

Attachment H

COVER SHEET (PAGE 1 of 2)

May 1998 CALFED ECOSYSTEM RESTORATION PROPOSAL SOLICITATION

Waterfowl Response to Landscape-Scale Habitat Changes: Learning  
Proposal Title: From the Past to Guide CALFED's Ecosystem Restoration Program

Applicant Name: Joseph P. Fleskes

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Telephone: 707/678-0682 ext. 628

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Amount of funding requested: \$183,000 ea year for 3 years

Indicate the Topic for which you are applying (check only one box). Note that this is an important decision: see page    of the Proposal Solicitation Package for more information.

- Fish Passage Assessment
- Floodplain and Habitat Restoration
- Fish Harvest
- Watershed Planning/Implementation
- Fish Screen Evaluations - Alternatives and Biological Priorities
- Fish Passage Improvements
- Gravel Restoration
- Species Life History Studies
- Education

Indicate the geographic area of your proposal (check only one box):

- Sacramento River Mainstem
- Delta
- Suisun Marsh and Bay
- San Joaquin River Mainstem
- Landscape (entire Bay-Delta watershed)
- Sacramento Tributary: \_\_\_\_\_
- East Side Delta Tributary: \_\_\_\_\_
- San Joaquin Tributary: \_\_\_\_\_
- Other: \_\_\_\_\_
- North Bay: \_\_\_\_\_

Indicate the primary species which the proposal addresses (check no more than two boxes):

- San Joaquin and East-side Delta tributaries fall-run chinook salmon
- Winter-run chinook salmon
- Late-fall run chinook salmon
- Delta smelt
- Splittail
- Green sturgeon
- Migratory birds
- Spring-run chinook salmon
- Fall-run chinook salmon
- Longfin smelt
- Steelhead trout
- Striped bass

COVER SHEET (PAGE 2 of 2)

May 1998 CALFED ECOSYSTEM RESTORATION PROPOSAL SOLICITATION

Indicate the type of applicant (check only one box):

- |  |  |
|--|--|
| <input type="checkbox"/> State agency                    | <input checked="" type="checkbox"/> Federal agency |
| <input type="checkbox"/> Public/Non-profit joint venture | <input type="checkbox"/> Non-profit                |
| <input type="checkbox"/> Local government/district       | <input type="checkbox"/> Private party             |
| <input type="checkbox"/> University                      | <input type="checkbox"/> Other: _____              |

Indicate the type of project (check only one box):

- |  |   |
|--|---|
| <input type="checkbox"/> Planning            | <input type="checkbox"/> Implementation |
| <input type="checkbox"/> Monitoring          | <input type="checkbox"/> Education      |
| <input checked="" type="checkbox"/> Research |   |

By signing below, the applicant declares the following:

- (1) the truthfulness of all representations in their proposal;
- (2) the individual signing the form is entitled to submit the application on behalf of the applicant (if applicant is an entity or organization); and
- (3) the person submitting the application has read and understood the conflict of interest and confidentiality discussion in the PSP (Section II.K) and waives any and all rights to privacy and confidentiality of the proposal on behalf of the applicant, to the extent as provided in the Section.

Joseph P. Aleskes  
(Signature of Applicant)

## I. EXECUTIVE SUMMARY

**a. Title:** WATERFOWL RESPONSE TO LANDSCAPE-SCALE HABITAT CHANGES:  
LEARNING FROM THE PAST TO GUIDE CALFED'S ECOSYSTEM RESTORATION PROGRAM

**Applicant:** Joseph P. Fleskes

**b. Project Description/Objectives:** This is a cooperative landscape-scale project to identify lands in the Delta and other Central Valley regions that would benefit migratory waterfowl. It will complement efforts for other CALFED priority species to identify floodplain lands of value. The Central Valley is one of the most important waterfowl wintering areas in the world and impacts on waterfowl ecology should be considered in CALFED's land acquisition program. As we enter into a new millennium, we need to understand how waterfowl will respond to habitat restoration efforts so these programs can be coordinated and managed for optimum benefit of all priority species, including our waterfowl resource and those who enjoy it. This study will measure landscape scale impacts of recent and ongoing habitat changes on wintering waterfowl distribution, movements, habitat use and survival and use this information to target lands for acquisition through the CALFED program (ERPP III. C., page 35).

**c. Approach:** Information is available on distribution, movements, habitat use and survival of waterfowl in California from before the CALFED program. These data were collected during aerial waterfowl surveys conducted by the USFWS and California Department of Fish and Game (USFWS 1978, USFWS unpubl. data), and during studies of radio-tagged northern pintails (Miller et al. 1993, Miller et al. 1995, Fleskes et al. 1997), mallards (Heitmeyer 1989b, Day et al. 1990) and white-fronted geese (Takekawa et al. 1990) led by the Dixon Field Station of the USFWS (now U. S. Geological Survey) and by the California Waterfowl Association. This study will collect similar data under today's conditions and compare results with those earlier studies to measure the impacts of habitat changes on the ecology of waterfowl wintering in the California. These data will then be incorporated in a site analysis model (F. A. Reid, Ducks Unlimited, Inc., pers. comm.) to help guide CALFED land acquisition programs.

