

# **Proposal Reviews**

## **#198: Distribution and demographic status of steelhead trout (O. mykiss) in tributaries of waterways of the Central Valley**

University of California, Davis

**Research and Restoration Technical Panel Review**

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# Research and Restoration Technical Panel Review:

## CALFED Bay-Delta 2002 ERP PSP Research and Restoration Technical Panel Review Form

**Proposal Number:** 198

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

**Proposal Title:** Distribution and demographic status of steelhead trout (*O. mykiss*) in tributaries of waterways of the Central Valley

**Review:**

**Please provide an overall evaluation summary rating:**

**Superior:** outstanding in all respects;

**Above Average:** Quality proposal, medium or high regional value, and no significant administrative concerns;

**Adequate:** No serious deficiencies, no significant regional impediments, and no significant administrative concerns;

**Not Recommended:** Serious deficiencies, significant regional impediments or significant administrative concerns.

Overall Evaluation Summary Rating	Provide a brief explanation of your summary rating
-Superior	<b>The proposal has a scatter-gun approach, unknown cost, and no recognition of local and regional needs. The members of the panel were in agreement that this proposal should not be recommended and should not be funded.</b>
-Above average	
-Adequate	
<input checked="" type="checkbox"/> Not recommended	

1. **Goals and Justification.** Does the proposal present a clear statement of goals, objectives and hypotheses? Does the proposal present a clear justification and conceptual model for the project?

**The applicants develop an effective rational for the assessment of distribution of steelhead and a study of the stressors that might be causing the declines in steelhead populations. They also effectively use the hypotheses to describe how the approach will answer the questions.**

2. **Likelihood of Success (Approach, Feasibility, Capabilities and Performance Measures).** Is the project likely to succeed based on the approach, feasibility and project team capabilities? Are the proposed performance measures adequate for measuring the project's success?

**The approach is ambitious and lack of details in the approach is problematic. The authors describe some methods in adequate detail, but other details are omitted. The authors state Due to page limitations for this proposal, it is not possible to explicitly discuss the methodology by which each of these hypotheses will be tested. The authors could have**

reduced the number of pages (4 pages) with schematics of the conceptual models and added a succinct methodology with the appropriate citations and statistical approaches. The proposal is so ambitious so as to raise questions about a lack of focus. The authors use several paragraphs describing why classical statistics are not appropriate, but they do not provide adequate information on the alternatives they suggest. The numerous variables to be measured and lack of detail make a meaningful review difficult. The authors indicated they will analyze emergent fry for hsp, but do not indicate plans to analyze parr in late summer after environmental and chemical stressors might be at seasonal highs. The lack of feasibility does not arise from individual tasks not being technically feasible, but from a lack of specifics in design, methodology, and analytical approaches. The Sacramento Regional Review stated Unfortunately, little time was spent assessing actual need, and as such the proposal seems to be a scatter-gun attempt to cover all eventualities. The panel was in agreement with the Sacramento Regional Review.

3. **Outcomes and Products.** Will the project advance the state of scientific knowledge in general and/or make an important contribution to the state of knowledge of the Bay-Delta Watershed? For restoration proposals, is the project likely to contribute to ecosystem restoration or species recoveries in a significant way? Will the project produce products useful to decision-makers and scientists?

Under the Performance Measures section the authors write Unfortunately, the time frame of this project will not allow for the publication of manuscripts in scientific journals and the performance measures will simply be the submission of reports. The authors apparently have the same level of commitment to peer reviewed publications on the Navarro River Watershed research project which they often cite, but do not cite publications in press. Is this a red flag or just a timeline problem?

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

In Requested Funds item #17 the amount of state funds is \$4,905,289 and total federal funds of \$5,586,043. The amount in the Budget Summary was \$2,445,639. The applicants propose to rent off-campus office space. The equipment list would at first inspection seem reasonable for the tasks outlined in the proposal. However, after discussing in greater detail the panel concluded it was grossly excessive. Apparently the applicants as faculty of the UCD contribute little or no University owned equipment.

5. **Regional Review.** How did the regional panel(s) rank the proposal (High, Medium, Low)? Did the regional panel(s) identify significant benefits (regional priorities, linkages with other activities, local involvement) or impediments (local constraints, conflicts with other activities, lack of local involvement) to this proposal? What were they?

The regional reviews ranked the proposal low, medium, and low. Each reviewer pointed out the general lack of outreach and cooperation with local entities or fishery management agencies.

6. **Administrative Review.** Were there significant concerns about the proposal with regard to the prior performance, environmental compliance and budget administrative reviews? What were they?

Prior performance on the Navarro Watershed is often cited, but no references are provided. No attempt has been made at environmental compliance and the panel has doubt that any agency would find the information in the proposal adequate for permitting purposes. The total budget is somewhere between \$2.4 million and \$5.6 million.

