

**CALFED Bay-Delta 2002 ERP Directed Actions  
Selection Panel Review**

**Proposal Number: 205DA**

**Applicant Organization: University of California, Davis**

**Proposal Title: Invasion dynamics of perennial pepperweed, *Lepidium latifolium*, and their consequences for protection of natural and restored wetlands in the San Francisco Estuary**

**Recommendation: Fund With Conditions**

**Amount: \$178,700**

**Conditions**, if any, of approval (if there are no conditions, please put "None"): The project's field sampling effort should be broadened to ensure that they accurately document the impacts of the various environmental factors on perennial pepperweed.

**Provide a brief explanation of your rating:** the original Selection Panel recommendation was that the proposer revise in accordance with the comments of the external reviewers and resubmit the project for funding as a directed action. The Panel considered the resubmitted proposal and the technical reviews and believes most of the comments have been addressed with one exception. One of the Technical Reviewers recommended a longer sampling period to encompass the array of environmental conditions to which pepperweed may be subjected. The Selection Panel recommendation is that the project be funded at its full amount and that the study team broaden the field sampling effort to ensure it accurately documents the impacts of the various environmental factors on perennial pepperweed.

\* \* \*

**Research and Restoration External Review Form**  
**CALFED Ecosystem Restoration Program 2002 Proposal Solicitation Package**

**Proposal Title: Invasion dynamics of perennial pepperweed, *Lepidium latifolium*, and their consequences for protection of wetlands in the San Francisco estuary**

**Review:**

1. **Goals.** Are the goals, objectives and hypotheses clearly stated and internally consistent? Is the concept timely and important?

**Goals of this project are clearly stated, described and internally consistent throughout the proposal.**

2. **Justification.** Is the study justified relative to existing knowledge? Is a conceptual model clearly stated in the proposal and does it explain the underlying basis for the proposed work? Is the selection of research, pilot or demonstration project, or a full-scale implementation project justified?

**This project is fully justified. A large informational gap exists with respect to seed biology and perennial pepperweed establishment from seed. In addition, no information is present within the literature about the biology, ecology and control of perennial pepperweed in these salt marshes/ estuary systems. This information would be of immediate use to land managers of these areas.**

3. **Approach.** Is the approach well designed and appropriate for meeting the objectives of the project? Are results likely to add to the base of knowledge? Is the project likely to generate novel information, methodology or approaches? Will the information ultimately be useful to decision-makers?

**Aspects of this project are in general well designed and will answer the authors' hypotheses. Objectives 2 and 3 are well designed and should answer their respective questions. I found the methods not detailed enough in objective #1. Furthermore the authors' hypothesis with regard to salinity intolerance of perennial pepperweed is NOT documented in the literature as they state. The Authors' cite Blank et al. 2002 in stating that perennial pepperweed is intolerant of highly saline areas throughout the west. The authors do NOT draw this conclusion in this article! In fact this researcher and several others have found perennial pepperweed growing in very saline environments. A saline sensitive biotype may exist within the California Delta, or an interaction between salinity and some other environmental factor such as flooding may be the cause of the apparent bimodal distribution. The authors mention that an initial experiment supports this hypothesis, but present no data to confirm this. I also have concerns about the sampling schedule for this objective. Intensive sampling within only a 1 month period (May) may not elucidate the key fluctuations in the environmental factors measured. Salinity and soil pH will likely vary quite dramatically throughout the season, thus measurements should be made at varying times to account for this. Sampling at only one period throughout the year may miss important change in these factors, given few seedlings are ever seen in the field and timing of germination is not known. In order to**

**accurately document the impacts of these environmental factors on perennial pepperweed samples should be taken throughout the year.**

4. **Feasibility.** Is the approach fully documented and technically feasible? What is the likelihood of success? Is the scale of the project consistent with the objectives?

**This project does not describe some of the methodology in enough detail, leaving out how plots are sampled (objective #1), or # of plots sampled (objective #2, demographic comparisons), the size of plots/pots (objective #2, seed establishment study), and how the herbicide application will be applied and at what rate (Objective #3). Some of this information may have been in the previous proposal, but details such as these should be detailed within the current proposal. Information such as this could have large impact on the result. For instance, application method and rate can have a huge impact on the success or failure of a treatment.**

5. **Project-Specific Performance Measures.** Does the project include appropriate performance measures to measure success relative to the project's goals and objectives? Is there enough detail as to how the performance measures will be quantified? For restoration projects, are monitoring plans explicit and detailed enough to determine if performance measures will be adequately assessed?

**Performance measures are appropriate for this project.**

6. **Products.** Are products of value likely from the project? Specifically for restoration projects, are products of value also likely from the monitoring component? Are interpretative outcomes likely from the project?

**Products described will definitely add value, as no information about the biology, ecology and control of perennial pepperweed currently exists within these estuary systems.**

7. **Capabilities.** What is the track record of applicants in terms of past projects? Is the project team qualified to efficiently and effectively implement the proposed project? Do they have available the infrastructure and other aspects of support necessary to accomplish the project?

**Very capable of performing this research**

8. **Cost/Benefit Comments.** Is the budget reasonable and adequate for the work proposed?

