

# **Yolo Wildlife Area: An Evolving Model for Integration of Agriculture and Habitat Restoration in a Flood Control Setting**

**Ann T. Brice**

# Initial Selection Panel Review

0068

Yolo Wildlife Area: An Evolving Model for Integration of Agriculture and Habitat Restoration in a Flood Control Setting

Yolo Basin Foundation

*Applicant amount requested: \$1,231,400*

*Fund This Amount: \$0*

**Panel Recommendation:** The four components of this proposal are disconnected. The rice rotations being considered seem appropriate for refuges, but likely lack applicability to rice growers in general. The experimental design in the proposal needs to be significantly improved. The proposal would also benefit from involving UC experts - both agronomists and economists. The panel, therefore, recommends "do not fund" for this proposal.

**Do Not Fund**

# Technical Panel Review

*Proposal Name:* Yolo Wildlife Area: An Evolving Model for Integration of Agriculture and Habitat Restoration in a Flood Control Setting

*Applicant Organization:* Yolo Basin Foundation

*Amount Requested:* \$1,231,400

Panel Rating:

Fair - Lacking in one or more critical aspects

## Panel Summary

The panel felt that this proposal had one or more sound or worthy concepts. Based on its technical merits, however, this proposal is lacking in one or more critical aspects and should not be funded in its current form. Although the goals of this proposal were commendable and well-defined, they did not form a cohesive whole, nor were they sufficiently described to give the panel confidence that they would be accomplished. The proposal included five separate sets of methodology and projects that were poorly tied together resulting in an overall inadequate design. Specific limitations of the project include: The giant garter snake (GGS) work was not well-connected with the rest of the proposal and there was no description of a conceptual model. In addition, the budget included management salaries that may not be justifiable. The experimental control was questionable and evidence of replication was insufficient: the latter is an especially significant limitation considering the significant need to determine the specific benefits and costs in a rotation system like the one operating in the Bypass. The proposal lacked a comprehensive monitoring plan (although some sections of the proposal had monitoring pieces). The proposal also did not reflect knowledge of existing literature. One panelist stated that this system of fallowing was innovative and the concept of having shallow wetland habitat could fit in well with modification of production agricultural methods. Another panelist questioned if this methodology was realistic in terms of farm economics, as it was based on assumptions of the

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market demand for wild rice that may not prove realistic, and would require incentive payments to compensate landowners during fallow years. Overall, the panel felt that the researchers are well-qualified and the proposal was well linked with agricultural practices and took an ecosystem approach that would yield measurable results applicable to adaptive management. However, the panel questioned the ability of the team to adequately address all of the proposed questions raised by the project.

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*Proposal Number:* 0068

*Proposal Name:* Yolo Wildlife Area: An Evolving Model for Integration of Agriculture and Habitat Restoration in a Flood Control Setting

*Applicant Organization:* Yolo Basin Foundation

*Amount Requested:* \$1,231,400

## Goals

<b>Rating</b>	very good
<b>Comments</b>	The main goals of this study are to evaluate a potential farming rotation cycle, in terms of crop production and effects on wildlife, specifically shorebirds and a threatened species, the Giant Garter Snake. This rotation has much potential for wildlife, but this potential has not been quantified nor has the impact on agricultural production. Another main goal is to examine factors that control MeHg production in Yolo Bypass sediments. And a final goal is to educate and inform farmers regarding the program designed to use the rotation cycle. All of these goals are well suited for the general goals of the ERP.

## Justification And Conceptual Model

<b>Rating</b>	poor
<b>Comments</b>	In the text, the investigators tell the reader to refer to Figures 1 and 2 for the conceptual model; however, there were no figures present on the pdf document. With no other information in the text, it makes it impossible to interpret the conceptual model the investigators are using.

