Slime and Climate: How Weather Shapes Snail Activity

Introduction

-Snails play a critical role in the ecosystem, they are decomposers, nutrient cyclers, and prey for various animals. Brown garden snails, in particular, are widely distributed and interact with many environmental factors

-Weather is one of the primary drivers of snail behavior, influencing their movement, and feeding habits

-Factors such as temperature, humidity, and precipitation significantly affect their survival and interactions with their environment

-The aim of this study is to explore the relationship between weather conditions and snail activity

- Understanding how weather impacts snails can reveal adaptive behaviors that help them cope with environmental changes.

-By identifying specific weather conditions that influence snail activity, we can better predict their behavior and role in the ecosystem.

Literature review

Dahirel, M., Ansart, A., & Madec, L. (2014). Stage- and weather-dependent dispersal in the brown garden snail Cornu aspersum. Population Ecology, 56(2), 227–237.

-This text provides valuable information on how weather influences snail behavior and dispersal of brown garden snails

-The researchers concluded that snail dispersal is significantly affected by weather conditions such as humidity and temperature. These factors regulate their activity and movement, particularly their ability to navigate and colonize new habitats.

Bezemer, T. M., & Knight, K. J. (2001). Unpredictable responses of garden snail (Helix aspersa) populations to climate change. Acta Oecologica, 22(4), 201-208.

-This study examines how changes in temperature, precipitation patterns, and other climatic variables influence garden snail populations.

-they found that snail populations exhibit unpredictable responses to climate variability. Factors such as prolonged drought or sudden temperature shifts can lead to significant changes in population size and behavior.

Purpose, Research question and hypothesis

Purpose: Study how environmental factors such as weather conditions influence snails activity.

Question: How do temperature, humidity, and precipitation influence the activity patterns of brown garden snails?

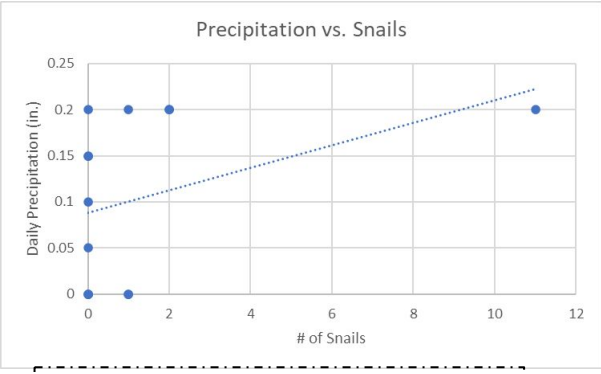
Hypothesis: Snails will exhibit higher activity levels during moderate temperatures, high humidity, and after precipitation, as these conditions provide an optimal environment for movement.

methods

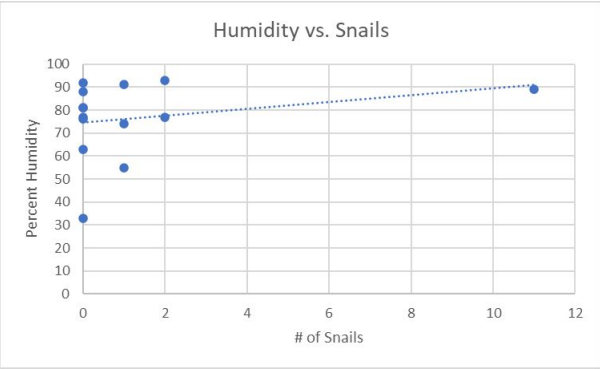
field surveys: Data collectors would revisit the same location throughout the collection period (10/22- 12/01). For 5 minutes the collector would actively search the area (open concrete, grass, dirt, vegetation) and would keep count of how many garden snails were present. The collector would scan for the presence of predators (can you see birds, can you hear them chirping?)

data collection: Temperature, humidity (%), precipitation (inches per day), time of day, sky conditions and presence of predators (y/n) was recorded. All weather aspects were recorded using the Apple iphones weather app. Snail count, predator presence and sky coverage were all completed with personal observations.

