Proposal Reviews

#177: Three Year Evaluation of Predation in the Stanislaus River

Tri-Dam Project

Initial Selection Panel Review	
Research and Restoration Technical Panel Review	
Delta Regional Review	
San Joaquin Regional Review	
External Scientific Review	#1 #2 #3 #4 #5
Environmental Compliance	
Budget	

Initial Selection Panel Review:

CALFED Bay-Delta 2002 ERP PSP
Initial Selection Panel Review

Proposal Number: 177

Applicant Organization: Tri-Dam Project

Proposal Title: Three Year Evaluation of Predation in the Stanislaus River

Please provide an overall evaluation rating.

Explanation of Recommendation Categories: Fund

- **As Is** (a proposal recommended for funding as proposed)
- **In Part** (a proposal for which partial funding is recommended for selected project phases or components)
- **With Conditions** (a proposal for which funds are recommended if the applicant contractually agrees to meet the specified conditions)

Consider as Directed Action in Annual Workplan (a proposal addressing a high priority action that requires some revision followed by additional review prior to being recommended for funding)
Not Recommended (a proposal not currently recommended for funding-after revision may be considered in the future)

Note on "Amount":

For proposals recommended as Fund As Is, Fund In Part or Fund With Conditions, the dollar amount is the amount recommended by the Selection Panel.

For proposals recommended as Consider as Directed Action in Annual Workplan, the dollar amount is the amount requested by the applicant(s).

Fund	
As Is	**-**
In Part	**-**
With Conditions	**-**
Consider as Directed Action	**-**
Not Recommended	**X**

Amount: **$0**

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

None

Provide a brief explanation of your rating:

This proposal would evaluate the extent of predation on chinook salmon in the Stanislaus River. Predation is an important question, but a complex subject. Although the regional panel identified this proposal as a high regional priority, the technical reviewers found the approach of this proposal unlikely to succeed in resolving predation issues. The Selection Panel does not recommend funding this proposal.

Research and Restoration Technical Panel Review:

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

Proposal Number: 177

Applicant Organization: Tri-Dam Project

Proposal Title: Three Year Evaluation of Predation in the Stanislaus River

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	**This project was ranked as a high priority for regional research needs but only average (good) by multiple outside reviewers. The strong local involvement and generally strong local support for execution of the project is a big plus for this project. However some administrative issues related to the budget, weaknesses in the sampling methods and the possibility that other factors, such as river flow may play a more important or equally important role in salmon escapement, justify ranking this proposal as adequate.**
-Above average	
XAdequate	
-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 goals, hypotheses and objectives were clearly stated. Their goal is to develop a better understanding of predation as a mortality factor for hatchery released juvenile salmon in the Stanislaus River and they propose to sample suspected major fish predators and look at occurrence of juvenile salmon in gut contents. A conceptual model is outlined in the text. It is clear and does explain the underlying impetus for the proposed research. The only weakness is that much of it is predicated on an unpublished manuscript.

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?

This project was judged as good by multiple outside reviewers and strongly supported by regional reviewers. More than one of the reviewers noted that some of the justifications and methods in the proposal were poorly documented. The Achilles heal of this project is that they propose to use multiple sampling techniques to estimate predator densities and impacts. These diverse methods each have biases and the proposal offers no plan to reconcile this and apply these estimates to predator impacts. The sample size and statistical power of tests should be presented by applicants because the power may be so low that this study is not feasible. As with most of the research proposals, performance measures were identified as reports and progress in completing the objectives and missed the mark as performance measures. In spite of some reservation regarding the presentation in the proposal the consensus of all the reviewers was that the project team is capable to conduct the project. This conclusion is primarily based upon past successes with similar work in this system.

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?

   The regional panels felt strongly that very useful results will come from this project. External reviewers suggested that the project might demonstrate its utility in a more significant way if there were an experimental comparison of predation in unrestored and then restored (some form of BACI analysis) or a comparison between habitats (unrestored and restored) in a single year. Such a project could be valuable in demonstrating the relative effectiveness of restoration efforts.