**Miscellaneous comments:**

**None**

## **Delta Regional Review:**

**Proposal Number:** 198

**Proposal Title:** Distribution and demographic status of steelhead trout (*O. mykiss*) in tributaries of waterways of the Central Valley

Overall Ranking: Low Medium High

Provide a brief summary explanation of the committee's ranking:

**Project does not appear feasible based on local constraints. A lack of linkage with other projects and local involvement was also noted.**

1. Is the project feasible based on local constraints?

Yes No

How?

**This project will require in-depth consultation with the National Marine Fisheries Service for the take of steelhead throughout the Central Valley. Though there is no start or completion date indicated in the proposal, it is possible the permits will take between one and two years to complete. The placement of fry emergence traps, electroshocking, PIT tagging, and the taking of steelhead for heat shock protein analysis will require significant consultation. In addition to the Section 10 permit required, the principal investigators will be required to obtain permission from government and private landowners to enter spawning grounds. Communication with other agencies such as California Department of Fish and Game and the National Marine Fisheries Service has just begun to take place. For example, no letter of intent or plan is orchestrated with CDFG as to the method of carcass collection. Investigators are expecting a call from the statewide steelhead investigator of CDFG and will be contacting Jennifer Nielsen for genetic analysis assistance. The formation of the Scientific Advisory Committee (a good idea) could also take a significant amount of time. The applicants do not appear to have done their homework and make many unrealistic assumptions about work loads and time frames.**

**The project appears to be a monster promising to complete conceptual models for steelhead delivering everything from determining steelhead population density across tributary watersheds to monitoring survival and growth of steelhead in reaches with and without large woody debris inputs. Other promised answers include the distribution and demographic status of steelhead throughout the Central Valley tributaries (including age determination by scale analysis), fry emergence success in selected watersheds, adult steelhead stress (from carcass asymmetry), heat shock protein analysis as a measure of condition, fish community characterization (based on scales), stable isotope analysis, etc, etc, etc.**

**The investigators list no publications related to this type of work in the Central Valley.**

2. Does the project pursue the restoration priorities applicable to the region as outlined in the PSP?

Yes No

How?

**This project, if successful, would achieve many tasks paving the way for restoration.**

**Ecosystem Restoration Program Goals: This project would acquire valuable information about at-risk species (Goal 1) and aid in the information needed to rehabilitate ecosystem processes and biotic communities in the watershed (Goal 2). This project would also help acquire information assisting with the recovery of harvestable species (Goal 3) and the improvement of habitat function (Goal 4) as well as sediment and water quality processes in the Central Valley (Goal 6).**

**Proposal solicitation package goals: This study will directly address multi-regional goal 6 which aims to recover at risk species by developing conceptual models. Sacramento Region priorities 3 and 7 (adaptive management experiments to restore ecosystem function and conceptual model development respectively) are addressed directly by this study. This project would also pave the way to completing San Joaquin Region objective 4 (improve understanding of at-risk species).**

**CVPIA goals: The authors do not acknowledge a CVPIA related benefit, however, this work would help achieve section 3402(a) which strives to protect, restore, and enhance fish and wildlife of the Central Valley. Also relates to 3406(b)(1) which authorizes the AFRP to make all reasonable efforts to double anadromous fish by 2002.**

3. Is the project adequately linked with other restoration activities in the region, such as ongoing implementation projects and regional planning efforts?

-Yes XNo

How?

**The authors fail to link this work or even discuss its merits with past or current related efforts funded by CALFED or CVPIA. How does this study relate to past projects? Does it build on prior work?**

4. Does the project adequately involve local people and institutions?

-Yes XNo

How?

**There is no evidence that the applicants coordinated with regulatory agencies prior to submitting the proposal (see prior comments). Evidence of coordination with local watershed groups and agency groups as well as plans for outreach to them is also absent from the proposal.**

Other Comments:

**The Scientific Advisory Committee should be composed of representatives from local, county, state and federal agencies (CDFG, Irrigation districts, NRCS, DWR, USACE, USBR, USFWS, USGS, etc.), academia, CALFED, and to interested stakeholders. Detailed outreach methods should be included.**

**Investigators should consult with the USFWS instream flow group before working on said topic.**

**Will any peer-reviewed publications be done? Investigators mention that the time frame of the project is too short to allow for publication. What about a final report summarizing the results for future use? Quarterly and annual reports are not sufficient.**

**Insufficient detail relating to field quality control and quality assurance as well as statistical approaches and methods were found. Suggest attaching operating procedures or at a minimum referencing standard operating procedures, etc.**

**Work schedule section was extremely brief.**

## **San Joaquin Regional Review:**

**Proposal Number:** 198

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

**Proposal Title:** Distribution and demographic status of steelhead trout (*O. mykiss*) in tributaries of waterways of the Central Valley

Overall Ranking:    -Low    Medium    -High

Provide a brief summary explanation of the committee's ranking:

**The data to be collected in this proposal would be extremely useful in any endeavor connected with steelhead. Whether, in a three year period, this data could be collected is in doubt. The proponents have no experience within the Sacramento/ San Joaquin watersheds and have made no effort to coordinate with the various agencies or, more importantly, the local landowners and watershed groups that will be providing access to the rivers.**

1. Is the project feasible based on local constraints?

-Yes No

How?

