



# CALIFORNIA STATE SCIENCE FAIR 2011 PROJECT SUMMARY

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<b>Project Title</b> <b>Plants and Their Environment</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> The goal of my project was to determine how different plants respond to different extreme conditions, specifically whether or not natural disasters play a role in the invasion of non-native species into the California ecosystem.</p> <p><b>Methods/Materials</b> I set up the aftermath of two natural disasters (wildfire and flooding), in addition to a control test. The fire aftermath consisted of heated, dried soil with ash on the surface. The flooded environment plants experienced a mock-flood soon after the experiment began. I used four species for my experiment. Two were native to California (Phacelia campanularia [California bluebell] and Eschscholzia californica [California poppy]), and two were invasive (Lobularia maritime [alyssum] and fountain grass [Pennisetum alopecuroides]). I used 300 seeds for each species (100 for each environment), for a total of 1,200 seeds. The testing period took place over two months, during which I recorded plant growth regularly. This data can be found in the binder. Additional observations are contained in the project logbook. The fire test produced very few specimens. I thought that perhaps this was due to the heating of the seeds, so I repeated the test without said step.</p> <p><b>Results</b> In very few instances did the performance of the flooded plants exceed that of the control plants. As stated earlier, the initial fire test did not produce accurate data. In the second fire test, more plants began to grow, but that test was cut short because of the deadline for the project. Overall, the invasive species proved far hardier than the natives.</p> <p><b>Conclusions/Discussion</b> My experiment showed how effective invasive species are at survival, even in harsh conditions. This, coupled with their overproduction of seeds, is why they are such a threat to our biodiversity. The native species simply can't compete. Southern California is one of the most bio diverse areas on earth, with the exception of rainforests, and invasive species are becoming a problem. As this was not an ideal period for growing plants, the weather somewhat interfered with the experiment, especially during the December rains. However, this weather also showed how the plants could survive in a natural setting, where, in reality, the weather is not always fair. The experiment demonstrated both the power of invasive species and the ability of all (or at least, most) plants to adapt to their surroundings, whatever they may be.</p>	
<b>Summary Statement</b> My project was about discovering how different plant species respond to different environments, and finding out if invasive plants can beat native plants in conditions that native plants have had thousands of years to adapt to.	
<b>Help Received</b> Mother helped in assembly of presentation board.	