The Impacts of Temperature on Wentletraps and Anemones

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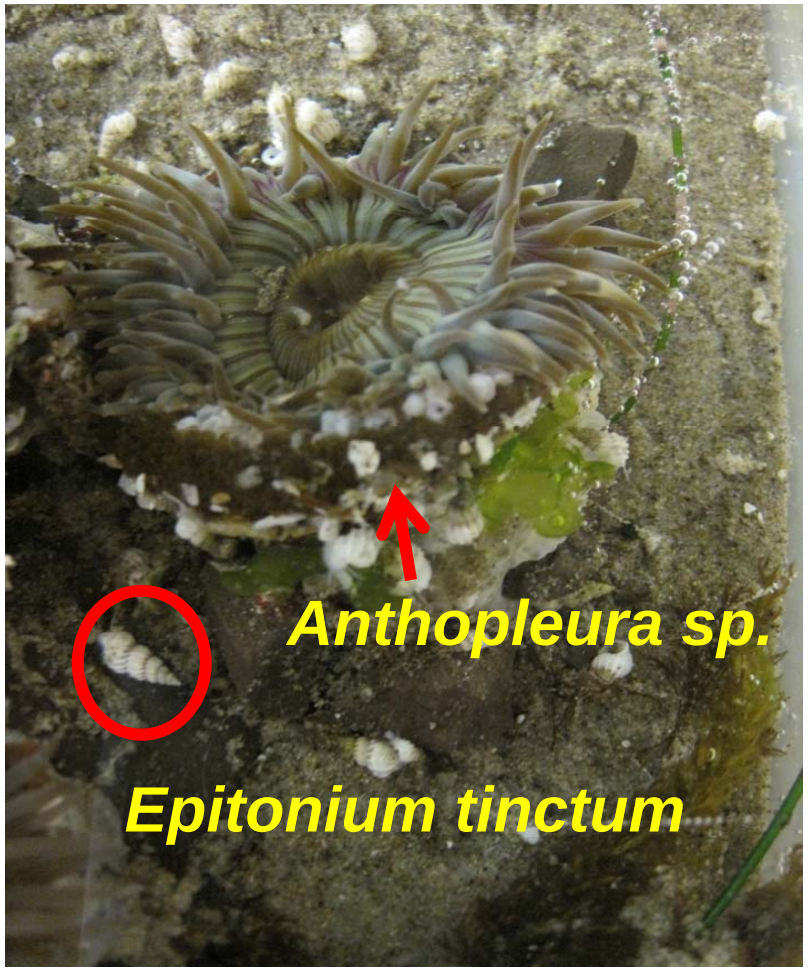
Impacts of Interactions on Communities

- Species interaction influence community dynamics
- **Species interactions change with the environment**
- Intertidal as Model System

Stephen Gosnell 11/19/2009

Research Focus

How will the interaction between sea anemones and a wentletraps change with temperature?