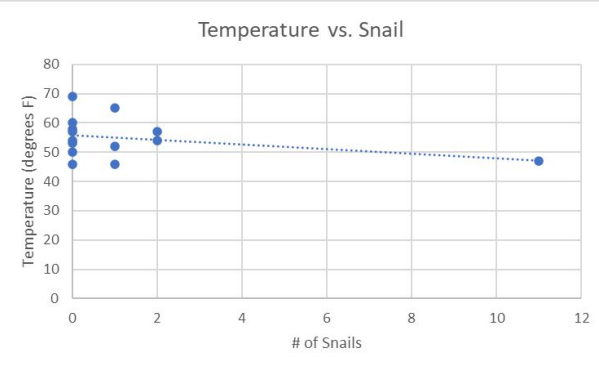
Results and Discussion



More snails present when the precipitation was high

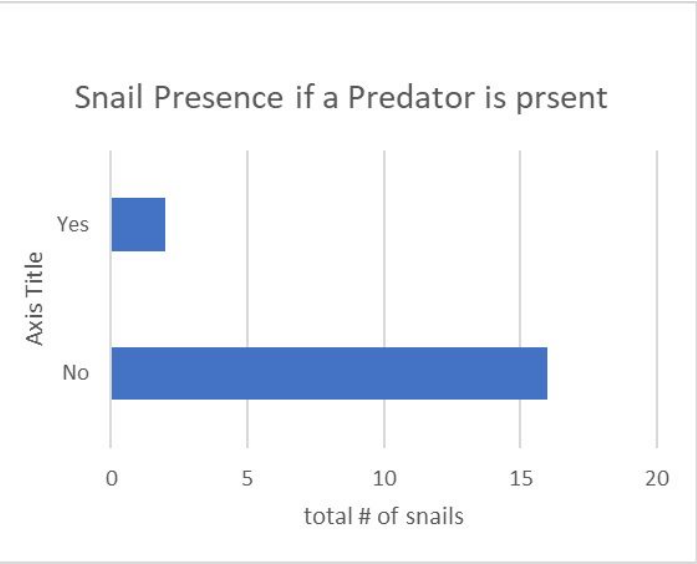


More snails present at a humidity average of 76

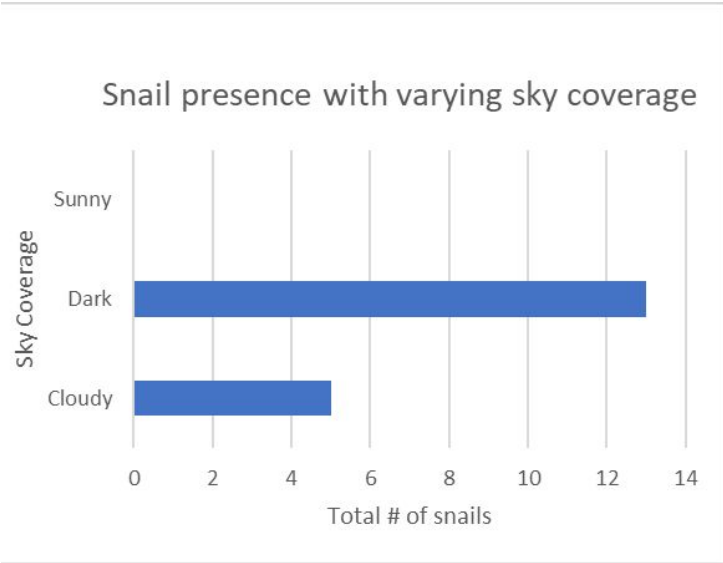


More snails present when the temperature was an average of 54 degrees fahrenheit

Results and Discussion



In most cases, snails were not present at the same time as predators.



Most snails present when it was dark, a moderate amount when it was cloudy, and none were observed during sunny periods.

References

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Conclusion

Our study demonstrated that weather conditions significantly influence the activity pattern of brown garden snails. Specifically:

Temperature: Snails were most active at an average temperature of 54 degrees F, indicating a preference for moderate temperatures

Humidity: Activity increased at higher humidity levels, with more snails present at an average of 76%. This supports our hypothesis that moisture is vital for movement and survival

Precipitation: Snail activity was positively correlated with increased precipitation, suggesting a wet environment is critical for their survival

These results highlight the importance of weather in influencing snail behavior and their adaptation to environmental changes

In the study in one of our articles that we referenced to, they studied the movement of brown garden snails in 2 months of a dry year and 1 month in a wet year. Their study resulted that snails were more mobile under humid conditions but the snails left when humidity was close to 100%.

Team Roles

Madison Garrett	Data Collection, Data Analysis
Kimberly Habon	Data Collection, Data Analysis
Analisa Coppens	Data Collection, Presentation Development
Layla Dreyer	Data Collection, Presentation Development