



**CALIFORNIA STATE SCIENCE FAIR  
2005 PROJECT SUMMARY**

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| <b>Name(s)</b><br><b>Daniel A. Huthsing</b>  | <b>Project Number</b><br><b>J0918</b> |
| <b>Project Title</b><br><b>Trapezoidal Channels vs. Natural Creeks Effects on Habitat</b>  |                                       |
| <b>Abstract</b><br><b>Objectives/Goals</b><br>In this experiment I address the effects of trapezoidal channels on the physical and biological characteristics of a Santa Barbara, California creek ecosystem. Two 100 ft. sections of San Jose Creek, one natural run and one trapezoidal run, were described and compared using measurements of water flow rate variance, water temperature, potential for water oxygenation, and insect population.<br><b>Methods/Materials</b><br>Each of the 100 ft. runs were divided into 20 ft subsections to allow a more precise measurement of the characteristics of the creek. The flow rate was found by dropping an orange at the top of the run and using a stopwatch to measure the time, in seconds, that it took for the orange to travel by each subsection. Water temperature was taken every twenty feet starting at zero with an analog thermometer. Potential for water oxygenation was measured by finding the length of white water in the creek. Finally the insect population was measured by using a seine net to capture the insects when they were kicked up out of the bottom sediment.<br><b>Results</b><br>The natural creek's flow time variance was 12.93 times greater than the trapezoidal channel. The average water temperature of the trapezoidal channel was 59.5°F versus 60.7°F in the natural creek. The potential for water oxygenation was 15 times greater in the natural creek than it was in the trapezoidal channel. There was only 1 more insect in the natural creek, 43, than in the trapezoidal channel.<br><b>Conclusions/Discussion</b><br>The physical characteristics of a creek are clearly affected by trapezoidal channels. These changes in physical characteristics may be responsible for the slight decline of the insect community. The results of this experiment could be used to modify trapezoidal channels so they have less of an impact on the creek ecosystem. |                                       |
| <b>Summary Statement</b><br>Creek channelization changes physical and biological characteristics of natural creeks in Santa Barbara, California.   |                                       |
| <b>Help Received</b><br>I worked with an ecologist who works at UCSB during my field testing.  |                                       |