Goals

- Locate field specimen and determine abundance

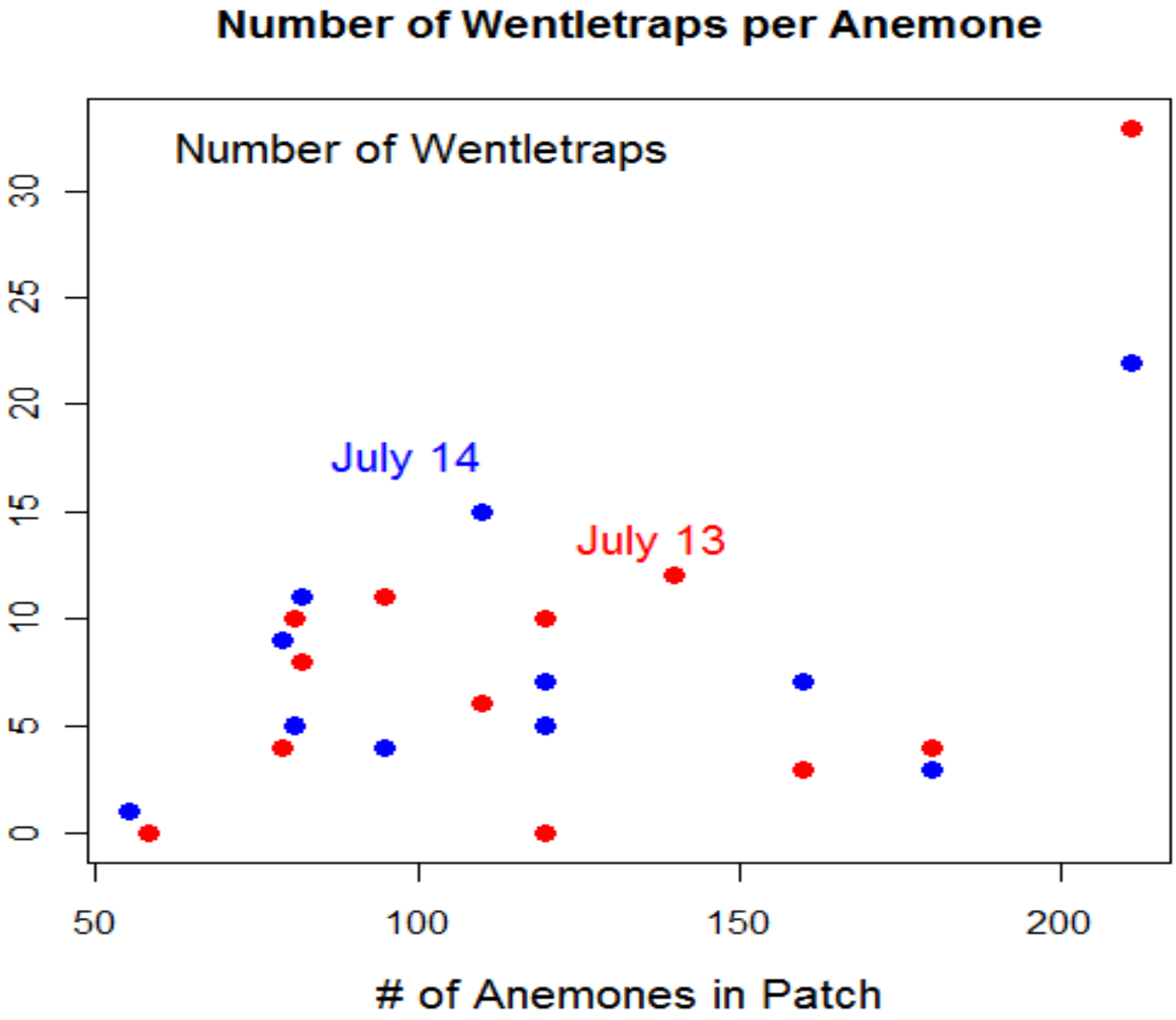
- Determine impact of temperature on species and interaction

