



**CALIFORNIA STATE SCIENCE FAIR  
2005 PROJECT SUMMARY**

<b>Name(s)</b> <b>Katie Kinsella; Anna Messier</b>	<b>Project Number</b> <b>S1908</b>
<b>Project Title</b> <b>Do You Know What Lies Beneath? Parasitized Crabs in Our Own Santa Barbara Channel!</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> The main objective was to extract the external Rhizocephalan barnacle parasite from the host crab. After analyzing the measurement results of both the crab and the parasite, we determined physical differences between infected and uninfected crabs. Not only did we study the external component of the parasite, we also researched the behavioral effects caused by the internal parasite.</p> <p><b>Methods/Materials</b> Following proper dissection procedure, we severed the crabs' thoracic ganglion (nerve chord) before extracting the externa (external parasite component) from the host crab through its mantle opening. We then took needed measurements for comparison to uninfected crabs. Our materials included a dissecting tray, triple beam balance, scalpel, forceps, microscope, calipers, scissors, and pins.</p> <p><b>Results</b> After graphing all of our measurement results, we found that carapace width, abdominal flap height, and the masses of similarly sized crabs of infected are distinctly larger than that of uninfected crabs.</p> <p><b>Conclusions/Discussion</b> After running many tests on both uninfected and infected sheep crabs (infected with rhizocephalan barnacles), we concluded overall that infected crabs are bigger than uninfected crabs. Once we recorded data on both the weight and height of 24 crabs, we found that, in general, the abdominal flap of an infected crab is greater than that of an uninfected crab. Likewise, on average infected crabs weigh more than uninfected crabs. Our tests also suggested that the externa (external part of the parasite located under the abdominal flap) adds significant weight to the crab. We used the carapace measurements as a constant to then compare crabs. We also learned about the behavioral effects of the parasite on its host. The Rhizocephalan barnacle "takes over" the crab: no longer produces its own eggs, but rather the parasite's (parasitic castration), as well as controlling the crab's central nervous system. This could lead to visible decrease in this particular crab species and eventual extinction.</p>	
<b>Summary Statement</b> In this project we explored the effect of the Rhizocephalan barnacle parasite on the host Spider/Sheep crab both physically and behaviorally.	
<b>Help Received</b> Used lap equipment at UCSB's Marine Biology REEF lab under the supervision of Scott Simon, borrowed Mentor Amber Kaplan dissecting equipment, REEF Marine Biologists aided in crab collection from Santa Barbara Channel	