

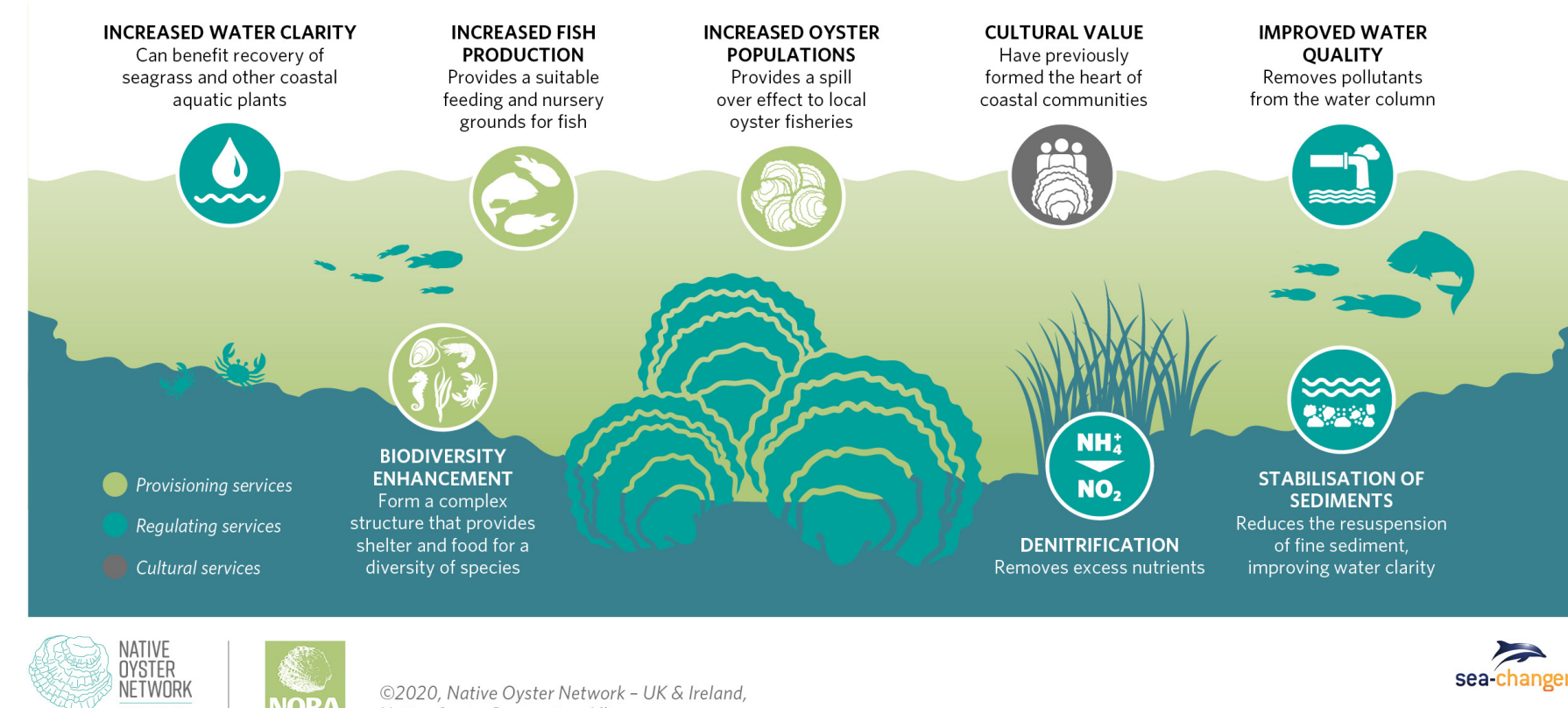
The Gape Between: Analyzing Valve-Gaping Behavior of Eastern Oysters (*Crassostrea virginica*) as an Anti-Predatory Response

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Introduction

Why should we care about oysters?

