

Don't Use That Tone With Me!

Will Dobb, Jeffrey Hunter, Eric Van Baak, Karen Dewey

Reed College Bio342



<http://www.nyworms.com/images/groupcrickets.jpg>

Many insects can recognize and respond to signals at different frequencies, but do they like some frequencies better than others?

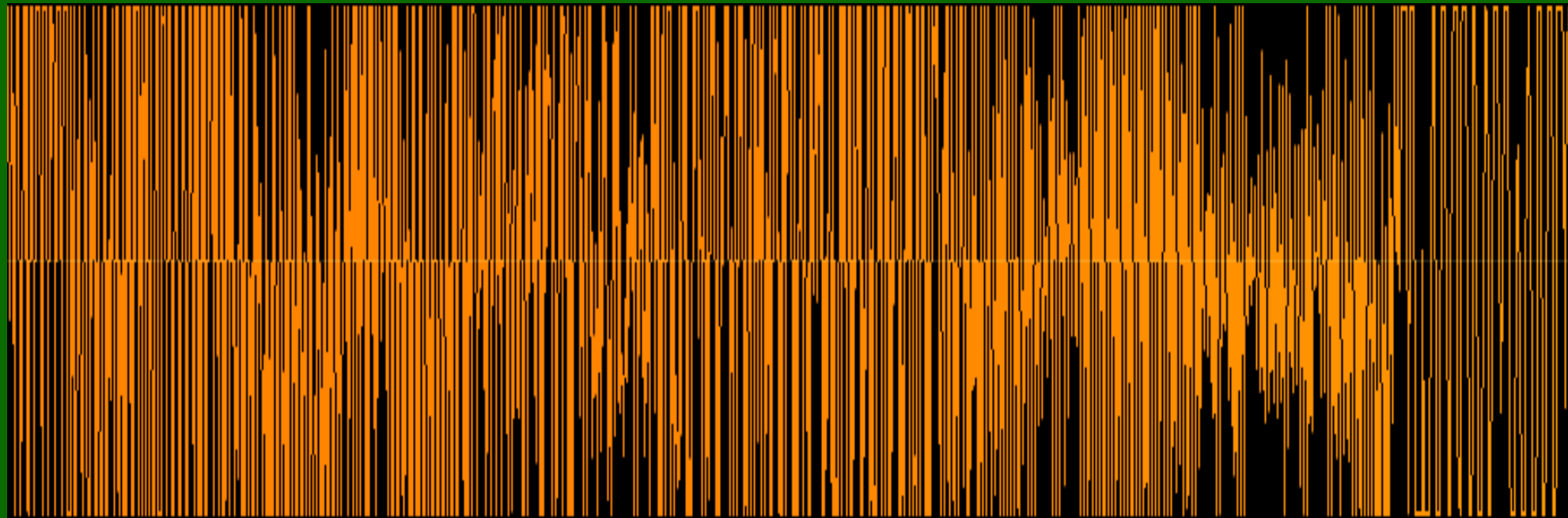
We investigated frequency preference of house crickets (*Acheta domesticus*).

- House cricket populations are spread across the eastern United States
- These crickets have an average lifespan of 2-3 months
 - they spend most of this time molting and eventually mating
- Males rub their wings together to produce a high-pitched chirping noise
 - this piercing sound serves to lure females and keep us up late at night.

Experimental Design:

- 11 female crickets were subjected to frequencies at 3 kHz, 5 kHz and 7 kHz
- Each cricket was placed in a 24 x 45 x 20 cm plastic tank with a speaker on either end
 - each speaker produced a different frequency.
- We marked the tank area by separating the tank into quadrants
 - two central 'neutral' zones and two far zones
- Observations were conducted with a stopwatch over a five-minute period.

Hypothesis: Female crickets will display a consistent preference for lower frequency tones, which is indicative of larger males.



http://www.freesound.org/data/displays/28/28019_205108_wave_L.png



Results:



