



**CALIFORNIA STATE SCIENCE FAIR
2006 PROJECT SUMMARY**

Name(s) Ted B. Conroy	Project Number J1906
Project Title Hangin' in the Harbor: A Study of Some Factors Affecting the Growth of Encrusting Marine Organisms	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals This study investigates how water depth and the type of substrate affect the growth of marine organisms. The independent variables were the four types of substrates used, and the depths that they were hung at. The abiotic factors of water temperature, pH, dissolved oxygen, salinity, and water clarity were measured weekly at each depth, to see how these would affect the observed growth results.</p> <p>Methods/Materials Substrate materials were clean wood, clean wood painted with anti-fouling boat paint, chemically-treated wood (pressure treated), and clear plastic. All substrates were cut into equal size pieces, and marked with grids to help measure marine growth. Each set of three (surface, middle, and bottom) substrates were connected by equal lengths of rope, and hung on ropes tied between the pilings underneath the end of Johnson Pier. Each set was weighted with a cement anchor to keep the boards from floating up. Once a week, for nine weeks, I paddled out in a kayak with my Dad to record water quality measurements and to record any visible growth on the boards.</p> <p>Results It turned out that my surface boards were actually intertidal because they were out of the water alot at low tides. There was very little growth on all the surface substrates. There was the most growth on the middle level clean wood and plastic boards. I observed growth after just one week, and every week there was more and more coverage. It was easier to see growth on the clear plastic substrates than on the wood. Also the grid grooves cut in the wood boards provided spaces for amphipods and other organisms to hide. These organisms were probably feeding on the microscopic film of algae and diatoms coating the boards.</p> <p>Conclusions/Discussion The surface level boards had very little growth on them because they were out of the water alot at low tides. Only intertidal organisms could survive on them. The middle level boards had more growth on them than the bottom level boards, maybe because they got more sunlight from the surface which increased algal growth. At all levels, the boards with the anti-fouling paint had the least amount of growth on them, followed by the chemical-treated boards. The chemicals on these boards probably interfered with the growth of marine organisms. The clean wood and plastic substrates had the most growth on them, both in coverage and the amount of different types of organisms.</p>	
Summary Statement How do the factors of substrate type and water depth effect the type and amount of growth of encrusting marine organisms?	
Help Received Dad went out with me in kayak weekly. He also helped me cut the wood pieces with a power saw. I used water quality instruments and microscopes from my Dad's work.	