



**CALIFORNIA STATE SCIENCE FAIR
2003 PROJECT SUMMARY**

Name(s) William C. Piper	Project Number J1916
Project Title The Balance of Nature: How Does Varying the Number of Freshwater Snails Affect a Closed Aquatic Ecosystem?	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals My objective was to find out the effect of varying the number of freshwater snails in a closed aquatic ecosystem. I predicted that a closed aquatic ecosystem with two freshwater snails and one freshwater plant would provide the best balance and the healthiest ecosystem.</p> <p>Methods/Materials The experiment involved setting up 12 identical ecosystems using jars with gravel, thermometers, freshwater plants, and purified water. Each of three trials had four jars: a 0-snail jar, a 1-snail jar, a 2-snail jar, and a 4-snail jar. The pH of the water was recorded for each jar at the beginning and end of the experiment. The condition of the snails, plants, water, and the water temperature was recorded daily.</p> <p>Results The results showed that the water temperature and the pH did not change significantly in the jars. The water conditions changed only in the 4-snail jars. The plants stayed healthy and green only in the 2-snail jars. 33% of the snails died in the 1-snail jars, 16% died in the 2-snail jars, and 50% died in the 4-snail jars.</p> <p>Conclusions/Discussion Based on my observations, my hypothesis was correct. The jars with two freshwater snails and one freshwater plant were the healthiest and provided the best balance. The plants in the jars with no snails suffered without carbon dioxide from the snails in order to photosynthesize. In the jars with too many snails, there was not enough oxygen produced by the plants for the snails, and there was too much waste product produced by the snails. This experiment demonstrates the balance of nature. In an ecosystem when there is too much of one thing or not enough of another, the effects spread throughout the unbalanced system.</p>	
Summary Statement My project tested the effect of varying the number of freshwater snails in a closed aquatic ecosystem.	
Help Received My mom and dad helped me set up the jars for the experiment. My mom helped me with my display board.	