## Approach

<p><b>Rating</b></p>	<p>good</p>
<p><b>Comments</b></p>	<p>Parts of this approach are excellent, whereas as other parts are good to fair.</p> <p>The study design is generally strong, incorporating an experimental approach where the investigators will compare two sets of a white rice-wild rice-fallow rotation to a reference site where white rice will be planted for all three years of the study (this is apparently the typical use of farm land in the region). In addition to this single reference site, investigators will also attain information on crop yield at other fields in the region. While the experimental design is generally strong, I do have two moderate concerns. First, for most comparisons, they will only have one reference site (the exception being for crop yield). Second, the two sets of experimental fields are very close to each other (~50 m). The potential for 'pseudo-replication' could be an issue when interpreting results because instead of having 2 replicates, in effect there is one large replicate. This issue may limit our understanding of the true effect of crop rotation. This issue might be less of a problem for some factors, such as estimating differences in crop yields, but for questions related to wildlife effects it could be a problem.</p> <p>The hypothesis for differences in crop yield is fairly clear; however, I do not think it is safe to assume independence among years within each field. Furthermore, a binomial test will be very conservative and will not include the magnitude of differences between fields in the analysis.</p> <p>A second treatment type is water depth for fallow fields (which is essentially a split-plot treatment), where fields will be kept at either relatively low or relatively high water depths. How will water depth be</p>

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maintained? In addition, there are only 6 fallow field replicates, with each replicate being split in half for the two water depth treatments. Because I would assume that the effect of water depth will be much less than fallow versus rice field farming practices, will this be enough replication to be able to interpret results of water depth? Furthermore, when the investigators discuss the treatments of different water depths, it is unclear how results will be used for management recommendations. It seems obvious that different species will prefer different water depths. Given that situation occurs, will the recommendation be that both shallow and deeper water levels be used in the crop rotation? It would be useful for the investigators to discuss how the different types of results could influence land management recommendations.

Based on the bird monitoring description, it unclear exactly how shorebirds will be surveyed. Is the survey approach a standardized one (e.g., same amount of time surveyed/area of field)? Has it been rigorously used in other studies? Similarly, will raptor abundance be surveyed in a standardized fashion?

Based on the description of vegetation cover sampling, it was unclear what the 4 sample units were. Is this the two fallow fields each year, with one sample unit in low water depth and one sample unit in high water depth plots? Is there any reason to suspect that these vegetation categories (simply grass versus forb) will influence shorebird abundance or prey availability in a single year fallow rotation?

In the description of measuring prey availability, it is not clear how sampling will be allocated and if it will be sufficient to understand differences in prey availability. Furthermore, for all descriptions of prey availability, the investigators are simply measuring what invertebrates are in the fields, not what birds are specifically eating. While I do not

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think this is a fatal problem, the investigators should attempt to screen invertebrate groups that are not typically eaten by shorebirds prior to any analysis.

A second distinct approach relates to understanding habitat use by the Giant Garter Snake. The investigators propose doing some general surveys and also radio-marking snakes. Some aspects of the survey design are somewhat vague (e.g., How will sites be deemed potential habitat? Will surveys be standardized?). Other aspects are not justified (e.g., Why will only larger snakes get radios? This may bias results). In particular, the radio-telemetry effort needs to be better justified and explained, because it is very invasive (e.g., snakes will need up to 14 days to recover). For the snake portion of the proposal, it is unclear how investigators will analyze/interpret the data collected (e.g., How will population size be estimated?) or how this information will be used to guide land management strategies.

A final distinct approach relates to a Mercury investigation. This work will focus specifically on the crop rotation fields used for the above investigation on shorebirds and crop production. While there are not a lot of details, the sampling approach seems straightforward and standardized based on other approaches. One potential issue is that they will only estimate MeHg in the most common invertebrates, but they will not estimate if these species are common food items for shorebirds (similar assumption as above). The investigators will focus on Black-necked Stilts, and justify using this species because another study in the region found adverse effects of MeHg in stilts. This is warranted, but it could be useful to compare effects from stilts to another species that differs in life-history and may appear to be less affected by MeHg, thereby attaining a broader perspective on how toxicity influences birds in this region.

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Overall, this approach will provide a great deal of information related to one potential crop rotation that may benefit wildlife and the environment. These results should directly add to the base of knowledge of integrating agricultural activities and ecosystem restoration, and results related to crop rotation should definitely be useful to farmers in the region. It will also provide some other information that will generally be useful, in terms of habitat use by the Giant Garter Snake and factors influencing MeHg.

