Does poor water quality due to eutrophication promote an invasive species?

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Welcome to the Elkhorn Slough

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Estuaries are an endangered habitat[2]

Invasive species are a major stressor[3]

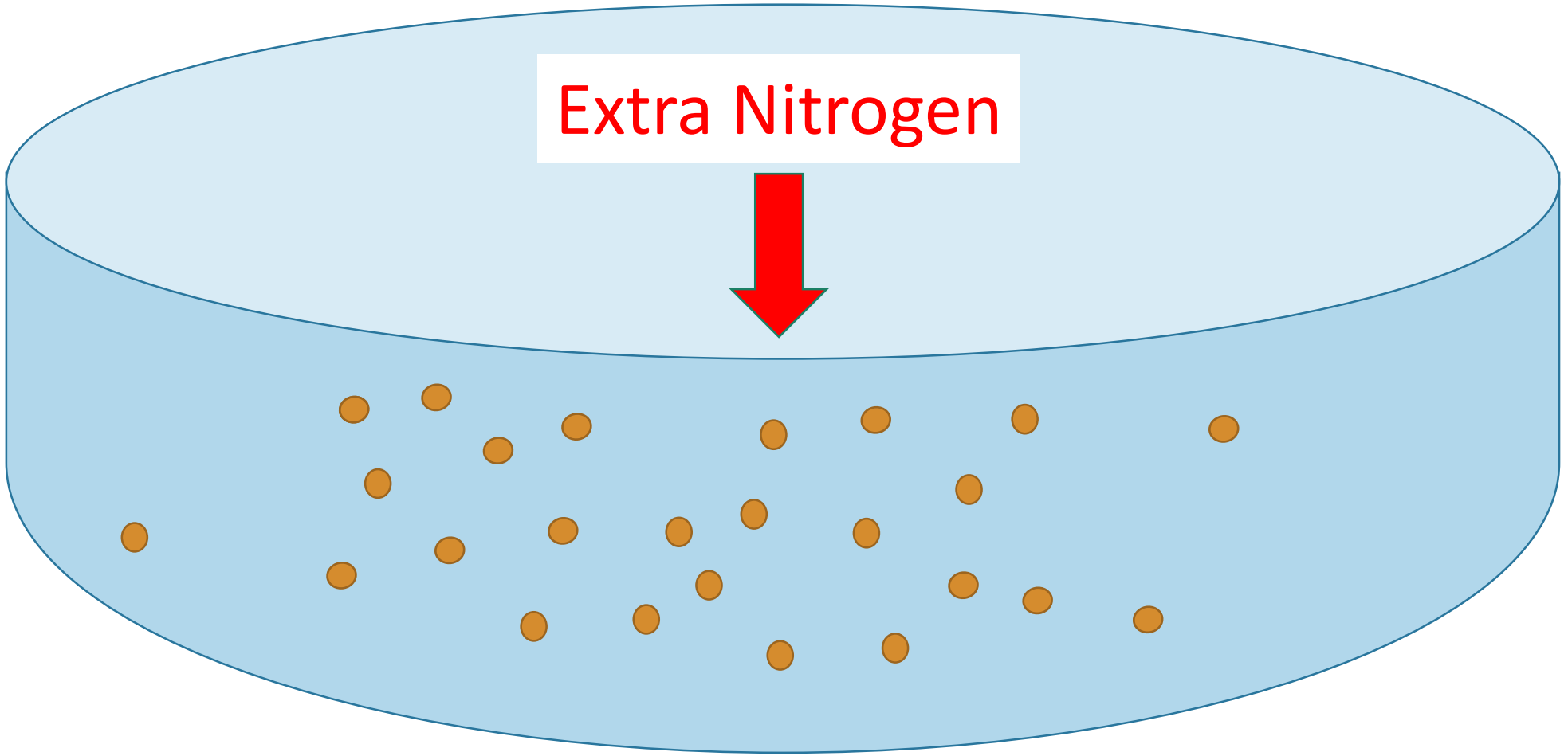
An invader in the slough

European green crab (*Carcinus maenas)*

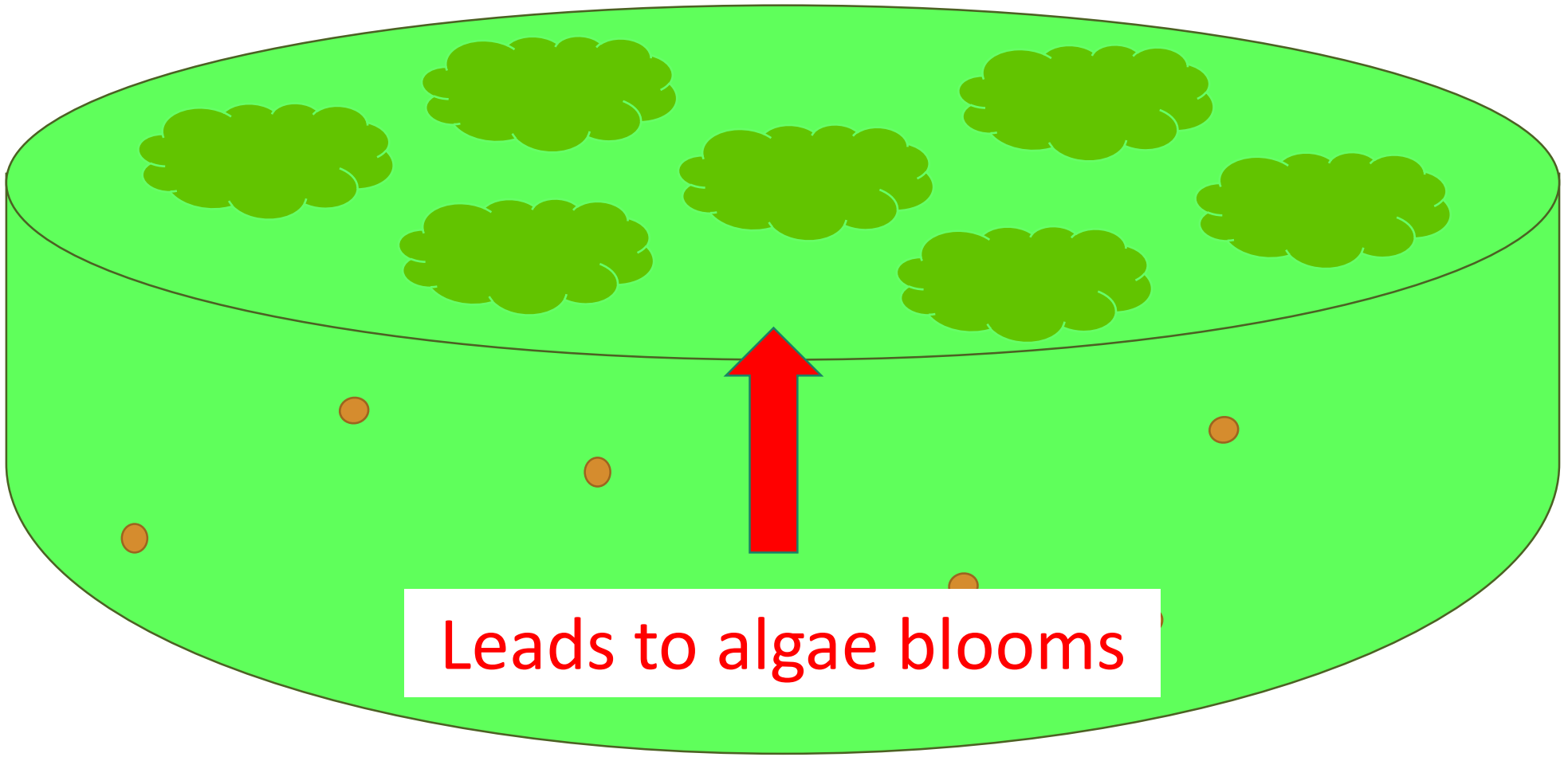
Often successful in disturbed environments

