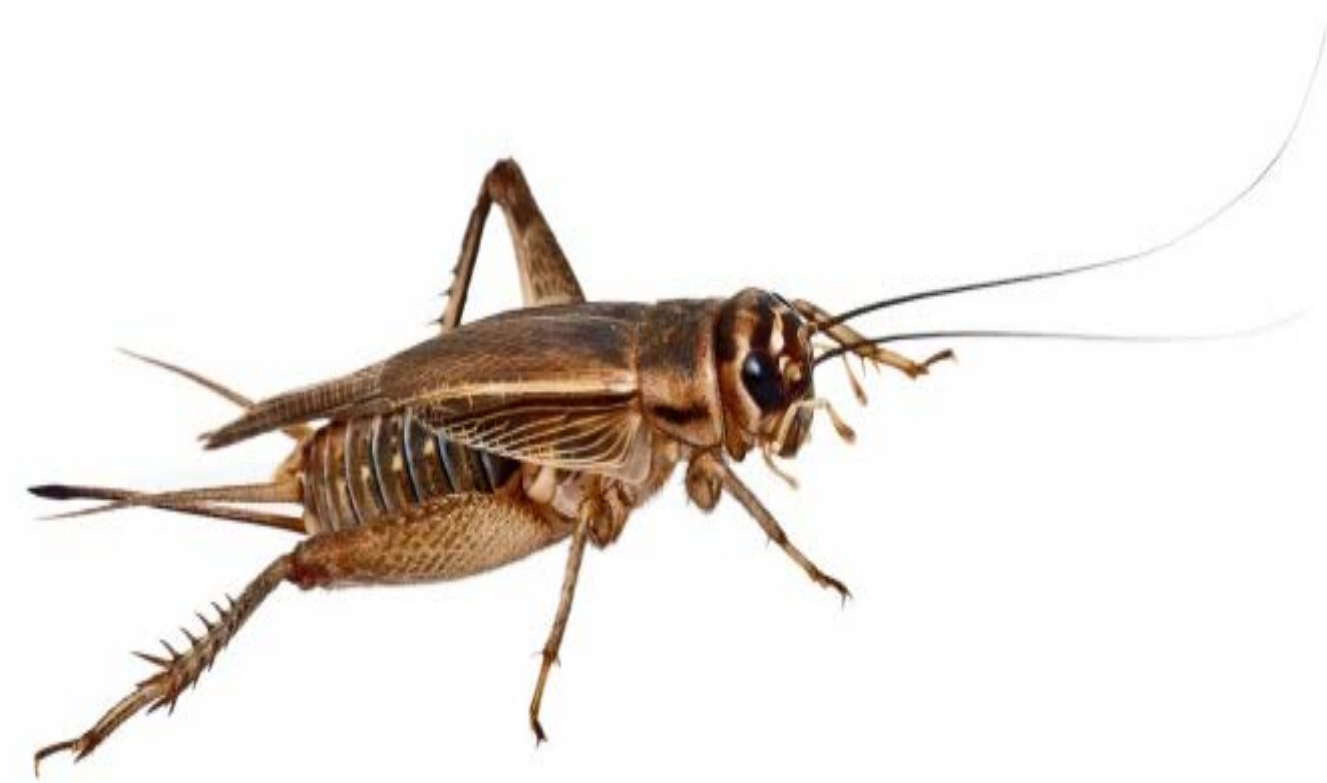


# The Effects of Heat on Metabolism in Crickets

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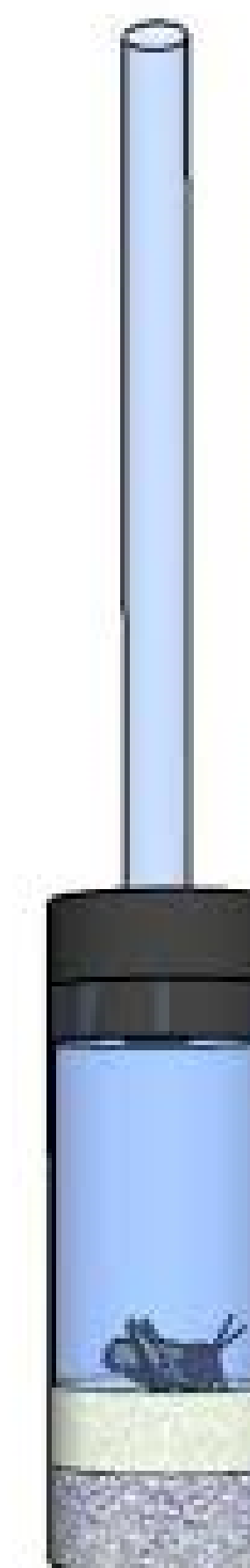
## Introduction

Crickets are cold blooded, which means they adapt to the temperature of their environments. The effect temperature has on the metabolic rate is a simple concept to understand. As the metabolic rate decreases, the metabolic rate decreases resulting in inactivity. An increase of temperature results in an increase of a cricket's metabolic rate, which is an increase in oxygen intake.