**The scope of the project and the information to be collected in a three-year period is rather ambitious and their familiarity of the watersheds is limited. Though most of the data collection techniques are not new and the proponents have some previous experience, it still seems like a lot over a large area in a short period of time. They have had experience with the proposed field and laboratory analyses for this project in another project currently underway, the Navarro River Watershed research project. Though this project has not been completed, it sounds like most of the field data has been successfully collected, but it would be nice to see if they have successfully completed the analysis.**

**There are a number of measurements needing to be made on multiple years on four different watersheds that could constitute a logistical nightmare. The selection of these four watersheds to be representative of steelhead habitat could, in itself, be lengthy. Then the basic study of ecological conditions of these watersheds including such measures as primary and secondary productivity, instream habitat condition in spawning and rearing reaches, and nutrient conditions in the watersheds are very time consuming and notoriously variable depending on the annual weather conditions. Other measurements such as accurately monitoring emergence success of eggs deposited in spawning areas are very difficult measurements to make.**

**Permits that need to be acquired for collection and permission to access property is probably the biggest obstacle though the authors seem confident on being able to get that. Wonder about the extent of landowner cooperation though and whether they will be able to gain access to all the areas that they need to for such a comprehensive study. They have not laid in any groundwork with local groups or landowners.**



2. Does the project pursue the restoration priorities applicable to the region as outlined in the PSP?

Yes -No

How?

**SJ-4: Improve understanding of at-risk species. The proposed project will involve an assessment of the current distribution and abundance of steelhead. The second phase will concentrate on a few select watersheds and will evaluate the impacts of watershed specific stressors and habitat improvement measures to overcome those stressors. The data collected, once analyzed will greatly enhance our understanding of steelhead and any environmental constraints to their recovery.**

3. Is the project adequately linked with other restoration activities in the region, such as ongoing implementation projects and regional planning efforts?

Yes -No

How?

**Just about any restoration effort involving steelhead would benefit from the results of this study. Quantifying the variables in the conceptual model for this project would identify the magnitude of stressors and their effect on any stage of the steelhead life cycle. This would enable a more efficient use of resources in restoring the steelhead populations.**

4. Does the project adequately involve local people and institutions?

-Yes No

How?

**There is little mention of utilizing any local agencies, organizations or people in this project. No contacts have been made within the watersheds.**

Other Comments:

**The amount of information that the proponents plan on gathering in three years is substantial and ambitious and would be of great scientific value in determining why steelhead populations are declining. The information would greatly assist in the determination of where to put resources and efforts to most effectively halt this decline and begin recovery. My main concern is whether they can gather and analyze all the data that they are proposing to collect. The project currently underway, the Navarro River Research Project, has not been completed or published and it would be useful and prudent to evaluate the progress of that project.**

## Sacramento Regional Review:

**Proposal Number:** 198

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

**Proposal Title:** Distribution and demographic status of steelhead trout (*O. mykiss*) in tributaries of waterways of the Central Valley

Overall Ranking:   XLow   -Medium   -High

Provide a brief summary explanation of the committee's ranking:

**The panel felt the proposal was poorly focused and also poorly coordinated with local stakeholders, institutions, and agencies.**

1. Is the project feasible based on local constraints?

-Yes XNo

How?

**Proposal is a complex mix of analyses that have as their major weakness, and perhaps fatal flaw, the failure to develop the proposal in conjunction with ongoing activities by other agencies, and local constituency groups. The proponents aptly state "The greatest difficulty with the project is being able to receive permits in a timely manner, and receiving permission to access property".**

2. Does the project pursue the restoration priorities applicable to the region as outlined in the PSP?

XYes -No

How?

**Project addresses Restoration Priorities for the Sacramento Region #2, "Restore fish habitat and fish passage for spring-run chinook salmon and steelhead trout and conduct passage studies", and #7, "Develop conceptual models to support restoration of river, stream and riparian habitat".**

**Unfortunately, little time was spent assessing actual need, and as such the proposal seems to be a scatter-gun attempt to cover all eventualities. Proponents might well have significantly refined the proposal if adequate consultation with existing programs, including assessment of the existing state of knowledge, had been completed.**

3. Is the project adequately linked with other restoration activities in the region, such as ongoing implementation projects and regional planning efforts?

