



# CALIFORNIA STATE SCIENCE FAIR 2010 PROJECT SUMMARY

<b>Name(s)</b> <b>William C. Braymen</b>	<b>Project Number</b> <b>J1202</b>
<b>Project Title</b> <b>Who Turned Out the Stars?</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> In my project I explore if light pollution levels increase the closer you get to large, densely populated cities. The purpose of my project is to raise awareness about the growing threat of light pollution. I think this research question is worthy of study because light pollution is a greatly unknown and underestimated threat. If we can use the already eco-friendly San Diego as a role model for other cities, we can make a big difference in the world.</p> <p><b>Methods/Materials</b> I used time lapse photography to create a star trails photo in three different locations throughout San Diego County. A star trails photo is taken when you set a camera to take one continuous photo for 10 minutes. Because of the rotation of the Earth, the stars appear to streak across the sky. I performed subjective star counts using a star count tube, which is a long, plastic tube which I look through. I chose three stars, Vega, Aldeberan and Cappella as my three main stars. I looked at the main star through the tube and counted the number of stars around it. I also surveyed students at my school about their knowledge of light pollution.</p> <p><b>Results</b> The photos and star counts show that stars are more observable in less populated parts of the county where light pollution is minimal.</p> <p>When asked if they ever look up at the night sky, 12 out of 16 students said that they did. However, when asked if they can see the Milky Way from their house, only 3 out of 16 said they could. Six out of 16 did not know what light pollution was.</p> <p><b>Conclusions/Discussion</b> The data gathered proved my hypothesis to be correct. The survey taken by students at The Grauer School showed that light pollution is greatly underestimated. One possible error in my experimentation may have been that my sample size wasn't large enough. If I had gone to more locations in between Ramona and Encinitas, I would have a broader sample range, making my data more accurate. The main constraints for me were time and weather conditions. I had to make sure that on every night I observed, the moon was new, however, there were only so many nights with new moons and good weather. My experiment was designed to bring light pollution to the attention of residents of San Diego. Although I expected to find more light pollution near San Diego, it really was dramatic to see the lack of stars in Encinitas.</p>	
<b>Summary Statement</b> My project explores whether light pollution levels increase the closer you get to large, densely populated cities.	
<b>Help Received</b> Dr. Stuart Grauer allowed me to use The Grauer School as my Encinitas observation point. My teacher Patricia Wundrow supported and encouraged me throughout the development of the project. My father transported me and my equipment to various locations. My mother and sister helped me with grammar.	