**Feasibility**

<b>Rating</b>	very good
<b>Comments</b>	Most of this project is highly feasible. The crop rotation has already been done on one field with promising results. Therefore, the general experimental design should be successful. Based on the experience of the investigators and PRBO, I have no doubt that they will be able to collect useful information on crop yield and shorebird habitat use. The main part of the proposal that has a chance of being unsuccessful is estimating habitat use by the Giant Garter Snake. It is unclear how rare the species is in the region and the investigators simply may not find enough for radio-tracking and understanding habitat use.

**Performance Evaluation**

<b>Rating</b>	very good
<b>Comments</b>	Parts of the performance evaluation are excellent whereas others are only good.  The proposal integrates a variety of monitoring approaches to interpret the efficiency of the crop rotation/restoration plan. The only part of this monitoring that is unclear or weak is that it appears

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that investigators will only monitor wildlife responses in their crop rotation (and, from what I can tell, only on the fallow field part; I think they are assuming that no birds will use the rice fields) and not on other potentially available habitats in the region. Under performance evaluation, the investigators mention that they will compare their density estimates to other studies in the region, but the approach is likely quite different for other studies, limiting rigorous comparisons. So, this proposal can answer: how many birds are using fallow fields? Yet, it cannot rigorously answer: Is this number high relative to other habitats in the landscape (i.e., is it a 'good' number)? Giant Garter Snake radio-tracking can potentially circumvent this issue for snakes, but it is unclear how much data they will really get on this species and the spatial extent of the data collected.

For Tasks 4-5 (Garter Snake and MeHg), the performance evaluation is a bit hollow—basically, if they collect the data, they will consider those parts of the study a success.

**Proposed Outcomes**

<b>Rating</b>	very good
<b>Comments</b>	<p>The general assessment of the efficacy of crop rotation will be of value to both farmers and agency conservationists/managers. Rice farming is common in this region, so results should be very valuable. The investigators also plan to provide their results to the Central Valley Joint Venture, and their data may fill a critical hole in some of the CVJV models.</p> <p>The proposed research should be applicable to the region, but it is not</p>

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	<p>clear whether these results would be applicable to other crops. The investigators state the information will be made available to the public, but they do not detail how this will be done. It would be very useful to actively provide this information to the public via the web and other avenues (e.g., newsletters to known farmers in the region). However, the proposal only really focuses on providing information at the Yolo Basin Foundation Working Group, which is fortunately made up of a wide diversity of stakeholders.</p>
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**Capabilities**

<b>Rating</b>	excellent
<b>Comments</b>	The principal investigator has received many previous CALFED grants. She is coordinating the proposed work with a diverse group of subcontractors, each of which seems very well suited for the tasks at hand.

**Cost-Benefits**

<b>Rating</b>	very good
<b>Comments</b>	While the budget is fairly large (\$1.2 million), it is reasonable for the breadth of work that should be accomplished. This work will include restoration/crop rotation work, plus detailed monitoring of crop production, shorebird habitat use, Giant Garter Snake habitat use, and Mercury monitoring in birds, snakes, and sediments.

**Overall Evaluation Summary Rating**

<b>Rating</b>	good
<b>Comments</b>	This proposal contains three fairly distinct sections: 1) assessing the efficacy of a crop rotation on crop yield and shorebird use, 2) understanding Giant Garter

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Snake habitat use, and 3) understanding MeHg levels in the area. There is much to like in this proposal, but most of this is in the first section on the crop rotation. If these sections were separate proposals, I would rate them as: very good, fair, and good. Yet throughout the proposal, there were many typos and sections that did not appear to be finalized. Furthermore, figures and maps were missing from the proposal, which limited my ability to interpret the proposed project. Overall, this project should provide some very useful information regarding agricultural practices and ecosystem restoration, but it would have been an even stronger proposal if the investigators outlined exactly how this information will be integrated into farming and restoration strategies for the region.

