

Introduction

- The phylum nematomorpha, or hairworms are parasites of crickets and other arthropods. Larval hairworms infect terrestrial arthropods, but live freely as adults in aquatic environments (May 1919; Hanelt et. al. 2005).
- Hairworm larvae are approximately 60 micrometers. As parasitic juveniles in arthropods, they can grow from a few centimeters to more than two meters for some species in the tropics. This requires a lot of energy from the host and is reallocated to the developing worm.
- Few studies have examined the behavior of infected hosts other than the water seeking behavior (Biron et. at., 2005) and no studies have investigated the effect of hairworms on their dietary intake.
- *Paragordius varius* is a species of hairworm that has been cultured in the laboratory and develops within 30-40 days.
- The purpose of this study was to determine how much food crickets (*Acheta domesticus*) eat when infected with hairworms (*Paragordius varius*) compared to uninfected control crickets.



Question

- Do crickets infected with hairworms eat less than uninfected control crickets?
- Hypothesis: The feeding behavior of the infected crickets will decline as the hairworm grows inside them

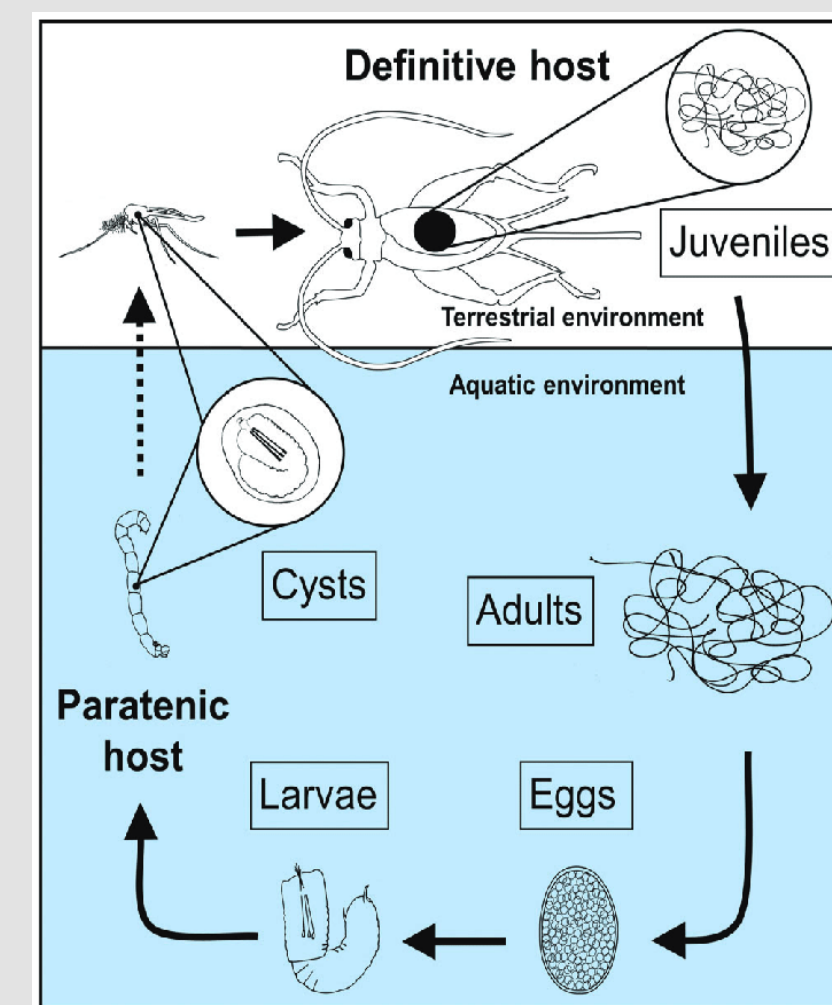


Figure 1: The general life cycle of hairworms



Methods

- To infect crickets, 50 aquatic snails (*Physa gyrina*) were each exposed to 250 hairworm larvae.
- After two weeks, infected snail tissue was macerated and fed to the crickets.
- Upon starving the *Acheta domesticus* for 48 hours the crickets were fed the infected *P. gyrina*.
- 42 female crickets and 47 male crickets consumed infected snail tissue. There were 55 female and 55 male control crickets
- Crickets were housed individually in 236 mL polystyrene containers with food which was removed every 5 days and replaced with a fresh dish of food.
- The crickets' food was ground Puppy Chow® and was weighed before and after it was placed in the cricket housing.

