Assessing variation in oyster survival, growth, and parasite community prevalence between aquaculture methods

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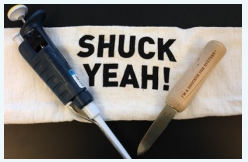


Background/Context

- Oyster aquaculture uses multiple farming techniques, such as on-bottom cages and floating bags, to optimize oyster survival, growth, condition, and marketability.
- These methods expose oysters to a variety of abiotic and biotic factors that can independently and interactively affect oyster health metrics and ultimately aquaculture sustainability.
- We compared survival/growth of oysters grown on-bottom vs floating at 4 aquaculture sites, as well as parasite community prevalence.

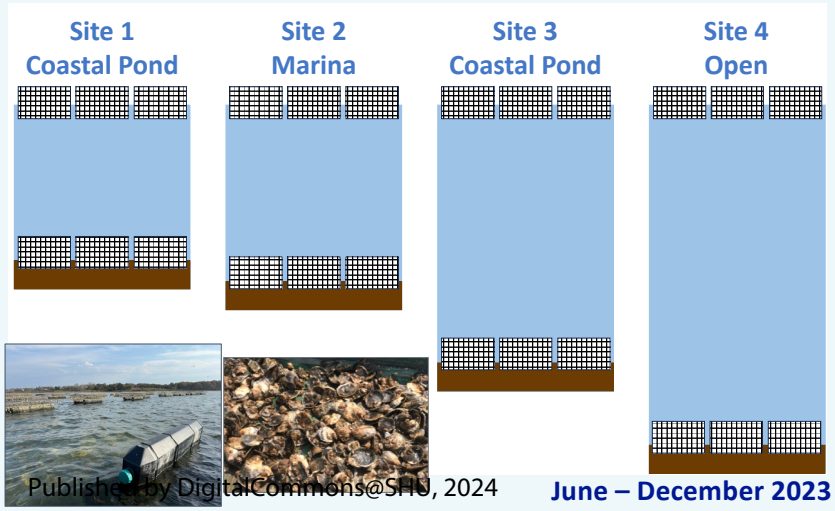
Questions

1) How do oyster survival and growth vary across aquaculture methods? Are differences consistent across sites?
2) How does parasite prevalence vary across farming techniques and aquaculture sites?

Methods

- Deployed 75-200 oysters (per replicate) in **on-bottom** and **floating** bags/cages at 4 sites in MA (varying in depth, salinity, proximity to development, etc.)
- Measured oyster survival, growth, and condition
- Measured prevalence and intensity of parasite community
- **Macroparasites**: mud blister worm, boring sponge
- **Microparasites**: causative agents of Dermo, SSO, and MSX diseases

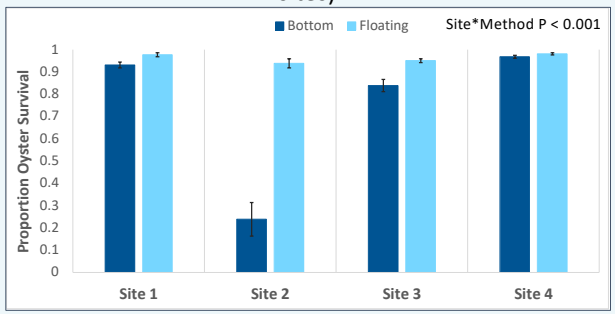
(data analysis in progress)



Results

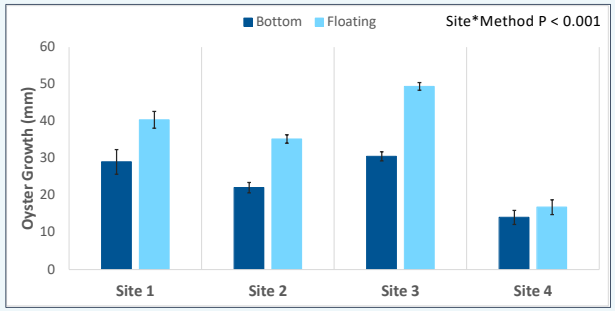
1) oyster survival was consistently lower in bottom cages than floating bags

(but magnitude of survival difference varied across sites)



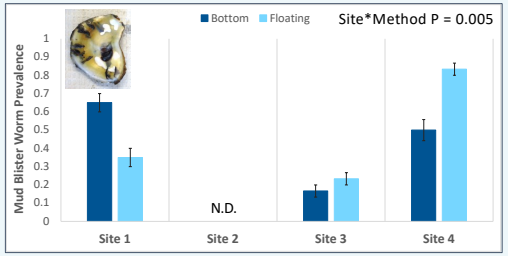
2) oyster growth (and condition) was generally lower in bottom cages than floating bags

(but magnitude of growth difference varied across sites)

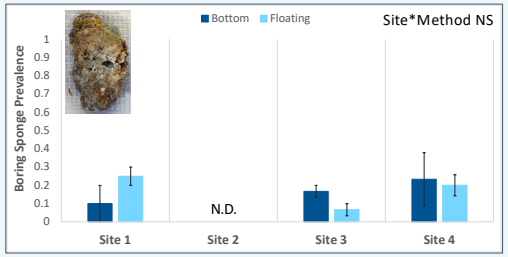


Results

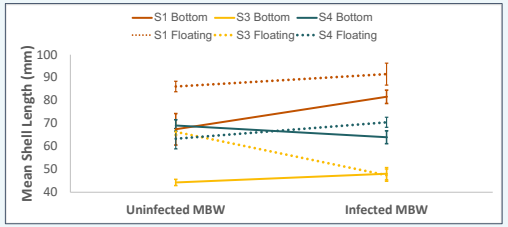
3a) higher mud blister worm prevalence; variation across site*method combinations



3b) lower boring sponge prevalence; no clear differences among sites/methods



3c) variable effects of mud blister worms on oyster growth across farming methods



Conclusions / Next Steps

- Floating bags/cages had consistently higher survival and generally greater growth than on-bottom bags/cages, but macroparasite prevalence is variable across farming methods and sites
- Next steps include i) examining patterns of microparasite prevalence and parasite intensity, and ii) incorporating data on water pollutants to assess combined effects of abiotic and biotic stressors on oysters grown on-bottom vs floating
- **Goal**: examine interactive effects of parasite/disease and pollutant stressors across farming methods to inform oyster aquaculture practices

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