

CALFED Bay-Delta Directed Actions -- Selection Panel Review

Proposal Number: 22DA

Applicant Organization: California Department of Food and Agriculture

Proposal Title: *Expanded Prevention, Detection, and Control of Purple Loosestrife in the California Bay-Delta Authority Watershed*

Recommendation: Fund in Part

Amount: \$328,136

Conditions, if any, of approval (if there are no conditions, please put "None"): None

Provide a brief explanation of your rating:

The Selection Panel recommends that the Survey, Control and Monitoring efforts be funded as is, encouraging the applicants to fully report in the future on the success of their control efforts. The panel does not recommend funding the trials at this time but encourage the proposers to consider developing a thorough well justified experimental approach to evaluating the alternative control methodologies for future CBDA funding consideration. The public outreach efforts could also be considered for funding in the future when sufficient measures of their success have been developed

This proposal seeks funds to continue survey and control efforts for Purple Loosestrife (PL), initiate a replicated trials efforts regarding control techniques, and continue public outreach efforts. The three reviews rate the proposal Good, Good and Excellent (note that the Excellent review provides the least detail or justification for the comments). Essentially the main issues the reviewers have concern the replicated trials experiment. Insufficient information is provided (e.g., number of replications, how anticipated problems regarding caging will be handled statistically) to really see how this work will produce value-added results. One of the reviewers provides recommendations for a more focused study. Reviewers also have concern regarding the lack of information on the success of existing control efforts (and thus the basis for the hypotheses underlying the trials) and the 'performance measures' for the outreach efforts. However, all note the importance of the survey/control efforts.

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CALFED Ecosystem Restoration Program External Review Form

Proposal Title: Control of Purple Loosestrife

Review:

1. Goals. Are the project's goals and objectives clearly stated and internally consistent? What ecosystem restoration benefits will it provide?

The goals are clearly stated and internally consistent. Ecosystems benefits are large- removing and excluding further spread of *L. salicaria*, a very aggressive and invasive exotic emergent (riparian) weed. If successful, this project will ultimately help protect the Bay-Delta areas and drastically reduce the cost of a major, uncontrolled population in Ca.

2. Approach. Is the approach well designed and appropriate for the project's objectives? Is it justified by prior site studies or other information documented in the proposal? If additional information is needed to adequately plan and design the project, does the proposal include adequate provisions for obtaining it during the project's design and environmental assessment? If not, what additional information should be gathered?

The approaches outlined are sound and appropriate for the time scale and objectives stated. I have the following suggestions however:

a. Include triclopyr (Renovate) in the experimental trials for the following reasons: It is likely to be registered in California by later spring of 2004; it may provide selective control of the target weed, which glyphosate does not; it may have a more rapid and effective translocation ability that glyphosate and may be more effective in rapidly reducing increases to the seed bank. Since this project seeks to determine improved methods, it would appear consistent with these goals to include potentially effective herbicides that offer alternative modes of action and selectivity.

b. "Adult" generally refers to animal stages; "mature" usually is used to refer to plants that have reached reproductive capacity (e.g. flowering stages) (i.e. p. 7, Part 2).

c. Will a new NPDES permit be obtained? If plants are found in sites where applications of herbicides will enter the water (e.g. overspray, or spray not intercepted by canopy), then an NPDES permit will be required probably. This may add significant costs for compliance.

d. The amount allocated for travel appears excessive (ca. \$12,000 per year). At about .40/mile, that's, 30,000. miles (via auto). Some site certainly are not

overnight (i.e. per diem- requiring) travel so the \$124/day should not apply. Also, why is \$1200. for travel allocated for “Report Results” the first year, \$1,500 the second year and \$750 the third year? (Total=\$3,450) Given the time frame of this project, it would seem that a report at meetings (if this is what the travel is for) should only be done in year two or three. With the ready access to the Internet and CDFA’s website, much of this reporting can be done at far less cost. I suggest that the total travel should be in the range of ca. \$7-8K per year and that the extra be reallocated to efforts at educating retailers, wholesalers as part of the outreach and education component. I suspect that some savings (in travel for monitoring) could also be generated via coordinated aerial surveillance and hyperspectral imagery with Ca. Dept. of Boating and Waterways.