**Task 1.** *Assess any changes in wintering waterfowl distribution in the Central Valley.* We will conduct nine complete aerial waterfowl surveys of the Central Valley between September - March during both field seasons and compare waterfowl distribution with that during 1973-79, when periodic aerial surveys of the entire Central Valley were last conducted. We will match the timing of our aerial surveys with the 1970 surveys to facilitate comparisons.

**Task 2.** *Identify any changes in wintering northern pintail, mallard and white-fronted goose distribution, movement patterns and habitat use.* We will track the daily movements and use of feeding and roosting sites of radio-tagged white-fronted geese, mallards, and northern pintails during August-April, each year. We will replicate field methods of earlier studies, (Heitmeyer 1989b, Day et al. 1990, Miller et al. 1993, 1995, Fleskes et al. 1997, J. Takekawa pers. comm.) including timing and locations of radio-tagging and tracking schedules to facilitate comparisons.

**Task 3.** *Model waterfowl value of lands for possible acquisition through CALFED.* Data from this project will be incorporated into a site analysis model that will rate lands according to their value for waterfowl. We will map habitat and changes that have occurred during the last decade and use our estimates of the timing and magnitude of waterfowl use in Central Valley basins, the locations of feeding and roost sites, daily and seasonal movement patterns, and use rates of

wetland and agricultural habitats to determine habitat requirements for fall, early winter, late winter, and spring to provide data for the site analysis model.

**Schedule:** The study will begin in August 1998 and last three years, including two August-April field seasons, and a period between and after the two field seasons to analyze and report results.

**d. Justification for Project and Funding by CALFED:** Despite loss of over 90% of California's wetlands since the turn of the century, about 60% of Pacific Flyway and 18% of North American waterfowl winter in the Bay-Delta and other Central Valley regions; millions more migrate through or nest there (U.S. Fish and Wildlife Service [USFWS] 1978, Gilmer et al. 1982, Canadian Wildlife Service and USFWS 1986). It is crucial that managers of conservation programs have the information necessary to understand how wildlife respond to landscape scale changes so that their large investments provide the maximum sustained benefit for our natural resources. Impacts on waterfowl should be considered in CALFED's land acquisition program. Information on waterfowl distribution, movement patterns and habitat use throughout the wintering period is needed to understand how waterfowl have responded to past habitat changes and to determine the acreage, distribution and flooding regimes of habitats needed to support waterfowl populations in the Delta and other Central Valley basins.

**e. Budget Costs and Third Party Impacts:** The amount requested from CALFED to complete this study is \$549,000 (\$183K for 3 years) to match funding acquired and in-kind services pledged from other project partners. Third party impacts include improved implementation of the \$528 million Central Valley Habitat Joint Venture (CVHJV) program, enhanced coordination of CALFED with CVHJV and other programs (e.g. CVP), reduction of fish and wildlife conflicts, and healthier fish and wildlife populations. This should enhance recreational opportunities that may improve the local economy.

**f. Applicant Qualifications** The project leader (Joseph P. Fleskes) has extensive training and over 20 years of working experience researching migratory waterfowl and their habitats throughout North America. He has successfully conducted 3 related projects in California and has assembled a team of waterfowl and wetland experts for this project. In addition to popular articles and management guides, his research has appeared in 12 peer-reviewed publications.

**g. Monitoring and Data Evaluation:** Standard statistical techniques (e.g., analysis of variance, compositional analysis) will be used to analyze data and detect significant results. Data from this study will be integrated with pertinent information from earlier works to generate findings and make recommendations.

**h. Local Support/Coordination/Compatibility:** This study was identified as the #1 research need by private and public managers and researchers during the 1996 Waterfowl Research Needs Workshop and by Pacific Flyway waterfowl coordinators at the First North American Duck Symposium held recently in Baton Rouge, Louisiana. The study proposal has been widely reviewed and called "exceptionally well-conceived" by the Wetland Habitat Coordinator of the California Department of Fish and Game and is strongly endorsed by the management boards of the CVHJV and Grassland Water District. Partner contributions total \$549,000.

## II. TITLE PAGE

### WATERFOWL RESPONSE TO LANDSCAPE-SCALE HABITAT CHANGES: LEARNING FROM THE PAST TO GUIDE CALFED'S ECOSYSTEM RESTORATION PROGRAM

**Applicant/Principle Investigator:**

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**Type of Organization and Tax Status:** U. S. Government, tax exempt.

**Tax Identification Number:** 84-1024566

**Technical and Financial Contact person:** Joseph P. Fleskes (see above information)

**Participants/Collaborators in Implementation:**

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**RFP Project Group Type:** Other Services

### III. PROJECT DESCRIPTION

**a. Project Description and Approach:** CALFED and other habitat conservation programs such as the Central Valley Habitat Joint Venture (CVHJV) are greatly altering the landscape of the Bay-Delta and other Central Valley regions. The Central Valley of California is one of the most important waterfowl wintering areas in the world and managers of these programs need to understand how waterfowl are responding to habitat changes so these programs can be coordinated and managed for optimum benefit of the waterfowl resource and those who enjoy it.

