California Sea Grant College Program
CALFed Progress Questionnaire

ProjectYear_2A 2nd Year **ProjectNo_2C** R/SF-12 Langridge
TypeQuestionnaire_2B Interim Questionnaire

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Project Information

ProjectNo_2C R/SF-12 Langridge **StartDate_3a** sept 1, 2005 **EndDate_3b** august 31, 2008
ProjectTitle_4 Addressing Stakeholder Concerns: Pests and Pest Control on the Sacramento River, California

CALFed Fellow contact information

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Community Mentor (for additional please see #9)

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CMPositionTitle_7N Senior Ecologist

Additional Research Mentors and Community Mentors

Additional Research Mentors_8

Additional Community Mentors_9

Dr. Geoffrey Guepel
Point Reyes Bird Observatory
Bolinas, CA

Dr. Bob Bugg
Sustainable Agriculture Research and Education Program
Davis, CA

Project Objectives: Please type your responses, and answer the questions in a style appropriate for laymen.

ProjectObjectives_10

1) Determine the distribution of pests and natural enemies in relation to proximity to restored and remnant riparian forest and agriculture
2) Determine the abundance and species richness of pests and natural enemies in relation to proximity to restored and remnant riparian forest and agriculture
3) Determine the interactions between proximity to natural habitat and behavior of avian insectivore predators
4) Determine the distribution, abundance, and species richness of riparian species on agricultural, restored and remnant riparian forest.
5) Communicate findings to local stakeholders and a wider national and international audience

Summary of progress in meeting each of these goals and objectives

ProgressSummary_11

habitat. These results have been interpreted and written up in a manuscript that will be submitted to Ecological Applications later this month. Portions of these results have also been presented at the Calfed/State of the Estuary Conferences in 2005 and 2006. I have also collected data on codling moth and navel orange worm abundances at different distances from restored and remnant habitat. These data were analyzed and interpreted for a report for The Nature Conservancy, as part of their Colusa Subreach Planning Project.

I collected data in 2005, 2006, and 2007, on bird abundance and species richness on agricultural areas and adjacent restored and remnant riparian forests at 414 different points along the Sacramento River. These results have been analyzed and interpreted in terms of agricultural pest birds, birds that eat pests, and riparian obligate birds. This information was presented at the Sacramento River Symposium in Chico, California in 2007, to the Point Reyes Bird Observatory, as well as at the International Ecological Society of America conference in San Jose, California in 2007. Part of this information was summarized for a report for The Nature Conservancy. These results are currently in draft manuscript form and will be submitted to Conservation Biology in the next two months.

I collected data in 2006 and 2007 on foraging observations on insectivorous birds on 15 different farms at different distances from remnant and restored riparian forest. This information was analyzed and summarized in the report for The Nature Conservancy and presented at the Sacramento River Symposium, for the Point Reyes Bird Observatory, and the Ecological Society of America meetings. I have collected, analyzed and interpreted data on 42 bird exclosures placed on farms in 2006. These data are summarized in the report for The Nature Conservancy. Data collected and summarized in a report to The Nature Conservancy also includes abundance of insects by order at different distances from restored and remnant habitat.

PROJECT MODIFICATIONS: Please explain any substantial modifications in research plans, including new directions pursued. Describe major problems encountered, especially problems with experimental protocols and how they were resolved. Describe any ancillary research topics developed.

Modifications_12

I have included more bird surveys within the restored habitats in order to determine how riparian birds found in the restored areas use the agricultural areas. The first year that I collected data within the restored areas showed that the riparian birds used the agricultural areas adjacent to the restored sites as a buffer, but that this was not true farther from the restored sites. Because of this interesting result, I will be collecting data on restored sites again in 2007-8. I plan to use this information as part of a publication for the journal Conservation Biology.

In 2006 I had a smaller than hoped for colony of overwintering codling moths. I am trying to build up a larger colony this year in

order to be able to cover more sites with more at each site, therefore having better results. I have talked with codling moth specialists at UC Berkeley about my colony problems and believe I should have a stronger colony this year.

BENEFITS AND APPLICATIONS: Suggest the relevance of these new findings to management. Describe any accomplishment, that is significant effects your project has had on resource management or user group behavior. CALFED is looking for "management cue" (see http://science.calwater.ca.gov/pdf/soemgmtcues.pdf).

BenefitsApplic_13

According to the Management Cues report, successful river restoration requires ecosystem-scale approaches. Yet an ecosystem-scale approach means many stakeholders must be involved and must support the restoration project for it to be successful. This research was presented in a report to The Nature Conservancy for their Colusa Subreach Program. This and other research will be used in order to better understand some of the concerns raised by stakeholders that opposed restoration on the Sacramento River watershed, with the goal of resolving these issues using information such as was provided through my report and feedback from stakeholders. Included in this report are results that indicate that insect-eating birds are more abundant and foraging more often closer to restored and remnant riparian habitat. The results also show that agricultural pest birds as defined by stakeholders on the Sacramento River are not affected by proximity to riparian habitat.

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PUBLICATIONS: List any publications, presentations, or posters that have resulted from this funded research. Give as many details as possible, including status of paper (e.g., in review; in press), journal name, conference location and date of presentation. Please note (as outlined in the conditions of the award) that each fellow is required to submit an abstract for an oral or poster presentation at each State of the Estuary conference and CALFED Science Conference during the duration of the fellowship.

Publications_14

Langridge, S.M., M. Buckley, K.D. Holl. 2007. Strategies for overcoming obstacles to restoring natural capital: Large-scale restoration on the Sacramento River. In Restoring Natural Capital, Island Press.

Large-scale riparian restoration and agriculture: Ecosystem services and habitat buffers? Ecological Society of America Annual Meeting, San Jose, CA, August 2007.

Effects of large-scale restoration on the distribution of riparian birds in agriculture. Invited talk for the Point Reyes Bird Observatory. Bolinas, CA, May 2007.

Contested views of restoration: large-scale restoration on the Sacramento River, California. American Association of Geographers. San Francisco, CA, April 2007.

Effects of large-scale riparian restoration on bird pests and pest predators. Sacramento River Conservation Area Conference, Chico, CA, April 2007.

Large-scale Riparian Restoration in Agricultural Landscapes: Are Weeds Causing Conflict? Calfed Science Conference, Sacramento, CA, October 2006.

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COOPERATING ORGANIZATIONS: List those agencies and/or persons who provided financial, technical or other assistance to your project since inception. Describe the nature of their collaboration.

CoopOrganiz_15

The Nature Conservancy, Northern California Office, provided free housing for field assistants and technical assistance through their ecologist and GIS specialist. This office also provided a $8500 contract for production of a report on pests and pest control results. The Point Reyes Bird Observatory has provided a network of field assistants, consultation on bird research, and data sharing. Dr. Karen Holl at University of California Santa Cruz and Dr. Elizabeth Crone at University of Montana provided initial technical advice on seed bank studies and feedback on the manuscript.

AWARDS: List any special awards or honors that you, or mentor or members of the research team, have received during the duration of this project.

Awards_16

David Gaines Award, UCSC, awarded to projects that will make a significant contribution to the field of environmental studies by adding to our knowledge of a specific problem or by strengthening protection of the environment. Awarded in 2005-6 to Suzanne Langridge.

KEYWORDS: List keywords that will be useful in indexing your project.

Keywords_17

Sacramento River, agriculture, agricultural pests, natural enemies, restoration, stakeholders

PATENTS: List any patents associated with your project.

Patents_18

none

Additions: Additional information can be added here. Please begin the text with the number of the question you are adding to.

Additions_19