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Rutgers Honors College Capstone Showcase

# Investigating the Efficacy of an Anti-Biofouling Coating on Commercial Hard Clam (*Mercenaria mercenaria*) Aquaculture Gear in New Jersey

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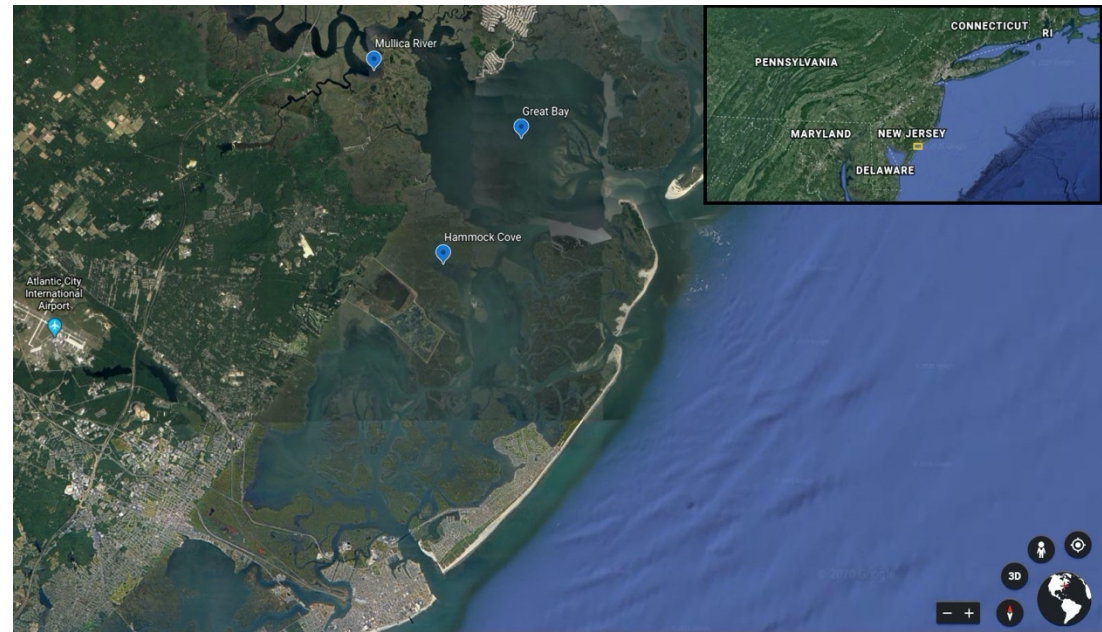
# Introduction

- Hard clam aquaculture began the in 1970s
  - Previously wild-caught fishery
- Important economically to NJ – USDA (2019)
  - \$2.2 million in 2018
  - 4% of US hard clam sales in 2018
- Clams grown in bays, protected by predator control screens
- Predator control screens protect crop from predators
  - Ex: Cownose rays (*Rhinoptera bonasus*), Blue crabs (*Callinectes sapidus*)
- Become fouled with organisms (ex: macroalgae, tunicates) over time (i.e. biofouling)



# Methods

- Six predator control screens deployed with 5,000 clams under each screen
  - 3 control screens, 3 screens painted with Netminder antifouling paint
- Screens undisturbed from May 10 – Nov. 15, 2019
- Initial sample (n=50) and final sample (n=26-30 clams/screen) were collected to investigate growth rates and condition
- Screens photographed in 1mx1m increments
  - Biofouling manually removed for analysis