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

   The project is labor intensive and therefore expensive. They justify these costs and they seem appropriate to conduct the project as proposed.

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?

   Regional reviewers rated this project as a high priority project for ERP (2 of 2H). The rationale is that this project will help understand predation in the Stanislaus which is a high priority for effective restoration of salmon spawning habitat in this system. They noted that SP Cramer and Associates successfully completed two closely related projects. They also noted the broad involvement of agencies and stakeholders in the proposed project.

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?

   Only one significant administrative issue was raised. The budget appears to be very poorly justified in a number of categories.

Miscellaneous comments:

Delta Regional Review:

Proposal Number: 177

Proposal Title: Three Year Evaluation of Predation in the Stanislaus River

Overall Ranking: **-**Low **-**Medium **X**High

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

Predation studies on the Stanislaus River with reference to the mining pits is a very high priority and precursor to future restoration.

1. Is the project feasible based on local constraints?

   XYes **-**No

   How?

   SP Crammer and Associates, indicating the feasibility of this project successfully completed two closely related studies. The proposal indicates a start date of 1 year providing some time for permits if required. Also indicates that no permits are needed as DFG or FWS will be present during sampling. This should be investigated as the FWS is not authorized to do this dont know what the set up with DFG is.

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

   XYes **-**No

   How?

   Ecosystem Restoration Program Strategic Goals Because this study investigates predation on a harvestable at-risk-species, the effects of habitat on that predation, and study of a non-native predator, it involves Goals 1, 2, 3, 4, and 5.

   Regional Implementation Priorities Multi-region and San Joaquin Region. This study addresses predation which is a major unknown that crosses all watersheds in the Central Valley. This addresses MR-6 and SJ-4.

   CVPIA Priorities 3402(a) mandates for protection, restoration, and the enhancement of fish and wildlife and associated habitats in the Central Valley. 3406(b)(1) authorizes the AFRP to make all reasonable efforts to double anadromous fish by 2002. This work helps meet these mandates.

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

   XYes **-**No

How?

This project was conceived through the Stanislaus Fish Group; a multi-agency team directing restoration and associated studies in the Stanislaus River. This proposed work will assess previously restored habitat as well as potential restoration sites.

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

XYes **-**No

How?

This project involves CDFG, FWS, The Fishery Foundation of California, S.P. Crammer and Associates, Carl Mesick Consultants many of which are heavily involved in the Stanislaus Basin.

Other Comments:

No specific items indicated in products section.

Lack of statistical detail.

Methods vague.

San Joaquin Regional Review:

Proposal Number: 177

Applicant Organization: Tri-Dam Project

Proposal Title: Three Year Evaluation of Predation in the Stanislaus River

Overall Ranking: **-**Low **-**Medium **X**High

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

This is a well thought out study, with testable hypotheses that will give planners information that is key to designing and implementing projects that will have the most impact on decreasing predation pressures. A great deal of money has already been spent on predator isolation projects on the Tuolumne and the Merced Rivers, and more are planned for these rivers as well as on the Stanislaus. The studies that these projects are justified from were conducted mainly on the Tuolumne and were not as comprehensive as some people would like. It would be advantageous to have a clearer idea as to the preferred habitat of the various predators and their relative impact. This would allow a better evaluation as to what kind of projects would have the most impact in lowering predation pressures upon salmon and steelhead. The results of this study would also give a measure of how effective the projects built are.

1. Is the project feasible based on local constraints?

   XYes **-**No

   How?

   The proponents are utilizing a number of agencies and consultants (DFG, USFWS, SPCA, Oakdale and South San Joaquin Irrigation Districts, Carl Mesick Consultants, Trevor Kennedy, and Smith and Walser Enterprises) for this proposed project. The pooled resources of experts with a great deal of experience in the SJR basin, and the Stanislaus in particular, gives them the equipment and experienced staff to complete the project.

   Sampling and collection will be done with CDFG or USFWS employees present so activities will occur with the bounds of their existing Section 10 ESA for Central Valley steelhead, and no other ESA authorization is necessary. Scientific collecting permits from CDFG will be required for all members of the sampling team.

