



**CALIFORNIA STATE SCIENCE FAIR  
2004 PROJECT SUMMARY**

<b>Name(s)</b> <b>Marci O. Kirchberg</b>	<b>Project Number</b> <b>S1908</b>
<b>Project Title</b> <b>Predicting the Mating Sites of Grunion Based on Sand Grain Size</b>	
<b>Abstract</b> <b>Objectives/Goals</b> The objective of my experiment is to predict where grunion will lay their eggs based on the coarseness of the sand and to determine whether sand grain size has an affect on the grunion's choice of mating sites. <b>Methods/Materials</b> A study area was organized between Newport Pier and Balboa Pier (approximately 2 miles). Sand samples were taken, using a sand sampler, at 23 sites (approximately one tenth of a mile apart). Using a sand shaker with appropriate size sieves, the sand from each site was separated into verry coarse, coarse, medium, fine and very fine sand. The amount of each type of sand was recorded and percentages were calculated. From March 21, 2004 through March 24, 2004 at and after the highest tide, grunion were observed at the specified sites and their appearance was recorded. <b>Results</b> A t test was performed to compare the coarseness of the sand at the sites where grunion appeared two or more nights with the sites where grunion appeared one nght or fewer. The result was a t value of 2.3158 with 21 degrees of freedom, which suggests that the data is significant at the .025 level. <b>Conclusions/Discussion</b> The results of the t test suggest that there is less than a 2.5 percent chance that the results are insignificant. Therefore, grunion prefer sand which is primarily medium and fine opposed to coarse and very coarse sand.	
<b>Summary Statement</b> My experiment uses the determination of sand grain size and direct observation to predict the where grunion will choose to mate.	
<b>Help Received</b>	