



**CALIFORNIA STATE SCIENCE FAIR  
2003 PROJECT SUMMARY**

<b>Name(s)</b> <b>Eric S. Wilder</b>	<b>Project Number</b> <b>J1540</b>
<b>Project Title</b> <b>Fishy Vision</b>	
<b>Abstract</b> <b>Objectives/Goals</b> My objective is to determine if the type of water -- fresh water, ocean water, and pool water -- affects refraction in a way noticeable to the human eye. I believe that ocean water and pool water will be more refractive than fresh water. <b>Methods/Materials</b> My experimental set-up included a tank filled to the brim with various water types, with a protractor standing vertically at the bottom. One foot away, a vertical yardstick was used to measure the height of a laser beam as it shone through the water to the protractor. As I moved the laser pointer, I recorded the angles and heights to measure the refraction effects. <b>Results</b> I made measurements of the laser height for every 5 degrees on the protractor (in water), for each different water type. I took 5 different trial readings at each angle, and averaged them in order to reduce experimental error. The pool water trial results were slightly different than the other two waters, so I tested again with 100% chlorine bleach, and got results similar to the fresh and ocean water. <b>Conclusions/Discussion</b> I found that the type of water solution does not make a noticeable difference in refraction. All three waters in my experiment had approximately the same refraction effects. So, my hypothesis was not supported by this data, and the type of water will not change refraction in a way noticeable to the human eye.	
<b>Summary Statement</b> My project compares refraction effects of different water solutions.	
<b>Help Received</b> Friend helped make the Excel graph, after I entered the data	