This objective of this study is to measure landscape scale impacts of these conservation programs on wintering waterfowl ecology by comparing waterfowl distribution, movements and habitat use from before, during and after CALFED, CVHJV and other habitat restoration projects take effect and use this information to model the value of lands to waterfowl. Information is available on distribution, movements, habitat use and survival of waterfowl in California from before the CALFED and CVHJV programs. These data were collected during aerial waterfowl surveys conducted by the USFWS and California Department of Fish and Game (USFWS 1978, USFWS unpubl. data), and during studies of radio-tagged northern pintails (Miller et al. 1993, Miller et al. 1995, Fleskes et al. 1997), mallards (Heitmeyer 1989b, Day et al. 1990) and white-fronted geese (Takekawa et al. 1990) led by the Dixon Field Station of the USFWS (now U. S. Geological Survey) and by the California Waterfowl Association. Our approach will be to collect similar data under today's changing conditions and compare results with those earlier studies to measure the impacts of habitat changes on the ecology of waterfowl wintering in the California. These data will then be incorporated in a site analysis model (F. A. Reid, Ducks Unlimited, Inc., pers. comm.) to help guide CALFED land acquisition programs (ERPP III. C., page 35). Specific tasks and methods to accomplish each are as follows:

**Task 1.** *Assess any changes in wintering waterfowl distribution in the Central Valley.* We will conduct nine complete aerial waterfowl surveys of the Central Valley between September - March during both field seasons and compare waterfowl distribution with that during 1973-79, when periodic aerial surveys of the entire Central Valley were last conducted. We will match the timing of our aerial surveys with the 1970 surveys to facilitate comparisons.

**Task 2.** *Identify any changes in wintering northern pintail, mallard and white-fronted goose movement patterns and habitat use.* We will track the daily movements and use of feeding and roosting sites of radio-tagged white-fronted geese, mallards, and northern pintails during August-April, each year. We will replicate field methodology of earlier studies, including dates and locations of radio-tagging, and day and night tracking (Heitmeyer 1989b, Day et al. 1990, Miller et al. 1993, 1995, Fleskes et al. 1997, J. Takekawa pers. comm.) to facilitate comparisons. Thus, each fall we will capture and radio-tag 300 birds; 60 white-fronted geese in the Klamath Basin or Sacramento Valley, 60 mallards in the Sacramento Valley, and 60 northern pintails each in the Sacramento Valley, Suisun Marsh and San Joaquin Valley. We will radio-tag only adult females. This cohort is especially important to population dynamics and shares similar movement

patterns and habitat use with hatch-year birds (Heitmeyer 1989b, Day et al. 1990, Miller et al. 1993, Miller et al. 1995, Fleskes et al. 1997, J. Takekawa, pers. comm.). Focusing on adults will provide the maximum comparative data at the lowest cost. We will compare local and regional movement patterns and locations of feeding and roosting sites with patterns and sites identified during earlier studies.

**Task 3.** *Model waterfowl value of lands for possible acquisition through CALFED.* Data from this project will be incorporated into a site analysis model that will rate lands according to their value for waterfowl. We will map habitat and changes that have occurred during the last decade and use our estimates of the timing and magnitude of waterfowl use in Central Valley basins, the locations of feeding and roost sites, daily and seasonal movement patterns, and use rates of wetland and agricultural habitats to determine habitat requirements for fall, early winter, late winter, and spring to provide data for the site analysis model.

**b. Location and/or geographic boundaries of project:** This landscape-scale project will investigate waterfowl ecology throughout the entire geographic scope of the CALFED program but especially in Bay-Delta basins and watersheds. Waterfowl will be radio-tagged in several locations in the Suisun Marsh, San Joaquin Valley and Sacramento Valley and tracked and surveyed throughout California.

**c. Expected benefits:** Results of the project will be made available in reports and publications that can be used by CALFED and CVHJV management board and planning committees, resource agencies, and private managers to design and manage waterfowl habitat projects, especially in the Central Valley of California. Project data will help managers determine whether habitat goals and management strategies of their programs need to be modified to ensure long-term viability of their programs and wildlife populations they support. Results will be published in scientific journals and research information bulletins and presented at technical seminars and workshops. Results will be made available to technical committees of CALFED and the Central Valley Habitat Joint Venture to permit evaluation of and to guide implementation.

**d. BACKGROUND AND JUSTIFICATION:** Despite loss of over 90% of its wetlands since the turn of the century, the Central Valley of California remains one of the most important wintering, migration and breeding areas in North America for waterfowl and other migratory birds (USFWS 1978, Gilmer et al. 1982). Adequate habitat in the Central Valley is essential to maintain healthy waterfowl populations because poor or crowded conditions increase losses to disease, predators and other factors and waterfowl rely heavily on nutrient reserves acquired on wintering and migrational areas to reproduce (Krapu 1974, Heitmeyer and Fredrickson 1981, Anderson and Batt 1983, Raveling and Heitmeyer 1989). Because of its critical importance to North American waterfowl and other wetland wildlife, the Bay-Delta and other Central Valley regions have become a focal point for wetland and habitat conservation efforts.

Two of the most encompassing conservation efforts are CALFED and the Central Valley Habitat Joint Venture (CVHJV). The CVHJV was began in 1988 under the auspices of the North American Waterfowl Management Plan (NAWMP) to restore and enhance wetland habitats and

increase the carrying capacity of the Central Valley for waterfowl while maintaining their traditional distribution throughout the valley (Canadian Wildlife Service and U. S. Fish and Wildlife Service 1986, CVHJV Implementation Board 1990). CALFED's mission is to restore the ecological health and improve water management for beneficial uses of the Bay-Delta system. Each program has the potential to greatly benefit California's fish and wildlife resources. Coordination of the two programs will greatly increase the likelihood that each program succeeds in its respective mission.