e. The criteria for “performance measures” of education and outreach are neither valid, nor adequate. Simply counting the number of presentations per year, or producing brochures -not matter how well done- does not ensure or assess the effectiveness (i.e. the performance) of this activity. This would be like simply counting the number of plots sprayed or insects released as a final performance measure. Success (i.e. performance) of outreach and education is measured by assessing changes in awareness and attitude and behavior. This requires proper surveys (pre/post) or other means of assessing the impact of the efforts. (Perhaps some of the travel funding should be reallocated to this- otherwise, how does one determine if the proposed methods are working?)

f. On page 19, state and federal collaborations are noted – but not how or in what part of this project. This should be clarified.

g. The diagram which includes the “adaptive management” loop is clear, but the actual steps that will be taken to implement adaptive management should be stated: how will the evaluation/ interpretation/ adjustment process be conducted? What are the criteria for making changes?

3. **Feasibility.** Is the approach fully documented and technically feasible? Is the scale of the project consistent with its objectives? Does it reflect “best practices” for this type of project? If not, how should the project be revised to reflect “best practices”? Is it likely to attain the ecosystem restoration objectives it seeks?

This project is feasible. Please see suggestions above re alternative herbicides as part of best practices development. The successful implementation of this program will definitely help attain restoration goals, and most importantly curtail the continuing spread of this noxious weed.

4. **Capabilities.** What is the applicants’ track record in terms of past projects? Is the project team qualified to efficiently and effectively implement the project? Does the proposal describe how additional expertise and other support necessary to

successfully accomplish the project will be obtained? If not, what additional expertise or support is needed? and the people responsible are fully qualified to conduct the tasks outlined.

The team is competent and has excellent experience in this and other invasive weed control and eradication efforts.

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

Please above suggestions re the travel budget and outreach budget and performance measures. Overall the project is very cost-effective- certainly in terms of stemming spread as soon as possible. The target weed is still at an incipient stage where effective control/eradication now will pay huge dividends over the next 5 to 10 years.

Additional 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	This project is rated “good” because most of the components are well designed, the applicants are very competent and the scale of work proposed is feasible. There are few gaps and a few tasks that should be improved and these were noted above.
Good X	
Poor	

CALFED Ecosystem Restoration Program External Review Form

Proposal Title: CONTROL OF PURPLE LOOSESTRIFE

Review:

1. **Goals.** Are the project's goals and objectives clearly stated and internally consistent? What ecosystem restoration benefits will it provide?

Project goals are important and are clearly stated. The direct benefit of this project will be virtual eradication of a nonnative plant demonstrated to be detrimental to ecosystem structure and function in other regions. Indirect benefits include myriad aspects of ecosystem function as well as public education.

2. **Approach.** Is the approach well designed and appropriate for the project's objectives? Is it justified by prior site studies or other information documented in the proposal? If additional information is needed to adequately plan and design the project, does the proposal include adequate provisions for obtaining it during the project's design and environmental assessment? If not, what additional information should be gathered?

The approach has been thoroughly tested via trial-and-error. It is well-justified and reasonable based on the considerable information currently available. This project is the result of many years of research and practice on this species in this system. Thus, the approach is excellent.

3. **Feasibility.** Is the approach fully documented and technically feasible? Is the scale of the project consistent with its objectives? Does it reflect "best practices" for this type of project? If not, how should the project be revised to reflect "best practices"? Is it likely to attain the ecosystem restoration objectives it seeks?

The proposed approach is fully documented and technically feasible. This ambitious project employs a well-tested approach; as such, it reflects "best practices" for this type of project. In my opinion, the project has a very high probability of attaining its objectives.