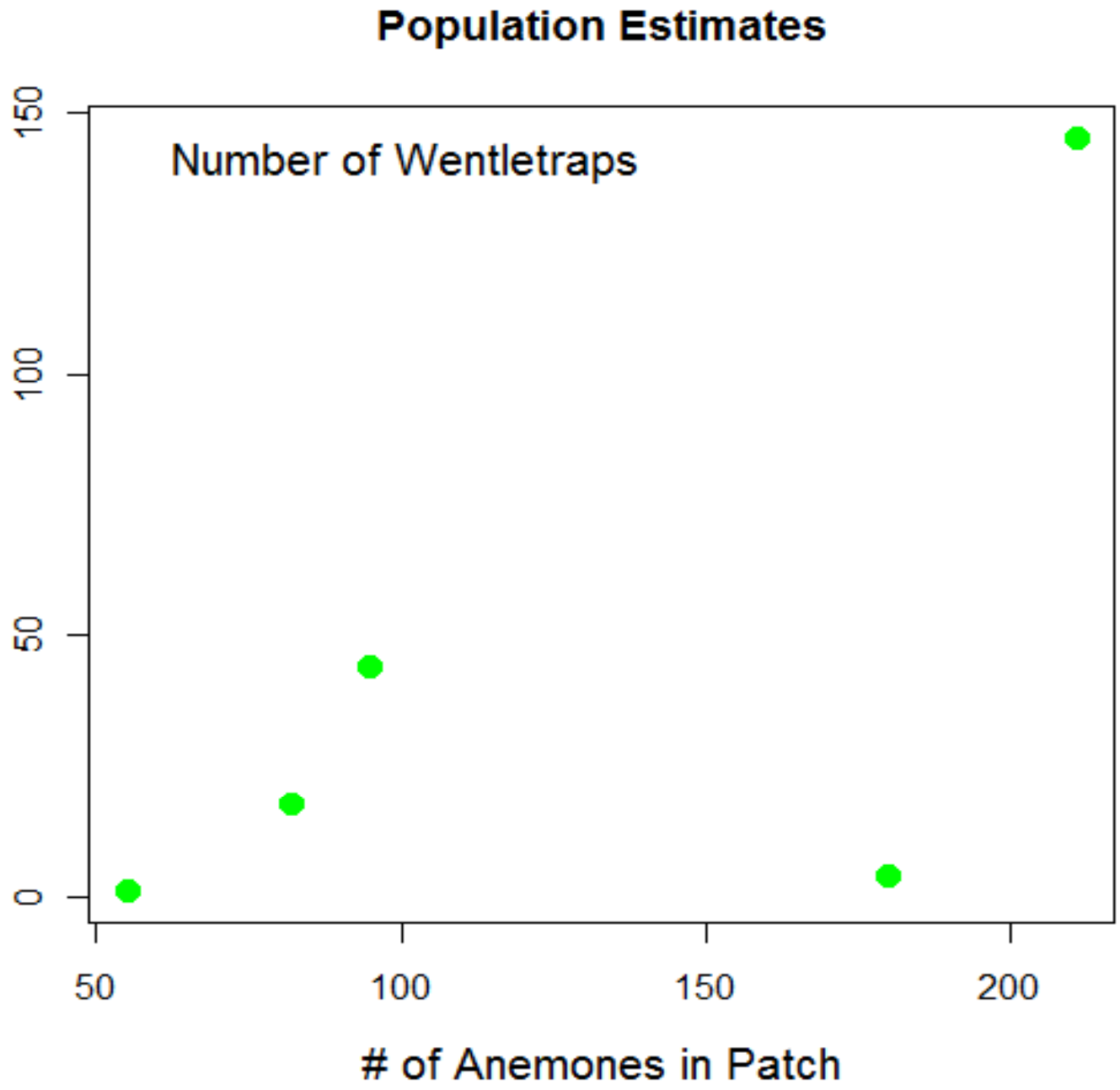
Experimental Methods in the Field

- **Collecting of specimens**

- **Field Experiments**
  - Developing search protocol

- **Surveys**
  - Determine wentletrap population size and density
  - Mark and recapture

