



**CALIFORNIA STATE SCIENCE FAIR
2004 PROJECT SUMMARY**

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Project Title Blinded by the Light: Is the Migration of Zooplankton Altered in Light Polluted Lakes? What Is the Effect When the Ligh	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals In previous experiments, I proved that Daphnia, a common zooplankton, are attracted to artificial light (opposite of the data reported by M. Moore in the April, 2002 issue of Science News) and repelled by ultraviolet light, altering the zooplankton's natural migration in shallow ponds. This project was designed to investigate a possible reason for the disparity in M. Moore's data with my findings from last year by looking at the migration of zooplankton in lakes that have been exposed to very different levels of light pollution. Therefore, the purpose of this project was to determine the effect of long-term light pollution on the migration pattern of zooplankton in lakes with differing levels of light pollution.</p> <p>Methods/Materials Four lakes, at least 25 feet deep, with various amounts of light pollution were identified. Tubes, 1.5 feet by 12 feet, were constructed that would isolate light pollution from the zooplankton during the night, yet allow them to vertically migrate. Using a 3.2 liter Kemmerer sampler, numerous samples at three different depths were taken in and outside of the tubes during the day and at night. The samples were concentrated and zooplankton identified and counted.</p> <p>Conclusions/Discussion After analyzing the data, two conclusions were apparent. First, light pollution has effected the migration of zooplankton in differing ways, depending on the amount of light pollution; the more light polluted the lake, the more eccentric the migration pattern of the zooplankton. One of the three light polluted lakes exhibited a suppressed migration as reported by M. Moore (Science News, April 2002). Second, when the light pollution was removed from the lakes, the zooplankton did not change their pattern and migrate like zooplankton in unpolluted lakes. This indicates that when exposed to light pollution, over time the zooplankton have changed their inherent response to light. It would be fascinating to determine if the zooplankton in light polluted lakes are genetically different from those in unpolluted lakes.</p>	
Summary Statement This project determined the effect of long-term light pollution on the migration pattern of zooplankton in lakes with differing levels of light pollution.	
Help Received Getting permission to sample on lakes that allowed no public access was difficult. I tried, but my mother ended up spending hours calling and emailing to get permission to sample. She drove me day and night, even at 4am, to get samples. She rowed the boat while I sampled. I also had to have a ranger observe my	