Eutrophication creates a disturbed habitat[5]

Excess nutrients cause poor water quality[5]



Excess nutrients cause poor water quality[5]



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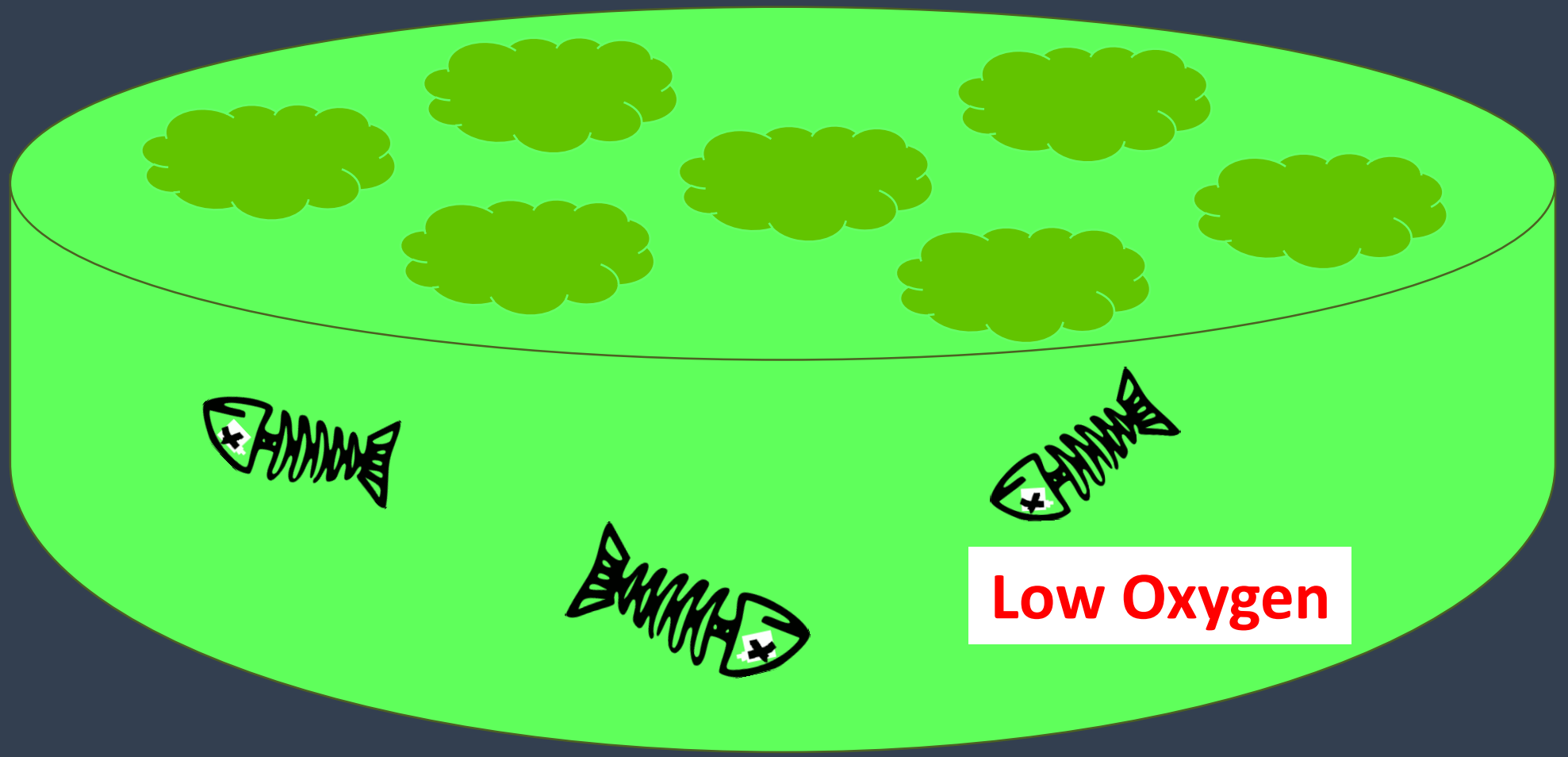


