

#4

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To: CALFED Science Staff. Attn 2006 PSP. FAX (916) 445-7297
From: Gonzalo Castillo, USFWS, Tel. 209-403-1346, FAX 209-946-6355
Subject: Public Comments on 2006 CALFED Science PSP

Proposal Name: An Experimental and Modeling Approach to Evaluate Environmental Water Effects on Threatened Delta Smelt (#0068)

Applicant Organization: U.S. Fish and Wildlife Service
Principal Lead Investigator(s): Castillo, Gonzalo; Fujimura, Robert

Comments on Technical Panel Summary of Findings:

Page 1:

" the panel voiced numerous reservations about the project as described. Portions of the proposed work are poorly described (in particular Tasks 6-8, i.e, the data analysis and modeling components). Feasibility of certain components has not been fully evaluated (e.g., photonic marking of juveniles; release locations; etc.). Quick feasibility tests could be conducted before committing large funds to this project. Also, it is not clear that mark-recapture experiments will examine entrainment processes in a sufficiently detailed manner (size effects, season effects, etc.)."

Comments: The referred limited detailed description of data analyses and modeling components is understandable considering the number of unknowns that must be resolved as part of the proposed work. Resolving many of these uncertainties is a key component of our proposed research. Several facts preclude us from providing a detailed methodology at this point. However, a pilot evaluation for juvenile marking is already contemplated in our original proposal as funds are specifically allocated to evaluate photonic marking and calcein marking. We intend to test alternative marking methods to conduct the mark-release experiments on juveniles. Even if photonic marking proves to be inadequate in our experiments with juvenile delta smelt, we have high degree of confidence on calcein as its use has already been successfully demonstrated for a number of species of fish, including juvenile and larval stages. Thus, that calcein marking alone should suffice to successfully conduct the proposed marking experiments in both juvenile and adult delta smelt. Use of different marking methods however, would provide us with greater flexibility to conduct these experiments.

"It is noteworthy that modeling analyses (which are critical for placing this work in a population and system-wide context) are not clearly described. (Two

reviewers question the qualifications of these researchers to conduct modeling analyses)"

Comments: We agree that more detailed methods for the modeling component would be desirable at this stage. The principal investigator has conducted previous studies using quantitative and qualitative modeling methods, two of which have been published in peer reviewed journals (Fishery Bulletin, Estuaries). The principal investigator has conducted population dynamics and community dynamics modeling using a number of programs including Mathcad, Matlab, Stella and Microsoft Excel. A detailed description of proposed modeling work was not provided for the following reasons:

- 1) **Modeling work on delta smelt and the methodology to investigate the use of environmental water is still in preliminary stages by other researchers. Further, the parameters and variables to be included in these population models under development have not been fully described. We originally intended to rely on ongoing modeling research to refine our conceptual model and proposed quantitative synthesis model.**
- 2) **Our proposal attempted to partially rely on statistical relations to be developed as part of this proposal as well as on the rapid progress being made by collaborators working on south Delta hydrodynamics (P. Smith, USGS and L. Grimaldo, DWR) and by the progress being made to model the delta smelt population (W. Kimmerer, SFSU). In addition, complementary methods applicable to EWA evaluation have been developed and being revised since the time we submitted our proposal (e.g. Kimmerer, in preparation, Brown et al. in preparation).**
- 3) **Research on salvage and entrainment dynamics for delta smelt began recently with IEP/POD investigations and is still an area of active development. Thus, it is still premature to provide a more detailed description of specific methods and algorithms to be used to quantify entrainment losses in our proposal. The rapid progress in the last two years further suggests that the most adequate algorithms should be developed based on evaluation of the most up to date research currently underway.**
- 4) **As one of the reviewers correctly pointed out "Although any researcher can create a quantitative model, the predictive value and usefulness of a model is dependent on the information included the model as well as careful calibration and post hoc testing". Thus, no degree of prior modeling experience may compensate for the empirical understanding required to model the complex entrainment and salvage process proposed in this research project.**

Pages 1-2:

"The price of doing this work is a major drawback. The budget includes significant requests for salaries for both university and agency biologists, which in the panel's opinion is not appropriate."

Comment: The cost of this project is high and from our perspective it is fully justified for the following reasons:

- 1) University (UC Davis) and agency staff (DFG) are 100% soft-money researchers. Therefore, they are unable to provide any cost share. However, the principal investigator and one of the primary staff members are able to allocate all their time contribution as a cost-share.**
- 2) We budgeted for actual production costs of all cultured delta smelt, rather than unrealistically assuming no costs to produce delta smelt.**
- 3) Production cost of delta smelt are understandably high due to the relatively small number of delta smelt cultured for research purposes when compared to the cost of research fish derived from other large-scale hatchery operations with lower the production cost per fish.**

Because the modeling components of tasks 7 and 8 have been excluded as a result of the technical panel recommendations, the principal investigator (Castillo) and a primary investigator (Poage) will be able to devote additional time to reduce costs of remaining tasks.

Page 2:

"In addition, since the panel is advocating a pilot project, they suggest that reduced costs can be accommodated by decreasing the number of smelt to culture."

Comment: We plan to reduce costs to accommodate a pilot project within the recommended budget. This will require decreasing the number of delta smelt to culture.

"Conditions:

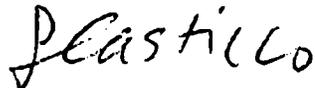
- 1. The panel recommends a reduced overall budget of \$670,000.**
- 2. Conduct a pilot test to ensure the feasibility of the project.**
- 3. Re-evaluate the budget, especially the university and agency staff time.**
- 4. Evaluate the feasibility of certain components (e.g., photonic marking of juveniles; release locations; etc.).**
- 5. Determine the efficacy of mark-recapture experiments.**
- 6. Remove tasks 7 and 8.**
- 7. Decrease the number of smelt to culture."**

Comment: The seven stated conditions above will be accommodated in a revised pilot project. Because the completion of all fish culture and mark recapture experiments of our anticipated pilot project will require two full years, we request an additional six month period to analyze all the data and produce the final report. This requested six month period will still be within the total recommended budget amount (proposed project duration is 30 months). If no more than 24 months are allowed for the completion of this pilot study by the CALFED Science Program, then we can still accommodate a smaller scope of work within a 24 month timeline. We would appreciate your early feedback on this issue to decide the best course of action to timely complete a revised scope of work.

Preliminary results in years one and two of this pilot project will provide us with the data needed to recommend a third year of potential funding without the need to interrupt culture operations needed for mark recapture experiments in a subsequent year. Alternatively, if project renewal for a third year is not feasible, the results of our pilot project will provide guidance and recommendations to propose a full scale-mark recapture project as part of a future proposal solicitation.

Thank you for your consideration of these comments.

Sincerely,



Gonzalo Castillo, Ph.D.

Fish Biologist
U.S. Fish and Wildlife Service
4001 N. Wilson Way
Stockton, CA 95205
gonzalo_castillo@fws.gov