

EVALUATING THE USE OF EMERGENCE TRAPS AND RADIO TELEMETRY TO TRACK BUMBLE BEES

LARIMER COUNTY

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Project Introduction

There is little research on bumble bee life history because it is difficult to find their overwintering and nesting sites. Sophia Gulutzo, a master's student in the Mola Lab, is testing the effectiveness of emergence traps and radio telemetry to find bumble bee overwintering and nesting sites. The long-term goal of the project is to gain insight into factors that determine where bumble bees overwinter and nest. Understanding more about bee overwintering and nesting will help wildlife managers and conservationists conserve land and habitat components that are beneficial to bumble bees.

My Role

Part 1: I studied the overwintering sites of insects using emergence traps. The original goal of the study was to learn more about the overwintering sites of bumble bees specifically. Since we only found one bumble bee during this part of the project, we focused on studying the order Hymenoptera (bees, wasps, and ants) and insect overwintering patterns in general.

Part 2: I helped Sophia radio-tag bumble bees to find potential bumble bee nesting sites. We netted worker bees, chilled/sedated them, and then glued tags onto their abdomens. Then, we used radio receivers to track the bees.

What We Learned

Radio telemetry is difficult with bees. Since the tags weigh 140 mg, bees must be large to support a tag. Additionally, bees are excellent at escaping from the tags. We found many tags in the grass that bees had managed to remove.

Radio telemetry is a useful method for tracking bees, but it still needs improvement. Smaller tags would allow smaller bees to be tagged. We used superglue to adhere the tags, but they didn't always attach well. Perhaps there is a more effective adhesive. Another challenge is choosing the correct research site. Buildings in urban areas block the transmission of radio waves. Meanwhile, flowers are more dispersed in wildlands, which makes the bees harder to find and catch.

Why it is Important

Bumble bees are important pollinators for both native plants and crops. There are 24 native bumble bee species in Colorado. Populations are in decline due to climate change, habitat loss, non-native species, pesticides, and other human-caused threats. Nesting and overwintering are two major components of a bee's lifecycle. Because nests are so elusive, it is difficult to study them. Gulutzo's research explores the effectiveness of emergence traps and radio telemetry for researching nests and overwintering sites.



Did You Know?

- Even though female bumble bees can sting more than once, they are not very aggressive and will usually only sting when attacked
- Male bumble bees don't sting
- Queens are much larger than worker bees
- Depending on the species, some bumble bees can travel up to 3 miles from their nest
- Worker bees are 75% related to each other

Internship Takeaways

I can now accurately identify the most common bumble bee species in Colorado and tell the difference between queens, workers, and males. I can set up and operate radio telemetry gear to track animals. Gulutzo's mentorship taught me what graduate school entails and how I would apply. The project taught me that research doesn't always work how you expect, but the data that you collect is still valuable.

