



**CALIFORNIA STATE SCIENCE FAIR  
2004 PROJECT SUMMARY**

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| <b>Name(s)</b><br><b>Lisa M. Reed</b>   | <b>Project Number</b><br><b>J1924</b> |
| <b>Project Title</b><br><b>Do Urchins Have Any Sense?</b>   |                                       |
| <b>Abstract</b><br><b>Objectives/Goals</b><br>My objective was to use the scientific method to determine if red sea urchins use touch or smell to find their food.<br><b>Methods/Materials</b><br>First, I starved the urchins for at least a week. Then I placed a sea urchin in the middle of a tank, about 400cm x 70cm, filled with seawater. There was no current in the tank. The bottom of the tank was covered with two inches of sand. I placed a small boulder at either the north or south end of the tank. On half of the trials, I placed kelp under the boulder. I had five trials for each combination of kelp treatment (present or absent), and direction (north or south). I used a different sea urchin for each trial. I timed each trial using a stopwatch, and I recorded the time of each trial in my field notebook. If the sea urchin did not reach the boulder in 120 minutes, I stopped the trial and recorded >120 min. At the end of each trial, I measured the length(cm) of the tracks that the sea urchin left in the sand. I measured how far the sea urchin traveled in both directions (north and south), and recorded the measurement in my field notebook.<br><b>Results</b><br>When kelp was present, 60% of the sea urchins reached the boulder. The average distance a sea urchin traveled was 262.2cm, and the average time it took the urchin to reach the kelp was 72.5 minutes. When kelp was not present, 60% of the sea urchins reached the boulder. The average distance traveled by a sea urchin was 289.5cm, and the average time to reach the boulder was 65 minutes. Many sea urchins stopped within a few centimeters of the kelp for as long as 30 minutes. They did not appear to know that the kelp was next to them, but as soon as they touched it with one of their tube feet, they began to eat it immediately.<br><b>Conclusions/Discussion</b><br>In conclusion, I found that sea urchins use touch rather than smell to find their food. In my experiments, they wandered around randomly until they contacted their food. I found that there was a wide range in the time it took a sea urchin to reach the boulder, and in the distance that it traveled. The average distance traveled to the boulder, and the average time that it took for a sea urchin to reach it was similar for trials with and without kelp, regardless of direction. |                                       |
| <b>Summary Statement</b><br>My project is to determine if red sea urchins use touch or smell to find their food.  |                                       |
| <b>Help Received</b><br>Used seawater tanks at UCSB, and sea urchins collected by UCSB collector Shane Anderson. Father helped with computer graphing program to display the data. Father and teacher gave advice on experimental design and display of data.   |                                       |