



CALIFORNIA STATE SCIENCE FAIR 2010 PROJECT SUMMARY

Name(s) Taylor G. Johnson	Project Number S1915
Project Title Effect of Light Pollution on the Visibility of Stars	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The visibility of stars is largely affected by the amount of light pollution in the area. Some stars remain visible everywhere you go while others appear rarely. I wanted to determine how different amounts of light pollution would affect the visibility of the stars.</p> <p>Methods/Materials In all eight experiments I used the Limiting Magnitude scale provided by the Great World Wide Star Count. http://www.windows.ucar.edu/citizen_science/starcount/. It took place on October 9-23, 2009, and people from all over the world used the following scale in order to record the visibility of stars. Basically it works like this: Depending on the number of stars you can see, you can find the approximate limiting magnitude of the night sky, meaning that all the stars you can see should at least have this magnitude. Although I attempted to use a Light Meter and a camera in order to determine the exact amount of light pollution in the area, both options failed due to the lack of light. Basically there was not enough light in the area for them to read it</p> <p>Results I compared the limited magnitudes (LM) at four spots with different amounts of light pollution. I also went to the same spot at the four phases of the moon and compared the limited magnitude of the stars. Through my experiment I found that the visibility of stars remained almost constantly at about 2.5 LM during all four phases of the moon. I also found that the stars were least visible at my house (2.3 LM), about the same at both the school and beach (2.5 LM), and was the most visible in the mountains (3.0 LM). The distance stars are from Earth and their locations in the sky can play a role in the results. For example, certain stars are not visible no matter where you are or their magnitude because they are so far away from the Earth. Finally, I discovered the phases of the moon don't affect the visibility of the stars especially if you are in a place that has a lot of light pollution already.</p> <p>Conclusions/Discussion Although I was originally correct in assuming that the less light pollution in the area from the Earth, the more visible the stars, I was also wrong in assuming that the phase of the moon largely affected the visibility of the stars.</p>	
Summary Statement In my project I wanted to determine how different amounts of light pollution would affect the visibility of the stars.	
Help Received Father drove me around and assisted in looking at the stars; Joanna Tichauer, a professional photographer and my neighbor, helped me by providing me with a camera and a light meter, as well as assisting me in using Photoshop on her computer; Anne Martin, an astronomer at Cornell University helped by	