



**CALIFORNIA STATE SCIENCE FAIR
2003 PROJECT SUMMARY**

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Project Title Distribution of Argentine Ants: Effects of Abiotic Factors and Human Disturbance on the Palos Verdes Peninsula	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The Argentine ant, <i>Linepithema humile</i>, has spread worldwide, often decimating native ant species and other arthropod species. Numerous investigations have shown biotic aspects that contribute to the Argentine's success, such as its ability to exploit resources, but fewer and somewhat contradictory studies have been made of abiotic or non-biological conditions that limit the Argentine's distribution. This study investigated the abiotic factors—light, temperature, relative humidity, soil moisture, and soil temperature in three habitat areas on the Palos Verdes Peninsula, non-developed, semi-developed, and fully-developed.</p> <p>Methods/Materials Experiment I—Sugar baits were set out when Argentines were observed. Abiotic factors, human disturbance levels, and ant abundance were measured after two hours. Twenty tests in each of three habitat areas were conducted. Experiment II—A 3 x 3 grid, spanning 8100 square feet, was set out three times in each of the three habitat areas. Each square in the grid was visually searched for Argentines, and results were recorded.</p> <p>Results Analysis of the factors where Argentines were established suggest that the Argentine prefers moderate air and soil temperatures, and dry soils with high relative humidity. Disturbance, especially in the form of human-installed water sources, and non-native plants appear to attract the Argentine. The most popular habitat area was the semi-developed, with human-installed water sources and non-native plants.</p> <p>Conclusions/Discussion The results of my two experiments shed light on why the Argentine favors the Mediterranean coastal regions, characterized by low soil moistures and high relative humidities. Moreover, analogous to following a natural riverbed as shown in some studies, could be the Argentine's inclination to establish by human-installed water sources such as sprinklers and irrigation systems found along dry coastal regions. In conclusion, learning about the ranges of preferred abiotic factors that influence Argentine distribution provides an understanding that could lead to preventing the continued encroachment of an ecologically destructive, invasive species.</p>	
Summary Statement My research on how abiotic factors and human disturbance affected the distribution of Argentine ants suggests an approach to controlling the number one urban, suburban, and rural pest in California.	
Help Received Mother helped in transportation to experimental sites.	