Miscellaneous comments:

**Please provide an overall evaluation summary rating: Excellent: outstanding in all respects; Good: quality but some deficiencies; Poor: serious deficiencies.**

Overall Evaluation Summary Rating	Provide a brief explanation of your summary rating
- Excellent	<b>Based on the previous reviews the authors did revise this proposal</b>
<input checked="" type="checkbox"/> Good	

- Poor	<p><b>to address most of the comments. This project if selected will deliver specific information, which will definitely aid in the management of perennial pepperweed within the California Delta. In particular no information is known about reproduction from seed, and I would anticipate this project to answer some of those questions. Undoubtedly seeds play an important role in the dispersal of this noxious weed, but many of the authors' experiments rely on the germination of seeds. The fact that few seedlings of perennial pepperweed are seen in field situations may make interpretations of results difficult. Perhaps these estuaries are different, but in other areas I am familiar with (riparian, floodplain, rangeland) the presence of seedlings are VERY RARE. Other concerns are raised in my review, but overall this project will definitely add value and lead to improved management of the California Delta system.</b></p>
--------	--

**Research and Restoration External Review Form**  
**CALFED Ecosystem Restoration Program 2002 Proposal Solicitation Package**

**Proposal Title:** "Invasion dynamics of perennial pepperweed..."

**Review:**

1. **Goals.** Are the goals, objectives and hypotheses clearly stated and internally consistent? Is the concept timely and important?

Yes, the goals, objectives, and hypotheses are clear. The concept explores interesting and significant aspects of basic biology and methods for control of very important pest plant. However, the basic approaches to control of perennial pepper weed appear to be well-enough understood for implementation. Admittedly we do not know all the mechanisms for the success of perennial pepper weed, but the limited options for control and limiting spread are unlikely to change much. Funds should go directly to control measures, not to more basic ecological study.

2. **Justification.** Is the study justified relative to existing knowledge? Is a conceptual model clearly stated in the proposal and does it explain the underlying basis for the proposed work? Is the selection of research, pilot or demonstration project, or a full-scale implementation project justified?

The study is well-justified on a scientific basis relative to basic knowledge, with a clear study model and plan. I believe that full and coordinated implementation of control measures rather than further study is most needed here. Their proposed testing of herbicide application techniques should be done as part of monitoring of broader implementation of controls, not just smaller-scale experiments.

3. **Approach.** Is the approach well designed and appropriate for meeting the objectives of the project? Are results likely to add to the base of knowledge? Is the project likely to generate novel information, methodology or approaches? Will the information ultimately be useful to decision-makers?

The approach is consistent with the stated objectives of the project. The project will likely generate significant new ecological information about tidal wetland communities and perennial pepper weed ecology in the Bay. The evaluation of control effects on community structure will be useful. Some of this information will be of benefit to decision-makers. I doubt that it will contribute a large amount of significant new information about control techniques.

4. **Feasibility.** Is the approach fully documented and technically feasible? What is the likelihood of success? Is the scale of the project consistent with the objectives?

The project is feasible and success likely for the stated specific objectives. However, I do not believe that the investment in research is appropriate to the information needs for management. The needs for implementation of control measures outweigh the need for more study of basic issues like community structure, relation of distribution to gradients, seed dispersal. The available methods for control are limited and not likely to change as a result of research.

5. **Project-Specific Performance Measures.** Does the project include appropriate performance measures to measure success relative to the project's goals and objectives? Is there enough detail as to how the performance measures will be quantified? For restoration projects, are monitoring plans explicit and detailed enough to determine if performance measures will be adequately assessed?

Performance measures are appropriate for stated objectives.

6. **Products.** Are products of value likely from the project? Specifically for restoration projects, are products of value also likely from the monitoring component? Are interpretative outcomes likely from the project?

There are likely to be some useful products, but the ratio is relatively low to the costs of the project.

7. **Capabilities.** What is the track record of applicants in terms of past projects? Is the project team qualified to efficiently and effectively implement the proposed project? Do they have available the infrastructure and other aspects of support necessary to accomplish the project?

Excellent qualifications of the applicants are coupled to excellent infrastructural support.

8. **Cost/Benefit Comments.** Is the budget reasonable and adequate for the work proposed?

The costs are appropriate for the stated objectives.

**Miscellaneous comments:**

The proposal is internally consistent, well-put together, costs are appropriate and applicants are excellent. The major issue I see is whether further research on is needed. This species is a known problem; control methods are limited in number but known well-enough to implement and funds should be aimed towards controlling the plant and monitoring effectiveness of control.

**Please provide an overall evaluation summary rating: Excellent: outstanding in all respects; Good: quality but some deficiencies; Poor: serious deficiencies.**

Overall Evaluation Summary Rating	Provide a brief explanation of your summary rating
- Excellent	
XXX- Good	Mainly issues related to need for more research versus direct implementation of control methods
- Poor	

*CALFED Bay-Delta Directed Action  
Administrative Review  
Budget Evaluation*

Proposal number: #205

Proposal title: Invasion dynamics of perennial pepperweed, *Lepidium latifolium*, and the consequences for protection of natural and restored wetlands in the San Francisco Estuary

Does the proposal include a detailed budget for each year of requested support? Yes, for state funding source only

If no, please explain:

Does the proposal include a detailed budget for each task identified? Yes

If no, please explain:

Does the proposal clearly state the type of expenses encompassed in indirect rates or overhead costs? No

If no, please explain: The type of expenses covered by the overhead rate are not stated.

Are appropriate project management costs clearly identified? No

If no, please explain: Project management is being provided as a cost share and is not charged against this budget. The value of project management is not stated.

Do the total funds requested (Form I, Question 17A) equal the combined total annual costs in the budget summary? Yes, for state funding only

If no, please explain (for example, are costs to be reimbursed by cost share funds included in budget summary).

Does the budget justification adequately explain major expenses? Yes

If no, please explain:

Are there other budget issues that warrant consideration? No, I didn't detect any issues with the budget.

If yes, please explain:

\* \* \*