



**CALIFORNIA STATE SCIENCE FAIR  
2008 PROJECT SUMMARY**

<b>Name(s)</b> <b>Andrew Schwandt; Bradley Schwandt</b>	<b>Project Number</b> <b>J2014</b>
<b>Project Title</b> <b>Humwhere over the Rainbow: Do Hummingbirds Prefer Colored Nectar from the Warm End of the Color Spectrum?</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> The objective of our project was to determine if hummingbirds preferred colored nectar from the warm end of the color spectrum (red, yellow) versus the cool end (blue, violet). Knowing that hummingbirds are attracted to red and orange flowers, we predicted that they would prefer colored nectar that resembled those flowers. Further studies showed that other variables must be considered, including color order, height, position, location, and color of feeder.</p> <p><b>Methods/Materials</b> We compared the consumption levels of six different colors of sugar water, representing nectar, placed in identical feeders hanging from different heights in our backyard for 10 days, changing nectar in all feeders once the first feeder fell below 200 mL. We used a 500 mL glass measuring cup, a stainless steel tablespoon, 6 identically labeled feeders, 10 bungee cords ( 6-18", 2-24", 2-30"), a 44-ounce cup, a 1-cup measuring cup, assorted food color dye, pure cane sugar, and warm tap water. Our nectar consisted of 700 mL warm tap water, 1 cup of sugar, and 4 drops of food coloring. We tested clear (control), red, yellow, green, blue, and violet nectar.</p> <p><b>Results</b> In our original experiment, with a cumulative total of 2,400 mL of colored nectar, in each color, offered to the hummingbirds over a period of 10 days, they drank 2,000 mL of yellow, 1,800 mL of violet, 1,000 mL of red, 400 mL of blue, 400 mL of green, and 400 mL of clear. They drank 2,950 mL of red and yellow combined (warm end), and 1,725 mL of blue and violet combined (cool end).</p> <p><b>Conclusions/Discussion</b> We concluded that, although cumulatively, the hummingbirds preferred the warm end colors, the two most popular individual colors were yellow and violet, not red, thereby rejecting our hypothesis! The yellow and violet feeders were hung the highest distance from the ground with the shorter 18" bungee cords, and this discovery took our research in entirely different directions. Due to their protective survival mechanisms, hummingbirds were more concerned with the safety, height, positioning, location, and color of feeders, rather than nectar color. In order to fuel their active metabolisms, they were more interested in sugar content and accessibility of feeders. Clear nectar may be healthier and equally as attractive as colored nectar, while eliminating potentially harmful dyes from their systems.</p>	
<b>Summary Statement</b> Our project tests whether hummingbirds prefer colored nectar from the warm end or the cool end of the color spectrum, while considering nectar color, color order, height, position, location, and feeder color.	
<b>Help Received</b> Dr. Altshuler and Dr. Welch from UCR contributed to our research, our dad helped design the topper, our brother helped with the graphs, our mom typed the project and helped with the board, and Mr. Poulsen took high-speed pictures.	