CALIFORNIA STATE SCIENCE FAIR
2013 PROJECT SUMMARY

Name(s)
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Project Number
33254

Project Title
By Land or by Sea: Where Does Beach Trash Come From?

Abstract

Objectives/Goals
The objective of my study was to determine if population size affects the amount and type of trash found on Santa Cruz County beaches. I predict there will be a greater amount of land trash on the beaches in populated areas than in remote areas, but an equal amount of styrofoam or sea trash on all beaches.

Methods/Materials
I surveyed two high population beaches in town and two low population beaches at remote spots on the north coast of Santa Cruz County. At each beach, 2-3 people walked along the high tide line for 0.7 miles and returned along the low tide line. I collected all trash (except very large items) and counted the people on the beach. I then sorted, counted, and weighed the trash according to the Save Our Shores Cleanup Data card (Save Our Shores, 2012). Each beach was surveyed three times over six weeks.

Results
High population beaches had more trash by weight than the low population beaches (46 lbs vs. 7 lbs.), but low population beaches had more pieces of trash (1498 vs. 964). High population beaches had more pieces of land trash (e.g. plastic, paper, metal, glass) than low population beaches (624 vs. 126), but low population beaches had more pieces of styrofoam or sea trash (1372 vs. 350). The weight of trash varied among the three dates for high population beaches, with the most trash collected after a large storm that produced high flows in local rivers.

Conclusions/Discussion
My research showed that, as predicted, there was more land trash on the populated beaches in Monterey Bay. The patterns and types of trash suggest some beach visitors do not dispose of their trash properly but also that some land trash washes down nearby rivers. I predicted the amount of sea trash would the same at all beaches, but more was found on low population beaches. This may be because the less populated beaches were on the open coast, while the more populated ones were in a protected bay, making less sea trash wash up. Also I think styrofoam bits were easier to find on the cleaner, less populated beaches. Beach trash can be reduced if people dispose of their trash properly. Bans on styrofoam may also help reduce sea trash.

Summary Statement
I compared the amount and type of trash found on popular and remote beaches in Santa Cruz County to identify how much trash came from beachgoers, the sea, and nearby rivers.

Help Received
Mom drove me to beaches and helped collect trash; dad taught me to use GPS, Excel and Google Earth to make graphs and maps.

Preliminary