-Yes XNo

How?

**Proponents seem to have relied solely upon CMARP hypotheses and therefore failed to coordinate proposal with any ongoing implementation or regional planning efforts. There are certainly components of the proposal that have merit, and should or could be tailored to a particular locale or circumstance, however such should have been done prior to generating the proposal.**

4. Does the project adequately involve local people and institutions?

-Yes XNo

How?

**Apparently no attempt was made to contact or coordinate with local people and institutions, including state and federal agencies. Mention of coordination with DFG, seems to have been perfunctory and after-the-fact. A general tenet of current restoration programs is upfront participation of local stakeholders and institutions. Proponents have made no effort to accomplish this and have probably significantly underestimated the difficulty in acquiring landowner permission to access private property. Additionally, failure to coordinate with local agency restoration personnel jeopardizes local cooperation achieved through personal contact.**

Other Comments:

**Proposal has components that if selectively modified, could be beneficial to restoration efforts for steelhead. Proponents should first carefully coordinate with existing agency projects and project personnel to better craft their proposal, and need to carefully understand and address the issue of local involvement.**

# External Scientific: #1

## Research and Restoration External Scientific Review Form

Proposal Number: **198**

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

Proposal Title: **Distribution and demographic status of steelhead trout (*O. mykiss*) in tributaries of waterways of the Central Valley**

### Conflict of Interest Statements:

I have no financial interest in this proposal.

Correct

Incorrect

In the blank below please explain any connection to proposal, to applicant, co-applicant or subcontractor or to submitting institution (write "none" if no connection):

**None.**

### Review:

**Please provide an overall evaluation summary rating:**

**Excellent: outstanding in all respects;**

**Good: quality but some deficiencies;**

**Poor: serious deficiencies.**

<b>Overall Evaluation Summary Rating</b>	<b>Provide a brief explanation of your summary rating</b>
-Excellent	<b>If this proposal covered 6 or more years, I would rank it quite highly (but I would make them rework their budget!). Because it is limited to 3 years and so little time is available to insure that appropriate sampling locations are chosen, my overall rating is poor.</b>
-Good	<b>Perhaps portions of the study can be funded, particularly much of Tasks 1, 3, and 5. Funding for just these tasks would be much lower than that requested, and the cost-benefit would likely be much higher. Once significant progress is made on these limited number of tasks, the proposers may well see fit to write a future proposal to include some or all of the other tasks.</b>
XPoor	

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

**The proposers outline extensive goals for this very extensive and expensive project. Individual goals in themselves are appealing, but the combination of so many goals suggests too many with too fast of time track with too little regard for the adaptive learning process. Without defined sampling locations and without in-depth knowledge of site characteristics,**

**the goals are likely to be unattainable.**

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?

**In general, this is a very pricey proposal at about \$5 million (or is it \$2.445 M? It is impossible to tell what budget figures are correct). Some of the reason for the budget confusion may be attributable to bad spread-sheeting, but a large part of the reason is because the proposers are asking for lots of dollars (about \$444K) to create an infrastructure, which includes numerous expensive non-expendable equipment (e.g., \$65K for a TOC 5000A total organic carbon analyzer with an autosampler and software; \$20K for a phase contrast microscope; \$8.5K for an ultralow freezer, etc.). The proposers are bringing little to no in-kind matching dollars to the table. They are asking for a large amount of expensive equipment that may or may not be able to use, or use enough to justify purchasing rather than renting, within the timeframe of the proposal. Similarly, the proposers have outlined an extensive range of activities that may or may not be justified or feasible. The problem is that the justification and feasibility for many of the proposed activities will not be known at least until the first year of sampling is completed.**

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?

**A major strength of the proposal is in the watershed and ecosystem approach that is planned. However, what is seemingly a strength is also a weakness because so much is proposed within such a short amount of time. Tasks proposed and the dollars requested would potentially be better served to cover 6 or more years rather than the 3 years as proposed.**

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 proposal appears to be unrealistically ambitious. So much is packed into this one proposal. Much of the intensive sampling effort in year 2 and 3 is too highly dependent on the extensive effort to locate appropriate sampling sites in the first year. Many potentially show-stopping roadblocks exist for the first year, including landowner permission and obtaining sampling permits. What happens if too few sites are available or permits are delayed for several months? Ultimately the problem is the lack of knowledge that these researchers have about the Sacramento and San Joaquin basins. To gain this knowledge will require extensive contacts with agency personnel and other groups, yet it appears too minimal of an effort has been expended to date for adequate scoping of this project. The only Local Involvement listed is a promise to work closely with the new DFG Statewide Steelhead Specialist. Not that lack of knowledge about a new study site is particularly bad, but much of the work proposed is reliant on having or gaining extensive knowledge of the river systems in a very short time. How can enough knowledge be gained within the first year of study to insure a successful second and third year? I think the proposers judgment that the project is completely feasible needs to be questioned.**

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?

