CALIFORNIA STATE SCIENCE FAIR
2003 PROJECT SUMMARY

Name(s)
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Project Number
S1916

Project Title
Testing the Adaptive Behavior of Joining Colonies in the Argentine Ant, an Exotic Species in California

Abstract

Objectives/Goals
A balance in ant species is kept because different ant colonies fight and kill off each other when together, being of different ant species or the same ant species. For some reason, Argentine ants in California have developed a mutation where they no longer fight among other Argentine ant colonies, resulting in an overpopulation of the species and a disturbance of the ecosystem. My project is to investigate the possibility of these ants not only tolerating each other's colonies, but possibly able to actually join colonies, resulting in a strength in numbers that allows them to better fight their enemies and assists in food gathering.

Methods/Materials
First, a local Argentine ant colony was located and then, over thirty miles away, another Argentine ant colony was located. Ants from the distant colony (experimental group), were collected and transported to the local colony. One foreign ant at a time (15 total), was placed near the trail and observed to see if they joined the trail. 15 ants from the local ant trail (control group) were collected, and after several hours reintroduced, one at a time, to their own trail at a distance from where they were collected. Observed to see if they joined the trail.

Results
After being placed onto the ant trail, 100% of the Argentine ants in the control group, and 100% of the ants in the experimental group followed the trail. The existing ants on the trail accepted these invasive ants onto their trail.

Conclusions/Discussion
Most ants of the same species have their own territory for each colony and will fight over it. Argentine ants in California do not fight each other over territory. Scientists hypothesized this is due to a change in their "chemical odor recognition" and they all smell the same to each other. If this is the case, I hypothesized that not only will they tolerate each other, but they would actually be unable to distinguish between each other's colonies, resulthing in a joining of colonies when intermingling occurs in territories. My experiment confirmed the introduced ants could not distinguish that they were not on the trail of a different colony and joined into and were accepted by the othr colony.

Summary Statement
As Argentine ants in California have developed a mutation where they no longer recognize each other as different, I investigated the possibility that the ants could actually be joining colonies.

Help Received
My mom driving to obtain experimental ants, my dad taking photographs, Liz Gil, from whose home I obtained experimental ants, and John, of Truly Nolan Pest Control, for confirming both sets of ants were in fact Argentine