



**CALIFORNIA STATE SCIENCE FAIR
2002 PROJECT SUMMARY**

Name(s) Andrea N. Gaines	Project Number 22811
Project Title Plover Preferences: Is Beach Grooming Driving Snowy Plovers to Extinction?	
Objectives/Goals The Western Snowy Plover is a threatened species that lives on beaches. Many human activities are thought to harm plovers, but none has been tested experimentally. I tested the hypothesis that beach grooming to remove seaweed and debris eliminates suitable habitats for Snowy Plovers. I hypothesized that key plover habitats will be depressions in the sand and piles of kelp. The process of grooming beaches smoothes sand and rakes away kelp, which should be harmful to snowy plovers. Abstract Methods/Materials My experiments and observations were done at the Coal Oil Point Reserve, in Goleta, CA. I observed plovers at different times of day and recorded their habitat choices. For the experiment, I set up five replicate experimental areas. Each area had 4 treatments (control, kelp removal, smoothed sand, combined smoothed sand & kelp removal) that I used to examine two separate effects of beach grooming -- smoothing the sand and removing kelp. The treatments were randomly assigned to 2m x 2m squares. I monitored the number of plovers in each treatment square on six different dates in March. Results My results supported some of my predictions but not all of them. The birds overwhelmingly preferred rough sand treatments over groomed treatments. 90% of the plovers I observed in my experimental area were located in rough sand treatments. Only 1% of the birds were observed in groomed treatments. This experimental finding was supported by my field habitat observations, where the birds were most commonly found in sand depressions. The most surprising finding was that kelp did not seem to play a big role in where plovers occurred in my experiments. Some of my field observations suggest kelp may be more important than my experiments suggest. Conclusions/Discussion Grooming beaches eliminates suitable habitat for the western snowy plover. Now there is not only anecdotal evidence for this claim but experimental evidence as well. I believe these experimental results could be useful in managing beaches. Further verification of my findings could help in banning beach grooming on snowy plover beaches. Protecting beaches from grooming could potentially play an important role in the recovery of snowy plovers. Stopping beach grooming on beaches where plovers used to occur may help reestablish populations on these beaches.	
Summary Statement My experiments test whether beach grooming is harming the snowy plover, a threatened bird species.	
Help Received My mother and father helped me clear kelp and smooth sand in my experiments. Dr. Cris Sandoval gave me access to the snowy plover populations in the Coal Oil Point Nature Reserve. Drs. Sandoval & Kevin Lafferty taught me many things about snowy plover biology, which helped me design my experiments.	