**Budget numbers do not make sense, especially for stated hours at given salaries. For example, Michael Johnsons direct labor hours is given as 5,900 over the three years of the study in the Budget Justification section, but the hours listed in Tables 1, 2, and 3 add up to only 1,800 hours. But then, the figures given in these tables to cover M. Johnsons ignores hours and tallies his entire annual salary 5 times (!), resulting in a charge of \$390,016 [(5 x \$78K) for salary; \$16.2K for benefits] for the 3-year study. In addition, the tables do not include Don Huggins, who is listed as a proposal applicant and somehow would be compensated for 5,500 hours for some undefined participation.**

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?

**The extent of study is largely undefined, other than stating that at least four watersheds are to be identified after the first year of extensive sampling. Once determined where to sample, the proposers do not commit to the number of study sites, for example, the proposers state under Task 1: identify reaches within several watersheds for intensive study; Task 2: in various watersheds; Task 3: on as many as reaches as possible; Task 4: for the stages of the steelhead populations for which we can obtain data; Task 5: GIS analysis of the watersheds selected for intensive study, measurements of flow in several cross sections; and Task 6: map as many projects as possible. No task has a defined minimum of sampling, so it is impossible to judge the value of the potential products. Certainly the value of the products would be expected to increase with sample size so that variability among sites can be assessed and encompassed.**

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?

**The proposers state that they have extensive experience in a related project on the Navarro River system. While I do not question the value of that experience, there does not appear to be a published paper or annual report from this project. If a product exists, the proposers should have provides a reference for these possible products, especially since the presenters mention the project several times. Of course, it could be that this kind of documentation does not exist because the Navarro project is a recent and ongoing project. Because of this lack of information on their ongoing project, capabilities are very difficult to judge.**

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

**Some tasks and subtasks in the proposal can be accomplished with a rather small investment in non-expendable equipment, but activities under Task 2, especially, are quite expensive (\$1.36M). The cost-benefit of this task is particularly questionable because the implementation is so dependent on the success of finding appropriate sampling locations in the first year of the study (see comment #2 above). The activities within this task seem more appropriately reserved for intensive studies of pre-defined and well known sampling sites that allow construction of a detailed sampling plan. In addition, Task 8 Project Administration is outrageously expensive at \$343K for the three years.**

**Miscellaneous comments:**

## External Scientific: #2

### Research and Restoration External Scientific Review Form

Proposal Number: **198**

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

Proposal Title: **Distribution and demographic status of steelhead trout (*O. mykiss*) in tributaries of waterways of the Central Valley**

#### Conflict of Interest Statements:

I have no financial interest in this proposal.

Correct

Incorrect

In the blank below please explain any connection to proposal, to applicant, co-applicant or subcontractor or to submitting institution (write "none" if no connection):

**None**

#### Review:

**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>Actually I would rate this between poor and good for the reasons outlined above.</b>
-Good	
XPoor	

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

**The goals of this proposal are consistent with the CALFED program and represent valuable contributions to both the management and scientific community. There are many objectives -- in fact there are so many that I had a hard time believing that the PI's can accomplish them all, even within a three year time span. This is especially problematical when the study watersheds haven't even been located or potential sites described in detail. In addition, lotic systems can vary substantially on a year to year basis (does the term drought ring a bell), yet it sounds like the PI's are assuming that if this occurs it will have little effect on their ability to produce results that are valid over long-term time horizons. In conclusion, although these goals are all commendable I just don't think that they are achievable given the three year time span of the proposal and lack of preliminary data presented.**

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?

**Yes to all of the above, but see below.**

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?

**As a reviewer I find statements like "Due to page limitations for this proposal it is not possible to explicitly discuss the methodology by which each of these hypotheses will be tested..." problematical. There are many methods that are commonly used yet are really insufficient to determine the question at hand -- maybe that's why we're still trying to find out basic information on steelhead despite many years of study (Hmmm, what has happened since Shapavalov & Taft's 54 monograph). There are many possible methodologies that can be used to test the hypotheses described in the proposal, some much better than others, but I'm pretty much left to guess which ones will be used (sorry I don't have access to a copy of your Nararro River proposal). This is simply an untenable practice for a proposal of this magnitude.**