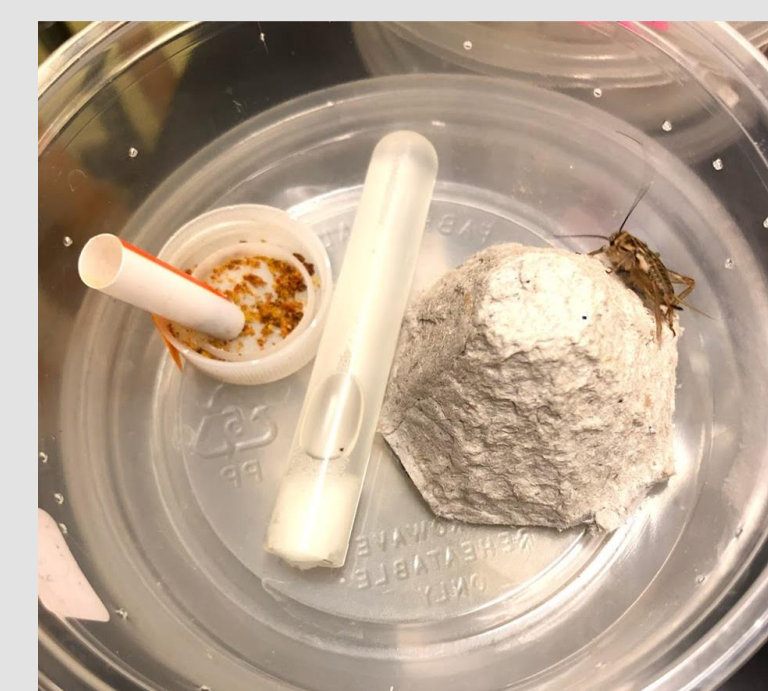


Figure 2: The housing for each cricket was a polystyrene container with an egg carton hideout, a water tube and a food dish.

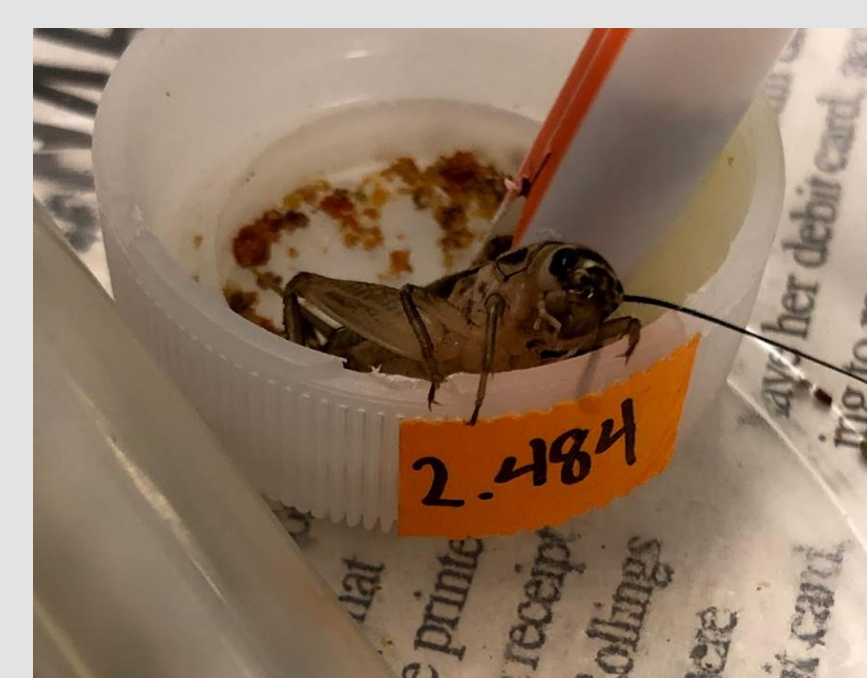


Figure 3: A cricket sitting in its food dish.

