**Linear Regression with Biological Data
(or the realities of working with real-life data)**

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| **Data:** The following data shows the relationship between chirps per second of a **striped ground cricket** and the corresponding ground temperature.**NOTE:** There seems to be some confusion relating to the "units" used in Pierce's data. According to the text, *The Song of Insects* by George W. Pierce, 1948, page 20, the information and unit labeling, as stated at this site, correctly reflects his findings.  |



Pierce (1948) mechanically measured the frequency (the number of wing vibrations per second) of chirps (or pulses of sound) made by a striped ground cricket, at various ground temperatures. Since crickets are ectotherms (cold-blooded), the rate of their physiological processes and their overall metabolism are influenced by temperature. Consequently, there is reason to believe that temperature would have a profound effect on aspects of their behavior, such as chirp frequency.
In general, it was found that crickets did not sing at temperatures colder than 60º F. or warmer than 100º F.

|  |  |
| --- | --- |
| Chirps/Second | Temperature (º F) |
| **20.0** | **88.6** |
| **16.0** | **71.6** |
| **19.8** | **93.3** |
| **18.4** | **84.3** |
| **17.1** | **80.6** |
| **15.5** | **75.2** |
| **14.7** | **69.7** |
| **15.7** | **71.6** |
| **15.4** | **69.4** |
| **16.3** | **83.3** |
| **15.0** | **79.6** |
| **17.2** | **82.6** |
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| **17.0** | **83.5** |
| **14.4** | **76.3** |

Assignment:

1. Plot the data into a graph.
2. Analyze the data.
3. Follow the scientific methodologies to generate an investigation that could possible yield the results obtained by Pierce in 1948 (above). Hint: Think about his possible observations, drawings, hypothesis, experimental design, variables.
4. Why do you think crickets did not sing at temperatures colder than 60º F. or warmer than 100º F.

AP Biology Practice 5 - Analyze Data and Evaluate Evidence:

 <https://www.youtube.com/watch?v=0JqukouOtZA&feature=player_detailpage>

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