# External Technical Review #2

*Proposal Number:* 0068

*Proposal Name:* Yolo Wildlife Area: An Evolving Model for Integration of Agriculture and Habitat Restoration in a Flood Control Setting

*Applicant Organization:* Yolo Basin Foundation

*Amount Requested:* \$1,231,400

## Goals

<b>Rating</b>	excellent
<b>Comments</b>	The project goals and objectives are well defined and appropriately linked to key strategic goals of the Ecosystem Restoration Program. Moreover, the goals and objectives articulated in section 2 of the proposal clearly address key inter-related questions pertaining to habitat and agricultural management; habitat use and benefits to migratory shorebirds; habitat use, biology and ecology of a resident, federally threatened species (the Giant Garter Snake); and potential effects of agricultural and habitat-management practices on the production, abundance, and bioaccumulation of methylmercury, a highly toxic form of mercury that biomagnifies in food webs. In addition, the project would provide a forum for communication among a diverse array of stakeholders with interests in the Yolo Bypass, and it would provide outreach materials for farmers.

## Justification And Conceptual Model

<b>Rating</b>	fair
<b>Comments</b>	Parts of this proposal are incomplete or insufficiently developed, and the conceptual framework is one such area needing further work. This reviewer, for example, was unable to locate either Figure 1

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	<p>(Project Conceptual Model) or Figure 2 (Mercury Conceptual Model) cited in section 3 ("Conceptual Model") at the bottom of page 5 of the proposal. Moreover, this subsection lacked explanatory text. The reviewer is familiar with the generalized conceptual model for mercury that has been developed and published by Dr. Alpers (USGS), one of the Project scientists involved with the mercury investigation. The components of that model pertaining to the Yolo Bypass, to mercury methylation, and to bioaccumulation would provide most of the necessary content for a conceptual mercury model for this project.</p>
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**Approach**

<b>Rating</b>	good
<b>Comments</b>	<p>The methods described for the various study components are considered valid and defensible; however, the proposal would benefit from the inclusion of a timetable, visually describing the timing of treatments and associated sampling efforts and measurements to be taken during the project. The value of the proposed project would be much enhanced by integrating the results from the various components of the overall effort into a sensible whole. For example, the proposed mercury investigation includes quantification of methylmercury in prey organisms of birds, total mercury in bird eggs, methylmercury in Giant Garter Snakes, and various mercury species in water and sediment. Yet there is no indication of how these various data will be integrated to enhance our understanding of mercury cycling in this ecosystem. Such understanding is essential for assessing the effects of the proposed agricultural practices on the behavior of mercury.</p>

**Feasibility**

<b>Rating</b>	very good
<b>Comments</b>	

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	The scientific investigations proposed for this project are considered to be defensible and technically feasible, given the expertise, capabilities, and past performance of the team members and the methods to be applied. This reviewer is not qualified to address the feasibility of the agricultural manipulations proposed for the project, but they seem to be intuitively sound.
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**Performance Evaluation**

<b>Rating</b>	good
<b>Comments</b>	The proposal includes substantial monitoring, and describes an array of appropriate samples and measurements to be taken. However, there is insufficient discussion of how the data obtained will be applied to assess the success of the agricultural treatments in achieving desired conservation objectives. Inclusion of a conceptual model and associated text would strengthen this aspect of the proposal.

**Proposed Outcomes**

<b>Rating</b>	good
<b>Comments</b>	The principal deliverables identified in the proposal are interim progress reports, final reports, and documents for use in public outreach. Publication of research results is mentioned, but deserves greater emphasis as a means of communicating and transferring scientific results from this project to other ecosystems and restoration efforts. With respect to deliverables, the proposal focuses largely on reporting of results from individual components of the study (e.g., shorebird studies, Giant Garter Snake investigation, mercury investigation, etc.). This reviewer was left wondering whether or how the findings from the multiple

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	<p>components of this large, multi-disciplinary effort would be integrated into a sensible whole. Section 7 (Data Handling and Storage, page 21) states that "data will be made available to the public" after "data quality has been assured", but details for accomplishing this are not provided. The proposal would benefit from a more complete description of the methods and approaches for sharing of project data with the public.</p>
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**Capabilities**