Efforts of the CVHJV, U.S. Fish and Wildlife Service, California Department of Fish and Game, California Wildlife Conservation Board and private conservation groups such as Ducks Unlimited, California Waterfowl Association and The Nature Conservancy have resulted in significant habitat development and improvements in the Central Valley during the last decade. Habitat improvements include establishment of new state Wildlife Areas (WAs) and National Wildlife Refuges (NWR), restoration of private wetlands, and enhancement of agricultural lands for wildlife. Total managed wetland acreage in the Central Valley has increased from 115,228 acres in 1985 to 138,882 acres in 1995 (CVHJV Technical Committee 1996). When fully implemented, the CVHJV alone will affect activities on 950,000 acres of wetlands and agricultural lands in the Central Valley at a capital cost of more than \$528 million and an annual cost of about \$38 million (CVHJV Implementation Plan 1990).

CALFED habitat restoration efforts are just beginning. Although many will be focused on fisheries restoration, most projects have potential impacts to waterfowl ecology. For instance, dry and shallow-flooded agricultural lands in the Delta are critical habitats for wintering waterfowl. Changes in flooding regimes of these habitats may alter the ecology of a large portion of state's waterfowl as they move in and out of the Delta in their travels between the Sacramento and San Joaquin Valleys.

In addition to CALFED and the CVHJV, recent changes in agricultural practices have also impacted the quantity, quality and distribution of waterfowl habitat in the Central Valley. Most significantly, flooding for rice-straw decomposition due to restrictions placed on burning, has increased the availability of waterfowl sanctuaries and feeding sites in the Sacramento Valley during the last decade. Overall, acreage of rice flooded after harvest in the Sacramento Valley has increased from about 60,000 acres in 1985 to about 150,000 acres in 1995, with about 6,000 of these acres serving as waterfowl sanctuaries in 1985 because of no or light hunting pressure compared to about 40,000 acres serving as sanctuary in 1995 (CVHJV Technical Committee 1996). In contrast, other expanding farming practices, such as use of the highly efficient "stripper-head" rice harvester and the recent expansion of cotton agriculture into the Sacramento Valley, is reducing the quality and quantity of waterfowl habitat in the Sacramento Valley.

The impact of these recent landscape changes on waterfowl distribution, movements and habitat use is unknown, yet this information is necessary to wisely manage waterfowl resources and habitat programs such as CALFED and the CVHJV (CVHJV Technical Committee 1996). For instance, CVHJV habitat goals were developed to increase the carrying capacity of the Central Valley habitats but maintain the historical (i.e. 1973-1977) distribution of waterfowl throughout the valley (CVHJV Implementation Plan 1990). Changes in regional waterfowl distribution, local movements and harvest opportunities may occur as a result of habitat conservation efforts and changing agricultural practices. About 75% of wetlands in the Central Valley are privately owned (Gilmer et al. 1982, Heitmeyer et al. 1989) and changes in waterfowl

distribution and movements may reduce the ability of landowners to raise revenues to support management of these wetlands. Understanding the impacts of habitat changes on waterfowl ecology would allow the opportunity to coordinate habitat restoration efforts and ensure habitat requirements of waterfowl populations are met throughout the Bay-Delta and other Central Valley basins.

Three types of waterfowl ecology information are needed to estimate the amount, types and locations of wetland and agricultural habitat necessary to support waterfowl populations in each basin: a) waterfowl use-days in each basin, b) daily food (energy) requirements for individual waterfowl, and c) amount of food (energy) acquired by waterfowl in wetland and agricultural habitats (Heitmeyer 1989a).

Current estimates of waterfowl use-days assume waterfowl distribution is like that observed during 1973-77 midwinter surveys, and that use in each basin follows a linear function of gradual buildup in fall, peaking at the midwinter count in early January and gradual declining to desired summer breeding levels (Heitmeyer 1989a). However, studies of northern pintail movements in the Central Valley indicate that the abundance of waterfowl may vary dramatically among basins during the wintering period and peak use in some basins (e.g. San Joaquin) may occur before or after the midwinter survey (Fleskes et al. 1997). Thus, a population model based solely upon the mid-winter survey most likely poorly represents the magnitude and timing of waterfowl use during the wintering period for some basins. Data on waterfowl distribution and movements throughout the wintering period are needed to better estimate waterfowl use days in each basin during the winter in order to determine how much habitat is required and when that habitat needs to be made available (i.e. flooded, etc.) in each basin.

A general estimate of the amount of food required by individual waterfowl can be calculated by assuming energetic expenditure equals 3 times basal metabolic requirements (Heitmeyer 1989a). However, flight is energetically costly compared to other activities, having been estimated to require up to 15 times the basal metabolic requirement (King 1974, Prince 1979). Changes in flight durations related to changes in the quantity and juxtaposition of roost and feeding sites would have a large impact on energy budgets, and should be included in energetic requirement calculations. Data on flight distances and durations under current and changing habitat conditions are needed to supplement existing data on time-energy budgets and improve estimates of energy expenditures and the amount of habitat required to support waterfowl populations in the Bay-Delta and other Central Valley basins.

The amount of energy acquired by waterfowl in wetlands and agricultural fields, requires estimates for the caloric value of waterfowl foods, the amount of waterfowl food produced by wetlands and agricultural lands, and rates of use of these habitats by waterfowl. Information on caloric value and habitat productivity are available in the literature but with a changing mix of habitat types, current use rates are needs. Because most waterfowl feed nocturnally, radio-telemetry methods must be used.

