Cushion Sea Stars (Oreaster reticulatus) have the Ability to Respond to Disturbance

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Introduction

- 45% of cushion sea stars (*Oreaster reticulatus*, CSS) can be found in seagrass (*Thalassia testudinum*), while 51% occur in coral reef patches mixed with seagrass, and 4.0% are found exclusively in coral reefs (Guzmán & Guevara, 2002) (Figure 1).
- Preferred habitat includes calm, shallow, subtropical waters, with a calcareous sandy bottom (Miranda & Patel, 2011).
- They are omnivores, with a diet consisting of algae, diatoms, crab larvae, and other small organisms (Miranda & Patel, 2011).
- Typical movement patterns consist of an average distance of six meters (19.7 feet) per day (Smith, 1940).
- We hypothesized that there would be a difference in the distance moved among *Oreaster reticulatus* in disturbed and undisturbed environments.
- We predicted that when in disturbed environments, *Oreaster reticulatus* would move a greater distance as compared to undisturbed environments.

Methods

- CSS were observed March 9 - 11, 2022, in Graham’s Harbor, San Salvador, Bahamas at 1100 and 1500 hours. All animals were tracked for one hour.
- Disturbed environment: CSS were moved to a central location (Figure 2).
- Undisturbed environment: CSS were marked in their original location (Figure 3).
- Data analysis was conducted using a t-test.

Results

- Data analysis results show a statistical difference between the distance moved among cushion sea stars in disturbed and undisturbed environments.
- This supports our hypothesis that there is a difference between the two external sensory inputs.
- A factor that could have disrupted data results was human interference at the testing sight, as Graham’s Harbor is a frequented snorkeling location.
- Another factor to consider is human error when measuring underwater distances.

Conclusions

- Our hypothesis was supported; the difference between disturbed and undisturbed environments was statistically significant (*P*(T<=t) two-tail = 0.005).
- In future experiments, a more controlled environment and a more efficient underwater measuring device may be beneficial.
- It would be interesting to investigate directionality and distances moved relative to various ages of the cushion sea stars.

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References

