Symbiotic or Sacrificial: The Impact of Kelp Cultivation on Oyster Performance in Integrated Multi-Trophic Aquaculture (IMTA)

Rebekka Larsen, Axel Nybakken, Emma J. Slutås, Torjus Gravelsæter & Christiane D. Nielsen

Background

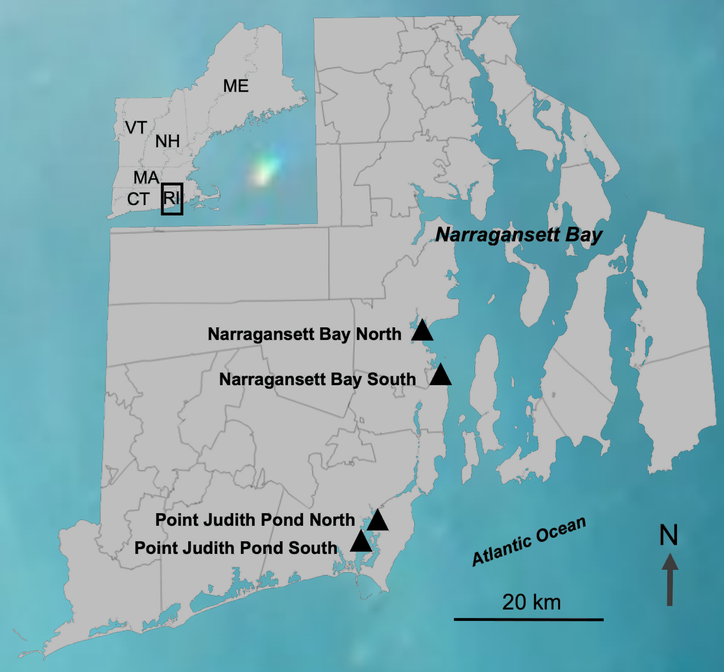
Integrated Multi-Trophic Aquaculture (IMTA) has emerged as a sustainable solution to meet the growing demand for protein due to a growing global population. This study explores an IMTA model integrating kelp cultivation with oyster farming, and studies the relationship between these. Utilizing data from a study conducted by Green-Gavrielidis et al. (2023), we focused on evaluating the performance of oysters in a kelp-oyster IMTA setup in one year.

Research question

Does the integration of kelp cultivation within oyster farming result in any trade-offs concerning oyster performance?