In summary, waterfowl distribution, movements and habitat use before, during and after habitat changes occur needs to be compared to evaluate impacts of these changes and guide and coordinate CALFED, CVHJV and other habitat conservation efforts. We propose to collect data necessary to make these critical measurements and comparisons by conducting periodic winter surveys of all waterfowl species in the Central Valley, using radiotelemetry to study the winter ecology of three important waterfowl species (northern pintails [*Anas acuta*], mallards [*A.*

platyrhynchos], and white-fronted geese [*Anser albifrons frontalis*]) for which radio-telemetry data from before recent habitat changes are available, and comparing results with earlier data.

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U. S. Fish and Wildlife Service. 1978. Concept plan for waterfowl wintering habitat preservation, Central Valley, California. USFWS, Portland, Oregon. 116pp + appendices.

**e. Proposed Scope of Work:** This project will be accomplished in 2 phases. In phase I (August 1998-April 2000) existing waterfowl survey, radio-telemetry, and habitat data will be compiled and habitat conditions, waterfowl distribution, movements and habitat use will be studied using aerial surveys and radio-telemetry during two, August-April field seasons. During phase II (May 2000-August 2001), data from the two, 9-month field seasons will be analyzed, compared with results from the earlier studies, and used in a site analysis model. Progress reports summarizing expenditures and significant results and accomplishments will be submitted at the end of each phase and a final report will be submitted at the end of the project.

**f. Monitoring and Data Evaluation:** Standard parametric and nonparametric statistical techniques (e.g., analysis of variance, compositional analysis) will be used to analyze data and test for significant results. Data from this study will be integrated with pertinent information from earlier works to generate findings and recommendations. The final results will be submitted to peer-reviewed journal(s) for publication.

**g. Implementability:** The project is fully implementable under the terms of current scientific collecting and banding permits held by the Biological Resources Division of the U. S. Geological Survey, U. S. Fish and Wildlife Service, and California Department of Fish and Game investigators.

#### IV. COSTS AND SCHEDULE TO IMPLEMENT PROPOSED PROJECT

a. **Budget Costs:** CALFED funding in the amount of **\$549,000 over 3 years (\$183,000/yr)** is needed to match funds and in-kind-services (survey flights and salaries) pledged by USFWS, BRD-USGS, California Department of Fish and Game, California Waterfowl Service and Ducks Unlimited, Inc. It is also possible that the support of CALFED will facilitate the leverage of other partnerships, ultimately reducing the total cost to CALFED. Incremental funding is feasible over the three sequential project years but failing to fund any one phase or year would prevent accomplishing tasks and meeting objectives. All three tasks will be undertaken throughout each phase of the project. Because this is a joint venture type project, work will be mostly carried out by the cooperating agencies using in-house resources. Some aerial flights will be contracted through the federal "Office of Aircraft Services" and materials will be purchased following federal General Service Administration policies. The Biological Resources Division-USGS will be responsible for distributing and administering any funds that are granted. Specific costs and funding sources for each task of this \$1,098,000 project are provided in Table 1.

Table 1. Project Cost (dollars) Summary by Phase and Task.

Project Phase and Task <sup>1</sup>	Direct Labor Hours	Direct Salary and Benefits	Overhead Labor (Gen. Admin. and fee)	Service Contracts	Material and Acquisition Contracts	Misc. and other Direct Costs	Total Cost
Phase I Task 1	5,000	115,000	13,800	43,000	27,000	5,000	203,800
Phase I Task 2	17,937	287,000	34,240	61,000	195,000	107,000	684,240
Phase I Task 3	1,390	32,000	3,040	0	21,000	3,000	59,040
Phase II Task 1	870	20,000	2,400	0	2,000	5,000	29,400
Phase II Task 2	1,740	40,000	4,800	0	2,000	5,000	51,800
Phase II Task 3	2,443	56,000	6,720	0	2,000	5,000	69,720

<sup>1</sup>Funding source for all phases and tasks is half CALFED and half from other partners (USFWS, BRD-USGS, CDFG, California Waterfowl Assoc., Ducks Unlimited, Inc.). There are no O&M costs. **Grand total requested from CALFED is \$549,400 (approx. \$183,000 each of 3 years).**

**b. Schedule of Milestones**

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<b>Start-Complete</b>	<b>Milestone</b>
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**Phase I**

- Aug. 98 - Apr 98 Compile and analyze existing aerial survey, telemetry and habitat data
- Aug. 98 - Oct. 98 Capture and radio-tag 300 ducks and geese throughout California
- Sept. 98 - Apr. 99 Conduct periodic waterfowl surveys and daily tracking of radio-tagged birds
- May 99 - July 99 Compile field data, prepare progress report and prepare for 2nd field season
- Aug. 99 - Oct. 99 Capture and radio-tag 300 ducks and geese throughout California
- Sept. 99 - Apr. 00 Conduct periodic waterfowl surveys and daily tracking of radio-tagged birds

**Phase II**

- May 00 - Dec. 00 Analyze and model survey, telemetry and habitat data
- Jan 01 - Aug. 01 Prepare final report

**c. Third Party Impacts:** Third party impacts include improved implementation of the \$528,000,000 Central Valley Habitat Joint Venture (CVHJV) program, coordination of CALFED with the CVHJV and other conservation programs and healthier waterfowl populations. This should result in enhanced recreational opportunities such as waterfowl hunting and bird watching that may improve the local economy.