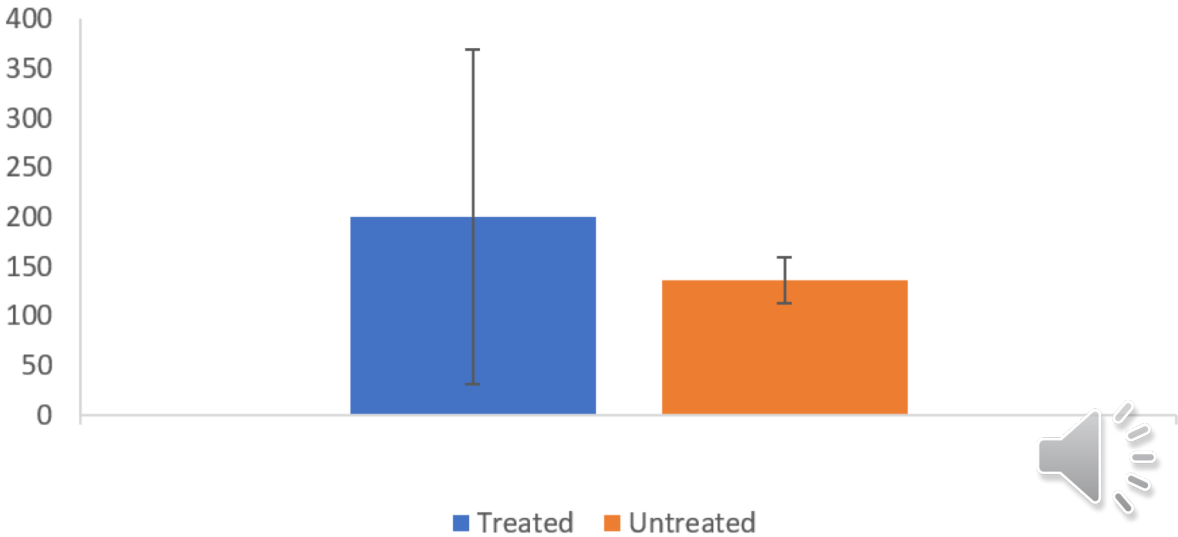


# Results

- There was no significant difference in percent area coverage between treated (6.43% +/- 3.71%) and untreated screens (5.35% +/- 2.37%) (p=0.699, d.f.=4)
- There was no significant difference in the average weight of biofouling between treated (200.6105g+/-137.9524g) and untreated screens (135.6981g+/-18.6736g) screens (p=0.577, d.f.=2)

Screen Number	Treated/Untreated	Area Covered (m <sup>2</sup> )	Area Covered (%)
1	Treated	0.857	4.71
2	Treated	0.714	3.88
3	Treated	1.88	10.7
4	Untreated	0.671	3.63
5	Untreated	1.37	8.05
6	Untreated	0.866	4.35

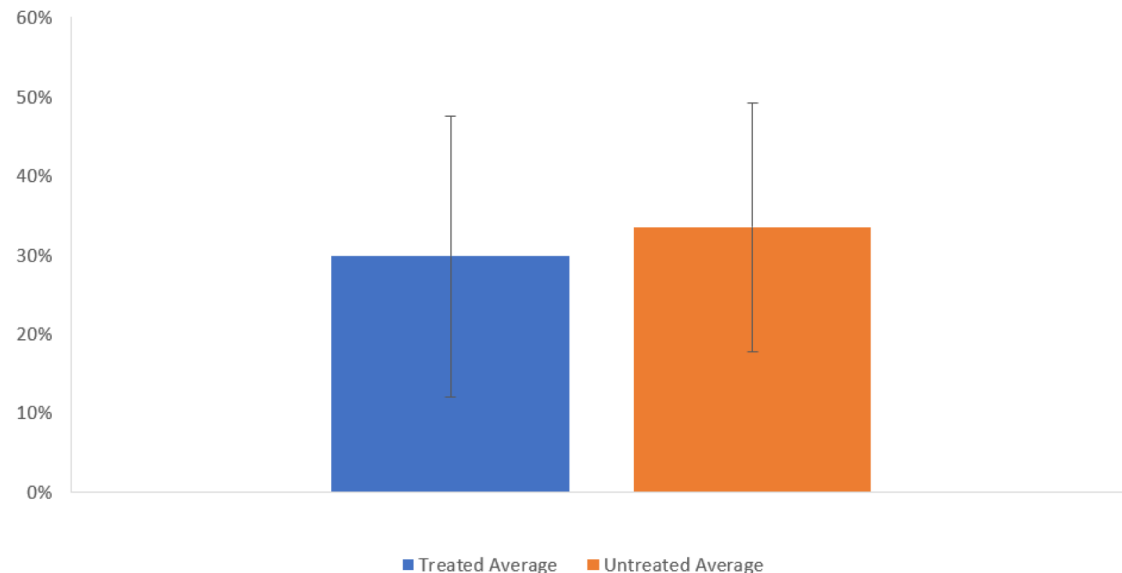
Treated and Untreated Average Biofouling Weight (g)



