CALFed Progress Questionnaire
California Sea Grant College Program

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ProjectYear_2A 2nd Year **ProjectNo_2C** Interim Questionnaire

TypeQuestionnaire_2B An Investigation of Floodplain Habitat for California's Native

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Project Information

ProjectNo_2C Interim Questionnaire **StartDate_3a** 7/1/03 **EndDate_3b** 6/30/04
ProjectTitle_4 R/SF-4

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Additional Research Mentors_8

Additional Community Mentors_9

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

ProjectObjectives_10

1. Develop conceptual models of historic and current Central Valley floodplains, including the interaction of hydrology, geomorphology, and ecology.
2. Write the CALFED Floodplain white paper. This paper will be a review of the current state of knowledge of Central Valley floodplains, incorporating the conceptual models described above. The paper will provide an overview of historical and current impacts, restoration programs, and future issues.
3. Organize a workshop to receive expert input on developing indicators for quantifying area of functioning floodplain, monitoring floodplain status and for guiding restoration.
4. Develop an area-based indicator for quantifying and monitoring floodplain habitat, and organize second workshop to receive expert input.
5. Organize a scientific symposium to present floodplain indicator, conceptual model, and CALFED white paper to a panel of scientists from agencies, NGOs, academia, and the private sector.
6. Organize a public conference on floodplain restoration.
7. Collaborate with NHI to incorporate floodplain inundation as a an ecological response variable for their research on reservoir reoperation and conjunctive water management.
8. Collaborate with other UC Davis researchers on field studies of how native fish use floodplain habitats.

Summary of progress in meeting each of these goals and objectives

ProgressSummary_11

1. I wrote a draft of the first of two floodplain white papers for CALFED. The first white paper reviews general principles of floodplain geomorphology, hydrology, and ecology and then focuses on these principles for Central Valley floodplains. This first draft has been circulated for informal review from a wide range of academic and agency scientists. I am currently working on a second white paper that will review the historical extent and losses of floodplains, describe restoration approaches from other systems throughout the world, summarize floodplain restoration projects in the Central Valley, describe the ecosystem services provided by functional floodplains, and review the literature on the effect of climate change on California hydrology and flood regimes.
2. I collaborated with Phil Williams and Associates (PWA) to develop a method for identifying floodplains that are inundated by ecologically important flows. We developed ërepresentative floodsí in terms of frequency, duration, and seasonality and then mapped the floodplains in selected reaches of the Sacramento Valley that are inundated by one specific representative flood ñ the ëfloodplain activation flow (FAF).í The FAF is a frequent (occurring two out of three years), long duration (> 7 days) flow that occurs in the spring. This type of flow is particularly important for native fish for spawning and rearing and for promoting the production of biologically available carbon that can be exported to downstream aquatic ecosystems. We found that there is very little FAF floodplain along the Sacramento River, while the Yolo Bypass is almost completely inundated by FAF flows.
3. We convened a second workshop of the Floodplain Working Group (FWG) in January, 2005. The FWG is a group of academic and agency scientists who we originally convened in May, 2004. We provided the FWG with a draft of the first CALFED white paper and presented conceptual models of Central Valley floodplains. Along with PWA we also presented the approach for identifying and mapping the FAF floodplain.
4. We have written a draft report on the approach for identifying and mapping FAF floodplain and this report will be sent to the FWG for review. We will then provide this report to CALFED. We are also writing a shorter version of this report to submit as a journal article.
5. During the flood season of 2005, I collaborated with a post-graduate researcher at UC Davis to study the relative growth rates of juvenile chinook rearing in various floodplain and riverine habitats of the Cosumnes River Preserve. We placed hatchery juvenile chinook in enclosures in a wide range of habitats on the floodplain and main-stem river channels. Initial results showed that fish rearing on floodplains had significantly higher growth rates than fish rearing in the river. Subsequent analyses will compare the mercury content of the tissues of fish rearing in floodplain and riverine habitats.

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

There have been no major modifications since the last report.

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

The research on growth rates of juvenile chinook is providing further evidence of the importance of floodplains for native fish. The research on FAF floodplains has demonstrated that there is very little of this type of habitat remaining in the Sacramento Valley - floodplain that floods frequently for long durations, allowing native fish to successfully utilize the habitat for spawning and rearing, and for floodplain productivity to occur. Together, these research efforts emphasize the importance and rarity of this habitat type.

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

Opperman, J., E. Andrews, S. Bozkurt, J. Mount, and P. Moyle. 2005. A conceptual model for restoring floodplains in Californiaís Central Valley. Joint Assembly of the American Geophysical Union and the North American Benthological Society, New Orleans, LA, May 2005

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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

Phil Williams and Associates
Natural Heritage Institute

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

n/a

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

Keywords_17

floodplain, floodplain restoration, native fish

PATENTS: List any patents associated with your project.

Patents_18

n/a

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

Additions_19

n/a

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