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

   XYes **-**No

   How?

   SJ-4: Implement actions to improve understanding of at-risk species in the region. The level of predation upon salmon by other fish (ie largemouth bass, striped bass, pikeminnow), and where the predation occurs (kinds of habitats) is not clearly known. What little is known pertains to studies on the Tuolumne. Evaluation of where salmon predators are, the kinds of

stream habitat they are in, and their relative impact upon the salmon runs, will be useful information with which to evaluate the kinds of projects proposed and funded, and well as a baseline with which to measure the projects success.

SJ-3: Improve rearing and spawning habitat and downstream fish passage on tributary streams. As mentioned above, by knowing where predators inhabit and their relative impact, measures can be taken to lessen predations impact upon salmon populations in the most efficient manner.

The proposed project will also test eight hypotheses regarding whether specific types of habitat degrade by gravel mining should be restored to reduce predation on juvenile steelhead and fall-run chinook salmon. This clearly meets the CALFED Science Programs priorities to conduct adaptive management experiments.

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

   XYes **-**No

   How?

   The proposed study will provide necessary information to direct future restoration efforts in the Stanislaus and other SJR watersheds. It will identify relative predator densities, habitat preferences, predation rates and the expected benefits of various projects to reduce predator habitat. Large scale restoration projects are planned for the Stanislaus River, and are planned or underway on the Tuolumne and Merced Rivers. Elimination or isolation of predator habitat is a key component of many of these. This proposed project will help to evaluate these projects potential effectiveness in relation to their cost, measuring their effectiveness after completion, and help in the planning for future projects.

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

   XYes **-**No

   How?

   The proponent, Tri-Dam Project, is a partnership between two public agencies, the Oakdale and South San Joaquin Irrigation Districts. They have daily contact and business with landowners along the river and in the surrounding watershed. They are working closely with agencies in the area, CDFG and USFWS who helped draft the proposal and have committed staff and resources to this project if it is funded. The consultants involved have spent a great deal of time on the river and adjacent drainages and are familiar with many of the issues, geographical, ecological, and political. They are also all currently involved in projects on the river and know many of the landowners.

Other Comments:

This is a well thought out study, with testable hypotheses that will give planners information that is key to designing and implementing projects that will have the most impact on decreasing predation pressures. A great deal of money has already been spent on predator isolation projects on the Tuolumne and the Merced Rivers, and more are planned for these rivers as well as on the

Stanislaus. The studies that these projects are justified from were conducted mainly on the Tuolumne and were not as comprehensive as some people would like. It would be advantageous to have a clearer idea as to the preferred habitat of the various predators and their relative impact. This would allow a better evaluation as to what kind of projects would have the most impact in lowering predation pressures upon salmon and steelhead. The results of this study would also give a measure of how effective the projects built are.

External Scientific: #1

Research and Restoration External Scientific Review Form

Proposal Number: **177**

Applicant Organization: **Tri-Dam Project**

Proposal Title: **Three Year Evaluation of Predation in the Stanislaus River**

Conflict of Interest Statements:
I have no financial interest in this proposal.
XCorrect
-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:

<u>Excellent:</u> outstanding in all respects;
<u>Good:</u> quality but some deficiencies;
<u>Poor:</u> serious deficiencies.

Overall Evaluation Summary Rating	**Provide a brief explanation of your summary rating**
-Excellent	**I think this study could be a very good one if data collection is successful. As water demand grows in California we will need to further bastardize our salmon runs and try to squeeze every drop of water we can from our water supply. Hard decisions must be made about who or what benefits from our ephemeral water supply. This study will hopefully do more than just assess predator impact on salmonids in this river system. Hopefully it will bring about further knowledge and practice of fixing and optimizing what is left of the dwindling natural and suitable habitat for our native fauna.**
XGood	
-Poor	

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

   The goals, objectives, and hypotheses are clearly stated. The project is timely and important. If successful this project will gather important information to determine top salmonid predators in specific areas and habitat types of the Stanislau and San Joaquin River systems. This data would be very beneficial in determining the degree of predation on salmonids in this river system and if that impact is sizeable enough to affect stock-recruitment numbers. These researchers hypothesize that 50% of the juvinile salmonids in this system are taken by just a handfull of predatory fish species. Many of these predators are non-native game fish

that have found ideal habitat in dredged out channels and in in-stream gravel pits. These degraded sections of stream could have the two fold effect, if restored, to increase salmonid spawning habitat, as well as eliminate predator habitat. A restoration plan is not incorporated into this proposal, but it would be the next step upon statistical analysis of the study data.