**To give a specific example, the PI's propose to use the IFIM methodology to quantify habitat relationships for steelhead, yet this methodology has been soundly criticized by many investigators (papers by Mathur and Orth). The primary problem with it (besides its view that streams have little interannual variation), is that it doesn't include any biological information (i.e. competitor abundance, food abundance, predator abundance, etc.) and instead acts as if physical factors alone drive fish abundance-habitat relationships. Yet for salmonids in particular, there is considerable evidence that prey availability and intraspecific interactions for foraging sites play the dominant role in habitat selection and ultimately habitat-abundance relationships (see papers by Nick Hughes, Tamara Grand, Larry Dill, Kurt Fausch, Jennifer Hill, etc.). Given these findings, which seem to have been completely ignored in this proposal, the author's approach to habitat studies is seriously flawed, as may Cal Fish & Game's.**

**In addition, there is the whole issue of source-sink population regulation (i.e. crucial segments of the population may occupy a small portion of the habitat with most occupying unfavorable habitat, see Pulliam's work in Am. Nat.) which also need to be considered when examining steelhead habitat suitability and population dynamics.**

**The hydrologic modeling is innovative as are the biochemical techniques (heat shock proteins). The ROC sounds interesting, but I'm not sure that its really warranted given much of the uncertainty that will exist in the biological data.**

**Why use an age-based matrix model for steelhead rather than a size-based model. Most demographic characteristics (e.g., fecundity) of fishes are more strongly correlated with size than age.**

**How will the PI's distinguish age 0+ & 1+ steelhead from resident rainbow trout, which can be found sympatrically?**

**I am not familiar with the LSE modeling technique, but given the author's statements, it sounds like an information theoretic approach as outlined in the recent book Model Selection and Inference by K. Burnham & D. Anderson might be a more appropriate statistical approach for the problems described by the PI's.**



**There are several other methodological problems that I could have commented on, but given the number of major problems already discussed it seems pointless to continue.**

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?

**Despite the PI's statement that "The project is completely feasible." I would have to disagree. This proposal reads as if the PI's will uncover every possible biological, physical, and toxicological factor that could possibly influence steelhead and fix your kitchen sink at the same time. With 20+ years of research and 50+ papers in my own c.v. I just don't believe that they can do what they'll say they can do. This is especially troublesome when the PI's do not appear to be familiar with difficulties involved in several aspects of the research that they describe in this proposal (habitat work and possibly population biology of fishes).**

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?

**Hard to evaluate, I always am dissatisfied with a "report" as a performance measure (what granting agency doesn't require a report?) and think that a commitment to publish, even if its done after the project has been completed, is most appropriate. The PI's indicate that they eventually intend to publish the data, but when will they have time to do so? If the PI's do half of what they're proposed, they'll have data for many journal articles.**

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?

**Yes, but I just don't think that the PI's can do them all.**

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?

**It is hard to assess the PI's capabilities with respect to the tasks outlined in this proposal. The two PI's seem to be toxicologists with some expertise in statistical modeling, yet most of the research outlined in this proposal is hydrology and fish habitat relationships with a dash of demography, fisheries management and physiology. I found the author's knowledge of the fish habitat aspects of this study to be sorely lacking, although I can't really comment on the other aspects. Johnson also appears to have a background in population biology of birds and small mammals. Nonetheless, it gives a reviewer pause when PI's just say "I've been doing aquatic ecology for 30 years." yet don't have a long list of relevant papers to show for those years (i.e. have the PI's published anything on fish-habitat relationships or population biology of fishes?). Science Citation Index did not yield many citation for Huggins and there were too many M.L. Johnsons to wade through (~890 hits) although most of these were medical citations. All in all the PI's qualifications for certain major segments of this project are problematical.**

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

**The budget is written as if this is a consulting firm. CALFED would do much better to find a faculty member with an active graduate program who could find good PhD students to do this work. Cost/benefit ratio is low.**

**Miscellaneous comments:**

# External Scientific: #3

## Research and Restoration External Scientific Review Form

Proposal Number: **198**

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

Proposal Title: **Distribution and demographic status of steelhead trout (*O. mykiss*) in tributaries of waterways of the Central Valley**

### Conflict of Interest Statements:

I have no financial interest in this proposal.

Correct

Incorrect

In the blank below please explain any connection to proposal, to applicant, co-applicant or subcontractor or to submitting institution (write "none" if no connection):

**None**

### Review:

**Please provide an overall evaluation summary rating:**

**Excellent: outstanding in all respects;**

**Good: quality but some deficiencies;**

**Poor: serious deficiencies.**

<b>Overall Evaluation Summary Rating</b>	<b>Provide a brief explanation of your summary rating</b>
-Excellent	<b>There were no categories low enough for this one. Was it submitted in jest? If so, I can think of at least three panel members who might like to visit with the proposal PIs to discuss a few things, if you know what I mean.</b>
-Good	
XPoor	

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

**Goals and objectives are sweeping and overly ambitious, but vaguely specified. Null hypotheses are dopey and known to be false prior to any research. Therefore, without explicit specification of alternative hypotheses, it is unclear what value such null hypotheses might serve.**

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 authors claim that this proposal is modeled on their just-concluding \$3.5 million 4-yr study of the Navarro River watershed, but no evidence is presented that that project has produced useful results or that the procedures and approaches of that project should be emulated much less repeated.**

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?

