



**CALIFORNIA STATE SCIENCE FAIR  
2005 PROJECT SUMMARY**

<b>Name(s)</b> <b>Sonia Singhal</b>	<b>Project Number</b> <b>S1916</b>
<b>Project Title</b> <b>A Study of Anthopleura sola as an Indicator of Global Warming in the Northern California Rocky Intertidal</b>	
<b>Abstract</b> <b>Objectives/Goals</b> The goal of this research is to understand ecological change in the Northern California intertidal due to global warming by observing populations of <i>Anthopleura sola</i> , a newly-identified species of sea anemone. This project describes results from a baseline survey conducted at Fitzgerald Marine Reserve and Davenport Landing. <b>Methods/Materials</b> Abundance, distribution, and size of <i>A. sola</i> were measured using 1-m <sup>2</sup> quadrats along randomized transects within 30 m x 30 m plots at each site. Temperature data was recorded at 20-minute intervals with ThermoChron data loggers to gain a detailed temperature profile of the intertidal. <b>Results</b> The survey shows that the average densities of <i>A. sola</i> at the Fitzgerald Marine Reserve and at Davenport Landing are 0.37±0.1 per m <sup>2</sup> and 4.97±0.03 per m <sup>2</sup> , respectively (p=0.05). Population densities increase towards the ocean and can be modeled by exponential distribution. Sizes are normally distributed, with larger individuals occurring at the more northern site. Temperature data shows that <i>A. sola</i> is subjected to a wider variation in temperature than indicated by the mean ocean or atmospheric temperatures. Surprisingly, the temperature at the northern site is slightly higher than at the southern site, the difference being both statistically and environmentally significant. <b>Conclusions/Discussion</b> It may be possible to understand changes to both macro and micro-habitats in the intertidal by observing <i>Anthopleura sola</i> . This project establishes a baseline of <i>A. sola</i> populations and intertidal temperature that will be used for comparison in future research.	
<b>Summary Statement</b> This study creates a baseline survey of a newly-identified species of sea anemone, <i>Anthopleura sola</i> , in order to test if global warming is causing its migration northward.	
<b>Help Received</b> Dr. John Pearse gave me information on <i>A. sola</i> , suggested study sites, and answered questions. Mr. Robert Breen helped me get started with field work.	