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?

   Aside from the issues of seasonal flows and "giving" more water to the salmon to increase their runs, this study does seem justified relative to existing knowledge. It is fact that flows are not what they historically were before we dammed our rivers and began diverting waters for human use. Ideally salmon numbers could be increased and predator numbers decreased by high seasonal flows, but water is precious in California. As the document well explains, juvinile salmonids must emmigrate through many different stream specific habitats before exiting the river system and entering the sea to mature. As they traverse through these areas they are preyed upon by species such as large mouth bass (Micropterous salmoides), small mouth bass (Micropterus dolomieui), striped bass (Morone saxatilis), Sacramento pikeminnow(Ptychocheilus grandis), centrarchids, and many others surely. The study intends to define what specific habitat/niche these salmonid predators tend to congregate in and assess their degree of impact on annual runs of juvinile salmonids as they pass through these areas. The concepts of the proposed project are clearly stated and the underlying basis for the proposed work is explained. The selection of research is justified to an extent. The data obtained will be beneficial to future projects (if it is conclusive)not just located on the Stanislau, but could be applied to other California river systems that have been dredged or altered in the past and now must be more efficiently managed to insure adequate salmonid habitat, as well as meet other instream needs. By determining predator impacts within the stream system and correlating them with specific stream habitats created naturally and artificially along its course, a "cradle to grave" approach can be made as to what juvinile salmonids may require to maximize a harvestable adult population. Reducing predation in a cost effective manner would help attain this goal. High flows would be ideal, but this seems like a somewhat adequate compromise.

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 to the project is well outlined and should be easily implemented. Electrofishing, hook-and-line, and snorkel surveys do derive data from aquatic systems, but are not always accurate in determining densities of fish. They certainly should provide some usable data, but they do have their limitations, and as the proposal admits, some methods are not possible in certain research areas. The surveys will be conducted by qualified people from California State agencies as well as individuals who are already familiar with the river system. The methodology of the proposed study displays the knowledge the researchers already have of the river system and this study could only add to the base of knowledge. Prior to completing a project one cannot conclude whether the information gained will be novel or groundbreaking, if data collection is successful there should be some novel information attained. It could certainly be used in theory on other similar California waterways.

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 approach to the study is well documented. Whether it is technically feasible is hard to say. Using the various sampling methodologies should acquire some good data, but on such a vast river system it will be hard to obtain real concrete numbers. How can you calculate predator densities by a hook and line survey if the fish aren't biting? Electroshocking seems like the best way to get a sample in selected areas, but if there are protected salmonids in this area and you can't sample for predators who would be feeding on them in these areas at this time, how do you get accurate numbers? It's hard to predict the likelihood of success. I'm sure there will be some good and relevant data from this study, but success? The scale of the project does seem consistent with the objectives. The study looks very good on paper, but while doing research many unpredictable things can happen.

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?

   The project does include performance measures. Details are given, including data analysis by a Biometrician and a Stanislau Fish Group will help oversee the 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?

   This study will mainly provide a product in the form of knew knowledge about the river system. If the study is a success, it will provide information that could one day increase salmonid populations in the Stanislau and San Joaquin river systems. Not to mention the possible application to other river systems state wide, and even in other states. As we have covered the landscape with concrete acheivements, literally, we have mined and depleted our streambeds of gravel and other substrate that salmonids require for successful spawn. Primarily non-native fish such as bass, have found these reaches ideal habitat. By determining where dredged channels have become beneficial to salmonid predators, eventually fisheries managers can consider the cost/benefit of refurbishing these stream beds. If the research indicates that salmonid predators thrive in degraded salmonid habitat, dredged channels, then improveing them (adding gravel etc.)will not only increase salmonid populations, but decrease predator habitat and populations. This in turn will increase the number of fishable salmon, a product of value.

