



**CALIFORNIA STATE SCIENCE FAIR  
2008 PROJECT SUMMARY**

<b>Name(s)</b> <b>Kelley C. Boland</b>	<b>Project Number</b> <b>J2002</b>
<b>Project Title</b> <b>Ant Attack: Do Ants Bite and Chase Other Insects off Castor Bean Plants?</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> Castor bean plants are invasive shrubs that often have Argentine ants crawling on them. The ants are attracted to extrafloral nectaries, which are nectar producing glands outside the flowers. Because I saw the ants getting nectar from the plant, I wondered if the plant was getting anything in return. I hypothesized that the ants on castor beans would bite and chase away other insects.</p> <p><b>Methods/Materials</b> I tested my hypothesis by doing a series of tests in which I placed locusts on a castor bean stem and recorded the interaction between the ants and locusts. I tested six locusts, one at a time. I also tested one caterpillar.</p> <p><b>Results</b> I found that all of my tested insects were bitten by the ants. In 321 minutes of locust observations, I recorded a total of 198 bites. One of the locusts was bitten 97 times within 28 minutes. All were chased from the stem, where they were bitten most, to a petiole, and out to a leaf, where they were not bitten at all. All six locusts were upset when the ants were biting, and tried to flick the ants away with their legs. The caterpillar was bitten a total of 238 times in 81 minutes and died as a result.</p> <p><b>Conclusions/Discussion</b> My first conclusion is that my hypothesis was supported: all of the insects were bitten and chased by the ants. My second conclusion is that both ants and castor bean plants benefit from this relationship - the ants get food and the plants get protection. My third conclusion is that this is an example of a mutualistic relationship between two species that did not co-evolve; it appears that the ant from Argentina and the plant from Africa and Asia are working together to invade California's wildlands.</p>	
<b>Summary Statement</b> I found a plant-animal mutualism: castor bean plants attract ants by using extrafloral nectaries, and the ants bite and chase other insects away from the plants.	
<b>Help Received</b> Family provided general guidance, transport to and from study site, and assistance in the field; Ms. O'Donnell, advisor, provided helpful suggestions and encouragement.	