



**CALIFORNIA STATE SCIENCE FAIR
2005 PROJECT SUMMARY**

Name(s) Brenda A. Fisher	Project Number J1615
Project Title Is It All Downhill from Here?	
Abstract Objectives/Goals My objective is to test if there was higher mortality of Pinyon Pines on steeper slopes and on hotter slopes (south aspect) during the last drought. Steeper slopes have greater water runoff and south aspects have the highest insolation. Methods/Materials At a site in pinyon-juniper woodlands I set up 16 random plots, four in each aspect. I counted the number of trees and recorded if they were alive or dead and measured the slope they grew on using a contractor's level and a protractor. I added the results for each aspect and slope to the results from my project last year and then used a Chi-square Goodness of Fit Test to see if the differences among slopes and among aspects were significant. I also compared the differences in mortality at last year's site with this year's site to see if the sites differ. Results The south aspect had the highest tree mortality (67%), followed by north (56%), east (38%) and west (30%). The differences were significant (chi-square = 9.67). The least steep slope, 0-15 degrees, had the greatest mortality (67%) followed by the 16-30 degree slope (36%) and last was the steepest slope (29%). These differences were significant (chi-square = 7.61). At the 2005 site 54% of the trees were dead but at the 2004 site 46% were dead. The differences between the two sites were not significant (chi-square = 0.68). Conclusions/Discussion My hypothesis that the hotter south aspect would have the highest mortality was correct. My hypothesis that the steepest slope would have the highest mortality was wrong, the least steep slope had the highest mortality. There were more trees and shrubs on the least steep slope that might have competed for water. Even though the two sites were not significantly different, by adding data from the two together I increased the sample size and got different results than from one site alone.	
Summary Statement I looked at how slope and aspect might have affected mortality of Pinyon Pine trees during the drought.	
Help Received Mom helped type. Dad taught me how to do chi-square test. Mom, dad, and sister helped set up plots and count trees.	