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 applicant has a record of several past projects. Considering much of the work is to be done by state and federal agencies with lots of human and equipment resources, the project team should have the capacity to do the study.

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

   The amount of man hours equipment and scope of the project would seem to deem the task quite a budget. I wonder how much water could be bought and releaseed into this system for $671,000 and what effect that would have on salmonid success over the next 3 years. Considering what some men pays for subsidized water to grow an overproduced commodity, it would seem we could spare enough water to wash out some of the non-native predatory populations of fishes, and aid our native salmonids in their reproductive efforts.

Miscellaneous comments:

External Scientific: #2

Research and Restoration External Scientific Review Form

Proposal Number: **177**

Applicant Organization: **Tri-Dam Project**

Proposal Title: **Three Year Evaluation of Predation in the Stanislaus River**

Conflict of Interest Statements:
I have no financial interest in this proposal.
XCorrect
-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	**Good-proposal subject has merits and interest. The proposal is yet another effort to understand predation pressure on salmon fry and smolts in this system.**
XGood	
-Poor	

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

   This is a relatively simple project. The goals are clearly stated. They make a convincing argument that predation may be the most important mortality factor for hatchery released juvenile salmon in the river and they propose to sample suspected major fish predators and look at occurrence of juvenile salmon in gut contents.

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?

A conceptual model is outlined in the text. It is clear and does explain the underlying impetus for the proposed research. The only weakness is that much of it is predicated on an unpublished manuscript (Mesick 2001). This leaves reviewers with little opportunity to judge the adequacy of the data, the analysis or the conclusions upon which the model and the proposal are based. Nevertheless the rationale seems to be sound.

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 methods as described lack detail but since they have been involved with similar research perhaps we can assume that the fundamentals like the electrofishing, hook and line, etc will be adequately replicated and the study statistically sound. Right? Implicit in estimating the overall predation effect is understanding something with regard to the total population of each predator and the vulnerability of the smolts to predation. This seems a large task to make sure you cover all the size related and species specific aspects in such a study. The assumption they make is that the riffle habitat is a better habitat for the juvenile to avoid predation and that the deep holes they wish to restore into riffle habitat are habitats of demise for the young salmon. Why not test that specific assumption with an experiment? Compare predation rates in a restored habitat vs. an adjacent unrestored habitat of similar type. If high flow years favor higher recruitment there may be little that can be done about the predation problem short of reducing the number of predators (hardly a good solution for those who like the bass). I would like to see both an experiment (predation in riffles vs stretches without riffles) as well as some sort of predation model that incorporates things like streamflow and other potentially important variables. For example when streamflow is high, turbidity may play a role in reducing predation for the salmon more than streamflow per se. Its also possible that when the salmon get ready to migrate they get flushed downstream more quickly and through the predator gauntlet.

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 approach could have been documented more carefully, although there is sufficient information to understand what they intend to do. A lot of effort has already gone into understanding the predation issue in this system and if funded this project will make add to the effort. What they propose is feasible but I think it could be better if they were more creative in their approach.

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?

   They list a number of performance measure that miss the mark. Publications, reports and such are deliverables or products. Using a biometrician to verify the statistical validity of the field plan is a good idea, but it should be part of the approach.

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?

Several products are listed in the performance measures. The real product you want from this project is to understand the value of specific restoration efforts in reducing predation and thereby increases escapement and survival of salmon.

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 team has some experience with this type of project and are familiar with the habitat. What I like most about this project is that it does have a broad group of agencies involved. You must wonder why predation wasnt evaluated more thoroughly in the previous projects.

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

   As outlined the project is labor intensive and therefore expensive. They justify these costs.

