

Eastern Oyster Aquaculture & Research in Great Bay

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Introduction

OYSTER GROWTH TRIAL

The Eastern Oyster (*Crassostrea virginica*) holds both ecological and economical value in the New Hampshire seacoast region (1). Currently, 15 licensed farms comprise 95.4 acres with a total harvest value of \$653,558 in 2023 (2). With Little Bay and Hampton-Seabrook Estuary being the only approved areas for commercial aquaculture, some of the highest producing farms are facing spatial limitations within their lease sites.

Novel gear types are receiving recent attention as they offer improved efficiency in specific applications (e.g., nursery sites). In this effort, the current studies investigated performance of juvenile oysters (seed) in different gear types and densities.

FARM ROTATION

Oyster farms are all managed differently based on lease site characteristics, business strategies, labor, market trends, and more. To best understand how the NH industry operates, it is important to work directly on multiple farms. We rotated among NH oyster farms during peak summer productivity learning from growers and helping on different farm tasks.

Methods

OYSTER GROWTH TRIALS

- Oyster seed (~3/8 in) from two hatchery sources were stocked into 4mm Tumble tubes (Image 1) and 4mm Condo bags (Image 2) on a farm site in Little Bay.

Study 1- Hatchery and density interactions in Tumble tubes

- Muscongus Bay (MUS) and Downeast Institute (DEI) oyster seed was stocked at low (L) or high (H) density into duplicate Tumble tubes (8 tubes total)
 - MUS-L → 2 liters (3,980 oysters) and MUS-H → 4 liters (7,960 oysters)
 - DEI-L → 2 liters (4,350 oysters) and DEI-H → 4 liters (8,700 oysters)

Study 2- Tumble tube and condo comparison

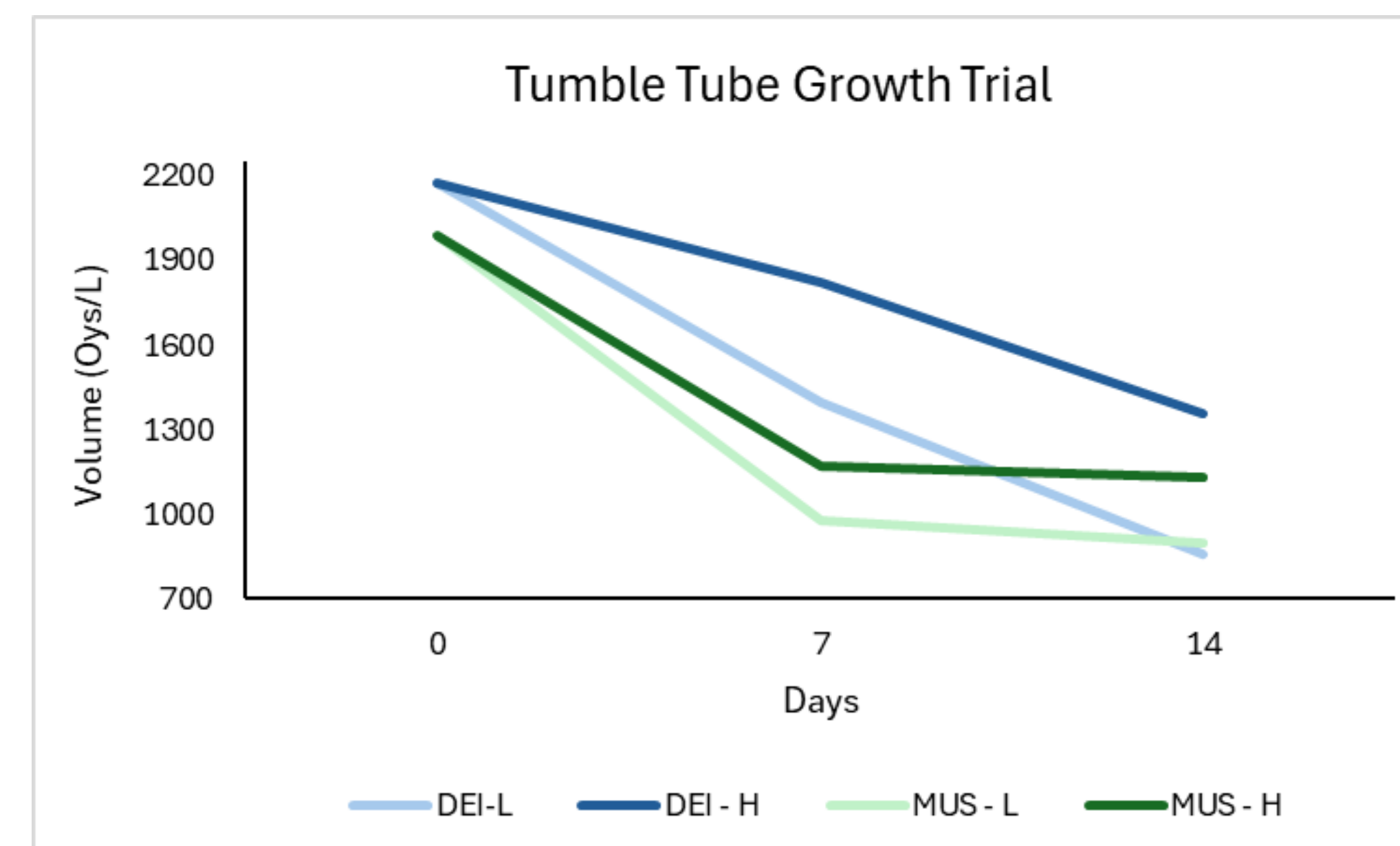
- DEI seed was stocked in four 4mm mesh bags and grown in a condos at the same density and location described above
- Oyster volume (Oys/L) was measured at stocking and again every 7 days to compare growth rate between hatcheries, densities, and gear types. Additional qualitative observations were made on oyster performance (Image 3; survival, shape, size variation).