## V. APPLICANT QUALIFICATIONS

The applicant (Joseph P. Fleskes) is the project team leader and will be responsible for all phases of the proposed work, including scheduling research activities, approving expenditure of funds, and ensuring timely reporting of results. Working in collaboration as project team members to plan and conduct the project are an array of waterfowl and wetland experts from private conservation organizations and state and federal resource and research agencies. Team members David Paullin (Central Valley Habitat Joint Venture coordinator), Brad Bortner (Pacific Flyway migratory bird coordinator), Dr. M. Robert McLandress (California Waterfowl Association biologist), and Dr. Fritz Reid (Ducks Unlimited, Inc. Biologist) helped plan the project and will continue to serve as project advisors. Dr. David Gilmer (BRD-USGS biologist) will work with Dr. Michael Bias (Ducks Unlimited, Inc. biologist) to collect and interpret historical and current habitat data. Daniel R. Yparriguirre (CDFG waterfowl specialist) and Greg Mensik (USFWS refuge biologist) have coordinated and conducted operational waterfowl surveys in California for over a decade and will coordinate and conduct the aerial waterfowl surveys for this project. Dr. John Takekawa, Michael Miller, Dennis Orthmeyer, Michael Casazza (BRD-USGS biologists) and Gregory Yarris (California Waterfowl Association biologist) have, along with the project leader, conducted extensive research on waterfowl ecology using radio-telemetry and will lead or participate in the telemetry aspect of the project for a particular region/species of their expertise.

### **Qualifications of Project Leader: Joseph P. Fleskes**

#### **Educational Background.**

- B.S.** 1980, Fisheries and Wildlife Biology, Iowa State University, Ames, Iowa.
- M.S.** 1986, Wildlife Biology, Iowa State University, Ames, Iowa.
- Ph.D.** 1999 (Projected), Wildlife Science, Oregon State University, Corvallis, Oregon.

**Additional Training.** Covey Leadership Training, July 1996, Santa Cruz, CA; All Terrain Vehicle Training, Dixon, CA, 1994; Waterfowl Measurement and Survival Analysis Techniques, Vallejo, CA, January 1992; Predator Management Techniques, Jamestown, ND, August 1990; Office of Aircraft Services Aviation Safety Training, Sacramento, CA, 1990, 1993; CPR Training, Dixon, CA, 1989; Wildlife Disease Workshop, Sacramento, CA, February 1987; Waterfowl Age/ID, Pacific Flyway Wingbee, Redding, CA February 1987; Trees For Tomorrow Environmental Study Center, Eagle River, WI, August 1975.

#### **Professional Experience.**

*December 1994 to present.* Wildlife Biologist (Research), U. S. Department of Interior, United States Geological Survey, Biological Resources Division, (renamed from National Biological Service) California Science Center, Dixon Field Station, Dixon, CA.

*January 1994 to December 1994.* Graduate Research Assistant, Oregon State University, Department of Fisheries and Wildlife, Corvallis, OR.

*June 1993 to January 1994.* Wildlife Biologist, U. S. Department of Interior, National Biological Service, California Science Center, (renamed from FWS, Northern Prairie Wildlife Research Center, Pacific States Ecology Section) Dixon Field Station, Dixon, CA.

*April 1993 to June 1993.* Graduate Research Assistant, Oregon State University, Department of Fisheries and Wildlife, Corvallis, OR.

*July 1986 to April 1993.* Wildlife Biologist, U. S. Department of Interior, FWS, Northern Prairie Wildlife Research Center, Pacific States Ecology Field Station, Dixon, CA.

*March 1985 to July 1986.* Refuge Manager, U. S. Department of Interior, FWS, Region 3, Union Slough National Wildlife Refuge, Titonka, IA.

*February 1984 to July 1986.* Graduate Research Assistant, Iowa State University, Iowa Cooperative Wildlife Research Unit, Department of Animal Ecology, Ames, IA.

*March 1981 to February 1984.* Biological Technician (Wildlife), U. S. Department of Interior, FWS, Northern Prairie Wildlife Research Center, Jamestown, ND and Patuxent Wildlife Research Centers, Mississippi Field Station, Vicksburg, MS.

*March 1978 to March 1981 (intermittent).* Wildlife Research Technician, Iowa Department of Natural Resources, Drakesville, Chariton, and Clear Lake IA.

*March 1980 to June 1980.* Undergraduate Teaching Assistant, Iowa State University, Department of Animal Ecology, Ames, IA.