4. **Capabilities.** What is the applicants' track record in terms of past projects? Is the project team qualified to efficiently and effectively implement the project? Does the proposal describe how additional expertise and other support necessary to successfully accomplish the project will be obtained? If not, what additional expertise or support is needed?

This group of applicants has excellent credentials and an excellent track record. This is an impressive team.

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

Project benefits are potentially huge; they clearly outweigh costs. The budget is reasonable and adequate.

Additional comments:

This is a meritorious proposal that I strongly support. This excellent opportunity to keep purple loosestrife “at bay” should not be passed up.

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
<i>Excellent XXX</i>	This proposal represents considerable thought and effort. The justification and resulting conceptual model are compelling, and the project has a high probability of success. Benefits are potentially huge, and costs are relatively small.
Good	
Poor	

CALFED Ecosystem Restoration Program External Review Form

Proposal Title: Expanded prevention, detection, and control of purple loosestrife in the California Bay-Delta Authority watershed

Review:

1. **Goals.** Are the project's goals and objectives clearly stated and internally consistent? What ecosystem restoration benefits will it provide?

My response to this question depends upon the interpretation one makes of the proposed goals. The stated goal of the project is to expand the program (detection, outreach and control) beyond the scope of the pilot program to encompass the range of environments invaded by purple loosestrife. This goal was established by previous work, and it is quite clear that expanding the geographic focus is feasible. If control, really local eradication, is achieved over a broad geographic area and in the most severely invaded areas in particular, the benefits of the program would be substantial.

Detection seems simply a matter of covering likely riparian areas frequently enough, and education seems to require little more than regular communication with local agencies and individuals. However, control is more problematic. I have chosen to regard the first two hypotheses on p. 7 as more precise indicators of goals pertaining to control. They do contain precise performance conditions and experimental protocols, and if pursued rigorously have the potential to contribute to improve our understanding of the potential to control purple loosestrife in California. However, pursuing the objective of testing effectiveness of control does not require geographic expansion of the area of interest to be successful. Expanding the program contributes to a more complete picture of the extent of infestation, which already seems to be quite large, judging from Plate 5.

2. **Approach.** Is the approach well designed and appropriate for the project's objectives? Is it justified by prior site studies or other information documented in the proposal? If additional information is needed to adequately plan and design the project, does the proposal include adequate provisions for obtaining it during the project's design and environmental assessment? If not, what additional information should be gathered?

The experiment is set up as a replicated complete block design covering glyphosate application (once or twice per year) where feasible, caged application of predatory beetles, physical uprooting or clipping seed heads where not. Presuming that the experiment will be carried out at all sites where loosestrife has been detected, this experiment has the potential to spiral out of control if carried out as specified. Two glyphosate treatments, 1 uprooting and one seed removal treatment, and up to 4-5 biological control treatments (it remains unclear how many biological agents will be used and in which combinations) and 3-4 replicates of each implies a range of 15 to 40 plots per local experiment, excluding cage controls and area separation needed to isolate

treatments and prevent interactions between plots. Some infestation sites may be too small to accommodate the entire experiment, in which case incomplete blocks will compromise the experimental design. The design also excludes mention of pure controls where no treatment is imposed; these may be necessary to account for short-term changes in natural variability or to estimate the treatment effects. Note that adjusting the experimental quadrat areas to infestation size is dangerous to the extent it involves changing ratios of border to centers of plots. To the extent these are serious design flaws, I recommend scaling back the discovery aspect in favor of experimental control at the most serious sites, such as the Tuolumne River area.

Other problems exist in the criteria for a successful experiment. Those associated with outreach seem trivial; giving seminars once per year per county is a matter of making the effort. There is a need for a more meaningful criterion that actually measures the effectiveness of outreach. Those associated with the control experiment are more meaningful but artificially precise. The 25% removal fraction specified appears to be quite arbitrary; what matters is the estimated rate of decline, or that there is continuous decline, not a specified yearly % target. Similarly, the three-year timeline to seed bank exhaustion may be meaningless, arbitrary, or not feasible. DiTomaso and Healy (2002:245) indicate that persistence in the seedbank is at least three years, but that field longevity remains unknown. Estimating dormancy, dormancy release, and longer time frames for monitoring are all indicated as high priority activities here.

