# The Effect of Pollution on the Number of Tardigrada in Lichen and Moss

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This project studies the effect of pollution on the number of tardigrades (water bears) in lichen and moss samples. I asked whether the correlation between pollution and elevation as measured along the Wasatch Front has a long-term effect on the population of tardigrades, some of the toughest organisms on earth. I hypothesized that samples collected at higher elevations with less pollution would have more tardigrades than at lower elevations, because long-term exposure to concentrated pollution would gradually have an effect on tardigrades. I collected more than 30 samples from elevations ranging from 1400 to 1900 meters. After soaking each sample in distilled water, I counted the tardigrades in each petri dish using a dissecting microscope and an alpha numeric grid system. I analyzed my data using descriptive statistics and difference in means tests. There was no significant positive correlation between elevation and the number of tardigrades in my samples, instead the data showed a bell curve suggesting an optimal elevation for the tardigrades. The sample material lichen or moss also had a statistically significant effect on the number of tardigrades. The lichen samples had 37.8 tardigrades on average, compared to 3.09 for moss. The sample substrate tree or rock also had an impact on the number of tardigrades. Lichen from trees had 51 tardigrades on average, the highest value of all the samples. Samples from rocks had only 1 on average. Although my hypothesis was not supported, I found other sources of variation in tardigrade numbers that provide good questions for future research.

**Awards Won:**

Fourth Award of $500