



**CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY**

Name(s) Julia J. Dressel	Project Number J0703
Project Title Dune Heroes	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals In Seagrove Beach, Florida, my uncle and a nearby hotel wanted to protect their dunes from further hurricanes after mass destruction during Hurricane Dennis. My uncle and 4 neighboring households chose to install a system of baffles, or sand filled tubes, that are built to absorb and divert the energy of the wave upwards. The hotel decided to build a wooden seawall that is meant to resist the energy of the waves. This project to discover which way was the most efficient way to protect the dunes during a hurricane.</p> <p>Methods/Materials This question was tested by scaling the dune and beach in Seagrove Beach, Florida to a scale of 1/20, adding an amount of water that was to scale to the rise in the sea level (storm surge) during a Category 5 Hurricane, and by building a sea wall and baffles to try and protect the dune. (An unprotected dune was also tested.) A wooden wave maker was placed at the back of the trailer, and the board was tilted back and forth to designated points 100 times each test to create waves. Materials include 1.4 tons of Olympia Sand, a 6 ft by 10 ft trailer, water, 2 yard sticks, a shovel, and a wooden wave maker.</p> <p>Results The results of multiple tests are as follows; the sea wall allowed for a range of 0 to 3.5 inches of damage to be done to the dune during the wave process, the baffle system allowed for a range of 0 to 4.5 inches of damage to be done to the dune during the wave process, and when the dune was under no protection, a range of 0 to 6.5 inches of damage was done to the dune during the wave process.</p> <p>Conclusions/Discussion The results did not support the hypothesis. The sea wall allowed for less damage to be done to the dune than with the baffle system. As stated in the hypothesis, when the waves hit the sand covered baffles it is pushed up onto the dune. It was suggested the when the wave was pushed up onto the dune it would have little effect on the dune; however, damage was made. In the hypothesis it was suggested that the waves# energy would be strong enough to wash the sand away to the point of the wall, but this did not occur. During the tests, when the waves energy hit against the sea wall, the wave did not continue upward onto the top of the dune, but swept away a small amount of sand and receded. This concluded in more damage being done to the dune that was being protected with the baffles than with the sea wall.</p>	
Summary Statement This project was conducted to find the most effective way to protect a dune from a hurricane.	
Help Received Dad helped build wave board and sea wall; mom helped with sewing baffles.	