



**CALIFORNIA STATE SCIENCE FAIR
2012 PROJECT SUMMARY**

Name(s) Eleanor M.H. Schley	Project Number J2215
Project Title The Living Soil: Investigation of Microarthropod Diversity beneath Tree Canopies	
Objectives/Goals This experiment investigated microarthropod diversity beneath the canopies of three trees native to the San Francisco Bay area: oak, redwood, and eucalyptus.	
Abstract Methods/Materials Two half-gallon samples of soil were collected near the base of each tree, halfway between the tree trunk and the drip line at the edge of the tree canopy, and placed into separate Berlese funnels where they were heated for three days. The heat separated the microarthropods from the soil into cups of alcohol placed below the funnels. The number and types of microarthropods were counted under a microscope.	
Results All three trees had a diversity of microarthropods. In addition we noticed that all three trees contained nematodes in the soil, which were then added into the data. Nematodes are a similar, microscopic organism. The oak trees had 35%-50% more microarthropods than both other trees. We also found spider-like microarthropods that did not appear beneath the other two trees. Redwood trees have a higher percentage of nematodes than the other trees but less microarthropods in total.	
Conclusions/Discussion Research shows that microarthropods help decompose soil. These results would indicate that the soil beneath oak trees is higher quality, and more fitting for microarthropods. Redwood trees are more suitable for nematodes. There is an unknown factor causing redwood trees to have more nematodes. Future investigations would look at these factors: alkaline soils versus acidic soils, moist soils versus dry soils, and whether spider-like microarthropods are specific to the soil beneath oak trees. This information is valuable to farmers and gardeners because it will help them obtain healthier soil and better crops.	
Summary Statement Investigation of microarthropod diversity beneath three species of tree canopies.	
Help Received My Aunt Christina helped me to understand the scientific reports on microarthropods. She also showed me how to use graphs on Excel. My mother helped me to find the materials necessary to perform this experiment.	