



**CALIFORNIA STATE SCIENCE FAIR  
2009 PROJECT SUMMARY**

<b>Name(s)</b> <b>Jaclyn M. Hirbawi</b>	<b>Project Number</b> <b>J2414</b>
<b>Project Title</b> <b>Experimental Opuntia oricola Regrowth in Burned Cactus Wren Habitat</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> During the summer, I read an article in a magazine regarding our plant community, the most compromised plant community in the nation, coastal sage scrub. The article stated that, due to effects of the 2007 wildfires on prickly pear cactus, a bird, the Cactus Wren is now of particular concern. The only suitable nesting site for these birds is a cacti clump at least one meter in height. The purpose of this project was to monitor the vertical growth of approximately 500 experimental cacti and to search for evidence of cactus wren activity. I hypothesized that experimental prickly pear pads planted vertically would grow more rapidly and attain greater height than experimental pads that were laid flat or buried.</p> <p><b>Methods/Materials</b> I wore a SD River Conservancy vest as I measured and recorded the vertical heights of 345 experimental cacti. I also monitored humidity, wind speed, air and soil temperatures, soil moisture level, and soil pH. I performed soil nutrient tests on soil samples I gathered. I visited four different test sites; Lake Hodges, San Pasqual Valley, Battle Field Monument, and the Wild Animal Park Corridor. Almost on a weekly basis, I either took measurements of the vertical height of each cactus specimen or recorded the number of Cactus Wrens, and nest locations in cacti clumps at my control site at the battlefield monument.</p> <p><b>Results</b> According to my data, the horizontal method of planting prickly pear cactus plants was not successful. Many of these pads withered and rotted. Experimental pads that were buried showed more growth, but were not as tall as the pads planted vertically. After four months, the average height for the initially buried pads was 13 cm while the vertically planted cacti averaged 32 cm in height. The tallest vertically planted cactus attained a height of 63 cm. Several of the cacti grew 10 cm in height during the four month period.</p> <p><b>Conclusions/Discussion</b> At this rate, some of the experimental cacti may grow to heights that might attract cactus wrens by next winter. At my control site, I was able to spot many Cactus Wren nests. I also documented approximately 40 species of other birds. I very much enjoyed this project, and I am continuing to monitor the Cactus Wrens and prickly pear growth.</p>	
<b>Summary Statement</b> The purpose of this project was to monitor Cactus Wren activity and the vertical growth of approximately 500 experimental cacti as potential nesting habitat for the locally at risk Cactus Wren species.	
<b>Help Received</b> I would like to express my gratitude to my parents who drove me several times to my testing sites and provided supervision. I would like to thank field biologist, Leslie Woollenweber, from the San Dieguito River Valley Conservancy, who answered many of my questions.	