condition

- Condition category
- Percent cover of tissue (within cup)
- Weight (total)

Plump



Shrunken



Liquified



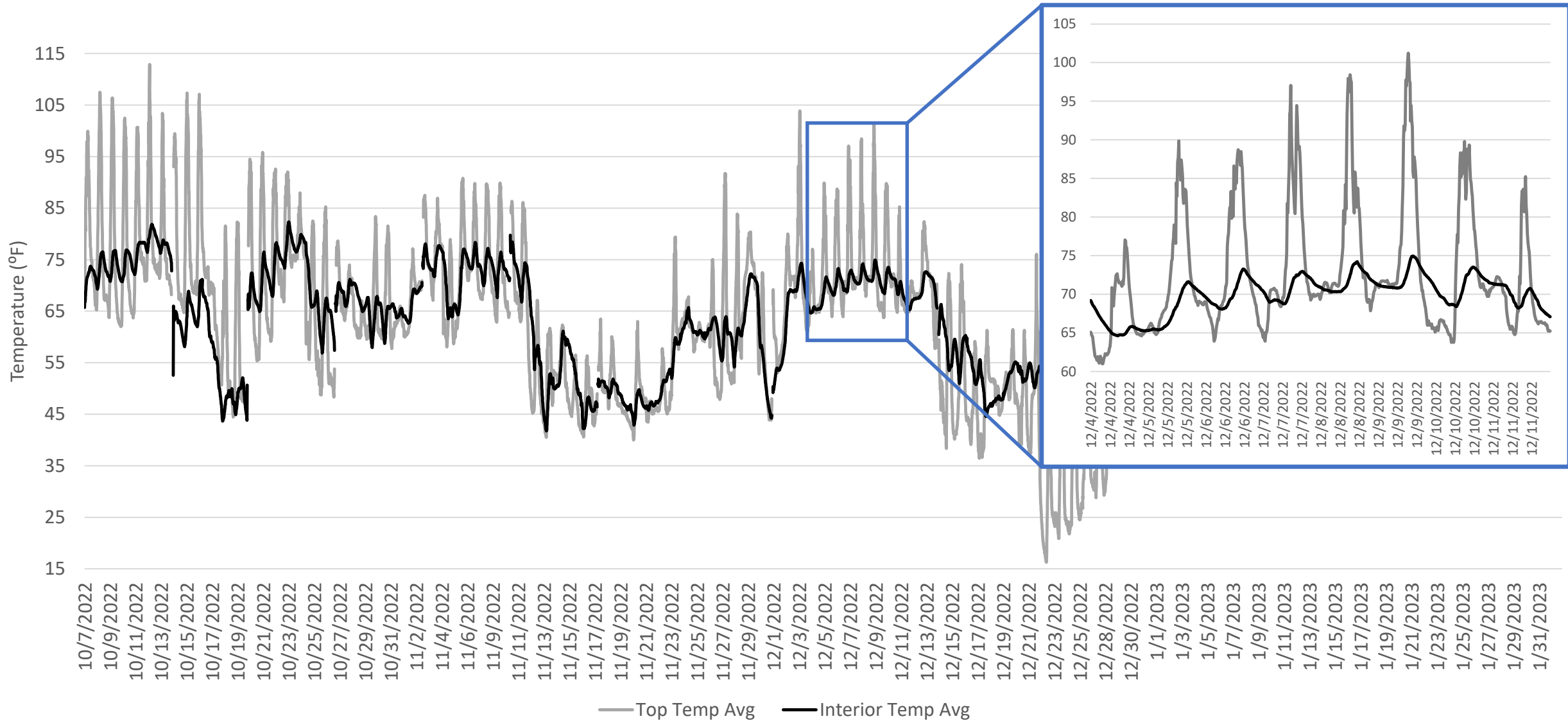
Desiccated



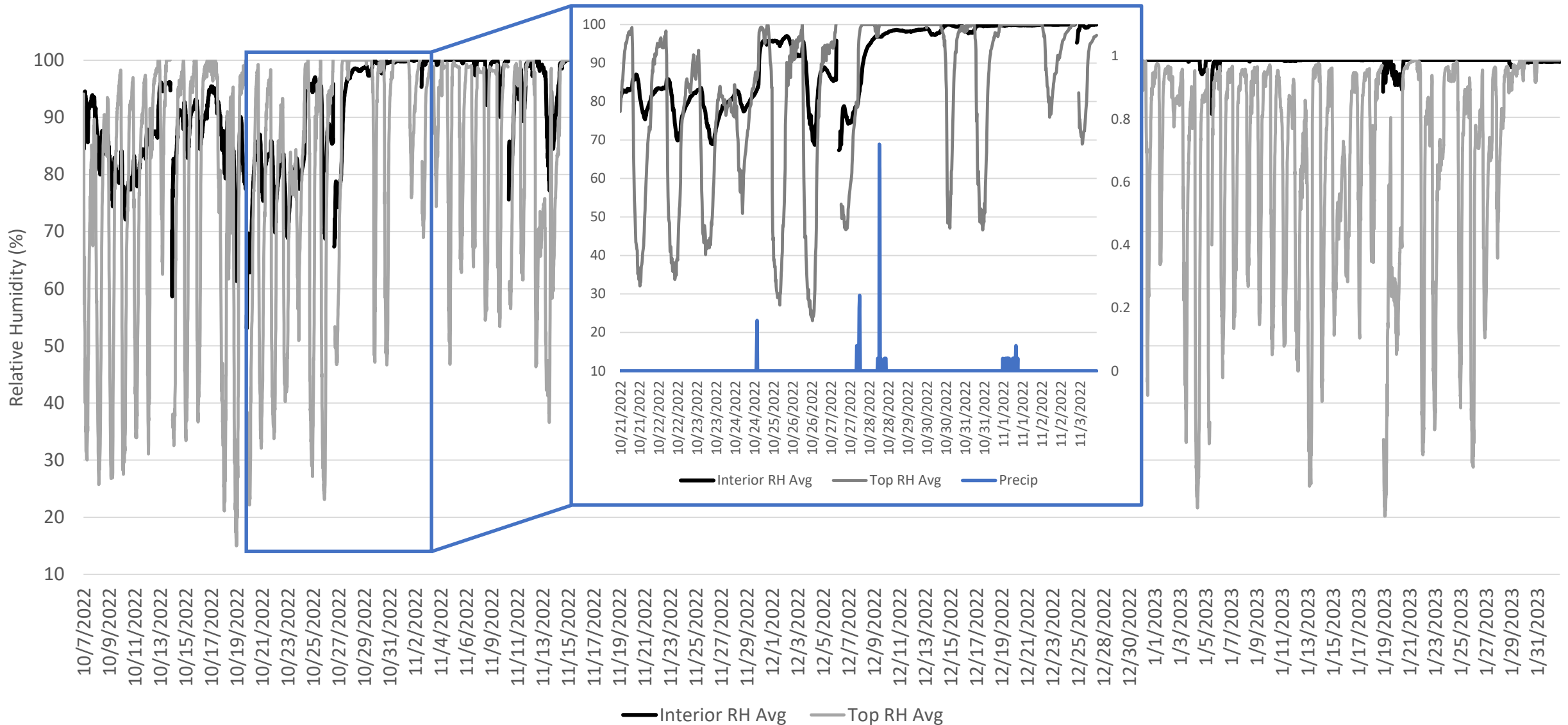
No tissue