**It is impossible to pass judgement on the authors recommended approaches because due to page limitations, it is not possible to explicitly discuss the methodology by which each of these hypotheses will be tested. How convenient. And at bottom of page 2, the authors tell us that this proposed \$2.5 million 3-yr study is just the very beginning of the work that they wish to accomplish on steelhead in the CV. How alarming. And my favorite hypothesis is The condition of the biotic community is directly related to the survival and reproduction of steelhead. How upside down.**

**Methods that are listed are either naïve or intended to illustrate that the authors are using the most modern techniques available. For example, for steelhead demographic status monitoring, they claim that they can visually distinguish 0+ from 1+ from 2+ individuals (not generally true guys, thats why we take subsamples of scales) and they propose to use the very latest and greatest and not yet published modifications to the Hankin & Reeves snorkel survey methods (Hankin and Mohr 2001 where did they get the MS?). Heat shock proteins will be measured, carcasses of juveniles (?) will be cleared and stained for analysis of developmental asymmetry (an indicator of stress), stable isotope analyses will be used to identify the importance of marine-derived nutrients imported by anadromous salmonids and to determine repeat spawning, food quality of will be determined by measuring PUFAs, unspecified age-based matrix models would be used to model demographics, DEM and GIS will be used to map the watershed and then a cumulative effects assessment will be carried out, habitat improvement projects will be assessed using an unspecified multivariate statistical approach, Receiver Operating Characteristic (ROC) will be used to evaluate unspecified indicators of resource condition (whatever that is). Have they missed anything?**

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 authors assert that the project is completely feasible, but I think that it would be more appropriate to state that the project is completely ridiculous.**

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?

**Quarterly reports yes, publications no (time frame of the project is too short we are told).**

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?

**Again, I must quote the authors on this: The expected outcome from any research project is new knowledge.**

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?

**The one paragraph qualifications statements for the two Pis are completely inadequate and give one absolutely no reason to believe that project proponents have the necessary expertise to carry out the proposed studies. Johnson received his PhD from U. Kansas (field unspecified) and now heads up a toxic substances program at UC Davis. Huggins is director of an ecotoxicology program at the Kansas Biological Survey but seems able to continue at Davis indefinitely if this project were funded. How is his program faring in his absence? The only cited references with these fellows names on them are chapters of unspecified length in a text of aquatic mesocosm studies published in 1993 by a publisher from Boca Raton, FL. The PIs have gone out of their way to provide no basis for a reviewer to find that they are qualified to carry out the proposed research.**

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

**This project is modestly priced at about \$2.5 million for 3 years. In the third and culminating year, Michael Johnson appears slated to receive 3 x \$78,000 or about \$240k for the 900 hours of wisdom that he would contribute to this project. Not bad, eh? But poor Huggins would receive not a dime.**

**Miscellaneous comments:**

# External Scientific: #4

## Research and Restoration External Scientific Review Form

Proposal Number: **198**

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

Proposal Title: **Distribution and demographic status of steelhead trout (*O. mykiss*) in tributaries of waterways of the Central Valley**

### Conflict of Interest Statements:

I have no financial interest in this proposal.

Correct  
 Incorrect

In the blank below please explain any connection to proposal, to applicant, co-applicant or subcontractor or to submitting institution (write "none" if no connection):

**None**

### Review:

**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>I rate the proposal as good because of the conceptual design and the clear articulation of the need for the work, as well as the nice integration into the needs expressed by the CMARP and IEP work. There are, however, some fairly serious deficiencies. As noted above, the proposal needs language detailing Performance Measures, a commitment to broader dissemination of the results, and, importantly, a much greater emphasis should be placed on collaboration with other research and management entities in the region.</b>
XGood	
-Poor	

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

**The proximate goal of this proposed work is to comprehensively survey tributaries of the Central Valley for the presence, abundance, and status of steelhead trout and to relate those parameters to ecological stressors. Ultimately, the work is intended to increase the efficacy of habitat improvement projects by allowing confident identification of projects that are focused on actual limiting factors and thus more likely to have a desired outcome. Given that little ongoing work in the region is directly focused on steelhead, the proposed work is timely and relevant.**

**The objectives as stated are clear and, collectively, represent an extraordinarily ambitious research effort. Linkages between the stated objectives and related hypotheses are reasonably well developed but do seem strained given that much of the work proposed is descriptive.**

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 justified because of the lack of existing knowledge. The conceptual model itself is well developed. Its complexity is warranted given the scope of the proposed work: integration of genetic, physiological and ecological processes scaling up from the individual fish to the level of the landscape. However, given that many of the proposed work elements are not particularly well developed, the project might best be started as a pilot project to accumulate necessary baseline information, test the applicability of the methods and, most importantly, develop a more detailed study design.**

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 seems conceptually useful but details on most of the proposed methods are not provided in the proposal. That in itself is not a fatal flaw because of the complexity of the overall design -- a comprehensive description of all proposed methods would be, as noted, beyond the space provisions of the proposal process. Clearly, should this proposal be funded, a detailed discussion of exactly how all the work is to be performed must be developed.**

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?