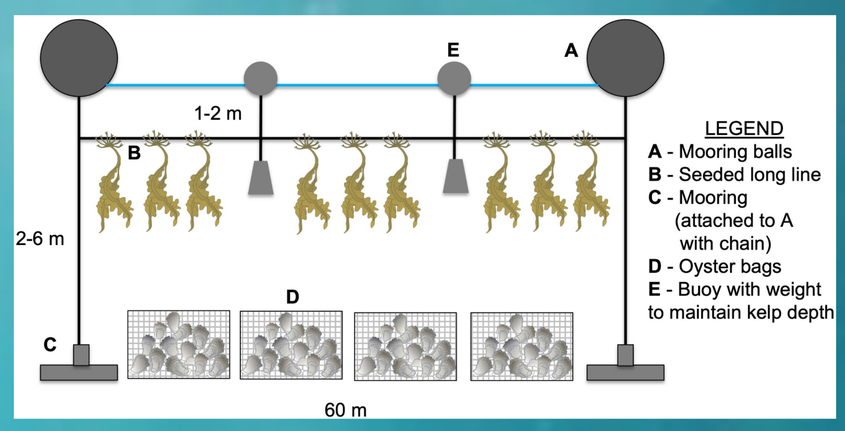
Hypothesis

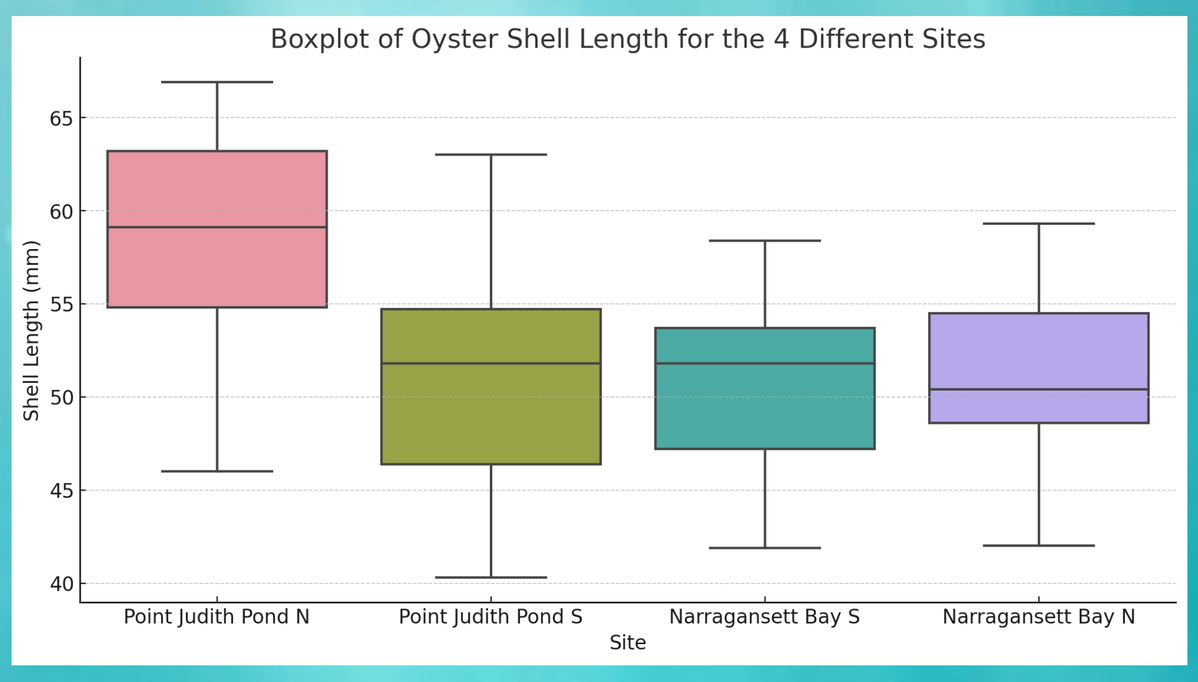
We hypothesize that the complementary relationship does not have a negative or positive impact on the oysters. Instead, we propose a form of communalistic symbiosis, where on part benefits from the relationship while the other remains neutral.

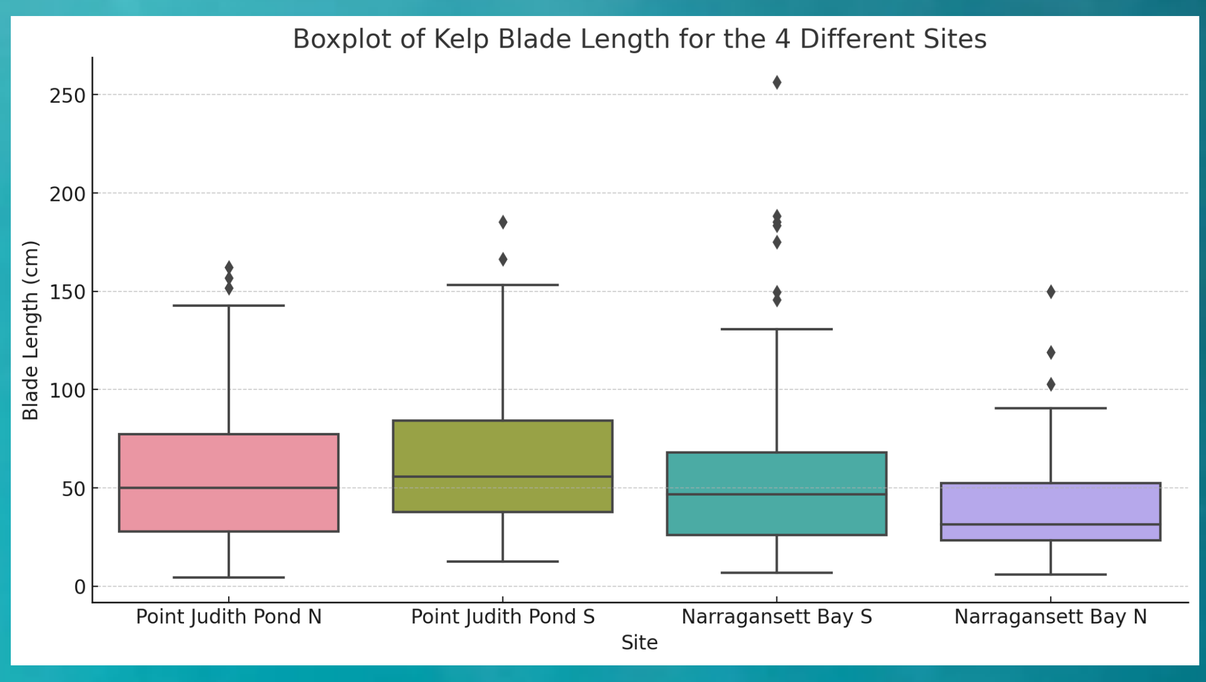


Material and methods

- The data comes from a IMTA model integrating kelp cultivation with oyster farming.
- Utilized data from four different locations.
- Data from May 2018 to May 2019.
- Made a boxplot and found correlation.







Results

- Positive correlation of 0.4 between kelp and oyster performance.
- Differing growth between the separate cites, indicating variation in growth conditions.

Conclusion

The research on trade-offs between oysters and kelp did not produce significant differences, leaving the presence of a trade-off relationship uncertain. This emphasising the need for further research to fully understand the dynamics between oysters and kelp.

References

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