As framed in the proposal, the control experiments seem clean and feasible. For reasons I have specified above, I think the more likely results will be far less clean or easily interpreted. It seems more likely that the proposal should be judged for its contribution to estimating the extent of invasion and possibly the rate of increase at local sites than its effectiveness at control. Although the proposal text asserts that previous work in control was successful, I could not find evidence in the proposal to sustain that conclusion.

3. **Feasibility.** Is the approach fully documented and technically feasible? Is the scale of the project consistent with its objectives? Does it reflect “best practices” for this type of project? If not, how should the project be revised to reflect “best practices”? Is it likely to attain the ecosystem restoration objectives it seeks?

I recommend that the control program be scaled back to improve its feasibility and content. I would remove hand harvest, biological control, and seed harvest as variables and concentrate solely on glyphosate treatments. This achieves a measure of control that the authors (and other reviewers) desire, while more cleanly testing the effect of glyphosate on eradicating local stands of loosestrife.

Of the questions above, the only one that seems important here is the final one. Removing purple loosestrife will help with ecosystem restoration, to the extent that removing invasive species is feasible and mandated by public policy. In reading over previous reviewers comments, the one which most stands out is the need to restrict the spread of loosestrife while it is feasible to do so. If the proposed program is able to stem the spread and local increase of the species and produces measures that

substantiate these things, it will be successful. However, the success of control is probably the least clear aspect of the proposal.

4. **Capabilities.** What is the applicants' track record in terms of past projects? Is the project team qualified to efficiently and effectively implement the project? Does the proposal describe how additional expertise and other support necessary to successfully accomplish the project will be obtained? If not, what additional expertise or support is needed?

The CDFA team's track record seems clearest in the areas of survey, GPS tracking, and public outreach-agency coordination. If the proposal were concerned solely with these aspects, I do not feel there would be any question over its merits. The real question concerns the scientific aspects of the control experiments. While I sympathize with the budget situation at CDFA and the need to control loosestrife, I do not have the confidence to affirm the merits of the control experiment.

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

If this proposal excluded the control experiments, it is overfunded, but if the control experiments are included and possible expanded, it might well be underfunded.

Additional 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	The survey elements are fine, but the control experiment is crucial and remains too flawed to inspire confidence. As a result, this proposal is certainly better than the no-action alternative, but does not promise to accomplish as much as it easily could have with a more thoughtful control experiment.
Good X	
Poor	

CALFED Bay-Delta 2002 ERP PSP
Administrative Review
Budget Evaluation

Proposal number: 22DA

Proposal title: *Expanded Prevention, Detection and Control of Purple Loosestrife in the California Bay-Delta Authority Watershed*

1. Does the proposal include a detailed budget for each year of requested support? Yes

If no, please explain:

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

If no, please explain:

3. Does the proposal clearly state the type of expenses encompassed in indirect rates or overhead costs? Yes

If no, please explain:

4. Are appropriate project management costs clearly identified? Yes

If no, please explain:

5. Do the total funds requested (Form I, Question 17A) equal the combined total annual costs in the budget summary? Yes, under question 19c the total funds requested match the budget summary.

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

6. Does the budget justification adequately explain major expenses? Yes

If no, please explain:

7. Are there other budget issues that warrant consideration? Yes

If yes, please explain:

In Year 1 on the Budget summary, \$2,000 is listed for Service/Consultants. On the Budget Justification, "Services or Consultants" question is identified as "None". Perhaps this is a mistake when they completed the final proposed budget, but this should be clarified, if the project is approved, prior to contracting.

Overall this is a reasonable amount requested for the scope of the project for 3 years and builds upon previously funded work.

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