<b>Rating</b>	excellent
<b>Comments</b>	<p>The project team is highly qualified to perform the proposed project. The team includes a diverse group of skilled specialists with the combined knowledge, expertise, and capabilities to complete the proposed work in a timely manner. The qualifications of scientific personnel on the project are excellent, and many of the participating scientists are nationally and/or regionally renowned for their prior work. The letters of support included with the proposal strongly endorse the qualifications and abilities of the project leaders and team to manage and complete a collaborative project of this magnitude, given their prior performance and experience.</p>

**Cost-Benefits**

<b>Rating</b>	very good
<b>Comments</b>	<p>The project budget of \$1,231,400 appears to be quite reasonable for a multi-year project of this magnitude, which involves a large, multi-disciplinary team of participants and investigators.</p>

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**Overall Evaluation Summary Rating**

<b>Rating</b>	very good
<b>Comments</b>	This project is well justified and would provide much-needed information, as evidenced by the strong written support provided by an array of partners and stakeholders. Moreover, the project team is considered to be very capable. However, this proposal is unfortunately weak or deficient in a number of areas. Given the justification and strong regional and local support for the proposed work, the proponents of the proposal are encouraged to further develop and refine their proposal, focusing in part on the deficiencies identified in this review.

# External Technical Review #3

*Proposal Number:* 0068

*Proposal Name:* Yolo Wildlife Area: An Evolving Model for Integration of Agriculture and Habitat Restoration in a Flood Control Setting

*Applicant Organization:* Yolo Basin Foundation

*Amount Requested:* \$1,231,400

## Goals

<b>Rating</b>	good
<b>Comments</b>	The overall project goal is to promote maximum wildlife use (shorebirds, giant garter snake) while insuring the rice agriculture that will support them remains economically profitable. This is a laudable and interesting goal if it were to provide an income stream to help support the Bypass program. However, reaching this objective depends on four of the five subprojects which actually comprise the proposal. The problem with this is that each of the components is directed toward its own goals, but there is no ecosystem focus to the proposal as a whole and therefore nothing to guarantee the fundamental goal is advanced, much less met. The most obvious problem is that the cost to the agricultural component for wildlife is restricted to the costs of fallowing every third year, while the profit term is a function of factors such as summer weather completely outside the experimental design (other than the loss due to having a third of the fields fallow). The loss of 1/3 of the fields every year while still incurring land preparation water costs and probably long-term weed load would probably make any rice operation in the Yolo Bypass unprofitable. This is a fatal flaw that effectively makes the central goal impossible to attain, not only in the period of the proposal itself,

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	but ever. The project goal remains a good one unfulfilled by a feasible research program.
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**Justification And Conceptual Model**

<b>Rating</b>	poor
<b>Comments</b>	The figures supporting the conceptual model were not included in the proposal, but this oversight did not matter. The basic idea of evaluating viable combinations that allow profitable rice agriculture and wildlife use of wetlands is clear enough, but the design of this study doesn't permit analysis of the problem. The proposal basically holds agricultural area and agricultural practices constant for any one crop and varies the location of each treatment within the fields. This emphasizes the ability of the wildlife (snakes, birds) and methyl mercury concentration to track the changes in fields with crop and water depth as principal variables. It may be likely that the shorebird, garter snake and methyl mercury components will yield improved distribution patterns and perhaps associations with flooded field depth and other characteristics, but even as a pilot study none of these will address tradeoffs between productivity and biological accommodation that represent the central objective of this study because profitability is not affected by distribution pattern, while still leaving the crucial weather factors totally uncontrolled. This proposal fails for this fundamental reason alone.