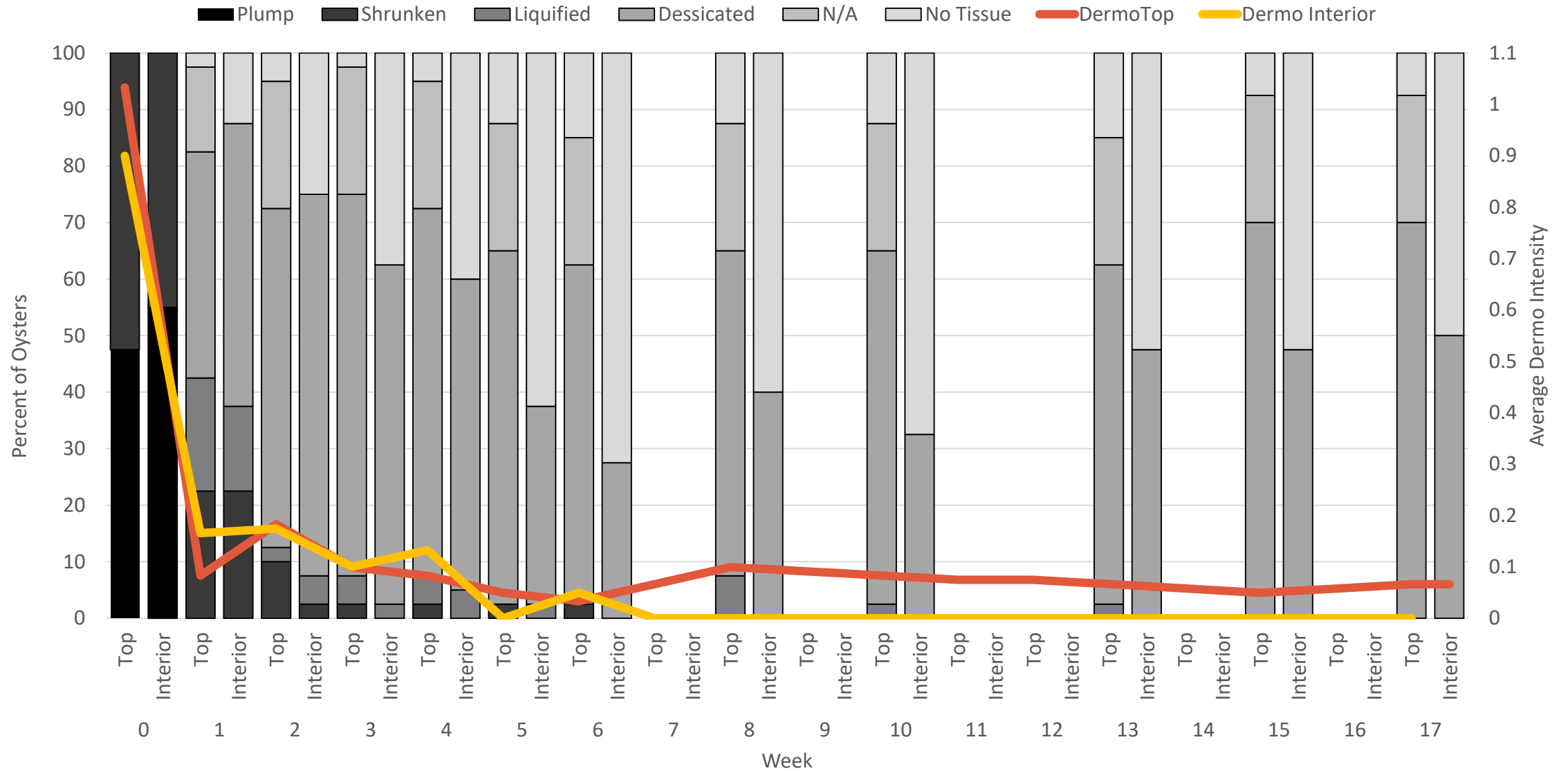
Temperature by Location



Relative Humidity by Location



Location (Top vs Interior)