Results

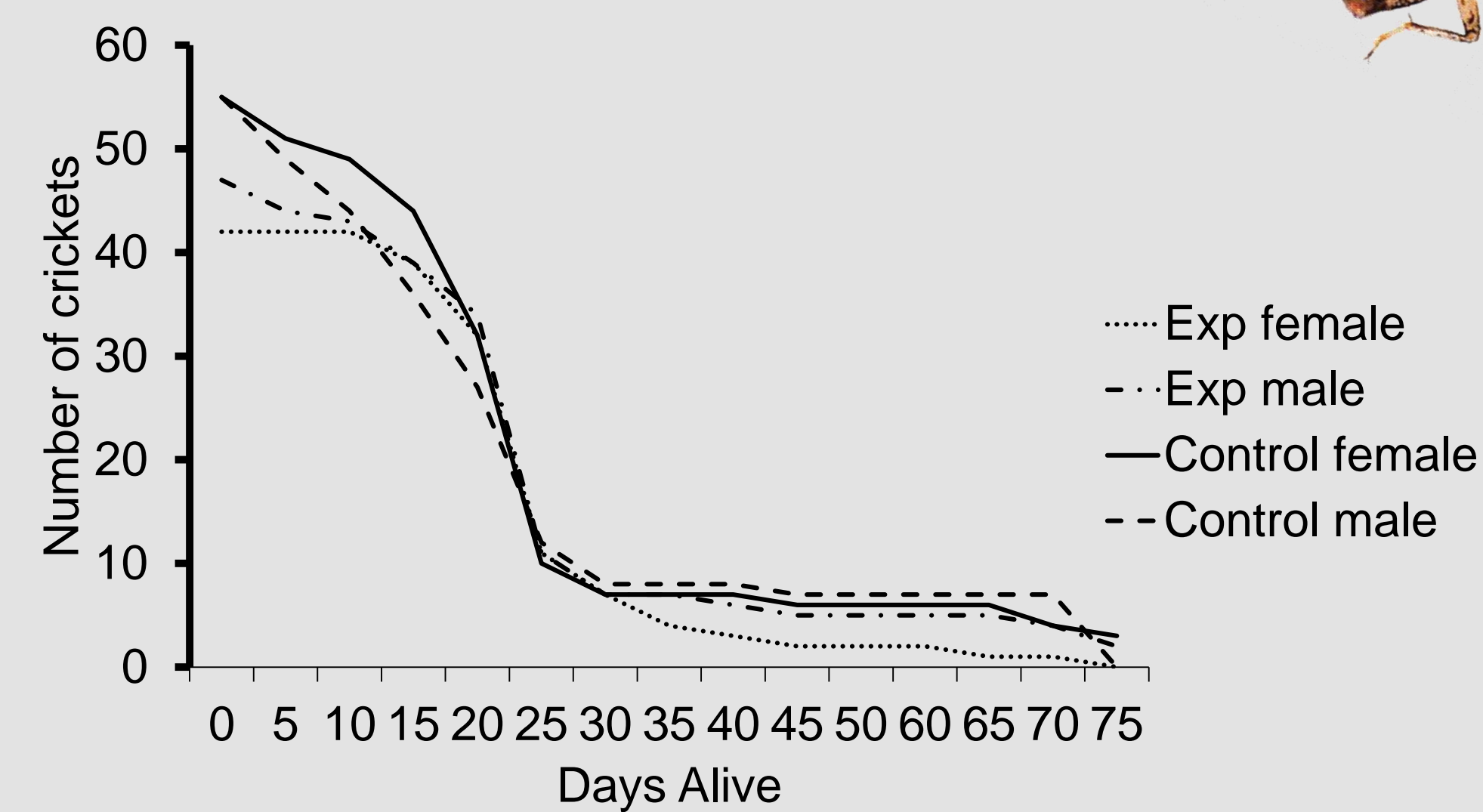


Figure 4: The survivorship of experimental and control groups.

