CALFED Progress Report
California Sea Grant College Program

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TypeQuestionnaire_2B: Interim Questionnaire

Preparer Information

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Project Information

ProjectNo_2C: U-04-SC-005 StartDate_3a: May 1, 2007 EndDate_3b: April 30, 2010

ProjectTitle_4: Measuring and predicting the success of riparian restoration for wildlife populations: Accommodating uncertainty and complexity

CALFed Fellow contact information

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Research Mentor (for additional please see #8)

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Community Mentor (for additional please see #9)

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CMInstitution_7E: PRBO Conservation Science

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CMPositionTitle_7N: Senior Conservation Scientist

Additional Research Mentors and Community Mentors

Additional Research Mentors_8

Additional Community Mentors_9

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

ProjectObjectives_10

1. Develop performance measures of restoration success. This project capitalizes on the rich data sets that are already available for riparian habitats in the Central Valley. The fellow will integrate information on avian demography with larger scale patterns of riparian restoration, hyrdrology, and climate to enhance the utility of birds as performance measures of restoration success.

2. Enhance information transfer and develop decision support. Performance measures of restoration success are of little utility if they are not useful to decision makers. To develop a better understanding of what types of information about riparian bird habitat conservation, fellow will engage with decisions makers about the type of information that is needed to guide the management and restoration of riparian habitats.

3. Incorporate uncertainty into restoration planning. Uncertainty about future land-use and climate necessitates conservation and restoration strategies that will be successful in the absence of detailed knowledge about future conditions. This project will address the ramifications of uncertainty for riparian restoration and conservation from a quantitative and qualitative perspective.

Summary of progress in meeting each of these goals and objectives

ProgressSummary_11

1. Developing performance measures of restoration success. Fellow has begun work on synthesizing data on reproductive success and survival to evaluate the demographic response of riparian birds to restoration. Since the last report, results of preliminary analyses were presented joint meeting of the Society of Northwest Vertebrate Biology and Washington Wildlife Society in 2009 and the National Conference on Science, Policy, and the Environment in 2008. In collaboration with PRBO biologists, Fellow organized a symposium on measuring the success of avian habitat restoration at the joint meeting of the Cooper Ornithological Society, American Ornithologists Union, and Society of Canadian Ornithologists held in August 2008. This work has resulted in unpublished manuscripts on the application of seasonal fecundity models to riparian restoration and on the response of riparian song reproductive success to restoration.

2. Enhancing information transfer and developing decision support. Fellow has gathered information about decision support tools for riparian habitat restoration and conservation by distributing a questionnaire to land managers and from one-on-one interactions with restoration practitioners. This work resulted in a paper in press at Biodiversity and Conservation. Fellow has worked to ensure that research results are being communicated to decision makers. In 2009, Fellow was invited to participate in the climate change and environmental stewardship workgroups that were formed to provide input to California Department of Water Resources about the scope of considerations that will be addressed in the 2012 Central Valley Flood Protection Plan. Between August and October, Fellow attended a series of meetings in which workgroups identified challenges, opportunities, guiding principles, and indicators of success to be considered in the plan. The Climate Change Scope Definition Work Group Summary Report and the Environmental Stewardship Scope Definition Work Group Summary Report are posted on-line (http://www.water.ca.gov/cvfmp/documents.cfm). Fellow serves as an invited participant in the Bank Swallow Working Group, helping to develop conservation and restoration strategies for this special status species that nests in river banks of the Sacramento Valley. Fellow has worked with The Nature Conservancy and Audubon California to help develop the San Joaquin River Conservation Action Plan. This work has resulted in a manuscript submitted for publication in Animal Conservation.

3. Incorporate uncertainty into restoration planning. Fellow has developed collaborations with climate modelers and restoration

practitioners to learn more about the uncertainty associated with future climatic conditions and how it impacts the practice of restoration. This work has resulted in papers published in the Auk and Ecological Restoration.

