Tidal Nonsense

Effects of Tidal Conditions on Egret Foraging Behavior in Arcata Marsh

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Introduction

- Egrets regulate wetland ecosystems by regulating populations of fish and invertebrates, but the impact of tide levels on their foraging success is poorly understood.
- Tide levels affect egret populations, and environmental conditions influence their foraging behavior (Strong et al. 1997, Maccrone and Brzorad 2002).
- **Objective:** to determine if high tides pose unfavorable foraging conditions for egrets and if their foraging behavior differs between high and low tide

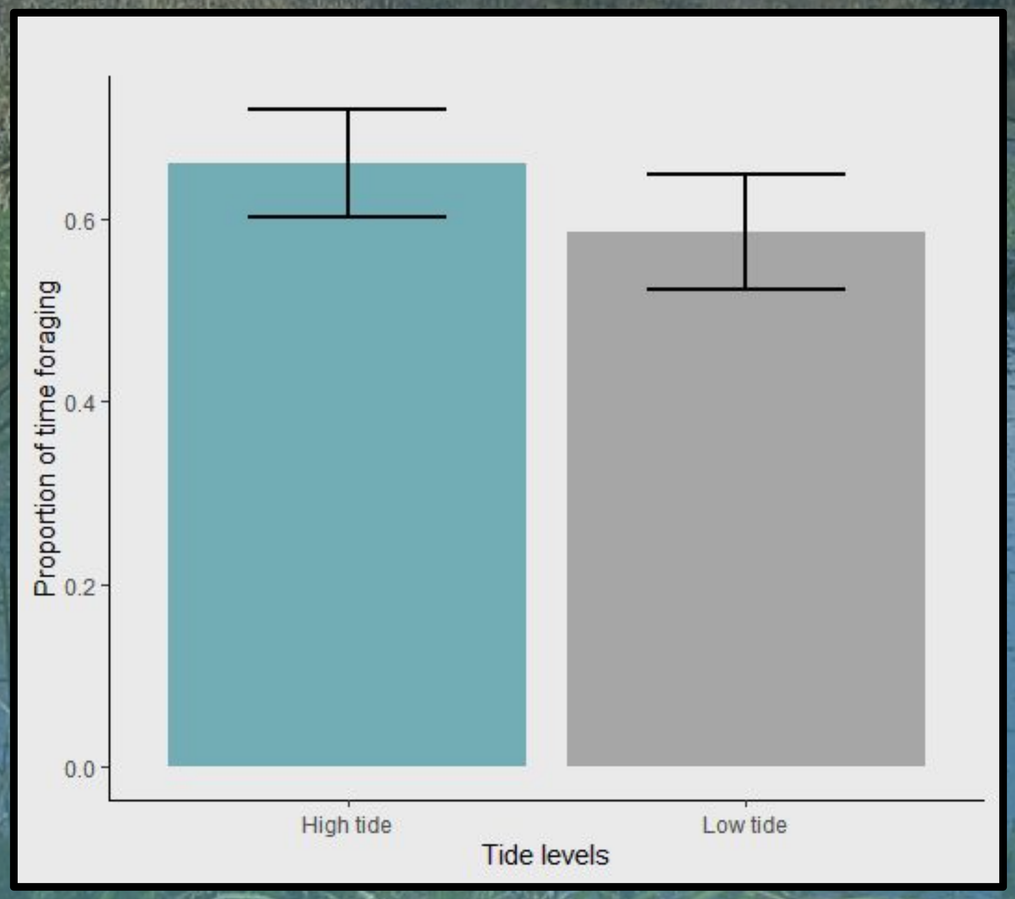
Hypothesis

- If high tides pose unfavorable foraging conditions for egrets, such as by reducing the visibility of prey, then we **expect** to observe greater foraging behaviors like strike rates during low tide

Methods

- **Sample size:** *6 ponds* labeled:1 - Brackish Pond, 2 - Gearheart Marsh, 3 - Hauser Marsh, 4 - Allen Marsh, 5 - Restored Salt Marsh, and 6 - Log Pond.
- **Variables:** tide levels, temperature, precipitation, strike rates, time spent foraging.
- **Observations:** 10-minute focal observations to minimize observer bias or interference with the bird's natural behavior.
- **Analysis:** T-test and Logistic regression in R statistical software

Outcome variables: Strike rate
Predictor variable: Temperature, Overcast, Waterfowl presence, Tide



Results

- tide did not impact egret foraging behavior
- (T= 1.730, DF 95%, P= 0.086).

- Logistic regression analysis compared AIC values, mod2 was lower at 129.09 than mod1 at 130.91

- my top-performing model showed inverse relationship between weather and egret foraging success, with Beta coefficient of -1.10 and a significant p-value of 0.03.

Discussion

- Contradicts previous studies (Lantz et al. 2010) Low tides were preferred
- Mean proportion of foraging time was similar for both groups.
- Weather extremes reduced egret activity at the AMWS: hail, snow, wind, rain (Youcefi et al. 2018)
- Future research could examine individual species and locations.

Literature cited

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Photo retrieved from: https://www.arcatamarshfriends.org/the-marsh/about-the-arcata-marsh-wildlife-sanctuary/

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