



CALIFORNIA STATE SCIENCE FAIR 2003 PROJECT SUMMARY

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| Name(s) Katherine E. Nakaba | Project Number S0809 |
| Project Title 2-Yr Study: Sandcrabs, Sandpipers, Pollution: Factors Affecting Sandcrab & Sandpiper Populations in SM Bay and LA Harbor | |
| <p style="text-align: center;">Abstract</p> <p>Objectives/Goals A study was conducted to determine if water temperature, salinity, barometric pressure, substrate, precipitation and/or pollution factors effect sand crab and sandpiper population densities. I hypothesized that sand crabs and sandpipers would have a smaller population where higher levels of ocean pollution were found. A further objective was to determine if the storm drain reclamation facility in Santa Monica was effecting the sand crab populations.</p> <p>Methods/Materials The first year, after measuring the abiotic factors, the number and size of sand crabs were recorded at one location. The trials were expanded to include a second location. Both locations were chosen based on ocean bacteria counts (enterococcus, total and fecal coliforms) - that indicate pollution from numerous sources including fecal waste. The second year, analyzed the difference in substrate as an additional abiotic factor, to corroborate previous results, and to determine if lower sand crab population numbers had a corresponding lower number of sandpipers. The study continued to measure bacterial levels, salinity, barometric pressure, precipitation, and water temperature and increased the number of sites from two to four, expanding from the Santa Monica Bay to the LA Harbor. The study included the run-off cleaned through SMURRF.</p> <p>Results At one site (Pico-Kenter) the storm drain run-off is now being cleaned through a SMURRF facility (Santa Monica Urban Run-off Reclamation Facility). Previous and current bacteria and sand crab data were compared. While the abiotic factors remained constant at all locations, the bacteria count was significantly different.</p> <p>Conclusions/Discussion The results obtained support the hypothesis that the population density of sand crabs and sandpipers is effected by bacterial pollution. There is minor variation in substrate that will generate further study. While the SMURRF project can significantly clean the water, it only funnels the Santa Monica portion of the run-off, not LA County's. Consequently, the bacteria levels at Pico-Kenter are still very high and the sand crab and sandpiper population densities are very low.</p> | |
| Summary Statement The population density of sand crabs and sandpipers is effected by bacterial pollution and reclamation need to be on a large scale to be effective. | |
| Help Received My family helped in digging sand/carrying water. Jose Bacallado from the Ocean Discovery Center reviewed my procedures to make them more precise. James Alamillo, who is the program manager of Heal the Bay's Beach Report Card, has shared his bacterial-count data. Kim O'Cain from SMURRF | |