**Selected Publications of applicant**

- Miller, M.R., **J. P. Fleskes**, D.L. Orthmeyer, W.E. Newton, and D.S. Gilmer. 1995. Survival of adult female northern pintails in Sacramento Valley, California. *J. Wildl. Manage.* 59(3):478-486.
- Miller, M.R., **J. Fleskes**, M. Casazza, and J. Austin. 1995. Wildlife Resources of the Central Valley, California: The Northern Pintail. Valley Habitats: A Technical Guidance Series for Private Land Managers in California's Central Valley 13:1-12. Ducks Unlimited, Inc., Sacramento, California.
- Fleskes, J.** 1995. NBS continues cooperative studies of pintail ecology in California. *People Land & Water* 2(6):24-25.
- Fleskes, J. P.**, J.M. Hicks, D.S. Gilmer, and D.R. Yparraguire. 1994. Changing patterns of goose harvest on California public hunting areas. *Calif. Fish and Game* 80(4):133-149.
- Fleskes, J. P.**, and E.E. Klaas. 1993. Remains of ducks and other prey found near fox and mink dens on an Iowa Wildlife Refuge. *Prairie Nat.* 25(1):43-50.
- Miller, M.R., **J. P. Fleskes**, D.L. Orthmeyer, and D.S. Gilmer. 1992. Survival and other observations of adult female northern pintails molting in California. *J. Field Ornithol.* 63(2):138-144.
- Fleskes, J. P.**, J. Y. Takekawa, and D. L. Orthmeyer. 1992. A simplified detonator for rocket net traps. *U. S. Dep. Int., Fish and Wildl. Serv., Res. Info. Bull.* 92-10.
- Miller, M. R., **J. P. Fleskes**, D. L. Orthmeyer, and D. S. Gilmer. 1991. High Survival rates for female northern pintails in California's Sacramento Valley. *U. S. Dep. Int., Fish and Wildl. Serv., Res. Info. Bull.* 91-38.
- Fleskes, J. P.** and E. E. Klaas. 1991. Dabbling duck recruitment in relation to habitat and predators at Union Slough National Wildlife Refuge, Iowa. *U.S. Fish Wildl. Serv., Fish Wildl. Tech. Rep.* 32. 19pp.
- Fleskes, J. P.** 1991. Two incubating mallards move eggs to drier nest sites. *Prairie Nat.* 23(1):49-50.
- Fleskes, J. P.**, J. A. Guthrie, and G. L. Welp. 1990. Raising wood ducks on a prairie marsh: The

story of Union Slough. Pages 275-278 in L. H. Fredrickson, G. V. Burger, S. P. Havera, D. A. Graber, R. E. Kirby, and T. S. Taylor, eds. Proc. 1988 North Am. Wood Duck Symp., St. Louis, Missouri.

**Fleskes, J. P.** 1990. U.S. Fish & Wildlife Service uses telemetry to study wintering pintails and white-fronted geese. Page 2 in Wetlands Update, April edition. Grassland Water District, 610 W Pacheco Blvd., Los Banos, California.

Gilmer, D.S., J.M. Hicks, **J. P. Fleskes** and D.P. Connelly. 1989. Duck harvest on public hunting areas in California. Calif. Fish and Game 75(3):155-168.

**Fleskes, J. P.** 1988. Predation by ermine and long-tailed weasels on duck eggs. Jour. Iowa Acad. Sci. 95:14-17.

**Fleskes, J. P.** 1986. Evaluation of waterfowl production at Union Slough National Wildlife Refuge. M.S. Thesis, Iowa State Univ., Ames. 139 pp.

Sargeant, A.B., S.H. Allen and **J. P. Fleskes**. 1986. Commercial sunflowers: food for red foxes in North Dakota. Prairie Nat. 18(2):91-94.

**Fleskes, J. P.** and J. Clark. 1985. A northern harrier nest in Kossuth County. Iowa Bird Life 55:114-115.

### Honors and Awards.

*Citizen Ambassador Program (Invited)*. Wetlands delegation to Australia and New Zealand. February 1996. *Length-of-Service Award (10-yr)*. U. S. Department of Interior, Fish and Wildlife Service and National Biological Service. Dixon, CA. August 1993. *Quality Performance Award*. U. S. Department of Interior, FWS, Dixon, CA. September 1992. *Special Achievement Award*. U. S. Department of Interior, FWS, Dixon, CA, November 1988. *Izaak Walton League McNurlen Memorial Scholarship*. Izaak Walton League. Dubuque, IA. August 1985. *Special Contribution Award*. U. S. Dep. Interior, FWS, Northern Prairie Wildlife Research Center. Jamestown, ND. March 1982. *Dean's List*. Iowa State University, Ames, IA. 1978-1980. *Environmental Science Center Selection*. Eagle River, WI. One of ten Iowa High School students selected. 1975.

### Professional Society Participation.

**The Wildlife Society** (Currently-National and Western Section member; Previously, Iowa and North Dakota Chapters, Midwest Section). **Vice President - Sacramento Chapter- The Wildlife Society (1988), Secretary/Treasurer - Sacramento Chapter- The Wildlife Society (1987), Newsletter co-editor - Iowa Chapter - The Wildlife Society (1985-1986).**

### References

Dr. Robert Jarvis  
Dept. of Fisheries and Wildlife  
Oregon State University  
Corvallis, OR 97331-3803  
503-737-1956

Dr. Erwin Klaas  
IA Coop. Fish & Wildl. Res. Unit  
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Ames, IA 50011  
515-294-7990

Dennis Woolington  
San Luis NWR  
P.O. Box 120  
Los Banos, CA 93635  
209-826-3508

## **VI. COMPLIANCE WITH STANDARD TERMS AND CONDITIONS**

All terms and conditions stated in the CALFED RFP are agreeable to and able to be complied with by the applicant.



