



**CALIFORNIA STATE SCIENCE FAIR
2004 PROJECT SUMMARY**

Name(s) Michelle Jiang	Project Number S1607
Project Title Mathematical Model of Marsh Biomass Distribution in the Upland and Alkaline Margin Environments	
Abstract Objectives/Goals Biomass, the total mass of living matter within a given unit volume of environment, is an important measurement to ecologists. Biomass shows the productivity of organisms under certain environmental conditions. Many factors affect biomass, including nutrient level, salinity, and water content. The plan is to analyze the characteristics of two marsh environments and find a correspondence to the biomass distribution taken at each site. Methods/Materials Actual measurements are gathered on the marsh site, in two sub-environments. Using a 1m by 1m quadrat made out of PVC pipes, calculations of the aboveground plant biomass are taken, by clipping the protruding shoots and sorting the clippings, by location, into separately marked paper bags. Each bag represents an area of 10cm by 10cm. Both wet and dry are measured, two samples for the each sub-environment. After data collection, the measurements are entered into a computer, and statistical analysis is used to find patterns correlations between the different locations. Results From the gathered data, it was seen the biomass data taken from the alkaline margin are more varied from square to square. No explicit pattern was found among the individual subplot areas. Variations among these measurements were irregular and unpredictable. Conclusions/Discussion The results show that environmental factors do seem to affect biomass distribution at the sites. Because the dispersal process is random and chaotic in nature, no set method could be found from which to extrapolate more biomass measurements. If the area of experimentation and number of samples are increased, it might result in a somewhat accurate model for total plant biomass.	
Summary Statement to find a evidence of an ordered, predictable structure in natural environments	
Help Received	