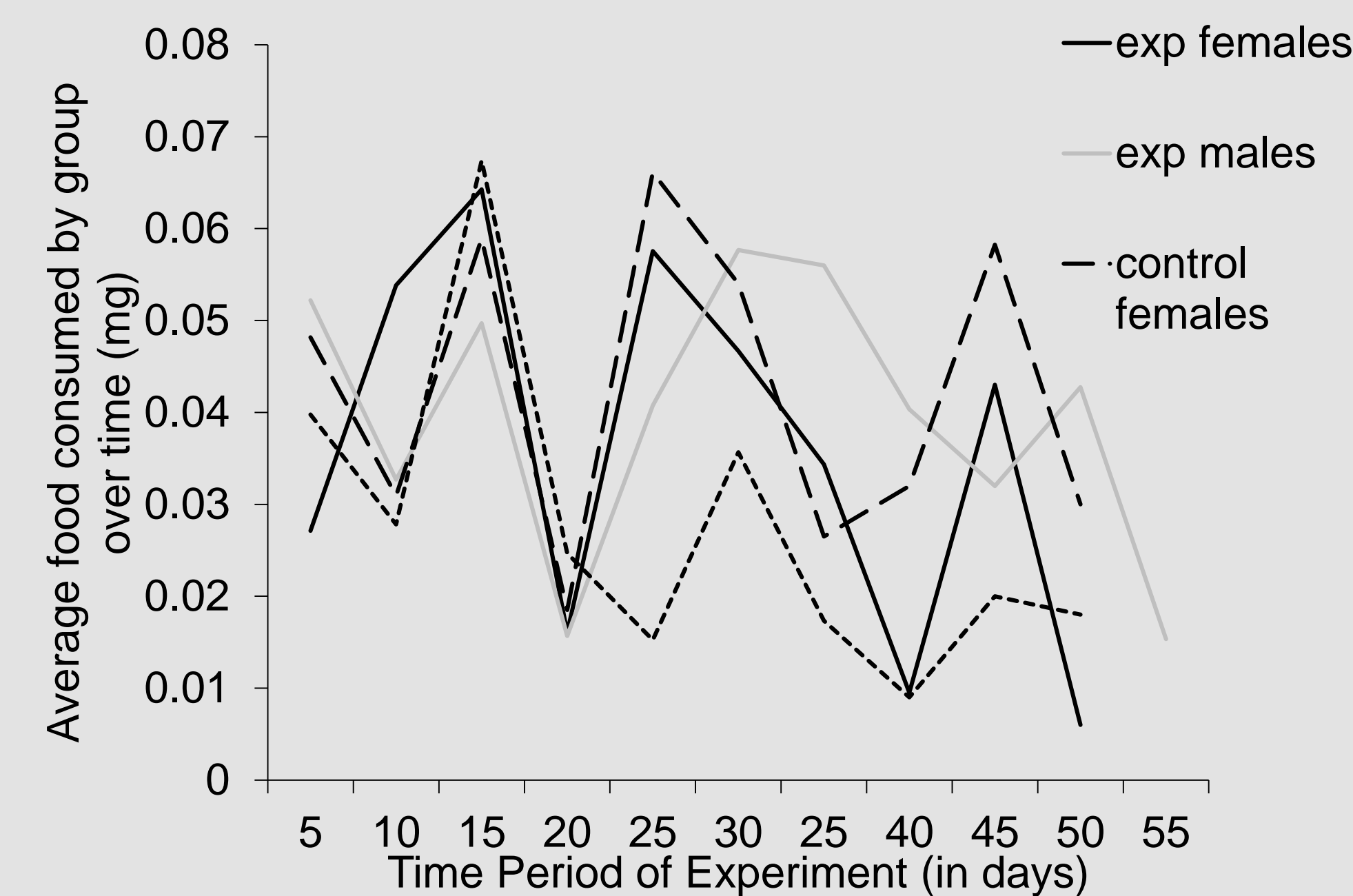


Figure 5: Average amount of food consumed by all groups over time.