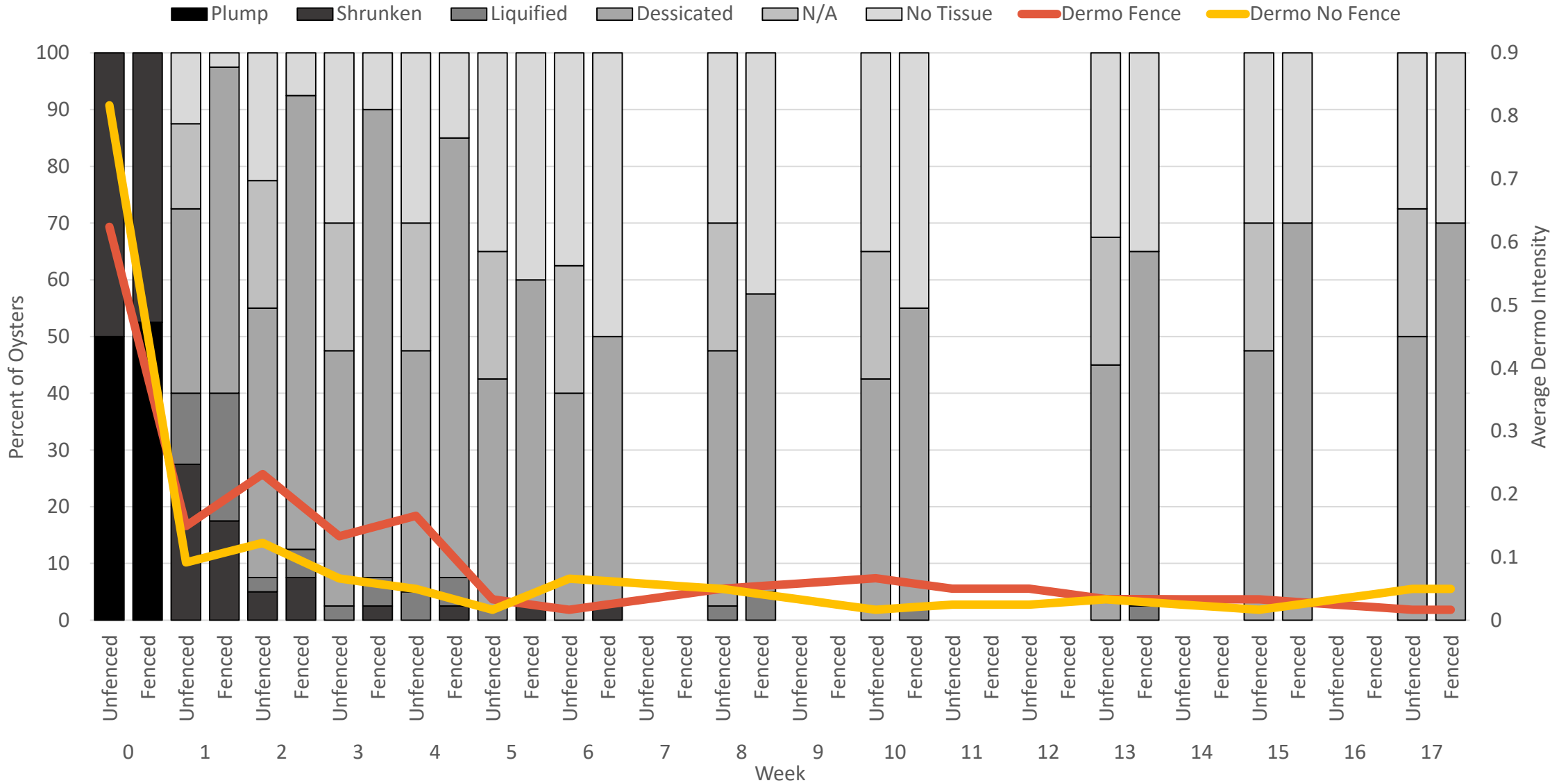
Wildlife Interaction



Wildlife Interaction

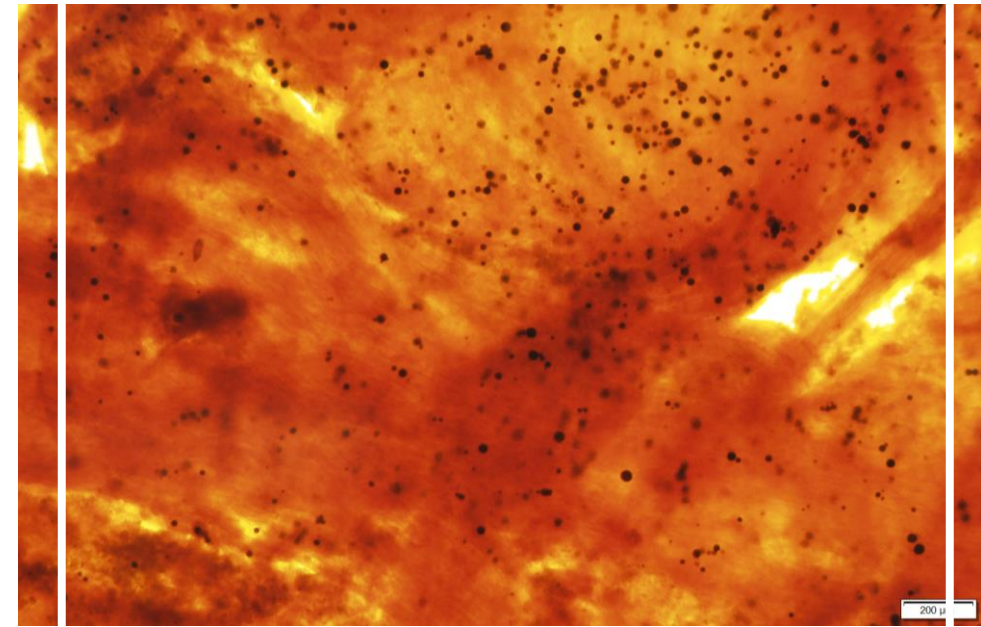


Wildlife Access (Fenced vs Not Fenced)



Discussion

- Significant decrease in Dermo prevalence and intensity after 1 week
- Dermo persisted through 17 weeks of curing
- Dermo may continue to be detected as long as tissue is present
- Tissue condition and degradation stabilized after 5th week.
- Oysters in the interior of the pile had faster tissue and Dermo degradation
- Wildlife removed/consumed tissue, impacting only the top of the pile.





Future Work

- Continue monitoring Dermo and tissue through the spring.
- Conduct follow-up study using various commercially sourced oysters, evaluate seasonality in curing.
- Laboratory-based experiments evaluating viability of Dermo in cured tissue.



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