CALIFORNIA STATE SCIENCE FAIR
2017 PROJECT SUMMARY

Name(s)

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Project Number

S2302

Project Title

The Effects of Predation Risk on Interspecies Flight Initiation Distances

Abstract

Objectives/Goals

Birds in California salt marshes have become acclimatized to human presence and its effects remain unexamined. The objective of this study is to determine whether differences in the flight initiation distances, a measure of bird escape behavior, of salt marsh sparrows in response to human approach is correlated with predator frequency and predator species diversity.

Methods/Materials

The study observed song sparrows, white-crowned sparrows, and savannah sparrows in 3 southern California marshes: Tijuana Estuarine, Penasquitos Lagoon and San Elijo Lagoon. Flight initiation distance (FID) measurements for the 3 sparrow species were recorded using a laser range finder during 6 observation periods of 4 hours each and compared to both the average number of raptors per 30 minutes seen at each lagoon and the number of raptor species seen at each lagoon during each observation period.

Results

Penasquitos Lagoon had the most predator sightings and diversity, while no predators were observed at San Elijo Lagoon. No association was found between overall sparrow FID and predator frequency or species diversity, but a significant difference between the FID of savannah sparrow and song sparrow/white-crowned sparrow was observed. FID measurements were roughly the same for all 3 species at San Elijo Lagoon, where no predators were observed, but savannah sparrow FID were statistically greater than FID of the other sparrows at the other 2 lagoons with elevated predator presence.

Conclusions/Discussion

These findings suggest that predation unevenly affected sparrow species behavior depending on species, which may be the result of differences in local habitat preferences. Savannah sparrow reside in more exposed sections of salt marshes whereas song sparrows and white-crowned sparrows cohabit areas of denser vegetation further from the inundated marsh zones. Proximity to urban areas/humans may serve as defense mechanism against predation for these sparrow species. The correlation between sparrow response to human approach and predator frequency suggests that alterations of bird behavior to one species can alter bird behavior to other animal species/environmental conditions. Further research should be conducted on whether proximity to urban areas and/or humans is a viable defense mechanism for passerine bird species as well as other potential effects of acclimatization to human presence by birds.

Summary Statement

This study investigates wether differences in flight initiation distance (measure of bird escape behavior) of California's salt marsh sparrows to human presence is correlated with predator frequency and predator diversity in the Lagoons.

Help Received

None. I designed and performed all the experiments and field visits myself.