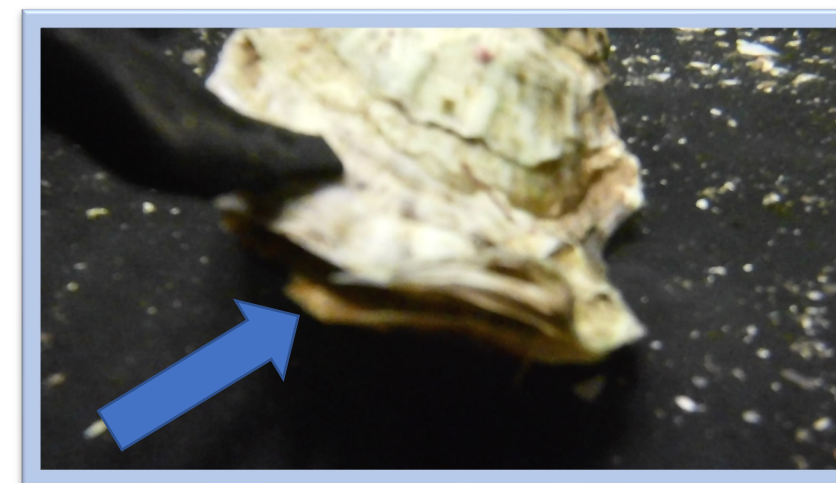


What factors effect the gaping behavior of oysters?

- Environmental factors:
 - Substantial fluctuations in salinity and temperature cause long closure durations
- Physical disruptions:
 - Tidal forces cause closure for a short duration
- Potential biological factors:
 - Presence of predator

What is the goal of this study?

- To identify the impact invasive European green crabs have on the gaping of Eastern oysters because green crab populations are increasing at substantial rates.
- Specifically looking at how different green crab interactions affect the opening and closing rates (gaping rate) of Eastern oysters.

