Monitoring MPA Violations and Human-Wildlife Interactions to Prevent Sand Barrier Breaching

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Introduction

- Orange County Coastkeeper and the Laguna Bluebelt Coalition created the Aliso Beach Wildlife-Habitat Monitoring Project in Laguna Beach, CA in 2021
- Aliso Creek's temporary open/close bar-built estuary serves as critical habitat for many species in the no-take Marine Protected Area (MPA).
- A natural sandbar that separates the creek from the ocean lessens the impact of destructive ocean waves before they reach the Aliso Creek Estuary and the mainland.
- However, individuals dig out the sandbar to surf the standing wave→ drain the creek habitat and form a deep gash on the beach that hinders beach access.
- Hypothesis: high amounts of human hazards and disturbances will result in lower wildlife abundance.
- These findings will be used to encourage enforcement action from the City of Laguna Beach to protect Aliso Creek and promote equal beach access.

Materials and Methods

- Volunteers and staff members took 159 surveys to record human activity, disturbances, and wildlife behavior in this area from August 2023 to June 2024
- Each survey consists of a 30-minute observation of the survey site: Aliso Creek, Aliso Point, or Treasure Island
- Materials included binoculars, long-range cameras, survey sheets, and standard operating protocols.

Figure 2: Data sheet used during surveys

Figure 1: Map of three survey sites

Results

Figure 4: Aliso Creek and the Sand Berm

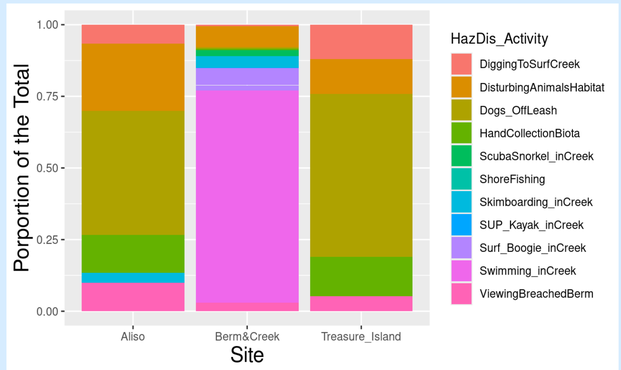

Figure 5: Proportion of Hazards and Disturbances Across Sites

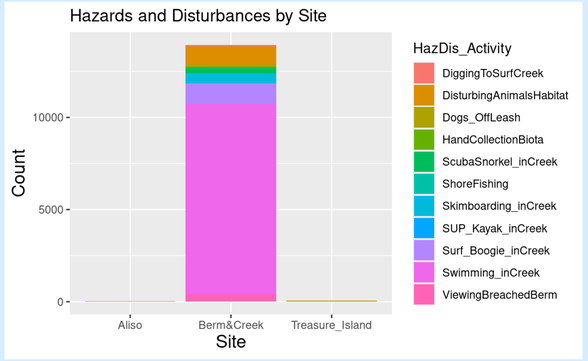

Figure 6: Total Hazards and Disturbances Across Sites

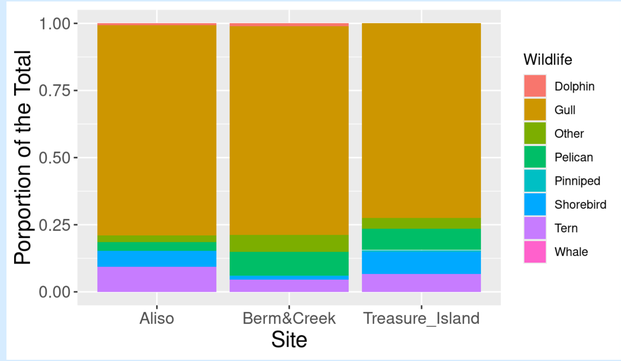

Figure 7: Proportion of Wildlife Presence Across Sites

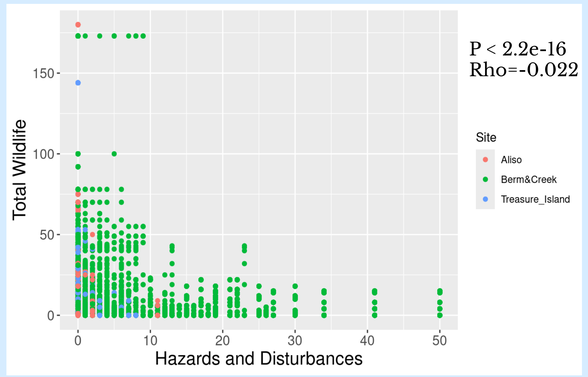

Figure 8: Correlation Analysis of Total Hazards and Disturbances and Wildlife

Wildlife presence decreases as hazards and disturbances increase

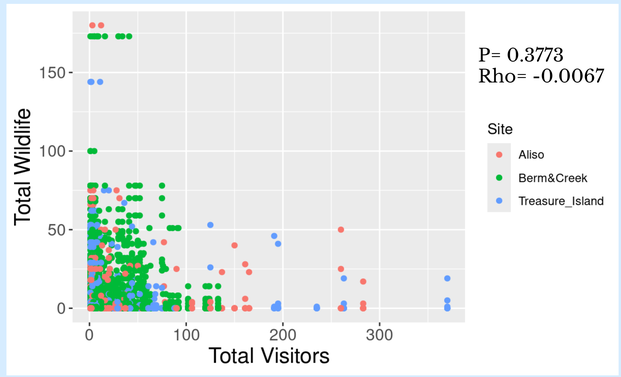

Figure 9: Correlation Analysis of Total Visitors and Wildlife

No relationship

Discussion

- Reject null hypothesis since more hazards and disturbances significantly correlated with lower wildlife abundance overall
- All visitor activities did not have a significant relationship with wildlife presence
- Few surveys were taken during outreach events so not all observations were recorded
- Most data (81%) is from surveys taken between August and November 2023 → will work on expanding temporal scale
- When there are more disruptions to the natural landscape or ecosystem, animals will be more hesitant to return to the unstable environment.

Conclusion

- As a result, consistent disturbances to areas like the berm at Aliso Creek disrupt the natural flow of the critical habitat, resulting in animals fleeing the area.
- Consider addressing different measurements of wildlife quality i.e. fish, invertebrate, and water data if possible
- Plan to present data to city council and continue education and outreach to raise awareness about the importance of protecting estuarine ecosystems

Figure 10: Outreach Setup

Acknowledgements

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