



**CALIFORNIA STATE SCIENCE FAIR  
2002 PROJECT SUMMARY**

<b>Name(s)</b> <b>Joseph S. Dickerson</b>	<b>Project Number</b> <b>J1906</b>
<b>Project Title</b> <b>Snail Trails: The Effect of Environment on the Color of a Snail's Shell</b>	
<b>Abstract</b> <b>Objectives/Goals</b> My objective is to determine what effect environmental factors such as soil composition have on the development of snail shells. For example, does the high limestone content of the soil in a park below a large cement plant cause the unusual white shells of snails that thrive in that park? <b>Methods/Materials</b> I obtained consent to collect snails, soil, and living plants from an open space preserve in the local foothills. This park has white-shelled snails that look identical to common brown garden snails. I also collected samples from my yard. I created four closed environments, and placed white and brown snails in native and non-native enclosures. I then conducted tests for pH content (soil acidity), shell strength, and color changes -- particularly in the baby snails I collected. <b>Results</b> No color changes were observed during the project. The soil from the open space preserve was approximately 5.5 on the pH scale, compared to 4.0 for my yard, a good indication of higher limestone CaCO <sub>3</sub> content. Drops of hydrochloric acid confirmed the presence of limestone in the white shells. The white shells were more than 9 times stronger than the brown shells. <b>Conclusions/Discussion</b> Near the end of my project, I learned from an expert I had previously contacted that the snails were different species, with genetics dictating their colors. It's interesting that I have only seen white snails in this limestone-rich environment, while brown snails are so common, and I wonder if environmental adaptations could cause some color changes over time.	
<b>Summary Statement</b> My project was to discover whether the mineral content of the soil in a specific area can influence the color, strength, or other characteristics of a snail's shell.	
<b>Help Received</b> Dianne Connelly, science teacher; Dr. Shannon Brose and Dr. Veta Kenk, San Jose State University Biology Department; Neil Fahy, California Academy of Sciences; Kathleen Hart, Open Space Preserve Permit Office; Hansen Corporation (Quarry); Francis and Lynne Dickerson.	