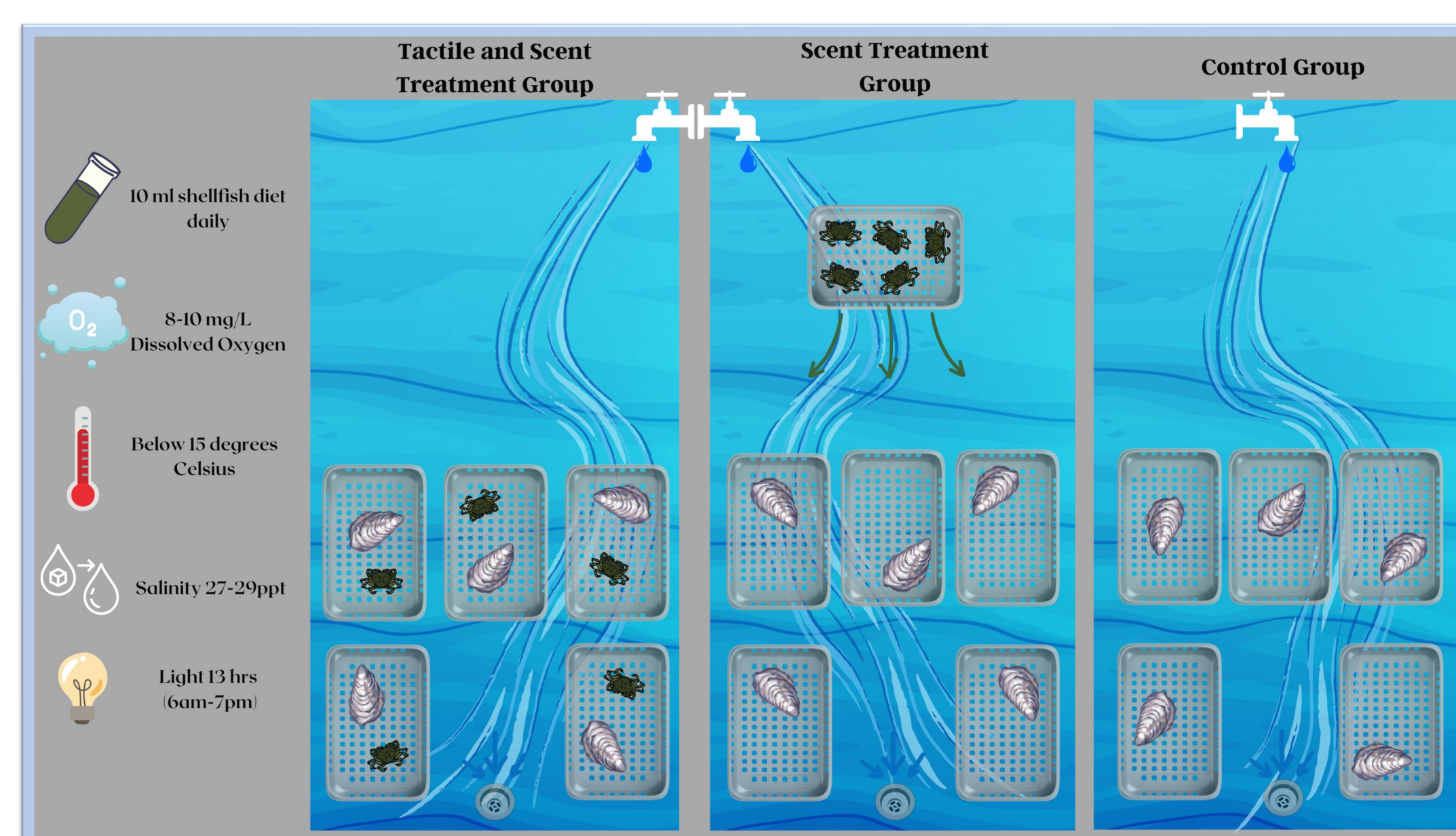


Open/ Gaping



Closed

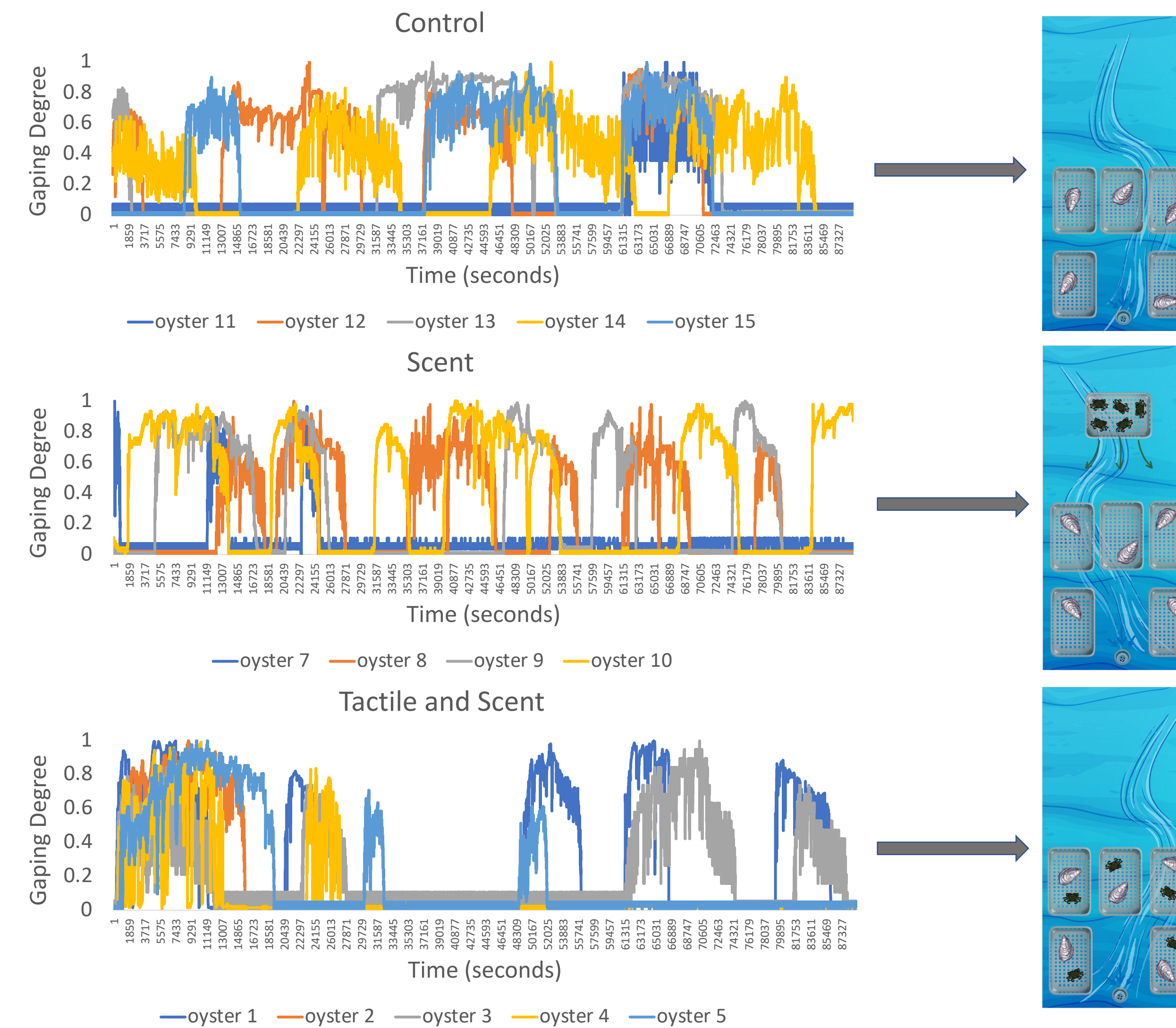
Methods



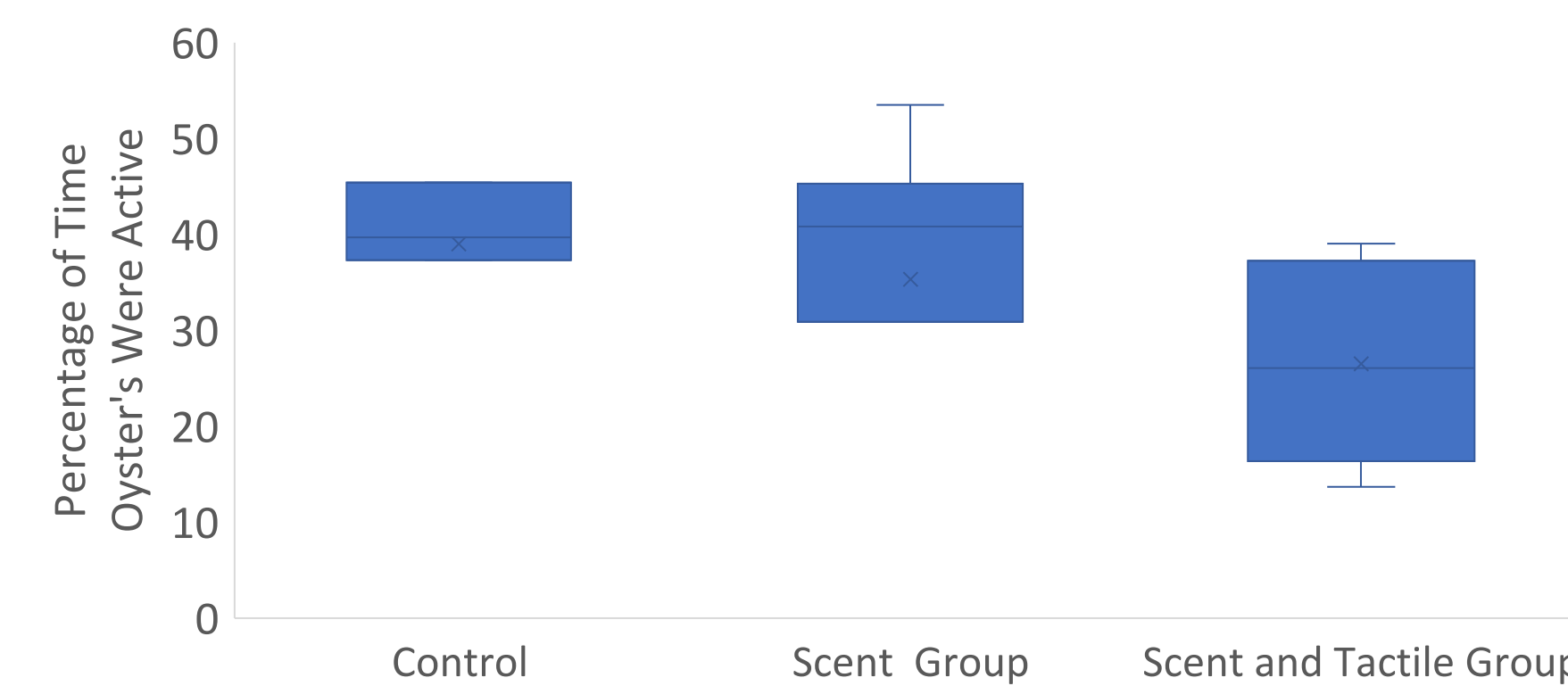
- Radiometric Hall Effect Sensors were glued to the top shell and a magnet was glued to the bottom shell.
- The sensors detect the distance from the magnet as the oyster opens which represents the gaping distance.

