



**CALIFORNIA STATE SCIENCE FAIR
2004 PROJECT SUMMARY**

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| Name(s) Garen M. Checkley | Project Number S0804 |
| Project Title Does It Matter What Plants Grow in California Salt Marshes? | |
| <p style="text-align: center;">Abstract</p> <p>Objectives/Goals California wetlands have declined by 90%. Those wetlands that occur in open lagoons support a variety of plant species, mainly Salicornia (Pickleweed) and Spartina (Cordgrass). But lagoons that close regularly do not support Spartina and are dominated by Salicornia. Both of these plant genera are nesting sites for endangered bird species.</p> <p>Methods/Materials This study, conducted in Mission Bay, California, examined the effects of these two dominant genera on the underlying sediment environment, and compared them to sediment lacking vegetation.</p> <p>Results Percent plant cover and corresponding light reduction were significantly different among the three treatments. Soil temperature and salinity were lower in vegetated than unvegetated sediments, but similar beneath Spartina and Salicornia. Chlorophyll a concentration in sediments, representing microalga biomass, was variable. The mean concentration for vegetated sites was over twice as high as that for unvegetated sites, although the results were not statistically significant. Soil conditions (salinity, temperature, microalgae) were correlated with percent plant cover and light reduction based on regression analysis. Although Spartina was taller (56.5 cm mean) than Salicornia (33.9 cm mean), many measured values of sediment conditions were similar, possible because Spartina had a lower percent cover (50.5%) than Salicornia (91.7%), letting these two factors balance out in terms of environmental effects.</p> <p>Conclusions/Discussion These plants affect the ecosystem by reducing stressful conditions, such as high salinity and high temperature, promoting microalgae, which are the base of the wetland food chain. This study suggests that vegetation matters, and that in wetland restoration, a large emphasis should be placed on vegetation.</p> | |
| Summary Statement The effects of the nearby environment on wetlands successfulness | |
| Help Received Worked under the supervision of Prof. Lisa Levin and Christine Whitcraft; father helped with board adhesives. | |