Miscellaneous comments:

External Scientific: #3

Research and Restoration External Scientific Review Form

Proposal Number: **177**

Applicant Organization: **Tri-Dam Project**

Proposal Title: **Three Year Evaluation of Predation in the Stanislaus River**

Conflict of Interest Statements:
I have no financial interest in this proposal.
XCorrect
-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	**As stated earlier I am concerned about the appropriateness of the sampling technique for density estimates. If this is resolved then I believe the atudy will be able to reach its goals and that the information will be beneficial in future restoration and management decisions.**
XGood	
-Poor	

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

   The proposal clearly states the objectives and hypotheses of the project. The goals are biologically relevant and tie in well with present management and restoration issues. Predation studies have been done on the river system in the past, but the questions asked in this proposal are different and will be potentially useful in making future decisions.

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 rationale for the questions is clearly stated and the goals of the proposal are justified relative to existing knowledge.

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 density of predators and salmonids will be compared between different habitats. These numbers will be estimated using different sampling procedures (hook and line, electrofishing and snorkeling). The proposal does not state how these numbers will be made comparable and I see this as a limitation to the study.

   As well there are severe limitations to estimating densities from snorkeling surveys as well as from hook and line surveys. These issues are not addressed in the proposal. I think that the sampling procedures may limit the questions that the research will be able to answer.

   Other technical details are well considered. The stomach content analysis procedure is clearly described and are appropriate for the objectives of the study . The proposal does not state why two different methods (gastric lavage for bass vs. surgical removal of the stomachs for pikeminnows) will be used. Past research has shown that these methods are comparable, but it is unclear why they are using different 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 approach is clearly stated and technically feasible. There are limitations to density estimates (see above) which may limit the conclusions which can be made from the study.

   The scale of the project is consistent with the objectives and the researchers have the means to collect the data.

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?

   The proposal does not give a detailed descriptions of how the data will be analyzed and the results quantified. The researchers, however state that they will discuss the research plan with a statistician to ensure that the methodologies result in answers to the stated questions.

   Otherwise the proposal sets timelines to assess the projects success and implement changes to the design if goals are not being met.

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 limitation of estimating density from the sampling techniques chosen (snorkeling and hook and line) as well as difficulties in comparing estimates made from different sampling techniques might limit the ability of the study to reach conclusions about the hypotheses.

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?

   This project is a collaboration between state, federal and private agencies. Most of the equipment is already owned which defrays the expenses of the study. All invloved parties have considerable experience in the river system and this should aid in choosing appropriate study sites and sampling dates. The research team is obviously capable of carrying out the proposed study.

   A statistician should, however, be more involved in the beginning planning of the study. Little is stated on how data will be analyzed once it is collected. The proposal mentions showing the initial study plan to a biometrician and this should ensure the robustness of the study.

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

   The budget is reasonable and adequate for the work involved.

Miscellaneous comments:

External Scientific: #4

Research and Restoration External Scientific Review Form

Proposal Number: **177**

Applicant Organization: **Tri-Dam Project**

Proposal Title: **Three Year Evaluation of Predation in the Stanislaus River**

Conflict of Interest Statements:
I have no financial interest in this proposal.
XCorrect
-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:

<u>Excellent:</u> outstanding in all respects;
<u>Good:</u> quality but some deficiencies;
<u>Poor:</u> serious deficiencies.

Overall Evaluation Summary Rating	**Provide a brief explanation of your summary rating**
-Excellent	**The possible outcomes of the project in its present guise might be useful, but they are only seen as such if the most significant factor (in the reviewer's opinion) limiting salmon numbers is ignored- the natural flow regime of the river. They state, "It is likely that predation is a primary limiting factors for chinook salmon, and steelhead, in these rivers." Predation effects, especially any possible effects by pike minnow, would be much less significant during outmigration if adequate flows were present. All evidence points to this. Should the project be funded, or to this degree? To be worthwhile, the project outcomes should have management implications useful to CALFEDS goals. If pikeminnow are having a large impact, then what? If striped bass are, then what? When would enough evidence be gathered and under what conditions?** **The reviewer feels the deficiencies lie with the focus away from the real problems affecting ecosystem health and a shift to the symptoms. The symptoms (and projects like these) would not need to be studied if the systems problems were properly addressed.**
XGood	
-Poor	

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

   The goals and biological hypotheses are clearly stated and consistent. The concept is timely and important, although this is only true if one disregards the possibility of altering the flow regime, which is likely not touchable by the agencies involved. The reviewer feels the question of pikeminnow predation would be less relevant if the Sac./San Joaquin were under a more natural flow regime. If the effects of flow regime cannot or will not be looked at, then the effects of predation by a coevolved species could be something to study. Its like taking two insects that have coevolved, sticking them in a jar, shaking the jar, and seeing if they fight. What management plans will be implemented if pikeminnows are the major predator?