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

While this project remains focused on using bird monitoring to define and evaluate riparian restoration success, the Fellow is pursuing several new opportunities that have resulted from recent collaborations (most with CALFED-funded investigators).

1. Remote sensing tools for quantifying riparian bird habitat. In collaboration with UC Davis and PRBO biologists, Fellow has been investigating the utility of LiDAR measurements to understand the response of riparian birds to vegetation structure.

2. Climate change. Fellow is working with PRBO biologists to produce a companion manuscript to the recently published California Bird Species of Special Concern. This manuscript will identify bird species in California that are most at risk from the projected effects of climate change over the next century.

3. Cost-benefit analyses of restoration. Fellow is collaborating with PRBO biologists to use information about the response of riparian bird communities to restoration to perform a cost-benefit analysis of different restoration designs. This analysis will help inform decisions about the amount of investment that is justified based on knowledge of how bird habitat is improved.

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

1. The development of decision support tools should prioritize one-on-one interactions between ecologists and decision makers. In our survey of managers engaged in the conservation and restoration of riparian bird habitat, there was a strong consensus that one-on-one interactions are important, but generally not available in the decision making process.
2. The role of riparian restoration in climate change adaptation. In the paper "Why climate change makes riparian restoration more important than ever", published in Ecological Restoration, a diverse group of authors discuss the role that riparian restoration can play in protecting ecosystem from the negative effects of climate change. This work provides decision makers with a rationale for investing in riparian restoration as a strategy for preparing ecosystems for climate change and makes recommendations for modifying on-the-ground practices and developing research questions to address climate change.
3. Improving a framework for incorporating riparian bird populations in conservation and restoration planning. Working with

PRBO, The Nature Conservancy, and Audubon California, the Fellow used avian habitat suitability models developed by PRBO for the Central Valley of California to support the San Joaquin River Conservation Action Plan. The results illustrate a process by which wildlife habitat suitability models can be integrated with riparian conservation planning processes.

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

PUBLICATIONS

1. Howell, C. A., J. K. Wood, N. Nur, K. Lindquist, N. E. Seavy. In prep. Hydrological events interact with habitat restoration to influence the reproductive success of a riparian songbird. Intended for submission to Restoration Ecology.
2. Seavy, N. E. In prep. Modeling predation and parasitism effects on seasonal fecundity of riparian birds. Intended for submission to Avian Ecology and Conservation.
3. Seavy, N.E., T. Gardali, G.H. Golet, D. Jongsomjit, S. Paine, S. Matsumoto, and D. Stralberg. In review. Integrating bird habitat suitability indices into a conservation planning framework for the San Joaquin River, California. Submitted to Animal Conservation in December 2009.
4. Seavy, N. E. and C. A. Howell. In press. How can we improve delivery of decision support tools for conservation and restoration? Biodiversity and Conservation.
5. Seavy, N. E., J. H. Viers, and J. K. Wood. 2009. Riparian bird response to vegetation structure: A multiscale analysis using LiDAR measurements of canopy height. Ecological Applications 19:1848-1857.
6. Seavy, N. E., T. Gardali, G. H. Golet, F. T. Griggs, C. A. Howell, T. R. Kelsey, S. Small, J. H. Viers, J. F. Weigand. 2009. Why climate change makes riparian restoration more important than ever. Ecological Restoration 27:330-338.
7. Seavy, N.E., K. E. Dybala, and M. A. Snyder. 2008. Climate models and ornithology. Auk 125:1-10.