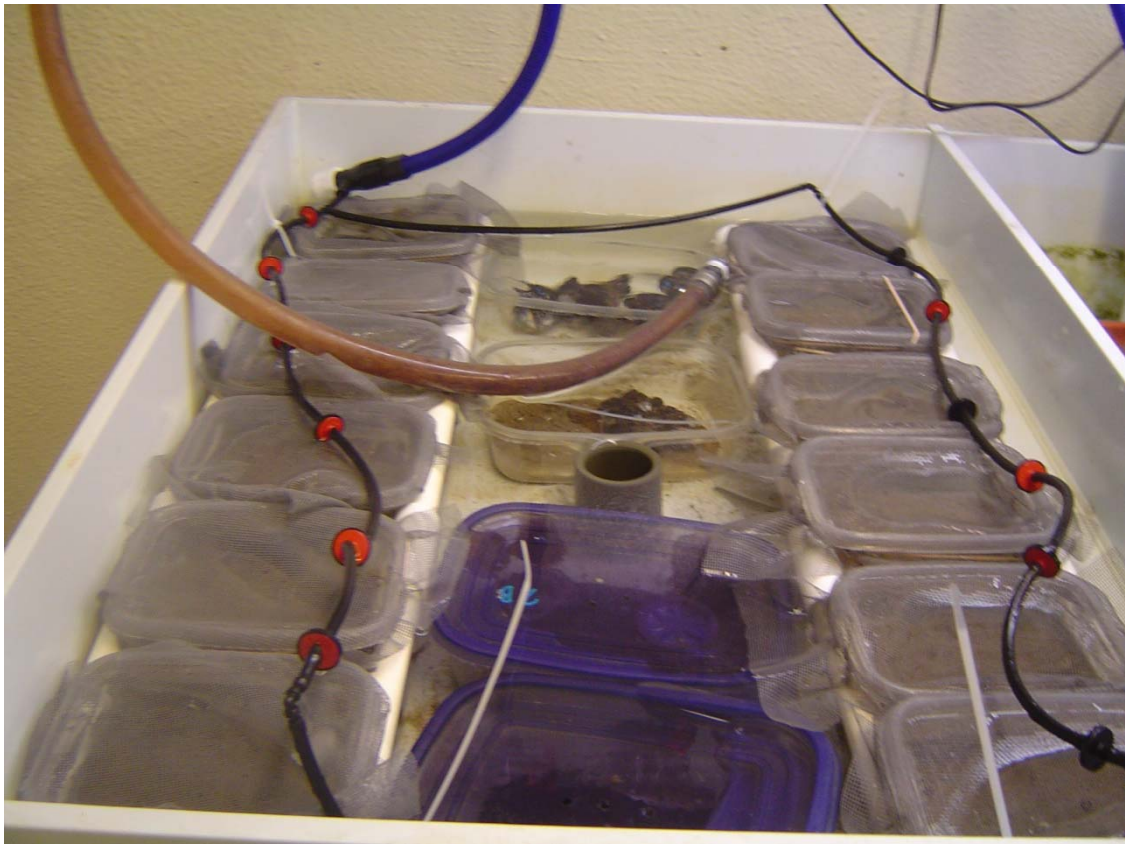

Number of Wentletraps per Anemone
Number of Wentletraps
July 14
July 13
0
5
10
15
20
25
30
50
100
150
200
# of Anemones in Patch


Population Estimates
Number of Wentletraps
150
100
50
0
50
100
150
200
# of Anemones in Patch

Experimental Methods in the Lab

Factorial Experiment

- Explore the combined impacts of temperature, food availability, and predation on anemones.



Factorial Table

Multiple Stressors
Temperature
Presence of predator
Food availability

Food/No Food		
	Low Temp 12˚C	High Temp 20˚C
Predator	12˚C, Predator	20˚C, Predator
No Predator	12˚C, No Predator	20˚C, No Predator