Results

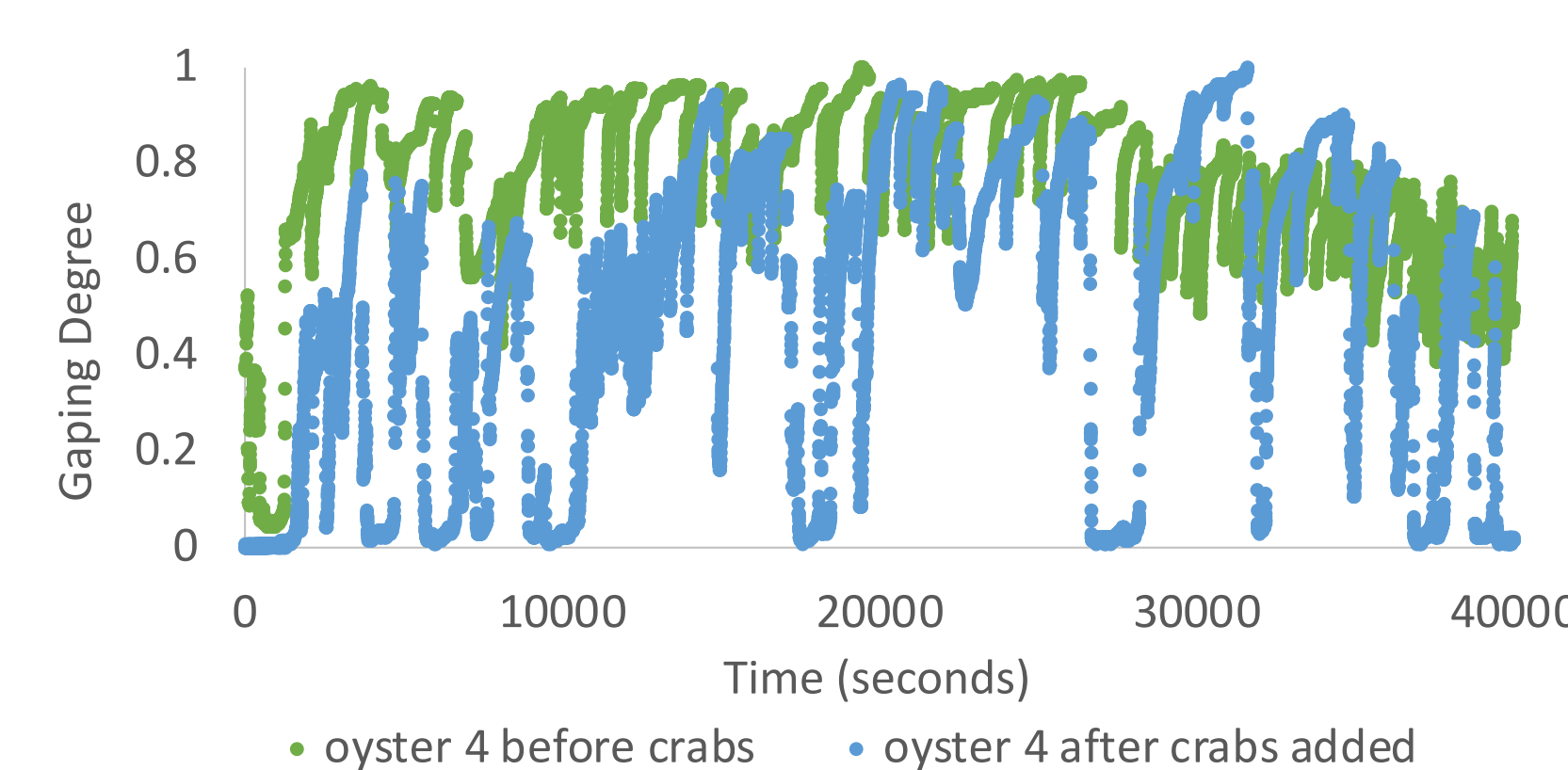
- The increased presence of European green crabs resulted in decreased gaping behavior in the Eastern oysters.



The line graphs above depict the gaping degree of oysters from the three predator treatments over three days. The y-axis represents an oyster as completely open (1) and closed (0).