**A confident judgment as to the feasibility of the work described the entire package -- is extremely difficult. Phase I, comprehensive surveys for distribution and abundance in tributaries on the Sacramento and San Joaquin Rivers, is completely feasible and long overdue. Similarly, some aspects of the Phase II work such as the genetic analyses and mapping of sources of sediment loading are feasible and, indeed, essential components to recovery planning. I am much less comfortable with judging the feasibility of the remainder of the work proposed in Phase II selection of index systems with an intensive evaluation of genetic, physiological, and ecological processes contributing to persistence of steelhead trout populations. While the Phase II work is conceptually and academically the most interesting work proposed, it will clearly be the most challenging.**

**The authors' arguments for the feasibility of Phase II work rest heavily on similar work in the Navarro Watershed. I recommend that reviews of this proposal from individuals with direct knowledge of the outcomes and applicability of the Navarro work be weighed heavily in the final assessment. The proposal does not provide citations for completed aspects of the Navarro work and I was unable to find any in the primary literature.**

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?

**This aspect of the proposal is surprisingly weak. Essentially no detail is provided. In Section 2 under the portion entitled Uncertainties, the applicants clearly demonstrate an understanding of the challenges they face especially with the Phase II work and how they adaptively managed the Navarro work to address challenges similar to those anticipated for their proposed work. I would suggest that the applicants more formally describe how they will adopt that approach for the new work, especially paying attention to how that process will contribute to and allow tracking of achievement of desired goals.**

**The lack of commitment to developing products for peer-reviewed journals is especially troubling. An important body of work starting with an exciting and ambitious conceptual design carried out over multiple years will surely provide excellent opportunities for dissemination of the results in peer reviewed journals.**

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?

**In the event that all the objectives are successfully addressed, the proposed work will aid greatly in recovery planning efforts in the Central Valley. Similarly, individual, more focused products such as the GIS-based hydrologic information, genetic work, and abundance/population status data will likely be extremely useful if the information is collected and disseminated in such a way that it is available to other entities in the region.**

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?

**As noted in section 4 above, arguments for the capabilities of the applicants rest heavily on the outcomes and applicability of the work in the Navarro watershed. Again, I recommend that reviews of this proposal from individuals with direct knowledge of the outcomes and applicability of the Navarro work be weighed heavily in the final assessment.**

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

**I did not attempt a detailed review of the budget. On cursory examination it would appear to be adequate and perhaps generous. It seems that the figures in the section entitled "Budget Justification" don't match the figures in the "Budget Summary". I may be misunderstanding the "direct labor hours".**

**Miscellaneous comments:**

**None.**



## **Environmental Compliance:**

**Proposal Number:** 198

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

**Proposal Title:** Distribution and demographic status of steelhead trout (*O. mykiss*) in tributaries of waterways of the Central Valley

1. Are the legal or regulatory issues that affect the proposal identified adequately in the proposal?

-Yes No

If no, please explain:

**Supporting NEPA documents are required for ESA section 10 compliance. Incidental take of listed salmonids may occur during field sampling. The applicant should consult with NMFS and CDFG to determine if Incidental Take Permits are required.**

2. Does the project's timeline and budget reflect adequate planning to address legal and regulatory issues that affect the proposal?

-Yes No

If no, please explain:

**Funding is not allocated for obtaining the proper permits.**

3. Do the legal and regulatory issues that affect the proposal significantly impair the project's feasibility?

Yes -No

If yes, please explain:

**It may take some time to obtain the proper permits. If the applicant has the funding to do so, the project is feasible.**

Other Comments:

## **Budget:**

**Proposal Number:** 198

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

**Proposal Title:** Distribution and demographic status of steelhead trout (*O. mykiss*) in tributaries of waterways of the Central Valley

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

Yes -No

If no, please explain:

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

Yes -No

If no, please explain:

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

Yes -No

If no, please explain:

4. Are appropriate project management costs clearly identified?

Yes -No

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 No

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

**Question 17a = \$4,905,289, and the Budget Summary = \$2,445,639.**

6. Does the budget justification adequately explain major expenses?

Yes -No

If no, please explain:

7. Are there other budget issues that warrant consideration?

-Yes No

If yes, please explain:

Other Comments: