Name(s)	Project Number
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Project Title

Abundance and Diversity of Aquatic Insects Colonizing Different Leaf Species: Does Leaf Matter MATTER?

Abstract

Objectives/Goals

The purpose of my experiment is to determine how different leaf species affect the abundance and diversity of aquatic insects that colonize them, and whether different leaf types affect the relative numbers of each functional feeding group represented in the population.

Methods/Materials

I created 20 leaf packs using hardware cloth and filled each with 23 grams of dry alder, eucalyptus, maple, oak, or artificial nylon leaves (four leaf packs of each type). Next I placed one of each type of leaf pack at four sites in Big Creek, Santa Cruz County. After 25 days, I removed the leaf packs and analyzed each for aquatic insect abundance and diversity using a dissection microscope and an insect key.

Results

In the 20 leaf packs, I counted a total of 3,346 aquatic insects representing 25 different families.
*On average, the control leaf packs (artificial leaves) tended to have fewer insects than leaf packs filled with natural leaves (except eucalyptus), and those insects were slightly less diverse and had fewer different insect families than the other leaf packs.
*On average, alder leaf packs contained the most insects, and the maple leaf packs had the most diverse insect population and the greatest family richness.
*Leaf packs with natural leaf species averaged 64-70% collector-gatherers and 23-32% shredders. In contrast, control leaf packs had the most collector-gatherers (78%) and the fewest shredders (15%). Control leaf packs had far fewer caddisflies.
*There was considerable site-to-site variation in insect abundance and diversity.

Conclusions/Discussion

My hypotheses were that my control leaf packs (artificial leaves) would have fewer insects colonizing them and those insects would be less diverse than other leaf packs. This was generally true for the abundance measurements, as well as the diversity index and family richness. I also thought that the control leaf packs would contain fewer insects that eat leaves for food. This hypothesis was supported by my data, as the control leaf packs had the fewest shredders. In addition, I hypothesized that the leaf packs containing the riparian leaves (alder and maple) would have more insects overall and those insects would be more diverse than those found in other leaf packs. I found that the alder leaf packs contained the highest number of insects on average. In addition, the maple leaf packs had the most diverse insect population and the greatest family richness.

Summary Statement

My science fair project investigates the effects of leaf species on the abundance and diversity of aquatic insects.

Help Received