## Set up

- Four respirators, two with crickets, two with rocks ( the control)
  - A heat lamp
  - A vial or tube
  - Potassium hydroxide
  - Dye
  - Filter to separate the cricket from the KOH
- We measured the rate of oxygen consumed in a 30 minute period and took down data every 5 minutes.



## Experiment

- Under the heat lamp, we had one cricket and one control.
- In the non-heated area we had one cricket and one control.
- Every 5 minutes, we would record how much the dye moved in the respirometer.

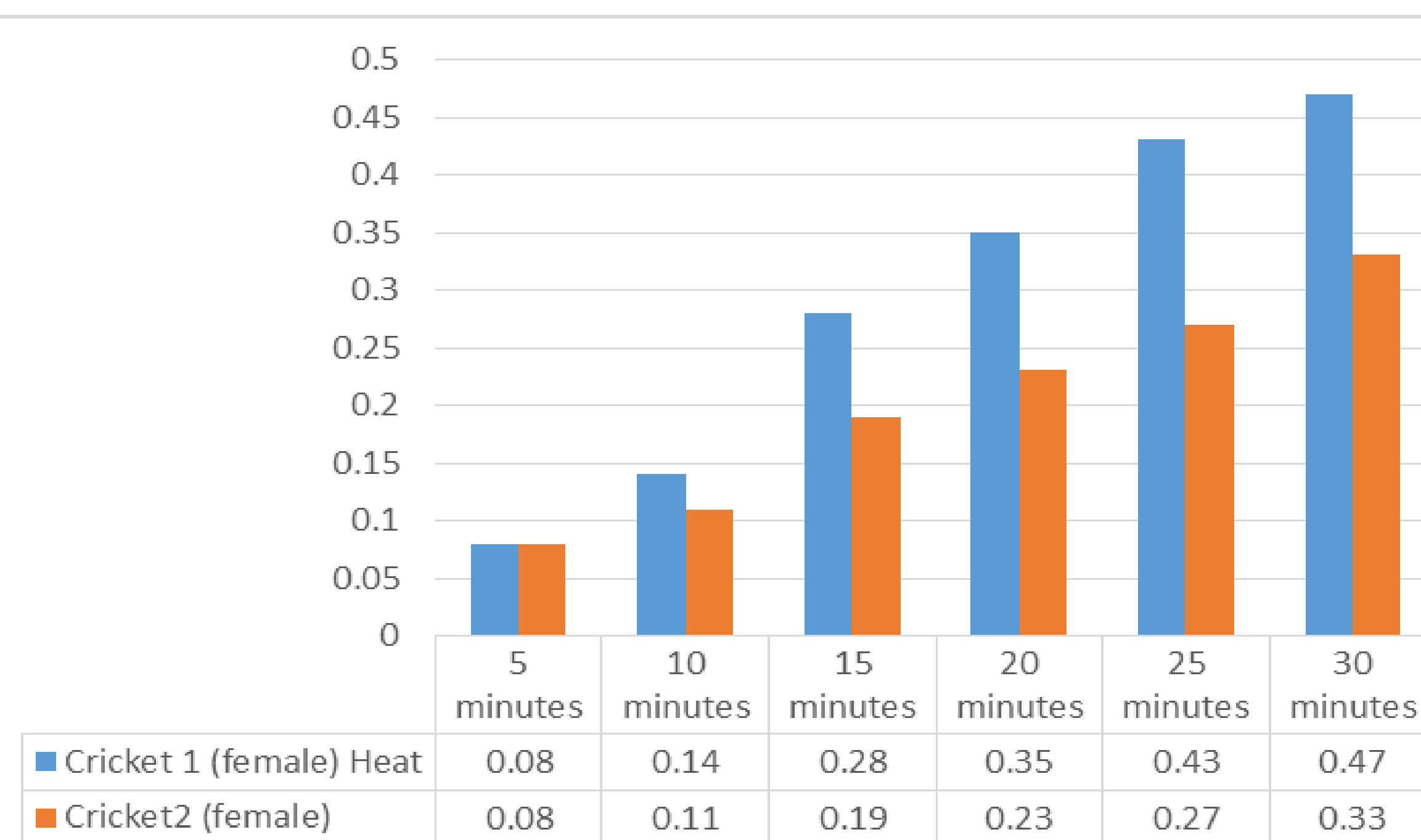


Figure one

“Much of the recent discussion concerning the form and underlying mechanistic basis of metabolic rate–temperature and development rate–temperature relationships has been precipitated by the development of the metabolic theory of ecology (MTE).”

## Results

We found that crickets do use more oxygen when placed under a heating source because it speeds up their metabolism. However, due to excessively high temperatures, this sometimes resulted in a decrease of activity.

