

## Introduction

1. Your TA will assign your group a topic to learn more about and present to the class. Record notes on your team's findings/discussion of your specifically assigned topic below. (1 pt)

**Assigned Topic:** Population Dynamics Model

**Notes:** Homing failure was introduced using it's estimated upper and lower bound into Khoury's et al. poplation model. The simulation used population sizes of 15,000 to 18,000, which are average values estimated by bee keepers. Foragers accounted for 25% of the total population. Natural death was 0.154 individuals per day. Other factors were kept the same.

Hypothesis was constant forager death rate with no forager exposure and forager death rate raised by post-exposure homing failure during a 30-days oilseed rape flowering period.

2. Insert a picture of your team's concept map of the introduction below. Use the words in the word bank below. Don't forget to include linking words between each connection! (1 pt)

3. What is the overarching hypothesis that the authors of this study want to test? (1 pt)

Sublethal exposure to a neonicotinoid (thiamethoxam) indirectly increases hive death rate through homing failure in foraging honey bees.

## Methods

4. What is the specific question the authors are attempting to answer with "Experiment 1?" (1 pt)

They were simulating the intoxication at a *familiar* foraging site.

5. What is the specific question the authors are attempting to answer with "Experiment 2?" (1 pt)

They were simulating the intoxication at a *random* foraging site, or one they have no familiarity or past forager experience with.

6. Insert a picture of your team's sketch of the methods used to produce Figure 3 below. (1 pt)

7. Insert a picture of your team's sketch of the methods that would be used to produce Figure 4 below. (1 pt)

### Figure 3 Analysis Questions

8. What is the "control" group and what is the "treated" group? (1 pt)

Treated honey bees are bees that received a nonlethal dose of thiamethoxam. The control group was treated with untreated sucrose solution.

9. What do you learn when you compare Panel A to Panel B? (1 pt)

Treated bees suffered in both familiar and unfamiliar sites, but thiamethoxam

10. Overall, what do you learn from Figure 3? (1 pt)

### Figure 4 Analysis Questions

11. What do the two sets of red and blue lines in each of the graphs in this figure represent? (1 pt)

12. What do the grey shaded areas represent? (1 pt)

13. What do you learn from comparing panels (A and D) to panels (B and E) to panels (C and F)? (hint: what condition is changed between these three sets of panels?) (1 pt)

14. What do you learn from comparing panels (A, B, and C) to panels (D, E, and F)? (hint: what condition is changed between these two sets of panels?) (1 pt)

15. Overall, what did you learn from Figure 4? (1 pt)

### Future Directions/Paper Evaluation

16. Within your team, discuss future experiments that would build off of this research. Individually, summarize an idea for one potential future research

