CALIFORNIA STATE SCIENCE FAIR
2006 PROJECT SUMMARY

Name(s)

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Project Number

S1901

Project Title

Amphibian Diversity in the San Lorenzo Valley

Abstract

Objectives/Goals

The objective of this project was to acquire an understanding of the amphibian species composition and diversity at each of our sites in the San Lorenzo Valley Watershed in Santa Cruz County, California. After our initial visits to the two sites, Quail Hollow Ranch and Waterman Gap, we formulated two investigative questions: 1. How does the species composition differ at these two sites? 2. Which site has greater biodiversity?

Methods/Materials

Methods: Our research took place primarily in the field using four search methods which included upturning logs and leaf matter, daytime visual surveys scanning the forest floor, evening listening surveys, and nighttime surveys using eye shine. We used the Shannon Weiner Biodiversity Index to analyze our data on species diversity at the two sites.

Materials included the Western Reptiles and Amphibians field guide (Robert C. Stebbins), Binoculars, Flashlights, All-Weather Notebook, Waders, Digital Camera, and Raingear

Results

During our research we observed 103 aquatic breeding amphibians (four species) and 1 terrestrial breeding amphibian (one species) at Quail Hollow Ranch. At Waterman Gap we observed 21 terrestrial breeding amphibians (two species) and 3 aquatic breeders (one species. Thus, 99% of the individuals found at Quail Hollow were aquatic breeding amphibians and 87% of the amphibians observed at Waterman Gap were terrestrial breeders.

Through use of the Shannon Weiner Biodiversity Index we found that the biodiversity at Waterman Gap scored an index of .958 and Quail Hollow scored an index of 1.212.

Conclusions/Discussion

Based on the data that we obtained, we have concluded that Quail Hollow is home to more aquatic-breeding amphibians while Waterman Gap supports more terrestrial-breeding amphibians. The calm waters at Quail Hollow provide an ideal habitat for aquatic-breeders to lay their eggs, while the leaf matter, duff, and logs found at Waterman Gap provide breeding ground for terrestrial-breeders.

After performing the Shannon Weiner Biodiversity Index equation to assess the level of biodiversity at each site, we found that Quail Hollow Ranch had higher biodiversity and Waterman Gap was lower. This is logical because although Quail Hollow supports mostly aquatic-breeding amphibians, we found a greater number of amphibian species and a greater number of individual amphibians there than at Waterman Gap.

Summary Statement

To determine the differences in species composition and biodiversity at two different sites in the San Lorenzo Valley.

Help Received

UCSC grad student Valentine Hemingway helped us get aquainted with amphibians, Marian Blair accompanied us on various excurrsions.