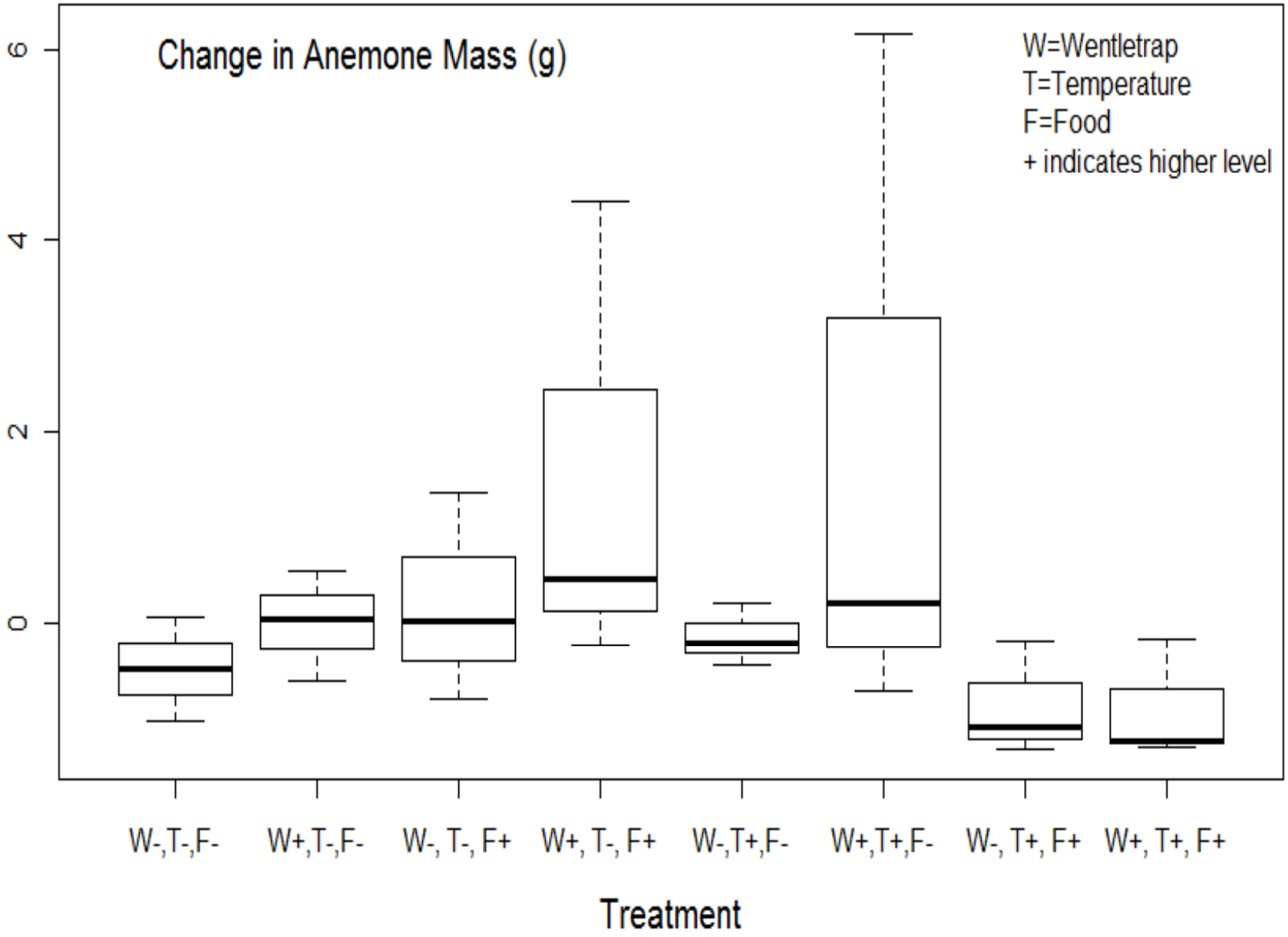
Assessing the Impact on Anemones

- Morphological measures
  - mass, color, death rate
- Molecular methods
  - protein degradation