PRESENTATIONS (selected)

1. Seavy, N.E., J. Viers, and J. Wood. Using LiDAR to quantify wildlife habitat in riparian ecosystems. Invited presentation to the Ecological Society of America Meeting, Albuquerque, New Mexico, 2009.
2. Seavy, N.E. Addressing the consequences: How do we adapt bird conservation to climate change? Invited presentation to the Cooper Ornithological Society Annual Meeting, Tucson, Arizona, 2009.
3. Seavy, N.E., G.R. Geupel, M. Herzog, S. Moss, and D. Stralberg. Bird conservation, resource management, and climate change. Invited presentation to the Climate, Resources & Ecosystems in Eastern California Conference, Bishop, California, 2008.
4. Howell, C.A., T. Gardali, R. D. Burnett, J. K. Wood, and N. E. Seavy. Breeding songbird responses to riparian restoration. American Ornithologists' Union, Cooper Ornithological Society, and Canadian Society of Ornithologists joint meeting, Portland, Oregon, 2008.
5. Seavy, N.E., J. Viers, and J. Wood. At what scale should we measure vegetation structure for bird habitat models? American Ornithologists' Union, Cooper Ornithological Society, and Canadian Society of Ornithologists joint meeting, Portland, Oregon, 2008.

POSTERS (selected)

1. Gardali, T., and N.E. Seavy. Searching for cost efficiencies of riparian restoration. American Ornithologists' Union, Cooper Ornithological Society, and Canadian Society of Ornithologists joint meeting, San Diego, California, 2010.
2. Seavy, N.E., T. Gardali, G.H. Golet, D. Jongsomjit, S. Paine, S. Matsumoto, D. Stralberg. Integrating bird habitat suitability indices into a conservation planning framework for the San Joaquin River, California. American Ornithologists' Union, Cooper Ornithological Society, and Canadian Society of Ornithologists joint meeting, San Diego, California, 2010.
3. Geupel, G., N.E. Seavy, T. Gardali, G.H. Golet, D. Jongsomjit, S. Paine, S. Matsumoto, D. Stralberg. Integrating bird habitat suitability indices into a conservation planning framework for the San Joaquin River, California. Wildlife Society, Western Chapter, Visalia, California, 2010. (more posters continued at end of document)

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

UC Davis--Fellow is collaborating with Dr. Joshua Viers on two manuscripts, and with graduate students Kristy Dybala and Elizabeth Porzig.
UC Santa Cruz--Fellow collaborated on one manuscript with climatologist Dr. Mark Snyder.
California Department of Fish and Game--Fellow is participating as a member of the Bank Swallow working group, organized by Kent Smith.
The Nature Conservancy--Fellow collaborated with Dr. Greg Golet on two manuscripts, and with Dr. Jaymee Marty on a proposal to experimentally compare alternative restoration techniques.
River Partners--Fellow collaborated with Drs. Stacy Small and Thomas Griggs on one manuscript.
Audubon California--Fellow collaborated with Rodd Kelsey on one 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

PRBO Conservation Science was awarded the "Conservationist of the Year" award in 2010 by The Wildlife Society – Western Section at their annual meeting in Visalia, California.

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

Keywords_17

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

Publications_14:

More poster presentations:

4. Seavy, N.E., C.A. Howell, and T. Gardali. Restoration of riparian wildlife habitat in California's Central Valley. Society of Northwest Vertebrate Biology and Washington Wildlife Society join meeting, Portland, Oregon, 2009.

5. Wiens, J. A., N. E. Seavy, T. Gardali, C. A. Howell, G. H. Golet, J. H. Viers. Science to inform action: Riparian restoration in California's Central Valley. National Conference on Science, Policy, and the Environment, Washington D.C., 2008.

6. Seavy, N. E., C. A. Howell, and J. F. Quinn. Restoring riparian wildlife habitat in California's Central Valley: New tools and greater urgency. CALFED Science Conference, Sacramento, California, 2008.

7. Seavy, N.E. Riparian restoration and bird monitoring: What are the tools and how can they be improved? Riparian Habitat Joint Venture meeting, Sacramento, California, 2007.

8. Seavy, N.E., G. Ballard, T. Gardali, G. Geupel, C. Howell, and N. Nur. Riparian restoration, bird population dynamics, and ecosystem function. State of the Estuary meeting, Oakland, California, 2007.