



**CALIFORNIA STATE SCIENCE FAIR  
2008 PROJECT SUMMARY**

<b>Name(s)</b> Lacey M. Smith	<b>Project Number</b> <b>J1628</b>
<b>Project Title</b> <b>Its Not Easy Being Blue: Light and Color Underwater</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> The objective of my project is to determine whether depth affects the ability to see color underwater. If depth does affect the ability to see color, then I believe colors such as blue, green, and yellow will be distinguishable at a greater depth than colors such as red because of the wavelength differential between the colors.</p> <p><b>Methods/Materials</b> Underwater, at the depth of 22 meters, photographs were taken of a Laminated Color Card, Fish Identification card, and a slate with the depth written upon it with a Digital Underwater Camera. While maintaining neutral buoyancy, pictures were then taken at each ascending meter until we had reached the surface. After developing the pictures, we compared the pictures taken at depth to our control group, the color cards. These pictures would portray the loss of color.</p> <p><b>Results</b> After comparing the pictures to our original color cards, we determined that depth does affect the ability to see color underwater and the color red was no longer distinguishable around the depth of 5-6 meters. Although unsuspected, our data portrayed the loss of the color green around 10 meters underwater. The colors blue and yellow however, remained visible even at our greatest depth of 22 meters.</p> <p><b>Conclusions/Discussion</b> Although the color green was lost before I had expected, my data does support my hypothesis that states that green, blue, and yellow will be distinguishable at a greater depth than red. The actual depth at which blue and yellow disappears was not able to be determined due to proper diving and safety regulations, but the raw data indicates that both colors had not been lost at 22 meters below the surface of the water. Taking a look at my data, it is clear to see that depth does affect the ability to see color underwater, but it affects some colors differently than others due to light wavelengths and the absorption of these wavelengths in ocean water.</p>	
<b>Summary Statement</b> The Effects of Depth on Color Underwater	
<b>Help Received</b> Two certified divers assisted in the dive.	