FARM ROTATION

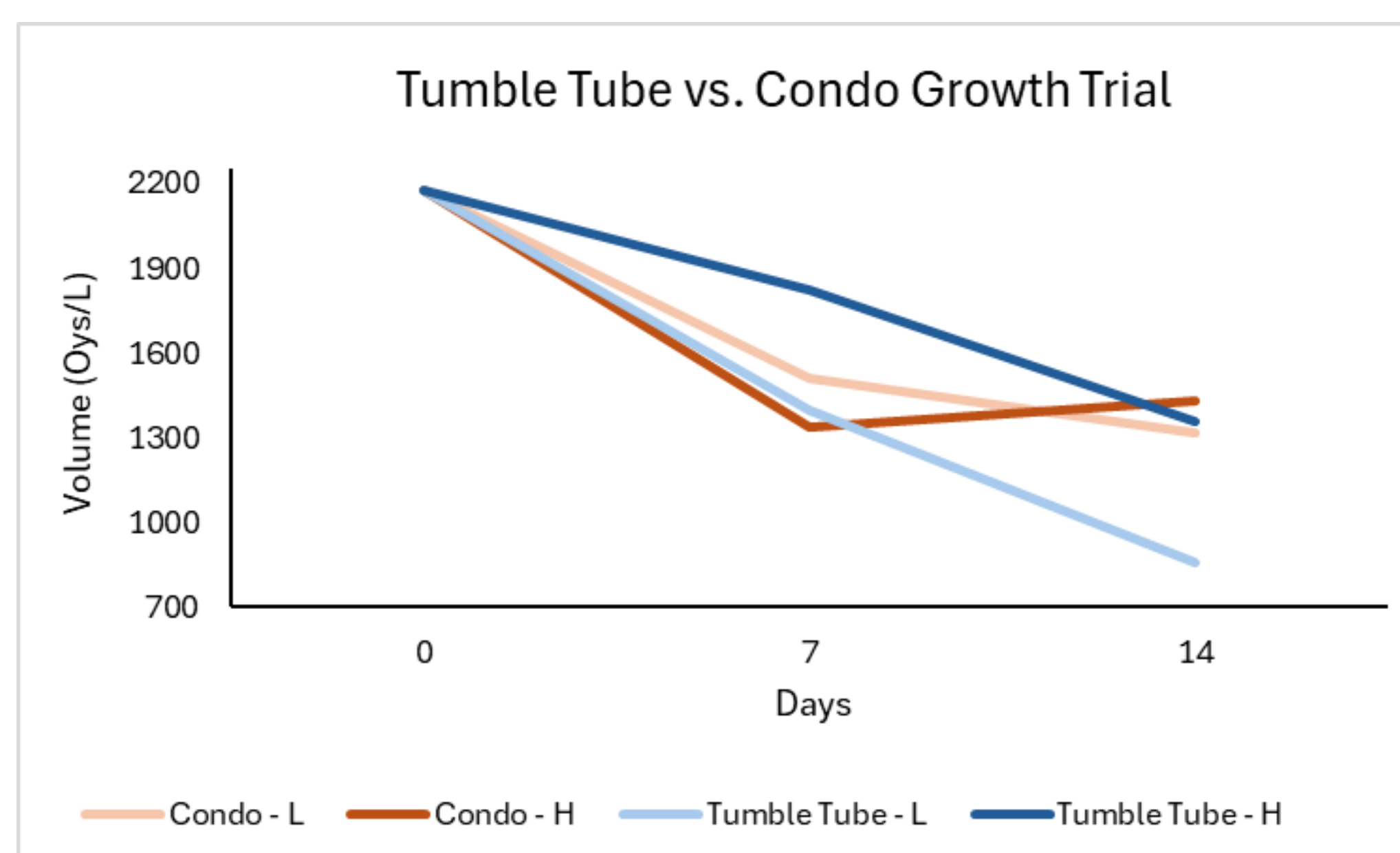
- Worked with commercial oyster farms on the water and on an upweller system learning the basic skills and strategies needed to run a successful shellfish business.

