Observing the Effect of Lunar Light on Nocturnal Rodents in a Mixed-Grass Plains Region

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ABSTRACT

The overall predation risk, foraging techniques, and habitat preferences of nocturnal rodents can be altered by the brightness of a particular moon phase and the particular temporal niche of the organism.

There is little recent literature to support the notion that moonlight directly affects the nocturnal activities of rodents.

We will be the first to use camera trapping as a mode of data collection for nocturnal rodent activity in a mixed-grass plains region. Capturing evidence of nocturnal strategies such as predator avoidance, foraging, and habitat preferences will be a key component of the project.

activities of rodents.

OBJECTIVES

1. Measure the variation in lunar emissions in month-long intervals.
2. Observe the consequential changes in nocturnal rodent behavior over month-long intervals using camera traps.
3. Contribute to two prominent databases:

Snapshot USA

Snapshot USA is a collaborative project across the US and parts of Europe to compose a database of mammals in their natural habitats by way of camera traps.

UCO Natural History Museum

Dr. Michelle Haynie's working database for the Selman Living Lab property and the UCO Natural History Museum.

MATERIALS

Cameras:

Rodent activity will be recorded via motion-activated RECONYX camera traps that will capture a series of 5 pictures when triggered.

Each camera trap will record the percent lunar emission. Each camera trap will be deployed and baited with peanut butter oats monthly to capture 6 months of lunar cycles and rodent behavior. We will also record any daytime activity.

Bait:

- No bait for September-October.
- Baiting with powdered peanut butter and dry oats November-February.

METHODS

Snapshot USA Guidelines:

- No bait to attract mammals to the cameras.
- Cameras should be no less than 50cm off the ground.
- All cameras must be at least 200m apart.

UCO Natural History Museum guidelines:

- Bait all cameras with peanut butter oats.
- Set no more than 50cm off of the ground and angled at the ground
- No limit to distance between cameras.

Moon Phase Definitions:

(~3 days per phase)

Moon phase	Percent Lunar Emission
New Moon	0%
Waxing/Waning Crescent	5% - 45%
First/Third Quarter	50%
Waxing/Waning Gibbous	55% - 95%
Full Moon	100%

DATA ANALYSIS

We plan to measure the fitness of the data to our predicted model, assuming equal activity for the different moon phases.

We will most likely use a goodness of fit test to analyze the data, but that is contingent on the nature of the data we collect over the coming months.

EXPECTATIONS

We have yet to come to any conclusions as we have only collected one month of camera trapping data.

We expect that if there is an increase in the percent emission of lunar light, then there will be a decrease in the nocturnal activities of rodents.

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