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 conceptual model is okay. The reviewer believes they selectively use reports for setting up their argument, challenging the findings when it suits them. But okay. As stated their selection of research will contribute to existing knowledge. Based on the type of work and players involved I am guessing the work will get funded. My concerns are about the quality of the conclusions that can be drawn. I would hate for a project requiring this much work and money to be criticized and doubted based on," professional fishing guides with over 15 years of experience fishing and photographing game fish in the San Joaquin tributaries.." Regarding the above quotation, is the professional fishing guides perception a justification for this work? What other EVIDENCE is there for suggesting the work of EA engineering and others is wrong, that pike minnow have greater impacts on salmon than bass? Is it worth retesting. Possibly, depending on how well the study design can be defended.

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?

   Here are some points that might prevent the objectives being met.

   Density estimates from snorkeling surveys- from experience I question this methods accuracy.

   Why different methods regarding stomach samples. Why remove pikeminnow ones and not bass? Although the techniques might be comparable, why use a different technique when testing a hypothesis? Standardizing can't hurt. Criteria must be drawn regarding half digested species and gorp. I'm assuming they have someone very familiar with otolith differences across species.

   "Statistical tests will compare the total number consumed by each predator species in all habitats each year." Listing the test used would help with identifying assumptions used. They should talk to their statistician about the effects on large numbers on p-values and so on before finalizing their study design and test methods. Will this be standardized to salmon per day, similar predator numbers, similar predator sizes/ biomass, and so on? Details would help with understanding whether their estimates will be worth reporting or not.

I think the predator abundance estimates with confidence intervals will be inaccurate due to problems with accurately estimating the sampling error and further by extrapolating across the whole habitat. This would be torn apart in a peer-reviewed journal. They need to state EXACTLY how they are doing this if one were to evaluate whether it is possible. If you don't have confidence intervals, you are in the land of government reports.

"This project will estimate both predation rates and predator abundance and together with estimates of juvenile abundance based on screw trapping studies, it will be possible to estimate the total mortality of juvenile salmonids in the Stanislaus River due to predation." Again, without confidence intervals or std. error on their estimates we are left with pretty numbers.

Hyp 4 point null hyp. should be scrapped. While a significant outcome is likely (things are different), their biological relavance is bunk. Comparing rates from different sampling methods and across sites? Accuracy much in question.

Hyp 5-fine

Hyp 6-How can you compare before and after restoration without before and after data at the same site? Scrap.

Hyp 7 not really testable, but correlations might be observed over the study. If not set up as hypthesis but using a multivariate technique, this might prove interesting and worth funding.

Results could add to the base of knowledge. Hyp 1, Hyp 2, Hyp 5, and maybe Hyp 7, could be achieved. Estimates generated for Hyp 3,4,6, and 8 would be meaningless and not conclusive.

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?

   Success is possible for Hyp 1, 2, 5, and 7. I would recommend they discuss this with a statistician BEFORE implementing. They will likely need something more powerful than MS Excel.

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 okay. The biometrician must be familiar with their site and habitat qualifications, sampling gear bias and limitations, and the problems of estimating sampling error accurately. I would recommend at least two of them for what they wish to do.

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 of value could come from the project. Interpretive outcomes are dependent on their study design and implementation.

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?

Project team appears qualified to implement proposed project and adequate infrastructure to accomplish the project.

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

   $220,000 per year is adequate for the work proposed.

Miscellaneous comments:

$220,000 per year is excessive for the results that might be delivered.