Results

Study 1



Study 2



Discussion, Conclusions, and Experiences

OYSTER GROWTH TRIAL RESULTS

Study 1

- MUS seed and DEI seed grew faster at lower densities (2 liters)
- Both hatcheries showing increase in biomass; need more time points

Study 2

- DEI seed had faster growth rate in tumble tubes at both densities; more time points needed to accurately compare high and low density

Overall

- Consistent survival rates between tubes and condos; shape and size uniformity appeared better in tubes
- Tubes can improve efficiency for the nursery phase production

FARM ROTATION

- Worked on six different farms with 12+ farmers
- Learned raking, sorting, harvesting (food and restoration), bottom seeding, barrel grading, upweller maintenance, rack and bag maintenance, and more!
- Obtained Basic Farm Hand certification
- Attended meetings which New Hampshire Shellfish Farmers Initiative



Image 1

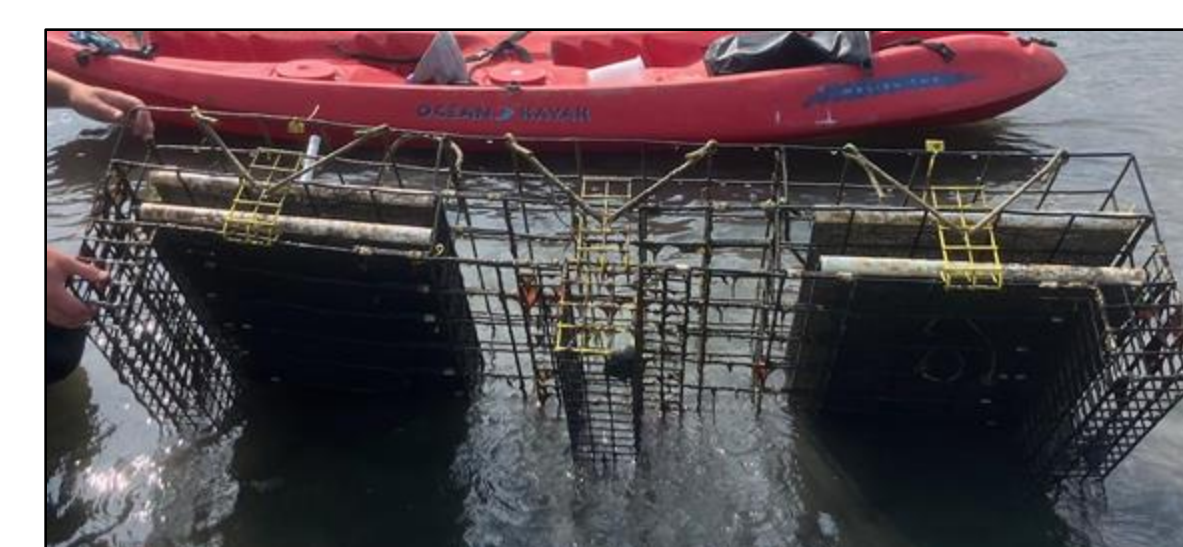


Image 2



Image 3

References and Acknowledgements

- Grizzle R., Ward K., Peter C., Cantwell M., Katz D., Sullivan J. 2016. Growth, morphometrics and nutrient content of farmed eastern oysters, *Crassostrea virginica* (Gmelin), in New Hampshire, USA. *Aquaculture Research*. 48, 4, p. 1-13. <https://doi.org/10.1111/are.12988>
- NH Fish and Game Department. 2023. *Marine Aquaculture Compendium*.

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