



# CALIFORNIA STATE SCIENCE FAIR 2003 PROJECT SUMMARY

<b>Name(s)</b> <b>Sarah M. Amiri</b>	<b>Project Number</b> <b>S1901</b>
<b>Project Title</b> <b>Between Pacific Tides</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> The objective is to identify any environmental, physical or biological factors that influence the larval settlement of marine invertebrates inhabiting the intertidal zone. The tuffies are also placed in the intertidal, in order to identify the larval recruitment rates in each zone, to compare them with those of the adult populations and to observe any adult larval interactions between species.</p> <p><b>Methods/Materials</b> The PISCO lab, located in UCSB, supplied me with most of the equipment needed for this experiment. These included: tuffies, three used for each zone (for each biweekly trial so that the larval recruitment rates were identified), a manual drill used for drilling a tuffie in to each zone, a metal plate and bolt used for pinning the tuffie into place during each biweekly trial, and the PISCO lab, mainly used for observing the larvae under their microscope.</p> <p><b>Results</b> The results quickly showed that the tuffie placed in the low tide zone, inhabited the largest population of larvae (or the juvenile stage of their adult species form), and it also had the highest rate in diversity within organisms. The low tide zone was of particular interest, because it had a high rate of adult larval interactions (a highly influential factor affecting the settlement of larvae) between several bivalve species, including <i>Mytilus californianus</i>, <i>Balanus fissus</i>, and <i>Pecten latiaratus</i>. Each zone roughly had the same diversity within adult organisms as those collected in the tuffie.</p> <p><b>Conclusions/Discussion</b> Through one year of research, testing, and observation, I have found that countless factors affect the larval settlement of marine invertebrates in the intertidal zone. The time of tide, angle towards the sunlight, velocity of the water, water pressure, and substrate area all contribute to the final settlement outcome of larvae in the intertidal. In addition, they must settle in a zone that they are able to adapt to in the future. Each zone varies in: water level, salinity levels, predation, exposure to sun and air, drying winds, wave shock, and even human contact, which makes it essential for them to settle in the exact location needed for their future survival. Obviously the low tide zone had the highest larval recruitment rates (also the highest adult populations) because of the lack of limiting factors affecting larval settlement. This also shows that larval settlement may strongly be influenced by their adult species.</p>	
<b>Summary Statement</b> By placing a tuffie (an object that catches incoming larvae) in to each zone of the intertidal, both the larval recruitment rates of various intertidal inhabitants, and factors that affect larval settlement will be identified.	
<b>Help Received</b> The PISCO lab at UCSB and their staff, greatly assisted me with equipment needed for this project and their microscope for viewing the larvae collected in each zone. My parents also drove me to the PISCO lab everyday needed, and helped me with the board set up. Patricia Sadaghian at the Invertebrate Zoology	