<http://challenge-services.co.uk/images/CPC%20-%20image008.jpg>

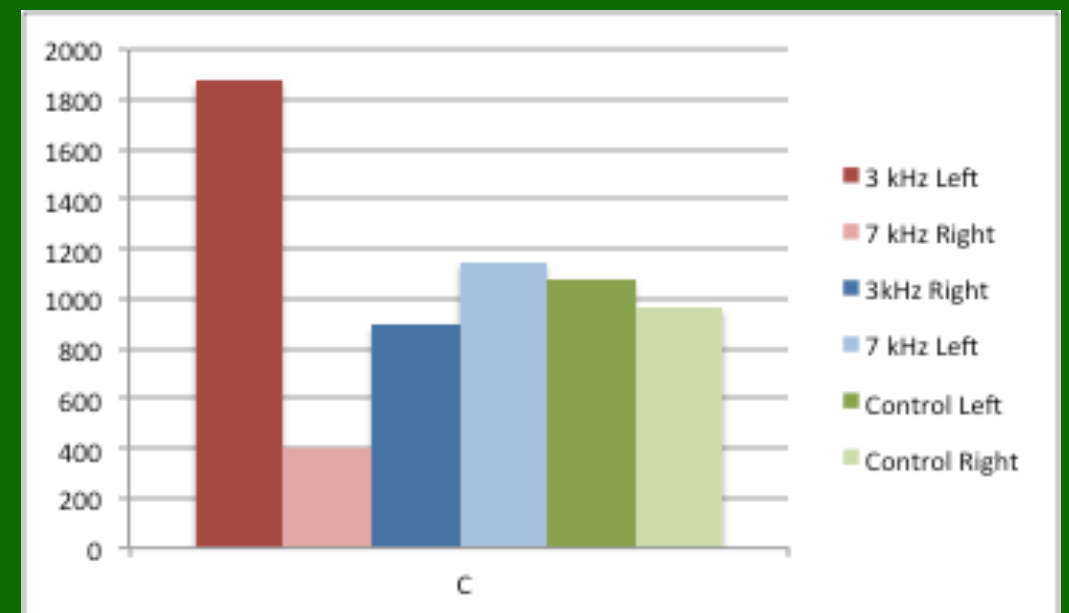
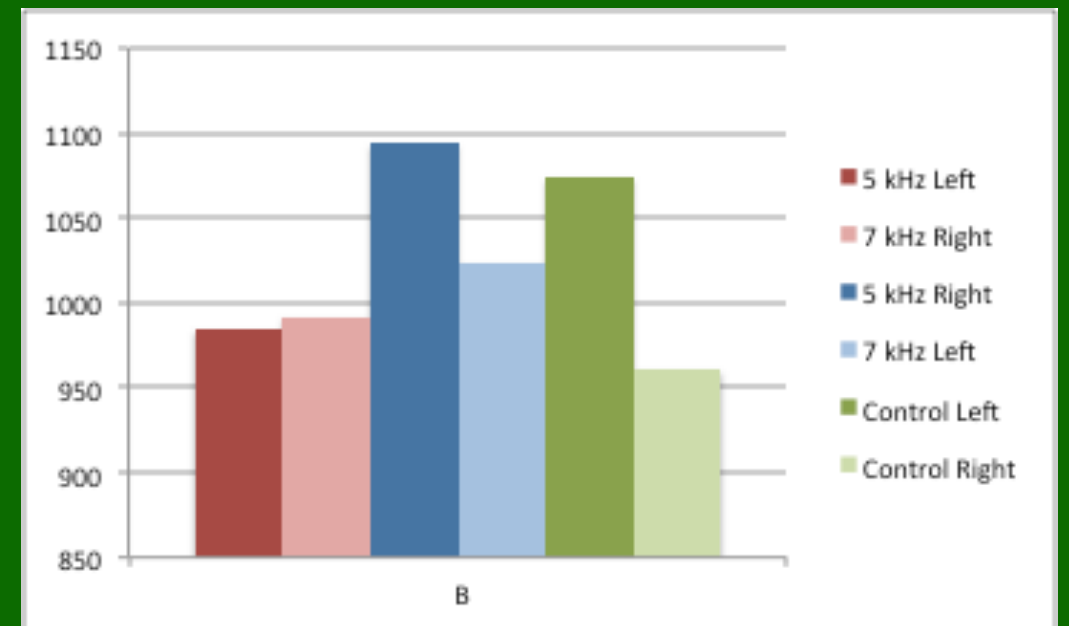
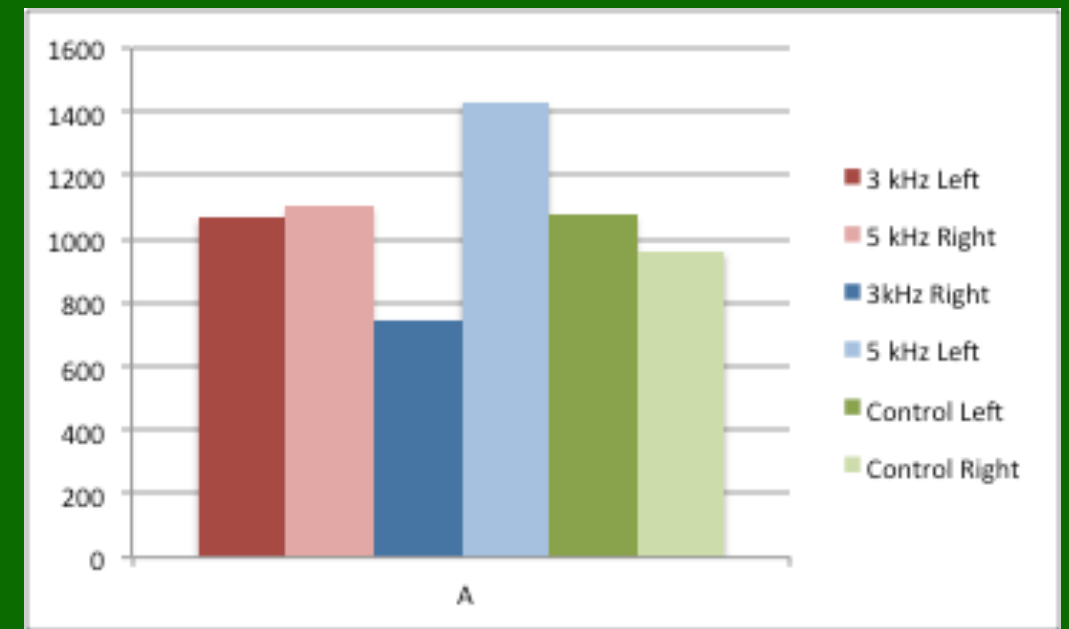


Figure 1: Total time spent on the left and right quadrants in the three sets of trials, accompanied by time spent in the control experiment. A shows the trial comparing 3 kHz to 5 kHz, B shows the trial comparing 5 kHz to 7 kHz, and C shows the trial comparing 3 kHz to 7 kHz.

We Conclude that:

We found no significant difference in the amount of time spent on high or low frequency sides of the tank.

Future Directions:

Future experiments could test sexually mature female crickets, expand the frequency ranges used, or even play different types of cricket chirps. Different shapes of experimental enclosures may affect how sound travels, and visual effects could be minimized by placing the tank in a stimuli-free room.



<http://www.myeverygreenonline.com/assets/Image/Product/detailsbig/842155.jpg>

References:

<http://entnemdept.ufl.edu/creatures/misc/crickets/adomest.html>

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Cited figures

Acknowledgements:

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