**Approach**

<b>Rating</b>	fair
<b>Comments</b>	The individual components are more or less satisfactory. The farming component represents standard rice practice in the Sacramento Valley, although the rotation is a bit unusual. The use of a single rice field as a control is not adequate given temporal and possible spatial variability, and the

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records kept are not adequately described or justified. The proposal for rice production follows standard rice practice for short grain and wild rice. The spring leveling and summer flooding-fallow treatment is unusual, especially if they are really hoping to minimize weeds. There is a tone of herbicide-fungicide reduction that is hard to understand since it is outside the context of this proposal. There is a lot of detail provided on lower chemical use and very little basis upon which to set expectations other than "farmers report lower herbicide use .." This is not organic agriculture; standard inorganic fertilizers will still be used, and in any case lower chemical inputs are nowhere part of the study, nor do they appear in other components. There is also a lot made of fungal diseases, which I would not expect given that has not become a major problem in other rice fields. Is there winter fallow for straw management? It is not mentioned. Why make weed counts? How do they result from wildlife use? This project does nothing for weed management. The problem is still the same: wildlife uses impact the fallowed field costs and losses in production, but not the rest. The shorebird component is the best in the group and is the only one to address specified hypotheses. This is the most detailed description in the lot, reflecting PRBO's experience. This is a good, detailed, respectable shorebird study. The observational methods are beyond reproach; it is the design which limits its potential, and to a lesser extent that the depth hypothesis must in all likely be correct, since we already know shorebirds segregate habitat by water depth. The interpretation of changes will be more difficult and ambiguous. The control expectation is also a difficulty for the project. What is the no-action alternative? A non-rotated field? Deeper flooding? Fields elsewhere? Any wetland in the general area of the Yolo Bypass? The GGS component is entirely descriptive, and other than distribution maps, does not adequately address how the data are to be used or how they relate to rice farming. This is

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the shakiest of the three research descriptions. The investigator is stuck between noninvasive limits to use of a threatened species and getting sufficient solid information. This limits the number of transmitters that can be implanted and thereby limits intensive tracking. There is no apparent limit to the number of passive transponders that can be used, but also no indication how much effort will be expended to follow them. The proposal notes each capture and sighting will be GPS-located, which might yield good distribution information (how accurately?), but there is no indication of how the data are to be used exactly. There is especially nothing on the population dynamics, despite vague indications there would be. The methyl mercury study is also descriptive, but bears little relation to rice. This is entirely a sampling-then-lab analysis program, based on the physical layout and discrete sampling periods. Very straightforward, although controls consist of only one field of rice and one of wetland, which represent marginal controls. A reasonable pilot study, but dubiously related to anything else in the effort. Its key hypothesis is that methyl mercury forms faster in shallow water with enhanced biological activity, such as would be found in rice systems. If methyl mercury concentrations are indeed more abundant in shallow samples, what is proposed for a solution? Nothing is said about what consequences it would have if significant associations appear. Does that mean rice agriculture should only be practiced in water deeper than a critical minimum? Or is rice in the bypass inviable for this reason? What happens if the critical minimum is too great for shorebirds and GGS? This proposal could have been much interesting if the components had been brought together and their hypothetical implications evaluated in terms of Yolo Bypass Foundation strategy for field management.

## Feasibility

<b>Rating</b>	good
<b>Comments</b>	<p>Judged as individual components, I have little doubt that each in isolation (except the outreach component) can be feasibly completed. The farming operation is routine farming practice, although its viability in the cool climate of the bypass is not. The shorebird research is equally routine for PRBO and has been done by the investigators and others in the organization for decades. The GGS research appears limited in depth but technically appears to be feasible; it is the significance of the research that is in question. The methyl mercury research also is being proposed by experienced personnel and requires no more expertise for the sampling and chemical analysis than they have already demonstrated. When judged in terms of the overall goal, however, the same flaws undercut the feasibility of this proposal. Until such time as the sensitivity of rice heading and yield in the Bypass are integrated into the proposal, and a more complete spreadsheet of costs and profits, including temporal replication, subsidies and market price fluctuation are included, any numbers regarding yields and profits will not be sufficient. In any case, save for the cost of preparing and maintaining the fallow fields, there is no connection between rice and the other components. Whether shorebirds or snakes use the rice fields or only the fallow fields or vice versa has no effect on rice culture practice. My rating of 'good' assumes the feasibility rating is for individual components overall. If feasibility refers to the overall program impact on the prime objective, my rating would fall to 'fair' or 'poor'.</p>

## Performance Evaluation

<b>Rating</b>	fair
<b>Comments</b>	Again, the individual components vary considerably

