



**CALIFORNIA STATE SCIENCE FAIR  
2005 PROJECT SUMMARY**

<b>Name(s)</b> <b>Stefanie J. Lynch</b>	<b>Project Number</b> <b>S1911</b>
<b>Project Title</b> <b>The Effect of Location on the Population Distribution and Size of the Olympia Oyster, <i>Ostrea conchaphila</i></b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> The Olympia Oyster (<i>Ostrea conchaphila</i>) is the only native oyster on the California coast. Once highly abundant, populations declined due to over-harvesting and habitat loss. Restoration projects are beginning, but data regarding current oyster numbers are scarce. This experiment is the first detailed population study ever done of <i>Ostrea conchaphila</i> around Richardson Bay, California, off of San Francisco Bay.</p> <p><b>Methods/Materials</b> Ecological transects were performed at five sites on Richardson Bay. Two comparison sites were on main San Francisco Bay. Ten 10-minute transects were done at each site. Oysters were counted during low tide, size measured, and the settling surface noted (rock, concrete, shell, or wood). Water samples measured potential limiting factors of salinity, turbidity, pH, chlorophyll, calcium, silicates, nitrates, and phosphates.</p> <p><b>Results</b> The number of oysters was greatest at two northern Richardson Bay sites (2.8 +/- 0.73 oysters/min, and 2.31 +/- 0.67) and the San Francisco Bay sites (3.64 +/- 0.78, and 2.92 +/- 0.78). Size distribution graphs showed distinct single peaks at 20-25 mm shell length for these four sites, indicating a preferred timeframe of successful larval recruitment. 84.9 % of oysters were found on rock. A positive correlation was found between oyster counts and Phosphate levels (<math>r = 0.72, p &lt; 0.05</math>) with the relationship: (Oyster count) = 7.60 [Phosphate (uM)] + 2.13.</p> <p><b>Conclusions/Discussion</b> These data support the hypothesis that Olympia Oyster populations survive in preferred sites in Bay waters. This is the first detailed study of the distribution pattern of Olympia Oysters around Richardson Bay, and they were found to be as prevalent in northern Richardson Bay as in the main San Francisco Bay sites. The size/frequency graphs had large single peaks of oyster numbers clustered around 20-25 mm, which shows that a major limiting factor could be pulses or waves of successful larval recruitment leading to an abundance of oysters of a singular size. Rock was the preferred settling surface likely due to the clear abundance of this surface found at the transect sites. Phosphate levels were found to have a significant correlation with oyster counts. Phosphates are a micronutrient in the food chain, but its effect on oyster ecology is complex, and future surveys are planned to study this further.</p>	
<b>Summary Statement</b> This experiment is the first detailed population study ever done of <i>Ostrea conchaphila</i> around Richardson Bay, California, and supports the hypothesis that Olympia Oysters survive in preferred sites in Bay waters.	
<b>Help Received</b> Parents drove me to transect sites. Dr. Michael McGowen, SFSU, and Holly Harris, M.S. candidate SFSU, gave advice on the process of transects. Adria Lassiter M.S., Romberg Tiburon Center, assistance with lab analysis of water samples.	