U. S. Department of the Interior  
 U. S. GEOLOGICAL SURVEY  
 BIOLOGICAL RESOURCES DIVISION  
 WESTERN ECOLOGICAL RESEARCH CENTER

Dixon Field Station  
 6924 Tremont Road  
 Dixon, California 95620  
 (707) 678-0682 FAX (707) 678-5039  
 1 July, 1998



CALFED Bay-Delta Program Office  
 1416 Ninth Street, Suite 1155  
 Sacramento, CA 95814

Dear sir or madam:

Please accept the enclosed 10 copies of the study proposal entitled "**WATERFOWL RESPONSE TO LANDSCAPE-SCALE HABITAT CHANGES: LEARNING FROM THE PAST TO GUIDE CALFED'S ECOSYSTEM RESTORATION PROGRAM**" for consideration for funding through the May 1998 Proposal Solicitation Package of the CALFED Bay-Delta Program.

*This study was identified as the most important migratory bird project that should be completed in California to investigate the impacts of CALFED, the Central Valley Habitat Joint Venture and changing agricultural practices on the ecology of wintering waterfowl. The work will provide information crucial for the management and coordination of these important programs. The concept and design of this project was the result of the cooperative efforts of the managers and researchers in the Pacific Flyway during the Waterfowl Research Needs Workshop held at Sacramento National Wildlife Refuge in 1996. A wide array of waterfowl and wetland experts from private conservation organizations and state and federal resource and research agencies have agreed to serve as the research team to accomplish the project. This project was also cited as the #1 research priority of Pacific Flyway waterfowl coordinators at the First North American Duck Symposium held recently in Baton Rouge, Louisiana. The study proposal has been widely peer-reviewed, and has been called "exceptionally well-conceived" by the Wetland Habitat Coordinator of the California Department of Fish and Game and is strongly endorsed by the Grassland Water District and Central Valley Habitat Joint Venture Management Board.*

Additional evidence of local and regional support of the project is the level of in-kind services and funding that partners have pledged thus far to this project. I ask that CALFED consider matching this support with funding at the level of \$183,000 per year for the 3 years of the project.

Please call me if you need any more information. Thank you for your consideration.

Sincerely,

Joseph P. Fleskes  
 Wildlife Research Biologist/Project Leader

Attachment H

COVER SHEET (PAGE 1 of 2)

May 1998 CALFED ECOSYSTEM RESTORATION PROPOSAL SOLICITATION

Waterfowl Response to Landscape-Scale Habitat Changes: Learning  
 Proposal Title: From the Past to Guide CALFED's Ecosystem Restoration Program  
 Applicant Name: Joseph P. Fleskes  
 Mailing Address: USGS/BRD 6924 Tremont Road Dixon, CA 95620  
 Telephone: 707/678-0682 ext. 628  
 Fax: 707/678-5039

Amount of funding requested: \$183,000 ea year for 3 years

Indicate the Topic for which you are applying (check only one box). Note that this is an important decision: see page \_\_\_ of the Proposal Solicitation Package for more information.

- Fish Passage Assessment
- Floodplain and Habitat Restoration
- Fish Harvest
- Watershed Planning/Implementation
- Fish Screen Evaluations - Alternatives and Biological Priorities
- Fish Passage Improvements
- Gravel Restoration
- Species Life History Studies
- Education

Indicate the geographic area of your proposal (check only one box):

- Sacramento River Mainstem
- Delta
- Suisun Marsh and Bay
- San Joaquin River Mainstem
- Landscape (entire Bay-Delta watershed)
- Sacramento Tributary: \_\_\_\_\_
- East Side Delta Tributary: \_\_\_\_\_
- San Joaquin Tributary: \_\_\_\_\_
- Other: \_\_\_\_\_
- North Bay: \_\_\_\_\_

Indicate the primary species which the proposal addresses (check no more than two boxes):

- San Joaquin and East-side Delta tributaries fall-run chinook salmon
- Winter-run chinook salmon
- Late-fall run chinook salmon
- Delta smelt
- Splittail
- Green sturgeon
- Migratory birds
- Spring-run chinook salmon
- Fall-run chinook salmon
- Longfin smelt
- Steelhead trout
- Striped bass

COVER SHEET (PAGE 2 of 2)

May 1998 CALFED ECOSYSTEM RESTORATION PROPOSAL SOLICITATION

Indicate the type of applicant (check only one box):

- |  |  |
|--|--|
| <input type="checkbox"/> State agency                    | <input checked="" type="checkbox"/> Federal agency |
| <input type="checkbox"/> Public/Non-profit joint venture | <input type="checkbox"/> Non-profit                |
| <input type="checkbox"/> Local government/district       | <input type="checkbox"/> Private party             |
| <input type="checkbox"/> University                      | <input type="checkbox"/> Other: _____              |

Indicate the type of project (check only one box):

- |  |   |
|--|---|
| <input type="checkbox"/> Planning            | <input type="checkbox"/> Implementation |
| <input type="checkbox"/> Monitoring          | <input type="checkbox"/> Education      |
| <input checked="" type="checkbox"/> Research |   |

By signing below, the applicant declares the following:

- (1) the truthfulness of all representations in their proposal;
- (2) the individual signing the form is entitled to submit the application on behalf of the applicant (if applicant is an entity or organization); and
- (3) the person submitting the application has read and understood the conflict of interest and confidentiality discussion in the PSP (Section II.K) and waives any and all rights to privacy and confidentiality of the proposal on behalf of the applicant, to the extent as provided in the Section.

Joseph P. Aleskes  
(Signature of Applicant)