Assessing the Impact on Wentletraps

- Acute temperature response

Impact of Treatment on Anemone Mass



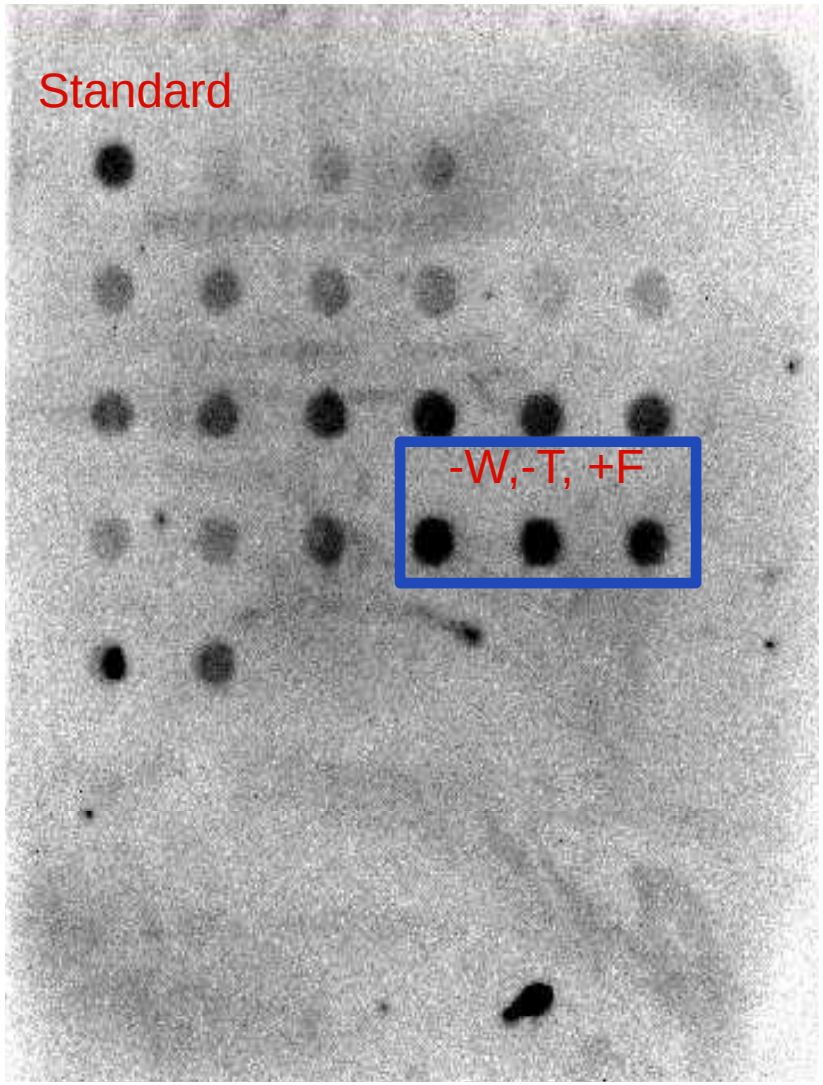
Ubiquitun Dot Blot

Quantifying protein degradation

- Extract protein from sea anemone tentacles

- Expose protein to anti-body

Results: Not clear



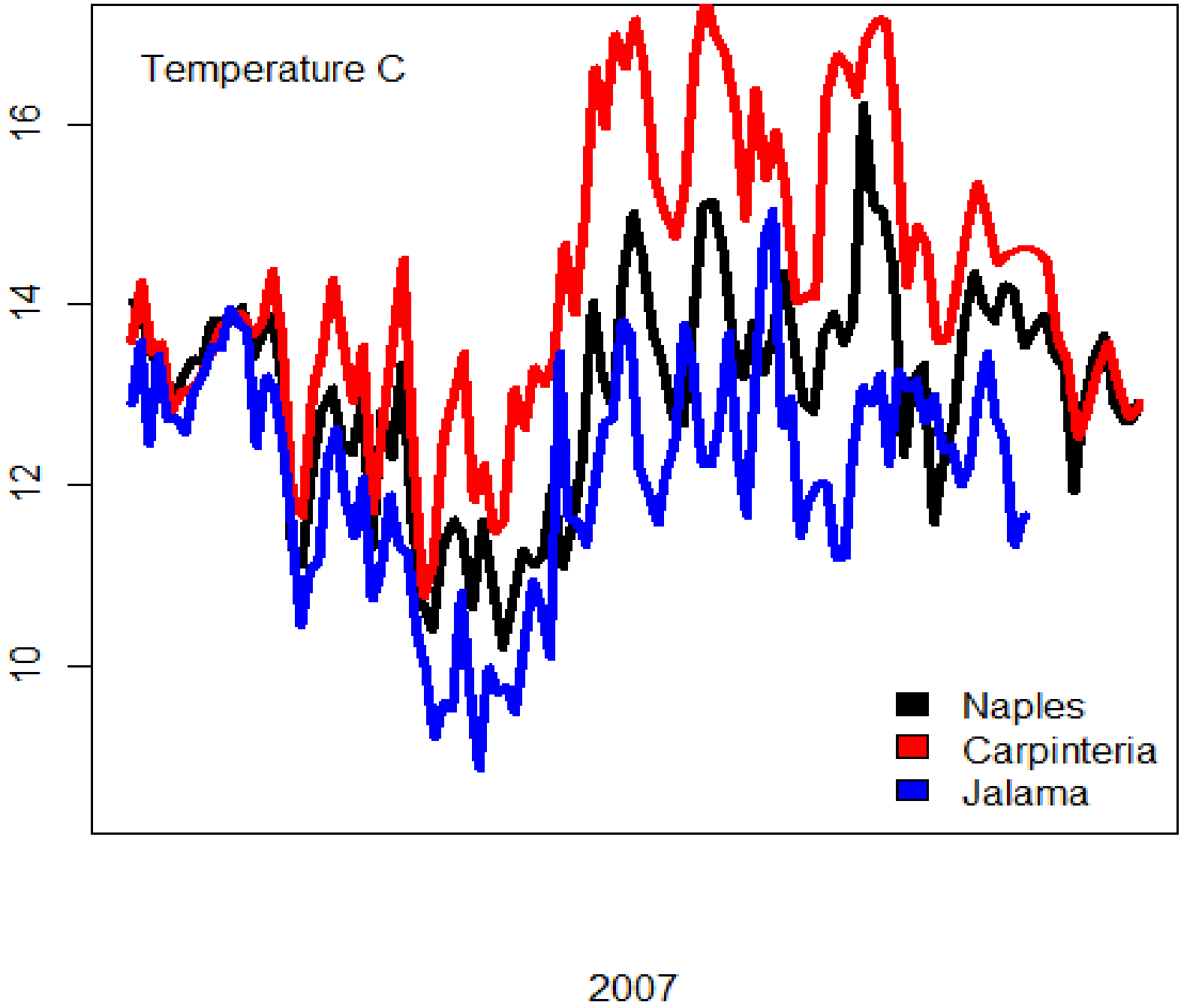
Heat Block Experiment

Acute Temperature Response

• 90 minutes exposure from 12.1˚C - 31.5˚C

Result: all survived

•Local water temp. does not exceed 20˚C

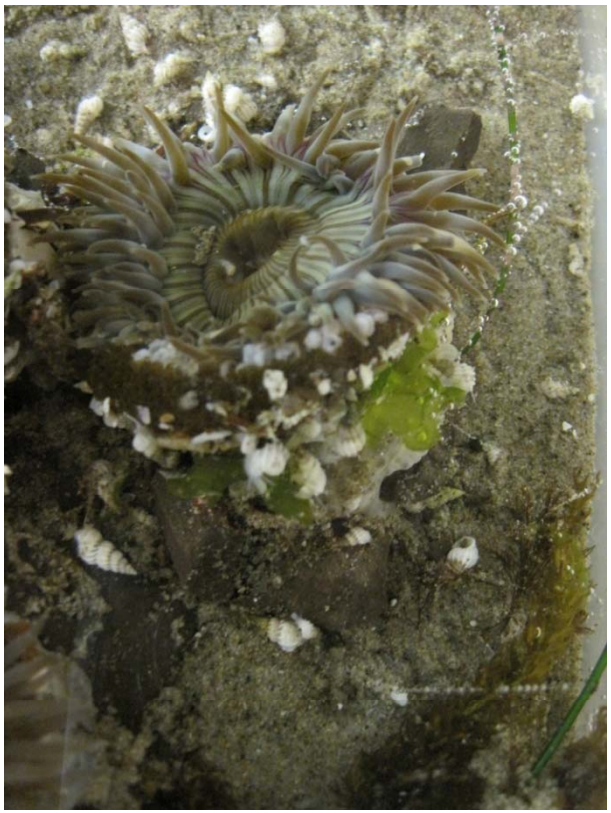

Temperature C
16
14
12
10
Naples
Carpinteria
Jalama
2007

Project Summary

Establish the impacts of temperature

on wentletrap and sea anemone

- Offer insight community dynamics
  - Similar anthozoan-gastropods relationships found in coral reefs around the world.



Future Plans

- Finish a second trial of the factorial experiment
    - Reassess the impact
- Go out into the field and re-evaluate population size and densities.
- Take a look at larger number of protein extraction samples
- Assess wentletrap movement and feeding preferences

Acknowledgments

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Friends and Family