2024

Eelgrass beds impact on juvenile Dungeness crab in Humboldt Bay, CA.

Jillian Hodge
jmh314@humboldt.edu

Eelgrass beds impact on juvenile Dungeness crab in Humboldt Bay, CA.

Jillian Hodge
Department of Wildlife, Cal Poly Humboldt
1 Harpst St, Arcata, CA 95521
jmh314@humboldt.edu

Background

- Eelgrass beds could serve as alternative nurseries, offering protective cover for juvenile Dungeness crabs.
- Eelgrass may influence crab abundance, growth, and distribution, acting as both a food source and cover.

Predictions:

- More juvenile Dungeness crabs are expected in eelgrass beds.
- Female adult Dungeness crabs may prefer eelgrass habitats.
- Juvenile Dungeness crabs in eelgrass beds may exhibit smaller average sizes.

Study Area

- Four beach locations were selected: Samoa beach, Eureka Waterfront Trail, King Salmon Beach, and Fields Landing (Fig. 1).
- 30 sites were evenly distributed across locations.
- Eureka Waterfront Trail served as a control beach without eelgrass, while the three other locations had eelgrass beds.

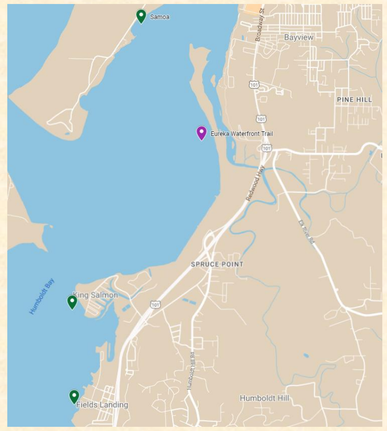

Fig 1: Four sampling locations within Humboldt Bay, green markers being eelgrass and purple the control.

Methods

- Sampling employed a 32-inch steel crab hoop trap baited with chicken drumsticks, deployed 50m from shore and retrieved after 30 minutes.
- Independent variables considered were eelgrass presence, temperature, and depth, while dependent variables included catch quantity, sex distribution, and carapace width.

Results

- Red rock crab were caught significantly more in eelgrass ($t = 4.25$, $df = 58$, $P < 0.05$, Fig 2).
- Dungeness crab were caught significantly more in no eelgrass areas ($t = 2.64$, $df = 58$, $P < 0.05$, Fig 2).
- No significant difference in red rock and Dungeness crab catch was found within eelgrass ($t = 1.59$, $df = 58$, $P > 0.05$).
- Dungeness crabs had larger carapace widths than red rock crabs ($t = -2.18$, $P = 0.03$).
- Male Dungeness had larger carapace widths than females ($t = 3.063$, $P = 0.003$, Fig 3).

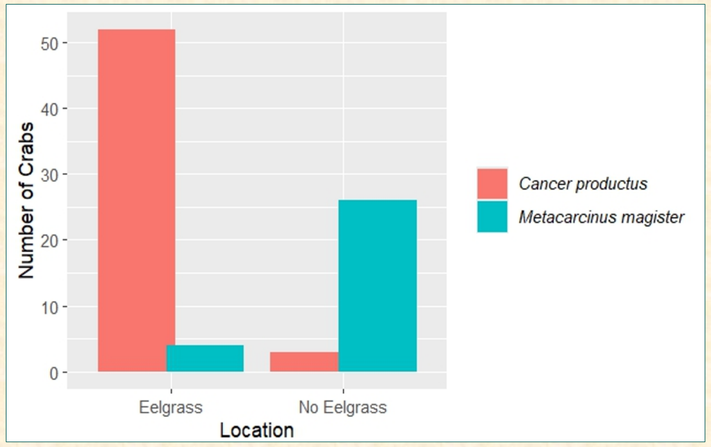

Fig 2: The number of red rock crab (*Cancer productus*) and Dungeness crab (*Metacarcinus magister*) caught within eelgrass beds and outside eelgrass.

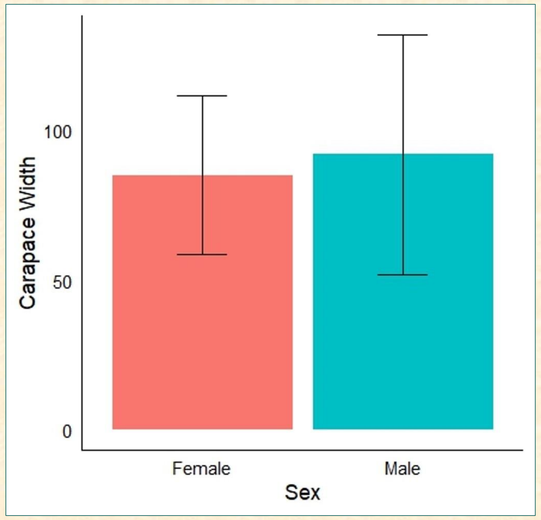

Figure 3: A comparison of the carapace width for Dungeness crab (*Metacarcinus magister*) between males and females.

Discussion

- No adult female Dungeness or juveniles were found in eelgrass beds, skewing the data.
- The size difference observed between crab species and sex could indicate they have unique roles or needs for both habitats.
- The catch differences between red rock and Dungeness in eelgrass and no eelgrass areas highlight distinct habitat preferences for each species.
- The different number of catches between eelgrass and no eelgrass might indicate that crab species are competing one another out of the other habitat.
- Just because no juvenile crabs were caught does not mean they are not there.

What's Next?

- Determine: Are juvenile Dungeness not found in eelgrass beds because red rock crab are outcompeting them, or is it truly habitat preference?
- Conduct sampling across longer periods of time and seasons.
- Consideration of ecological overlap within eelgrass habitats.
- Ongoing monitoring to address potential conflicts arising from these habitat preferences and interactions.

Acknowledgements

I would like to thank Professor Rafael Cuevas Uribe, for teaching me Ichthyology and inspiring my interest in crabs. I want to thank Dr. Sinn, who guided me throughout the duration of this project and its creation. Lastly, I want to thank Gabriel Irribarren, who sampled every day with me to complete this project and has been a tremendous support.

Cal Poly Humboldt.