

PROJECT REPORT

Project Title: Fox squirrels in almond orchards

Research Agency: University of California Cooperative Extension

Principal Investigator: M. Freeman

Budget: \$56,983.00

Background:

Introduced into California as recently as the 1950s, the eastern fox squirrel (*Sciuris nigris*) was initially confined to urban and suburban areas such as neighborhoods, greenbelts, parks and college campuses. In the following years, these populations have spread to agricultural areas. Consequently, the fox squirrel has been identified as a significant pest in almond orchards by several growers in Fresno County. Not only do the squirrels consume almonds, they have been reported to chew and destroy PVC pipe and hoses. While little is known about the demographics of fox squirrels populations in California at the urban/agricultural interface, evidence seems to indicate that populations are growing and spreading into agricultural areas. A concentrated effort to understand the ecology and potential impacts of the fox squirrel is crucial in assessing the severity of what may become a significant problem to the almond industry.

Objectives:

The objectives of this study are:

1. Determine the extent of fox squirrels relative to almond orchards in Fresno County.
2. Identify habitat use of fox squirrels.
3. Create a predictive model for fox squirrel distribution.
4. Based on the above information, we will investigate possible control methods such as shooting, trapping, and rodenticides.

Summary:

January - June 2003 We have primarily worked on our 1st objective, determining the extent of fox squirrels in Fresno County almond orchards. We have met with numerous growers and Pest Control Advisors to learn more about the problem and how clientele view the problem. The PI attended a 3-day course at UCD about using surveys and questionnaires to gather information. We are now developing a grower questionnaire to be mailed to all Fresno almond growers. To save money and time, we are attempting to conduct the surveys using FAX numbers and email if

possible. We are cooperating with the GIS unit at the Kearney Agricultural Center (Parlier) and will be constructing a digital map of the affected orchards. The Almond Board of California is funding this objective, and they have continued funding for the 2003-2004 year.

We are starting research in April on objective 2, determining habitat use of fox squirrels, and objective 4, investigating possible control methods. Some growers have used control measures with varying degrees of success. Some of those orchards and the neighboring fields will be used for the "trapping grid" studies. Objective 2 and 4 were funded by CDFA, and we have not spent any of that money to date. We would like to extend the dates of this project to June 2004, with the same amount of money (a no-cost extension).

We are also in contact with some researchers at CSU-LA, who are studying fox squirrels in urban areas of southern California. Their web site, [Http://instructional1.calstatela.edu/amuchli/squirreiform.htm](http://instructional1.calstatela.edu/amuchli/squirreiform.htm), has a mechanism for homeowners to email information about the squirrel numbers and habitat for survey information. Possibly, we can use the same idea for obtaining data from almond growers.

July - October 2003 We have established a web site (<http://www.gis.uckac.edu/>) for collection of information and future outreach to clientele concerning the fox squirrel. The site could potentially describe any almond orchard in Fresno County including location, pests, control methods used, damage levels, adjacent vegetation, soil types, irrigation method, etc. We are in the process of charting the fields with fox squirrels, which are more extensive than originally thought.

I would like to cancel objectives 2 and 3 of this grant (for the (\$29,000) and just work on objectives 1 and 4 (distribution and control methods). I have informed VPCRAC of this at the October 2003 meeting in San Diego.

August 2004 No new progress reports have been submitted to date.

March 2005 No new progress reports have been submitted to date.

Last Updated:

08/17/2009