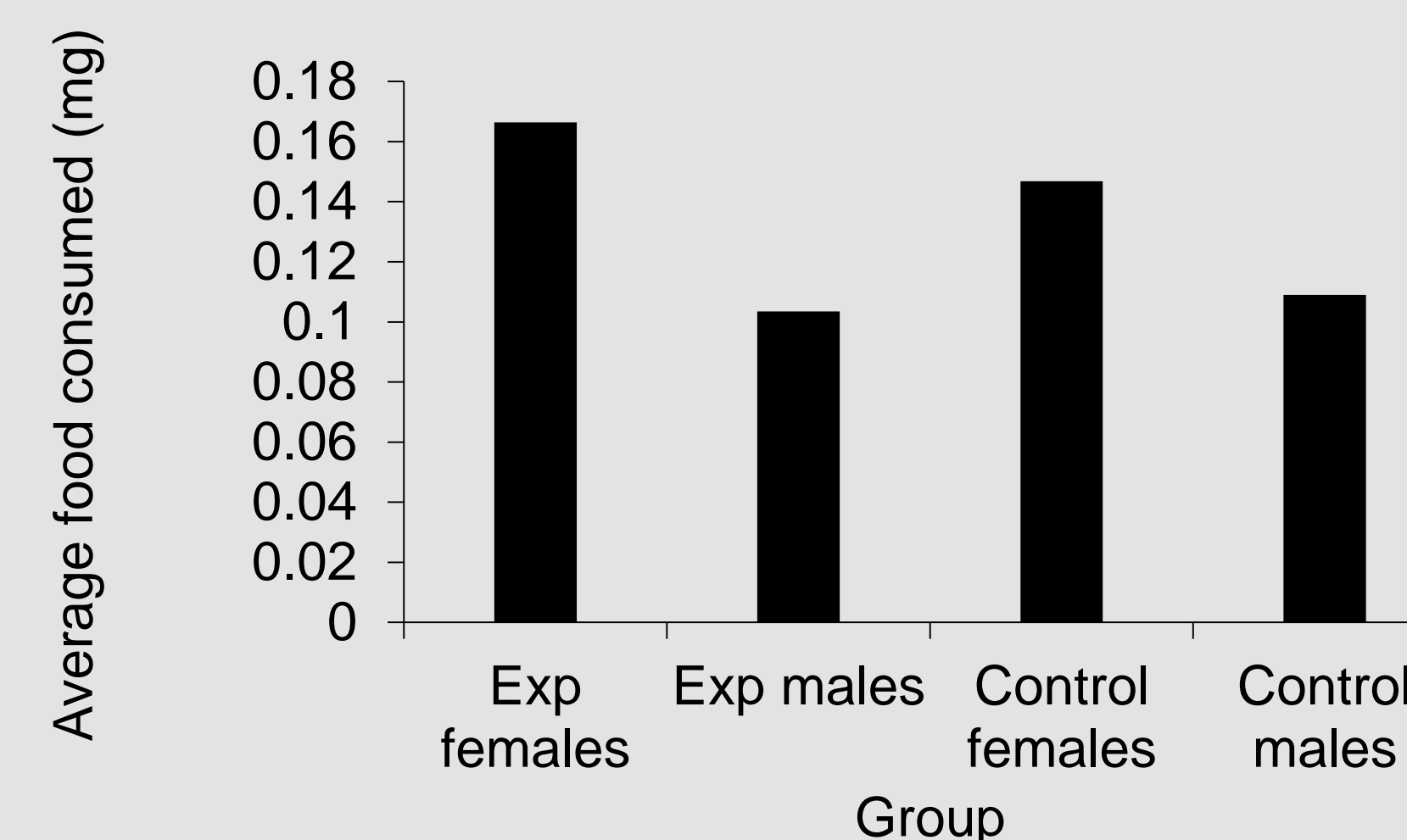


Figure 6: Average amount of food in mg consumed by each group.

Conclusion

- We had unexpected deaths during week two that continued through week seven. This may be due to a virus the crickets contracted or from pesticides sprayed around campus.
- On average, all crickets consumed food in the same pattern during the beginning of the experiment (Fig. 5). This suggests they ate similarly and were not affected by infection.
- By day 20, 50-70% of crickets had died. However, crickets were now 50 days old and transforming to adults. It has been demonstrated that crickets eat less when they molt to adults. After approx. 30 days, data was based on 4 males with one infected male. This may have caused the average food consumption to decrease for experimental males because as worms get larger, crickets eat less.
- When comparing the amount of food consumed between the groups, the female groups both consumed more food than there male counterparts

Acknowledgements

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Literature Cited

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