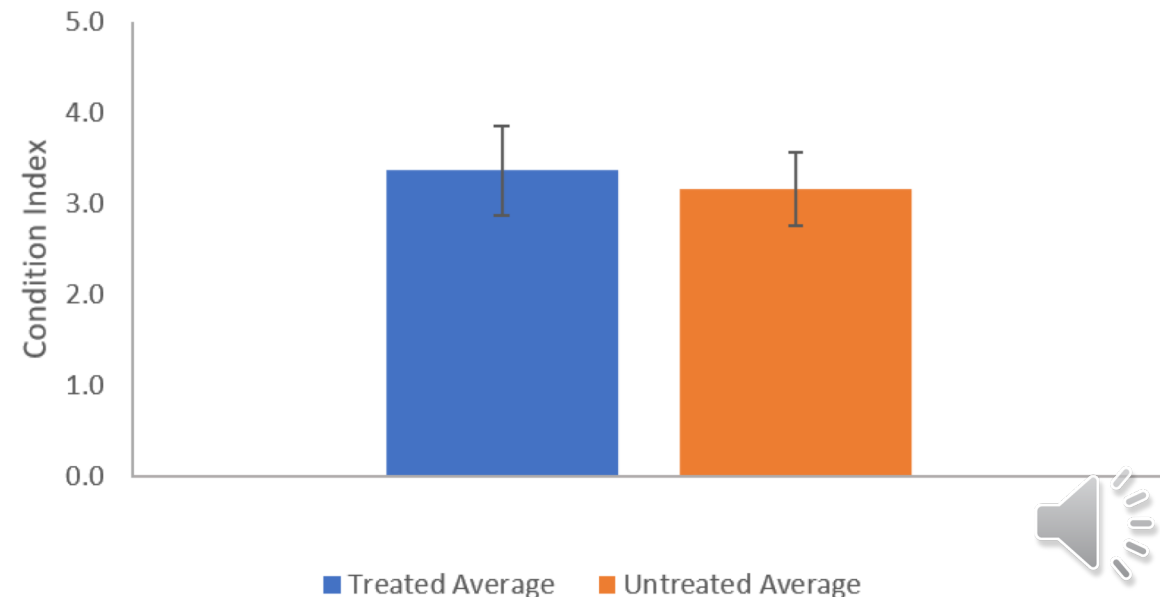
# Results (continued)

- There was no significant difference in average shell growth between treated (29.8%+/-17.8%) and untreated screens (33.5%+/-15.8%) (p=0.167, d.f.=159)
- There was no significant difference in the condition index of clams between treated (3.367+/-0.4893) and untreated screens (3.158+/-0.4034) (p=0.196, d.f.=159)

Percent Growth of Treated and Untreated Samples



Treated verse Untreated Average Condition Index



# Discussion

- Several factors may have influenced the high variability in biofouling observed among screens
  - Cownose rays interactions and interference
  - New netting material used
  - Light year for biofouling
- Netminder product does not appear to affect clam growth or condition indexes
- Future research should further evaluate the efficacy of anti-biofouling coatings in multiple locations and years, including a larger sample size of screens

Photo credits:  
Leslie Sturmer



Photo:  
Chesapeake  
Bay Program



# Acknowledgements

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