

PAPER CRITIQUE #1: FORAGING BEHAVIOR OF *CHAETODIPUS* POCKET MICE IN RESPONSE TO PREDATION RISK

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Research question: In terms of perceived risk from aerial predators, how do rattlesnake odors and moonlight intensity affect the foraging behavior of *Chaetodipus* pocket mice in the portion of the Mojave Desert that occupies southern California?

Methods summary: In order to determine the relative abundance of rodents and the locations of pocket mice, live-trapping was carried out using four pairs of 50 m transects that were separated by a distance of 20 m. Each transect consisted of five trap stations with two Sherman traps at each station. The traps were baited at sunset using a sterilized seed mix and they were checked before sunrise the following morning. The author then analyzed the foraging behavior of pocket mice using circular seed trays that contained 4.00 g of millet mixed with 2 L of sand. In order to examine how moonlight and microhabitat influenced foraging behavior, giving-up densities (GUDs) of seeds were compared. The author also examined the effects of rattlesnake odors on the foraging behavior of pocket mice using paired seed trays that contained clean sand and snake-scented sand and placed both trays either in shrub or open microhabitats. Trays were left out for two nights during full and new-moon phases.

Summary of the results: It was found that the phase of the moon did not have a significant effect on the number of pocket mice that were captured in either shrub or open microhabitats. GUDs of pocket mice were not significantly different in either microhabitat during full-moon nights when snakes were presumably active, indicating that foraging patterns of mice were similar in both microhabitats.

GUDs were significantly higher in seed trays that were placed in the open during new-moon nights lending support to the idea that mice preferred to seek shelter in shrubs. On full-moon nights when rattlesnakes were active, seed trays placed beneath shrubs that contained snake-scented sand had higher GUDs than shrub trays that contained clean sand. This suggests that on full-moon nights, pocket mice stayed away from shrubs if they detected rattlesnake odors beneath those shrubs.

Critique: One thing the author did really well in this scientific article was that she examined an index of risk from predators that focused on olfaction and the author did not get distracted by trying to incorporate other cues that could also influence animal behavior due to predation risk. This added to the strength of her research in that it allowed her to focus on how rattlesnake odors and moonlight intensity influenced the foraging behavior of pocket mice without diluting her research by trying to incorporate a multitude of ways that foraging behavior could be altered due to predation risk. Due to the emphasis that was placed on olfactory cues, the author successfully presented readers with a detailed background on olfaction and how it related to her research and this introduction helped establish a solid foundation for the rest of her article. Although the researcher examined the effects that rattlesnake odors, moonlight, and microhabitat had on foraging behavior, many important results were found and if she had expanded her research topic, she would not have been able to explain the significance of her results in the concise manner that she did.

One thing the author could improve upon in terms of the layout of her study is that she stated that the purpose of her research was to find out how an index of risk from aerial predators influenced the foraging behavior of pocket mice, but she did not stress the importance of aerial predators in this relationship. Most of the study focused on how the presence or absence of snakes (i.e., snake-scented sand or clean sand) directly altered the foraging behavior of pocket mice. After examining the effects of rattlesnake odors on foraging behavior, the author related the results to the predation risk posed by owls. Since snake-scented sand was used to simulate the presence of rattlesnakes, the author illustrated how olfactory cues could aid granivorous rodents in detecting terrestrial predators and then she linked these results with owls in that she described the indirect influence that aerial predators had on the foraging behavior of pocket mice. However, I feel that the author should have placed a greater emphasis on aerial predators and how they altered the foraging behavior of pocket mice in order to fully address the topic of this study.