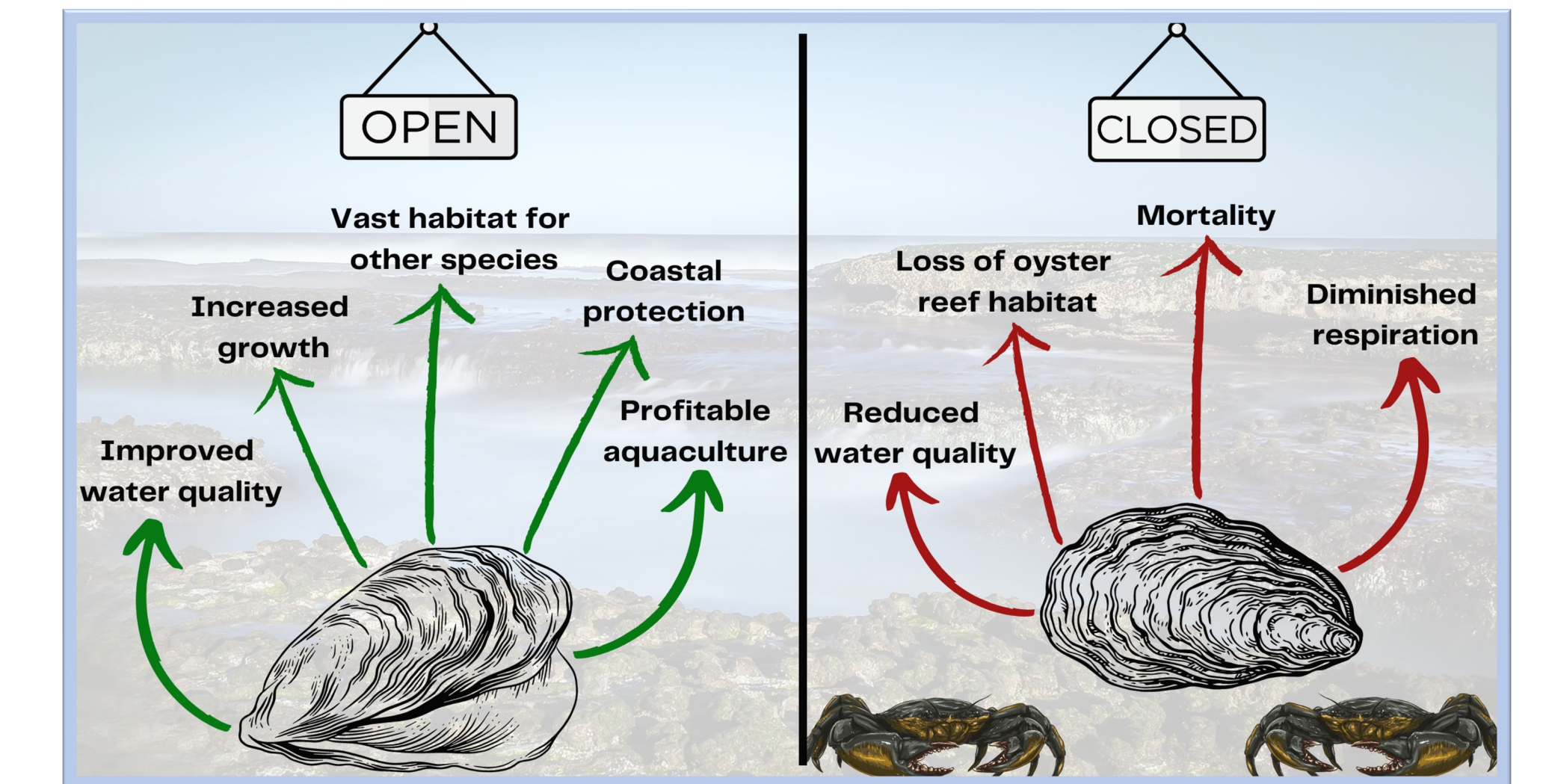
The box plot above depicts the percentage of time oysters were open across the three crab treatments.



The graph above compares the same individual oyster's gaping behavior before and after crabs were introduced over a 12-hour time period. The y-axis represents an oyster as completely open (1) and closed (0).

Discussion

Implications from study:



Complications:

- Some crabs were dormant for long periods of time. This means they were not physically interacting with the oysters.
- The size of the crabs was smaller than expected. Due to their size these crabs are less able to cause physical harm to the oysters.
- A sensor in the scent group failed during the experiment.

Future Research:

- Behavioral changes:
 - Habituation in oysters to crab scent cue
 - Changes in settling areas due to crab abundance
 - Gaping behavior in response to competition with other bivalves
- Physiological variations between groups:
 - Growth rate
 - Enzyme composition in adductor muscles
 - Adductor muscle size
 - Tissue weight
 - Shell density

Photos from Study



Acknowledgements

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Scan Below for Citations