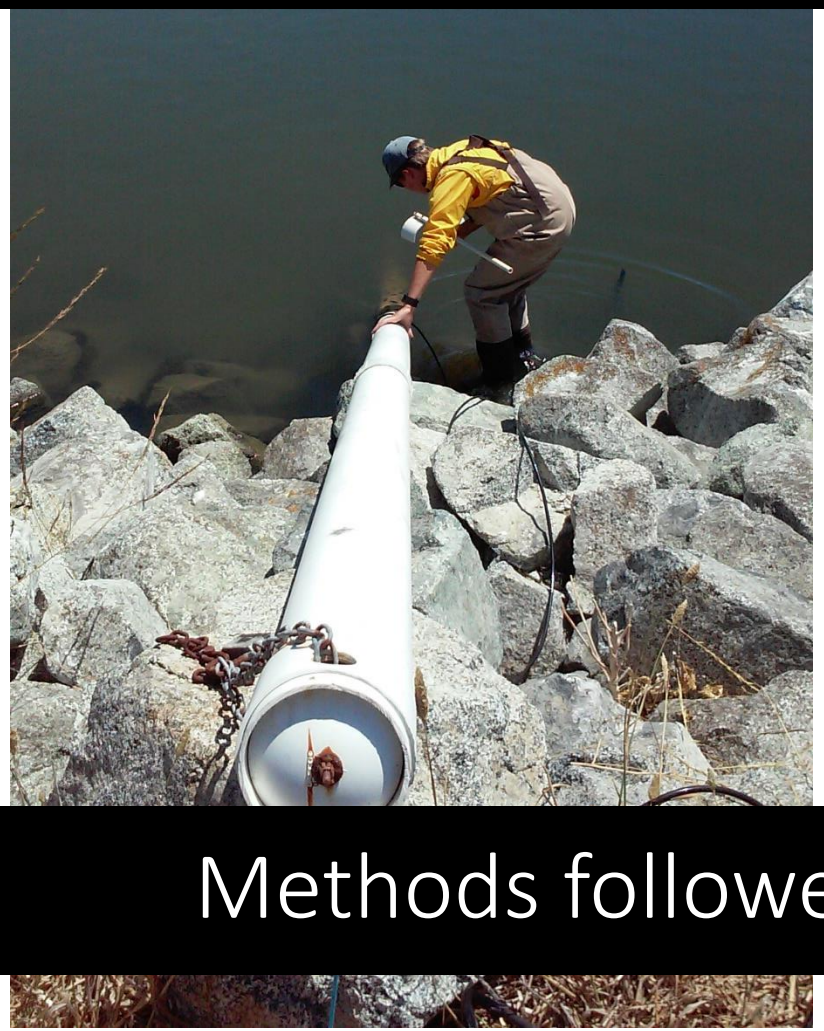
How are green crabs distributed in the slough?

Could water quality explain this distribution?

Collecting Data

Study sites correspond to monitoring studies

Measuring water quality



Methods followed standard protocols

Measuring nutrients

Nitrogen Data (June – August 2014)

