CALIFORNIA STATE SCIENCE FAIR
2016 PROJECT SUMMARY

Name(s)
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Project Number
J2209

Project Title
Changes in Arthropod Biodiversity: A Behavioral Study

Abstract

Objectives/Goals
The objective of this study was to find the variables that cause arthropod biodiversity in a sample field to change.

Methods/Materials
4 flags
1 barrel hoop (20 inch diameter)
2 separate notebooks, the first one having been destroyed in the rain.
Once an hour from sunrise to sunset for several days, samples were taken at each site (marked by flags). The number and type of arthropods in each sample was noted, as was the temperature and weather.

Results
There was a winter sample run and a spring sample run, with 4 days in each. Since I was looking at biodiversity, when making my charts I paid more attention to the number of arthropod species, rather than the number of arthropods, found. There were more arthropod species found nearer to the center of the field, and nearer to the peak of the day (when it was warmest), than other places and times.

Conclusions/Discussion
There appeared to be quite a strong association between the distance from the forest and the biodiversity. As for why there were more species at the peak of the day, there could be many hidden variables, such as the number of hours since dawn, or the intensity of the sun. It is hard to tell if there was a real correlation between temperature and biodiversity. Since it's not possible to use a control in this situation (one cannot replicate an entire field with temperature controls, etc), we can only extrapolate from the data.
As for how this furthers scientific knowledge, this study shows quite a lot about the behavior of many of these types of arthropods, for example, there are more arthropod species out and about when it tends to be warmest. One could attempt to better manage pest control, avoiding killing multiple species with a pesticide by using it later in the day. Further studies could be done, building on this one. The possibilities are limitless and, to be honest, this was fun to do.

Summary Statement
Both temperature and distance from the forest appear to affect the arthropod biodiversity in a field.

Help Received
I recieved no professional help with my research