“At extreme high and low temperatures performance may become inhibited, and sustained exposure to these conditions can result in damage and injury that may eventually lead to death (reviewed in Chown and Nicolson, 2004 and Angilletta, 2009). “

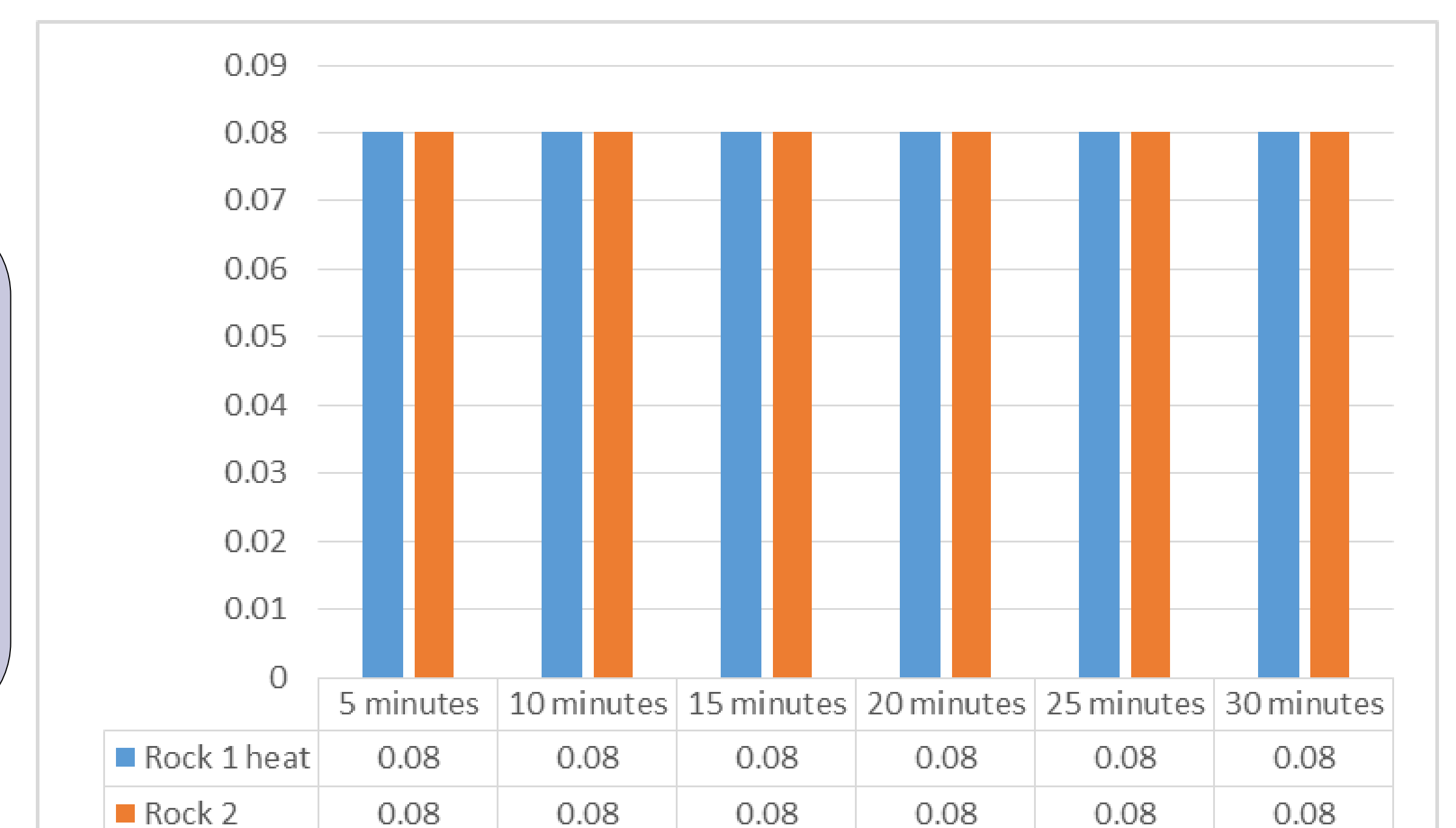


Figure two

## References

- "Insect Rate-Temperature Relationships: Environmental Variation and the Metabolic Theory of Ecology." Jstor.org. N.p., 27 Oct. 2009. Web. 13 Apr. 2016. (figure one)
- Lachenicht, M.W., S. Clusella-Trillas, L. Boardman, C. Le Roux, and J.S. Terblanche. "Effects of Acclimation Temperature on Thermal Tolerance, Locomotion Performance and Respiratory Metabolism in Acheta Domesticus L. (Orthoptera: Gryllidae)." Effects of Acclimation Temperature on Thermal Tolerance, Locomotion Performance and Respiratory Metabolism in Acheta Domesticus L. (Orthoptera: Gryllidae). N.p., n.d. Web. 13 Apr. 2016. (under results)