

# EurekaAlert! Science Reporting for Kids, Part A

Lesson Title: Simulating Climate Change Research in Grasslands

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## More time tells a different story about plants and climate change

Ecologists studying the effects of climate change on a California grassland, found that observing the interactions between plants and insects over five years, provides better information than one- or two-year-long studies on a single plant or insect.

Scientist Blake Suttle explained that they "manipulated the climate and saw how the grassland reorganized itself. The response was very different than we expected because of what we know about how the climate affects each species. This experiment taught us about the importance of interacting species in the community."

Suttle and other ecologists set up outdoor laboratories – hundreds of 10 meter-in-diameter plots of trees and natural plants in northern California. Their goal was to study the effect of climate change as predicted by two computer models on two different sets of plots. The two climate models involved changes in the amount and timing of rainfall, so the scientists added the extra water at the correct times to the plots to match the models.



Ecologist Blake Suttle enjoys working in the field. Here he is pictured in the California grasslands where researchers are studying the long-term effects of climate change on the ecosystem.



A third group of plots were "controls." Researchers did not do anything different to these areas. Setting up controls is a normal part of research, explains Suttle. "Without a control, we don't know whether what we are seeing in the experiments is due to the water we are adding or just natural conditions. The control gives us more confidence in our research because we have a 'normal' situation to compare it to," he said.

[The full story is found at <http://www.eurekaalert.org/features/kids/2007-02/aaft-mtt012607.php>.]

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### More time tells a different story about plants and climate change (Part B)

Over the first two years of the field experiment, the changed conditions increased production and diversity. In the first two years the plants, insects and spiders loved the extra water and thrived. In the second year the grasses began to thrive.

Then, annual grass production soared and its litter suppressed regrowth of flowering plants. By the five year mark, plant species richness had fallen to half that of the control plots and the production of plants insects could eat plummeted. As grasses took over, food for grasshoppers disappeared, then as grasshoppers died, the spiders soon followed.

Researchers suggest that short term studies do not provide an accurate picture of the long-term effects. They are continuing the study to see what happens in the even longer-term.

Climate change affects all organisms and this study gives us a different picture of what the future may hold, Suttle explained. "For example, if you are a fish that is going to be favored by higher water temperatures, that does not mean you'll be more favored, because it is not just about how climate change affects you. It is also about how it affects the things that compete with you."



#### About the Scientist:

Blake Suttle grew up in Connecticut and studied biology in college because he thought he wanted to be a doctor. After college he volunteered on animal research projects in the West because he had always been fascinated by wolves and predators. The projects were studying wolves in Yellowstone National Park, mountain lion hunting behavior at Sawtooth National Forest and bald eagles in Idaho.

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From those experiences "I knew that field research and ecology was what I wanted to do with my life," he said. "Ecology is the science that examines the distribution of species and abundance on Earth."

Suttle went to graduate school at the University of California Berkeley and began working on this large research project three and on-half hours away from the university. "I spent months living at the field site setting up an irrigation system for watering the plants. The project is based on an area of thousands of acres of preserved land."

"I spent every summer there and taught classes in the fall," Suttle said. The rest of the year I spent a lot of time in the field collecting data."

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