External Scientific: #5

Research and Restoration External Scientific Review Form

Proposal Number: **177**

Applicant Organization: **Tri-Dam Project**

Proposal Title: **Three Year Evaluation of Predation in the Stanislaus River**

Conflict of Interest Statements:
I have no financial interest in this proposal.
XCorrect
-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	**I gave this an overall summary rating of good rather than excellent because there was no statistical evidence that this 3 year project will prove anything definitively.**
XGood	
-Poor	

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

   Very good: The hypotheses are clearly stated and linked to potential habitat restoration actions. However, the hypotheses are only testable if the design has the appropriate statistical power.

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?

Very good: The project description, statement of problem, and conceptual model are described in detail.

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?

   Fair: The approach describes the sampling methods and frequency of sampling. Considerable thought has been given to the selective nature of sampling methods and some of the expected difficulties have been solved. This criterion was rated only fair and perhaps should have been rated poor because of the lack of statistical design. Up to 100 stomach samples will be collected each month from each species of predator. Application of evacuation rates to stomach content data collected over a selected part of diel period may create a biased estimate of total predation mortality. Given the data collected in prior studies some estimates of the expected differences in predation rates, consumption rates, and mortality rates could be proposed. Furthermore, what will the statistical power of such tests be given prior in formation. I understand that these are painful questions to be asked but considering the general lack of success of ealier predation studies, more should be expected of this as a "research project." Submittal of a detailed study plan under "Performance Measures" is too late because at that point the project will go forward whether any differences can be proved or not.

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?

   Good: The applicants provide a good rationale as to why this project is feasible and appropriate.

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?

   Fair: The use of a Biometrician appears to be a central milestone under performance measures. I would recommend a Biometrician be employed before the project is funded. As a research project the applicants should endeaver to publish in a peer reviewed journal.

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?

   Good: Last paragraph under Performance Measures describes some desirable products.

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 good: The capabilities of subcontractors is very good. The track record of the primary proposal applicant is not obvious, but if subcontractors have agreed to participate under Tri-Dam leadership that is a vote of confidence.

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

   Budget summary is not filled in an informative manner; no direct labor hours, salaries or benefits/ year as an apparent result of subcontractor status of all participants.

Miscellaneous comments:

Environmental Compliance:

Proposal Number: 177

Applicant Organization: Tri-Dam Project

Proposal Title: Three Year Evaluation of Predation in the Stanislaus River

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

   XYes **-**No

   If no, please explain:

   It states that one of the applicants has a section 10 permit for Central Valley Steelhead. This permit may need to be ammended to include this project. The above statement is also true for the Scientific Collecting Permits.

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

   XYes **-**No

   If no, please explain:

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

   -Yes **X**No

   If yes, please explain:

Other Comments:

Budget:

Proposal Number: 177

Applicant Organization: Tri-Dam Project

Proposal Title: Three Year Evaluation of Predation in the Stanislaus River

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

   XYes **-**No

   If no, please explain:

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

   XYes **-**No

   If no, please explain:

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

   -Yes **X**No

   If no, please explain:

   overhead costs (indirect rates) are not budgeted and according to the Budget Justification: indirect costs will not be charged by the applicant and will be contributed as a cost-share to the project.

4. Are appropriate project management costs clearly identified?

   -Yes **X**No

   If no, please explain:

   project management costs are budgeted, however, they are not broken down by a direct hourly rate, but instead calculated as one flat charge per task.

5. Do the total funds requested (Form I, Question 17A) equal the combined total annual costs in the budget summary?

   XYes **-**No

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

6. Does the budget justification adequately explain major expenses?

   -Yes **X**No

   If no, please explain:

   Budget does not provide a breakdown for direct labor hours and salaries per year. It is difficult to determine the rate in which service consultants will be paid.

7. Are there other budget issues that warrant consideration?

   XYes **-**No

   If yes, please explain:

   Expenses are shown for each year and task however, hourly rates and salary costs are not provided in the budget summary for consultant services.

   Budget does not provide benefit costs, as justified in the Budget Justification explaining that benefits were not requested.

Other Comments: