



**CALIFORNIA STATE SCIENCE FAIR
2002 PROJECT SUMMARY**

Name(s) Joseph S. Dickerson	Project Number 22308
Project Title Snail Trails: The Effect of Environment on the Color of a Snail's Shell	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals 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?</p> <p>Methods/Materials 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.</p> <p>Results 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 CaCO₃ 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.</p> <p>Conclusions/Discussion 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.</p>	
Summary Statement 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.	
Help Received 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.	