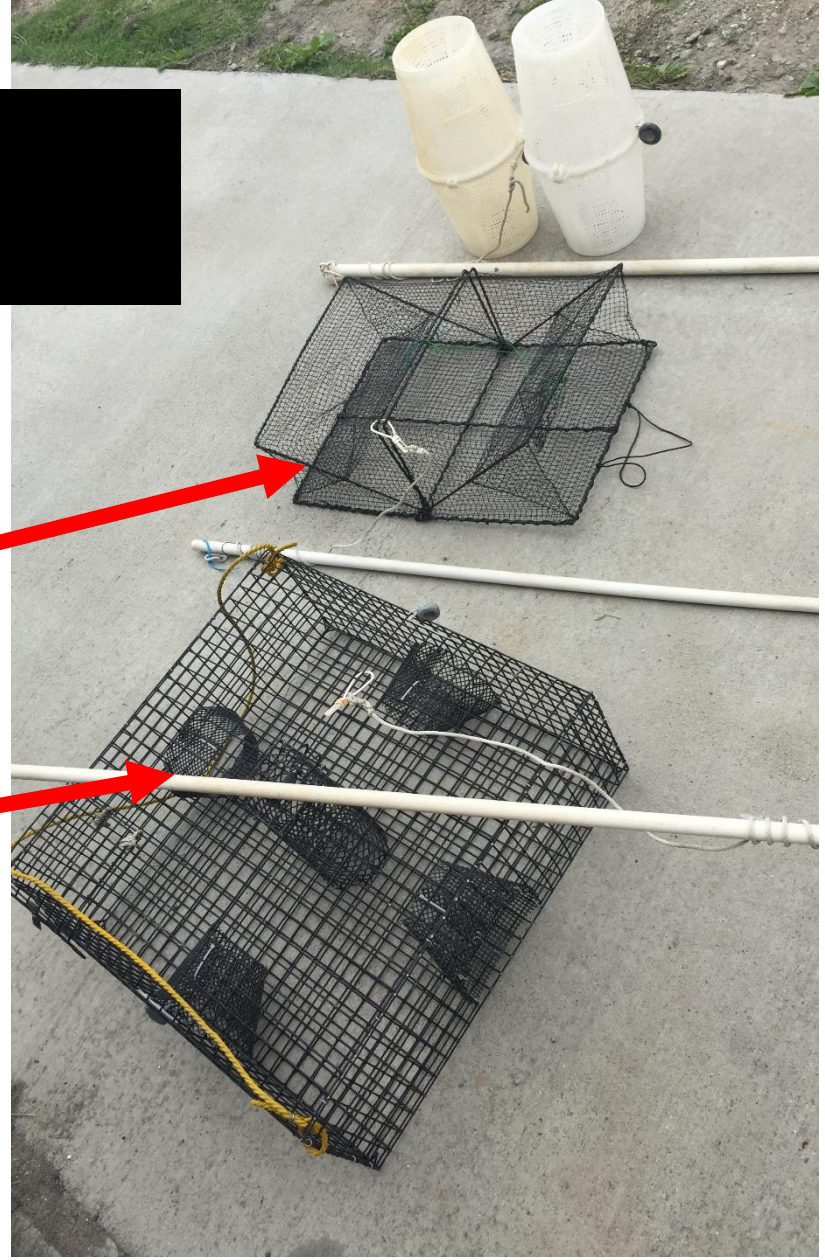
Measuring green crabs

Four types of traps were deployed

Minnow Traps

Mesh Trap

Metal Trap

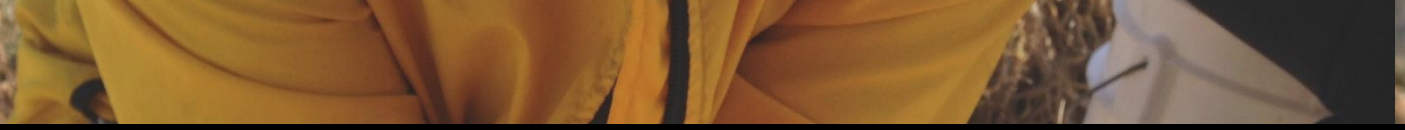


Traps were deployed at each site

9-10 traps, 3 sampling events

All crabs identified to species level

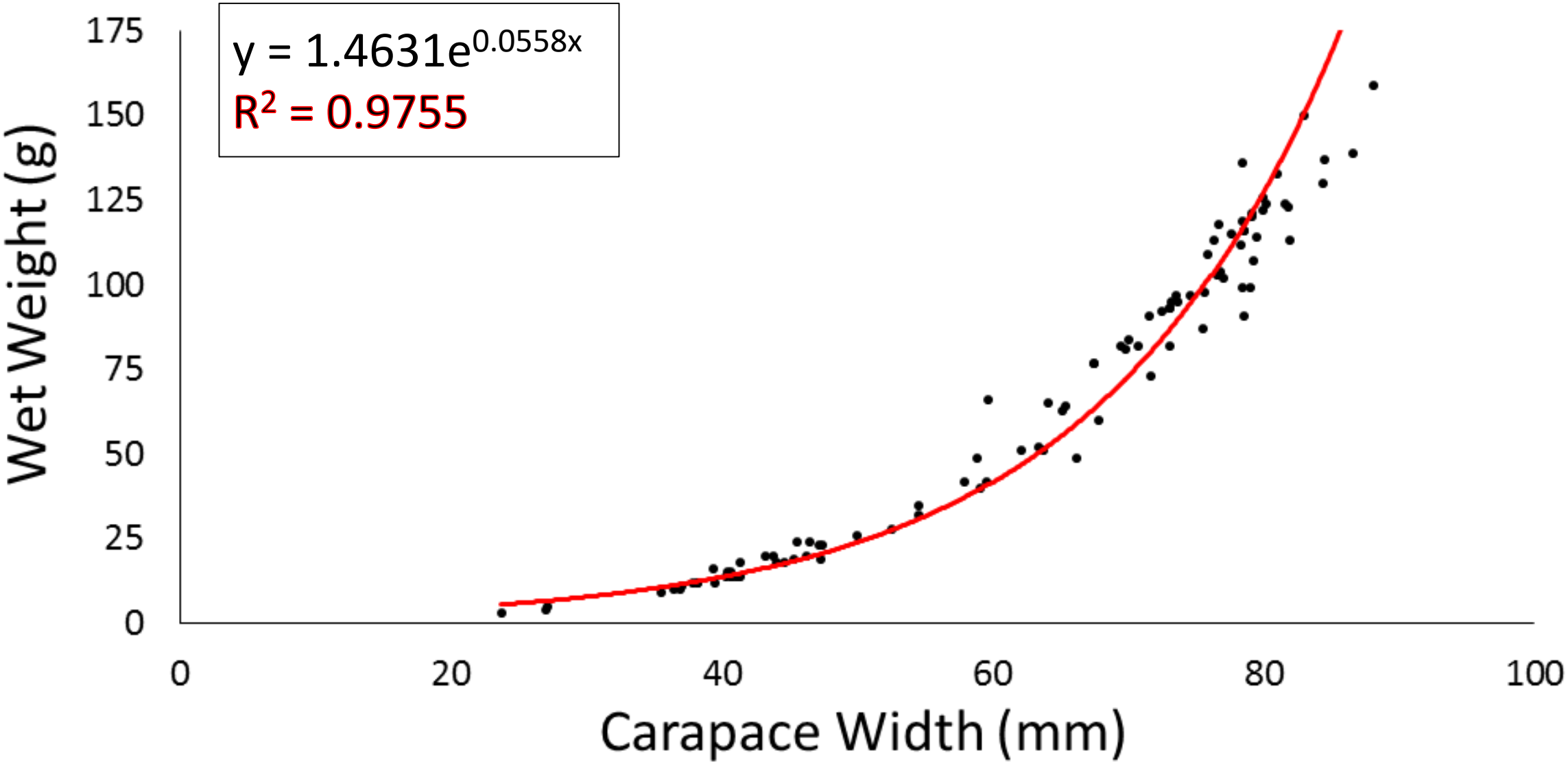
Width measured and weighed



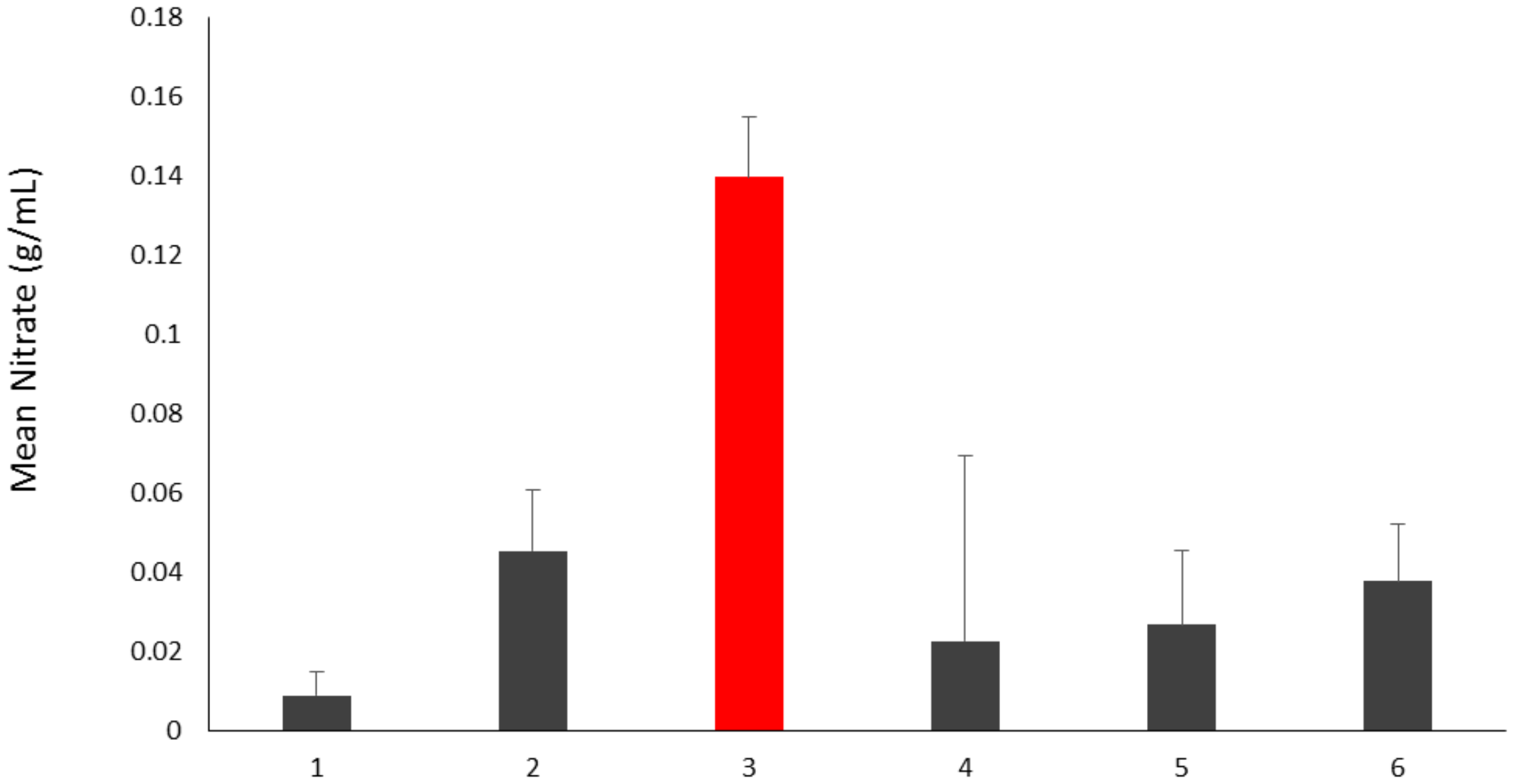
We used biomass to describe distribution

Better metric for future analyses

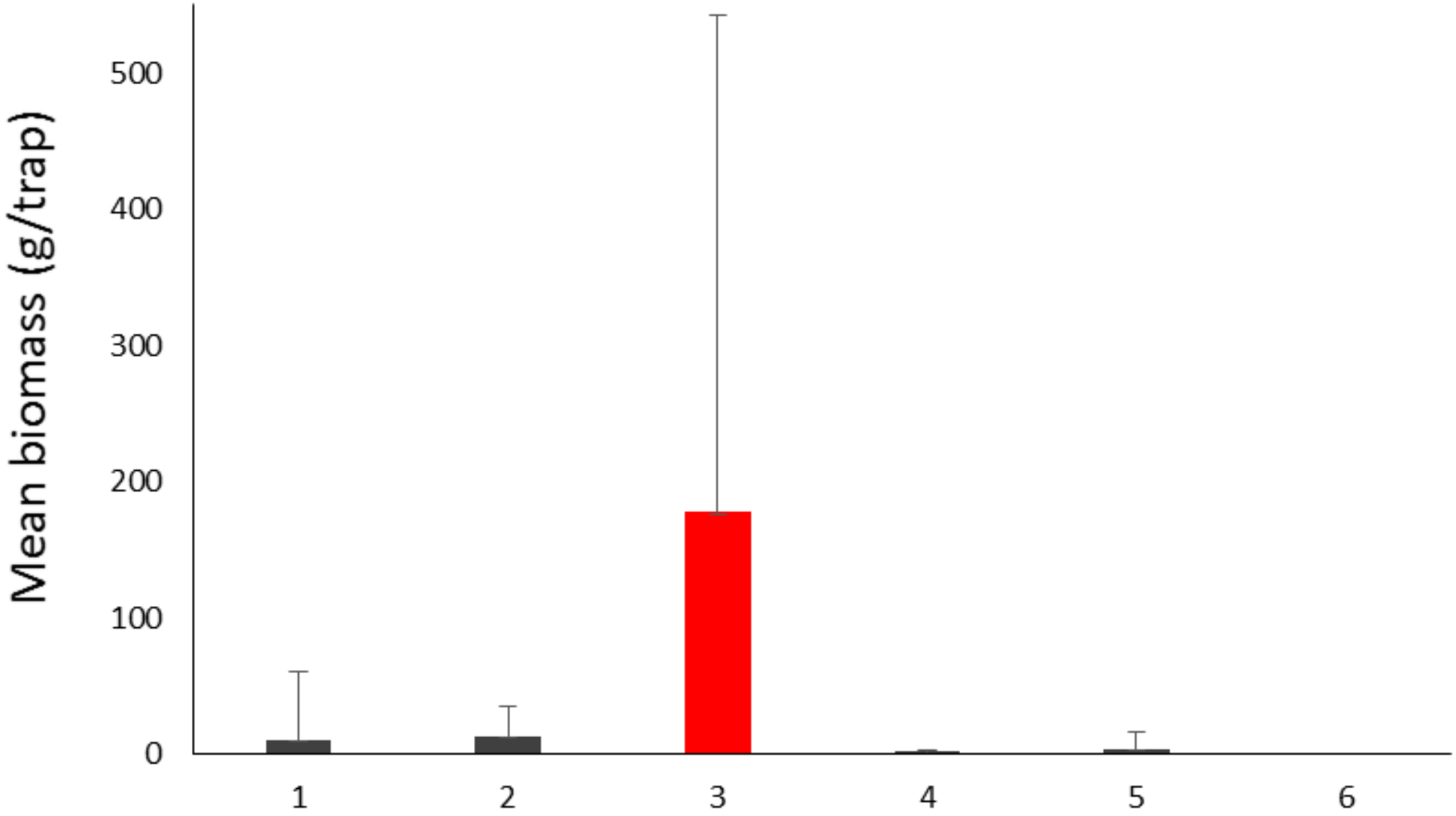
Carapace width is related to weight



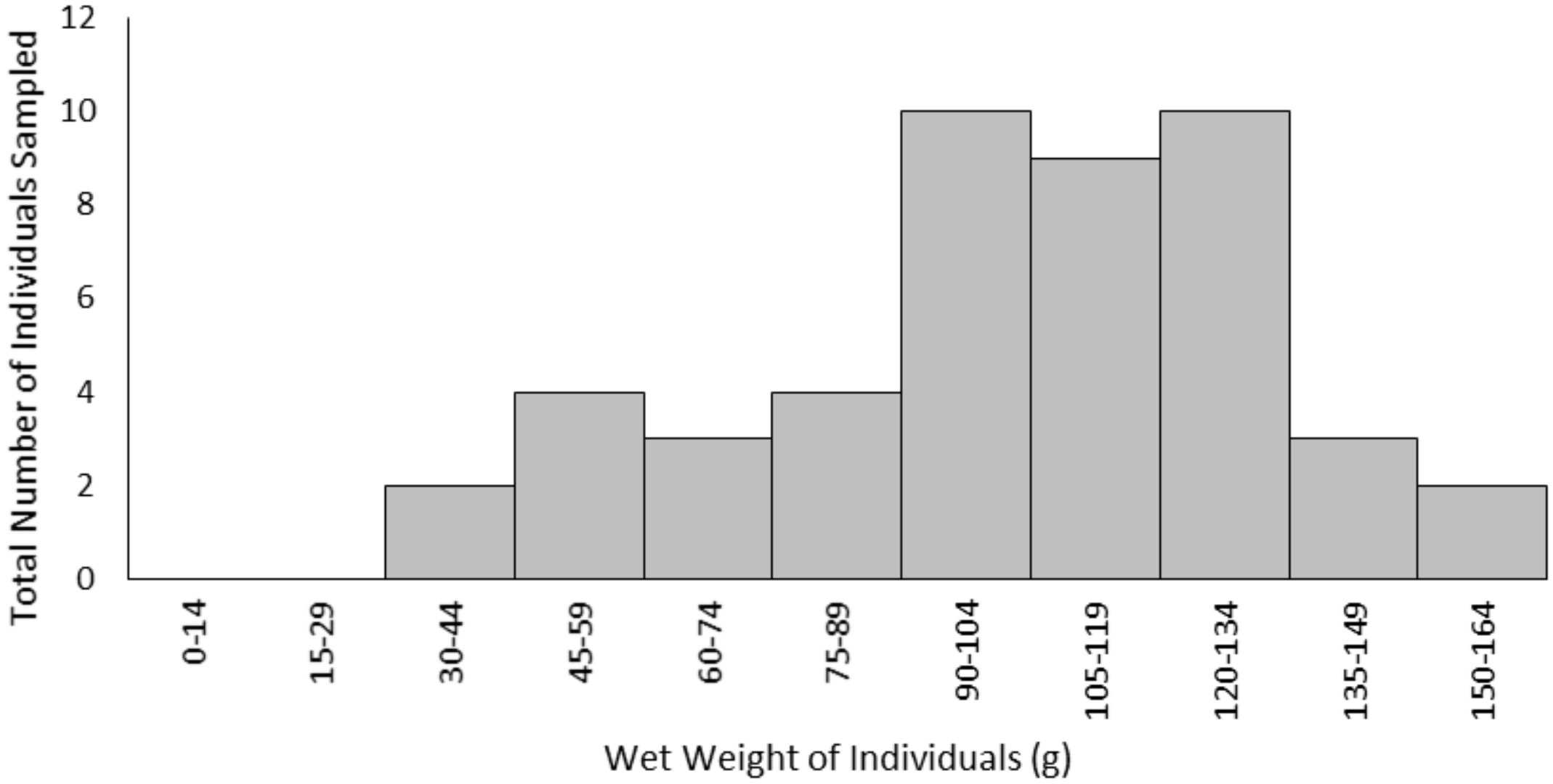
Site 3 shows highest nitrate levels



Site 3 has largest biomass



Site 3 has larger individuals



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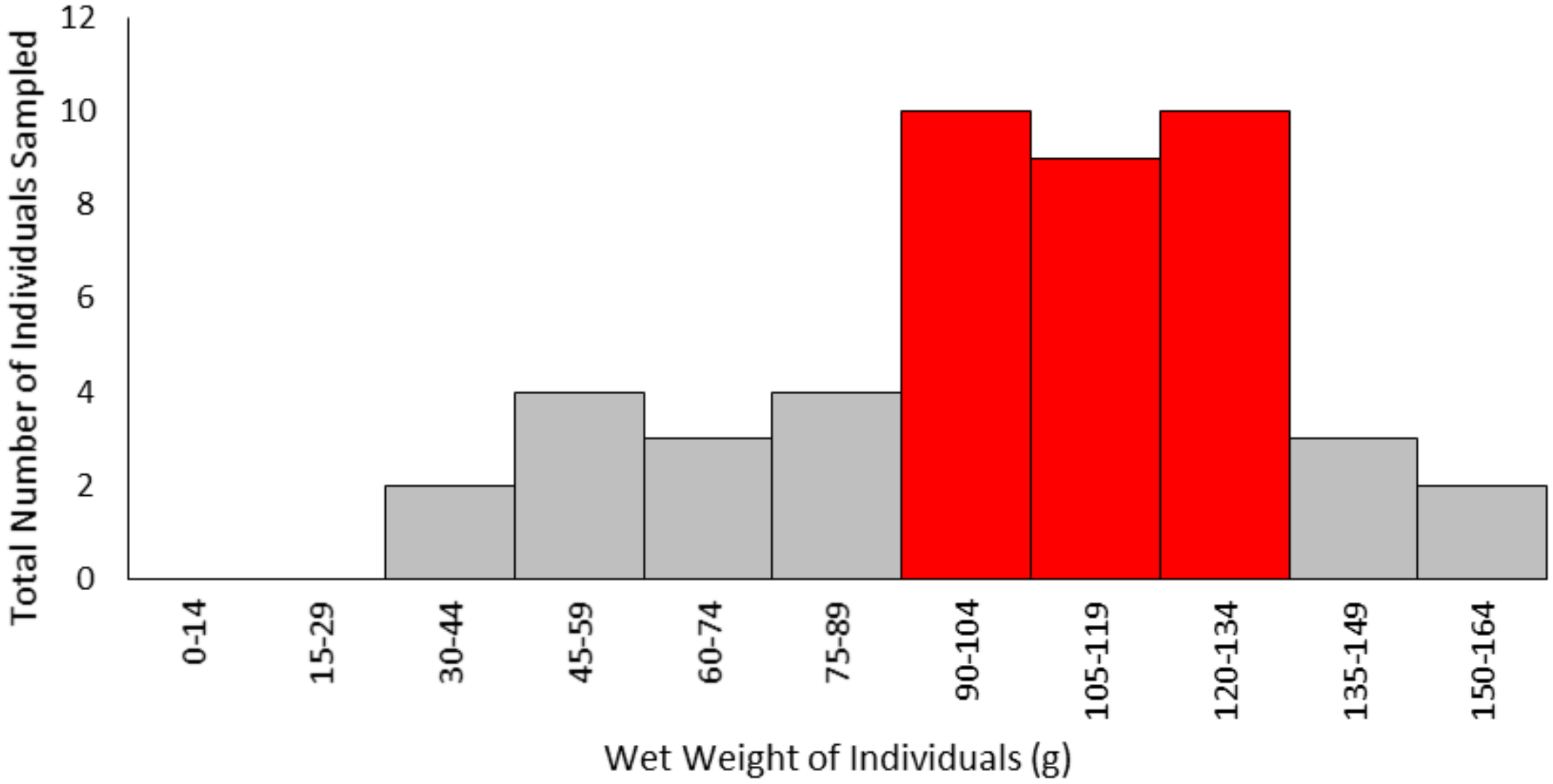

The data suggests that green crabs are more successful in poor water quality sites.

Crabs are larger and more abundant

Site 3 central among sampling sites

Does the process of invasion selects for tolerant species?[8]

Can help focus eradication

Novel biomass curve

Provide motivation to clean water

Acknowledgements

Dr. Kerstin Wasson, Mentors from various institutions
Elkhorn Slough Reserve Staff and Volunteers
Ocean Science Research Experience for Undergraduates (REU) at Monterey Support Staff

Thank You!

Any Questions?

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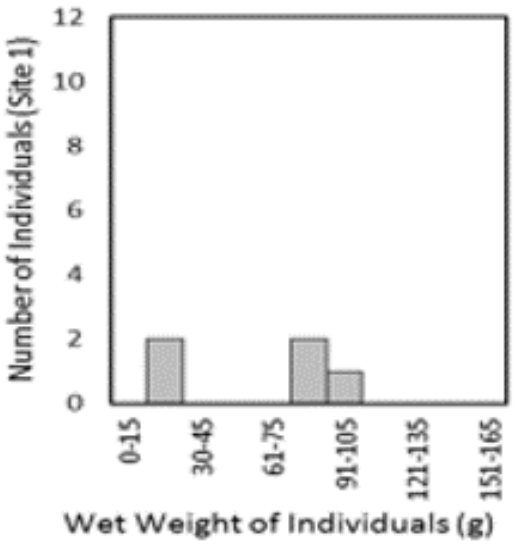
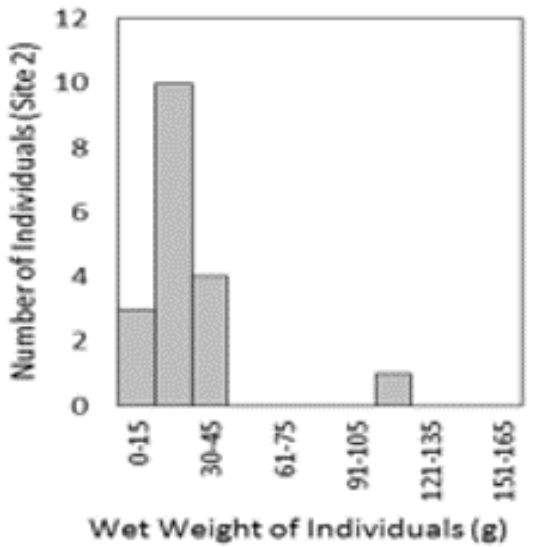
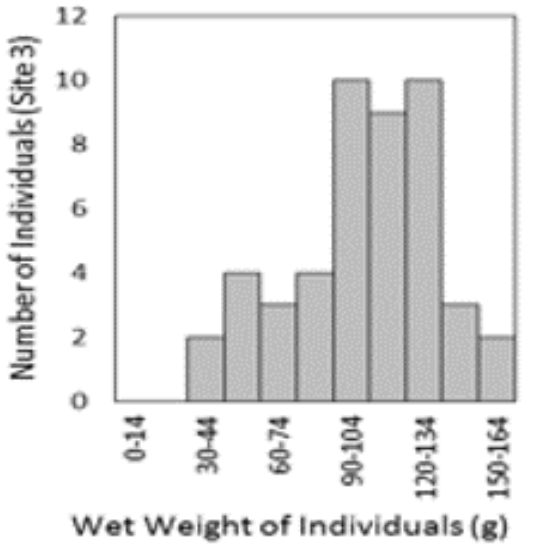
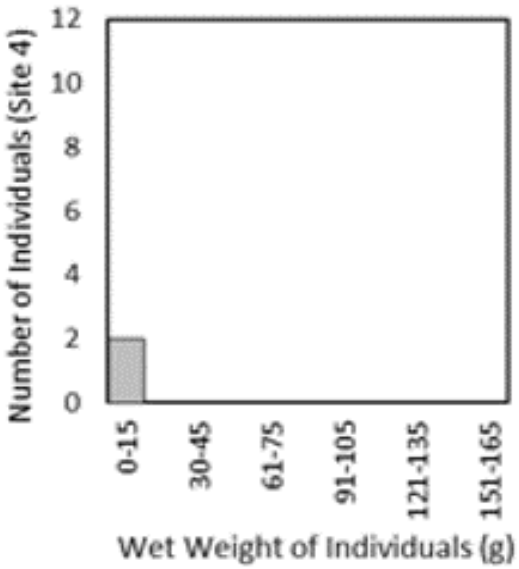
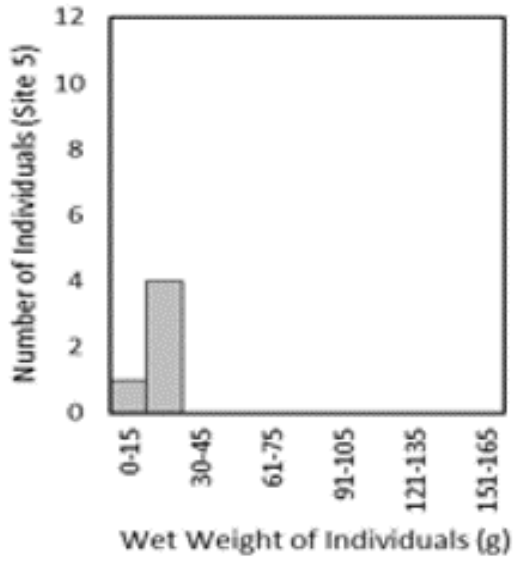
Size distributions at all sites

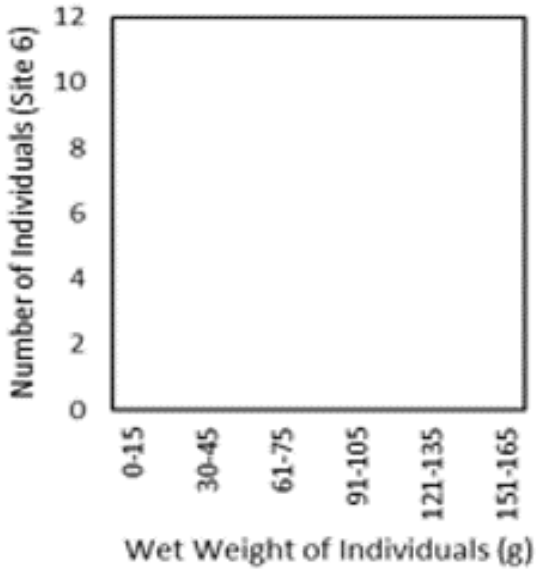




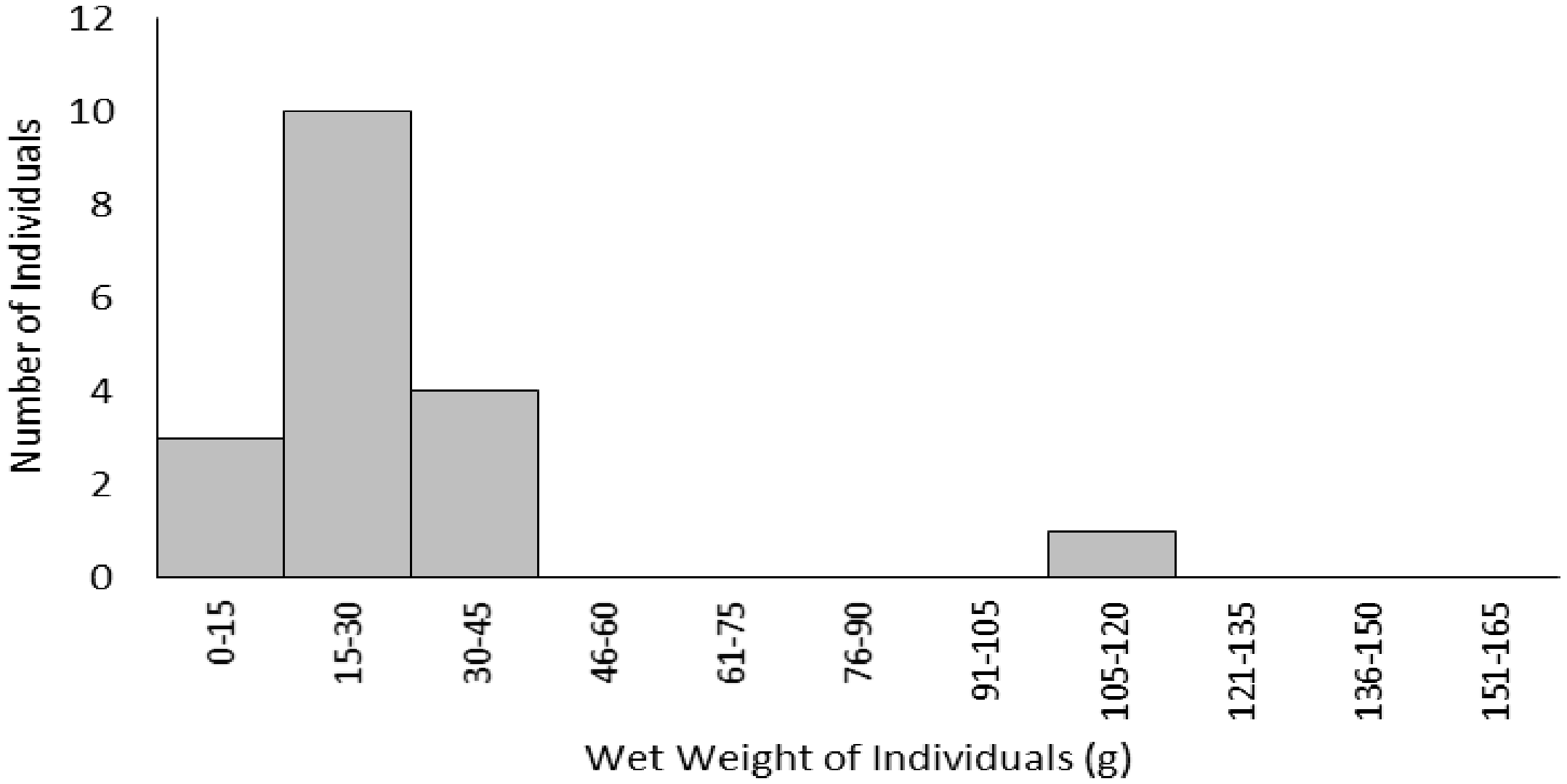








Site 2 has smaller individuals



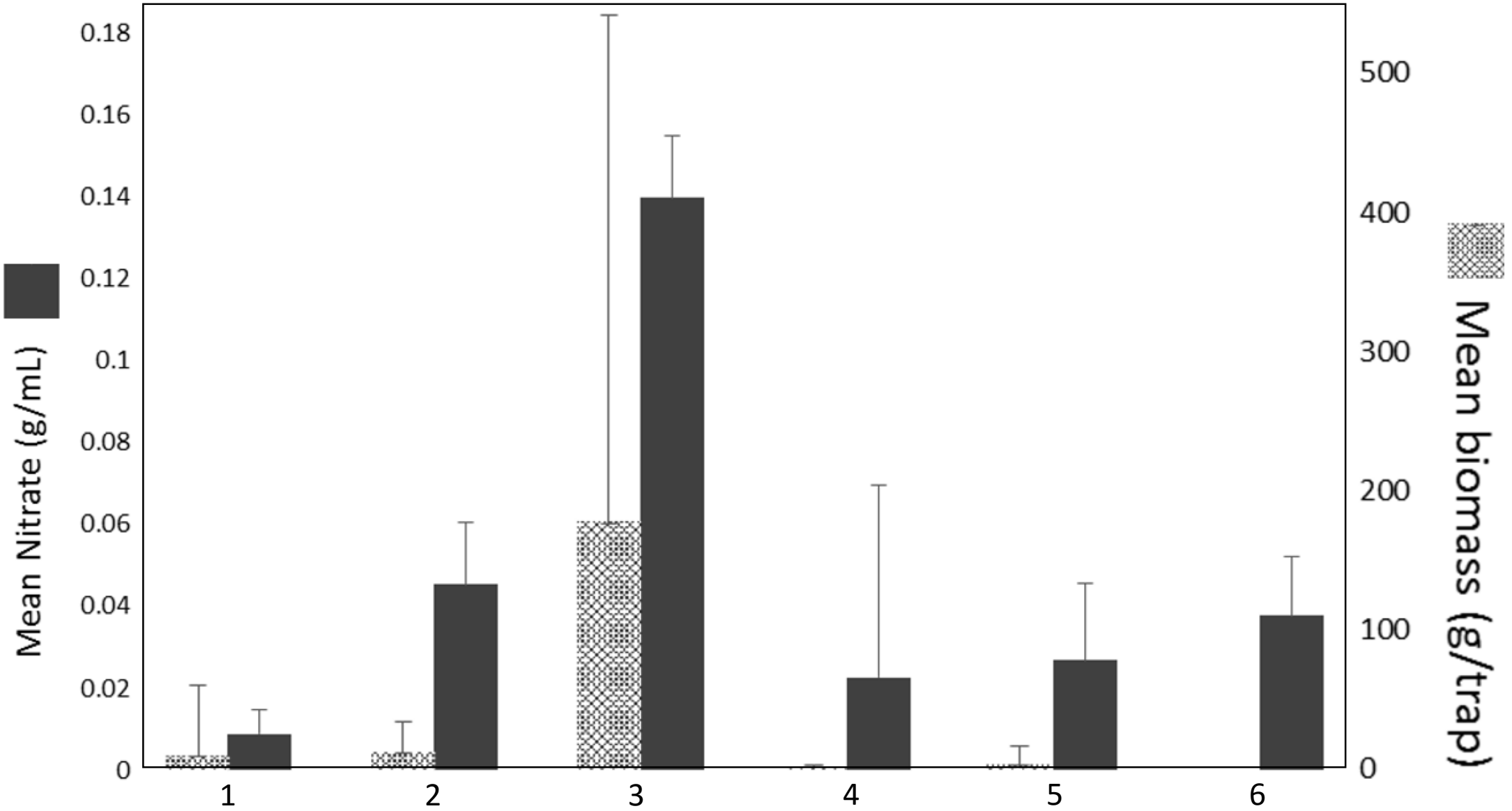


Figure 5: This figure shows mean nitrate levels (solid grey) and biomass (patterned grey) at each site. Site 3 has the highest nitrate and biomass levels.