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with regard to performance evaluation. The rice agriculture component is marginal science at best; neither the performance measures mentioned nor the economic analysis are adequately detailed. The GGS component describes data collection in detail but says very little about testing hypotheses or using the data in any way other than to produce distribution maps. The methyl mercury component is entirely descriptive, highly feasible technically, but lacks relevance to this proposal, especially with respect to its significance and effect on policy. The shorebird component is best in this regard and considered by itself would rank higher. The Foundation personnel definitely know how to do outreach. It should be pointed out that, given the more fundamental difficulties with this proposal, that performance evaluation is not very relevant. Ironically, satisfactory execution of the outreach elements logically would address how snakes and shorebirds benefit from the rice production system, what they cost in real dollar terms, and on the other side, what part of the time rice would yield a profit, if ever. If this had to be done anyway, why wasn't it addressed in the proposal?

**Proposed Outcomes**

<b>Rating</b>	fair
<b>Comments</b>	The same problem arises in judging proposed outcomes. The project described will yield potentially useful data enriching our knowledge of methyl mercury concentrations under wet conditions, its changes as fields are rotated, and the role of vegetation and soil microflora. The snake component will yield detailed distribution data, provided there are enough GGS in the experimental area and that the tracking systems work satisfactorily. The shorebird component is likely to yield good data on shorebird use of the area, and perhaps better data regarding

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	temporal and spatial shifts than the other components. The outreach component surely would find something to communicate to users and stakeholders. Only the farming component is in question in this regard. However, I see no hope of getting any results relevant to the overall goal, preliminary study or not.
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**Capabilities**

<b>Rating</b>	very good
<b>Comments</b>	In each case, the teams in charge of each task are competent and experienced in the types of activity proposed. I have no doubt each team will acquit itself well in performing the research specified.

**Cost-Benefits**

<b>Rating</b>	good
<b>Comments</b>	Given the number of proposed activities, the budget is reasonable, adequate and well-justified.

**Overall Evaluation Summary Rating**

<b>Rating</b>	poor
<b>Comments</b>	In the final analysis, this proposal represents three components coupled to the rice farming system and a Foundation eager to present progress in ecosystem management. Each component shows well enough, but with nothing substantial to hold them altogether as a unified proposal significant in its own right, it is a waste of time and effort beyond what each component can accomplish separately. This proposal could not be driven from the bottom up. The proposal as a whole ends up not being able to address its problem. Rather than propose the question and then fail to address it, it would have been better to experiment with rice farming, with the understanding that the farmer would not incur a loss in income while the experiments were underway. It would also be better to experiment with

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different modes of rice operation rather than fixing a rotation. Both of these are better ways to estimate the economic cost of combining rice farming with shorebird and snake habitat enhancement. Taking the other view, suppose that the value of the proposal is entirely in the five subtasks. Even then, four field research tasks are independent, and although each may yield information useful somewhere, there is little relevant to assessing tradeoffs in farming and conservation in the Yolo Bypass.

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*Proposal Number:* 0068

*Proposal Name:* Yolo Wildlife Area: An Evolving Model for Integration of Agriculture and Habitat Restoration in a Flood Control Setting

*Applicant Organization:* Yolo Basin Foundation

## *1. Applicability to ERP goals and regional priorities.*

The proposal goals meets those of CalFed. Probably a priority for restoration goals, given the probelms with rice production and the opportunity to better that production \*while\* improving conditions for wildlife.

notes:

Goals on the GGS area generally applicable to the PSP but are weakly integrated into other aspects of the proposal. The primary reviewer stated that the proposal directly addresses the needs of rice growers. However, another panelist said that this information on fallowing to control weeds was available already through the cooperative extension service. The economic analysis of the rice rotation may not be necessary

## *2. Links with other restoration actions.*

seeks to explore new methods of restoration and may result in models for future rice production and wildlife preservation.

notes:

The location of the study in the Yolo Bypass was positive, as it would be linked to other restoration and management

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activities at the site, but is restricted to public lands.

### *3. Local circumstances.*

The project is feasible and is likely to move forward in a timely and successful manner.

notes:

There were technical concerns about the feasibility of the rice production component and the methodology. The value of the fallowing component to private growers was questioned, although the panel agreed that the work on shorebirds, GGS, and mercury was applicable and valuable.

### *4. Local involvement.*

Yes to both

notes:

There is good tie-in with the Yolo Bypass working group, but the outreach of the proposal did not go beyond the partnership already in place.

### *5. Local value.*

May have extremely high value in both maintaining rice production in the immediate area, and increase knowledge and management recommendations for improving conditions for wildlife, potentially restoring ecosystems.

notes:

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Local value is to the Yolo Bypass WA. Methyl mercury research is needed here too, though how this would be directly applicable to growers is unclear. However there was no direct benefit to the greater delta area.

### *6. Applicant history.*

Only one participant is known and that person's reputation for expertise and research is excellent.

notes:

A panelist stated that the staff of the organization functions well. There were concerns that there is no agronomist or economist on the team. These would be necessary to evaluate the value of this research to farmers and consider the economic ramifications to public rice growers. The proposal is implemented on the DFG lands of the Yolo bypass and does not incorporate a nexus with private growers.

### *7. Summary of Overall Panel Discussion and Review*

The applicability of the project to private rice growers was questioned by the panel. However, the rice fallowing component may be valuable if it is economically and technically feasible. The effect of fallowing on shorebirds was seen as a high priority for this region. The rice production and shorebird work were strong points of the proposal as viewed by the panel.

The panel questioned the technical aspects of the GGS and methyl mercury components of this study. These components clearly address ERP and PSP goals but were poorly integrated with the rest of the study and add a lot of cost. The methyl mercury work was viewed as important for ERP, but less so for

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meeting the goals of this PSP. Technical review to determine feasibility and effectiveness of the methods is necessary.

The panel felt that this project would have had a higher priority for the region if had better integrated the different components of the proposal and illustrated a linkage and applicability to private growers.

### *8. Panel Quality Ranking*

**Fair**

notes:

### *9. Regional Priority Ranking*

**Medium**

notes:

# Environmental Compliance Review

*Proposal Number:* 0068

*Proposal Name:* Yolo Wildlife Area: An Evolving Model for Integration of Agriculture and Habitat Restoration in a Flood Control Setting

*Applicant Organization:* Yolo Basin Foundation

1. Is compliance with California Environmental Quality Act (CEQA) required for this project?

**No.**

2. Is compliance with National Environmental Policy Act (NEPA) required for this project?

**No.**

3. Does this project qualify for an Exemption or Exclusion under CEQA and NEPA, respectively?

**Does not apply.**

4. Did the applicant correctly identify if CEQA/NEPA compliance was required?

**Yes.**

5. Did the applicant correctly identify the correct CEQA/NEPA document required for the project?

**Does not apply.**

6. Has the CEQA/NEPA document been completed?

**Does not apply.**

7. If the document has not been completed, did the applicant allot enough time to complete the document before the project start date?

**Does not apply.**

8. If the document has not been completed, did the applicant allot enough funds to complete it?

**Does not apply.**

9. Did the applicant adequately identify other legal or regulatory compliance issues (Incidental Take permits, Scientific Collecting permits, etc.) that may affect the project?

**Yes.**

#0068: Yolo Wildlife Area: An Evolving Model for Integration of Agriculture ...

## Environmental Compliance Review

Comments:

**A State Scientific Collecting permit and federal 10(a)(1)(A) take permit are required to trap giant garter snakes. They have obtained both of those permits as indicated on page 20 of the project description but they did not indicate that these permits were required or had been obtained on page 15 and 16 of the Environmental Compliance section.**

10. Does the proposal include written permission from the owners of any private property on which project activities are proposed or, if specific locations for project activities are not yet determined, is it likely that permission for access can be obtained?

**Does not apply.**

11. Do any of these issues affect the project's feasibility due to significant deficiencies in planning and/or budgeting for legal and regulatory compliance or access to property?

**No.**

# Budget Review

*Proposal Number:* 0068

*Proposal Name:* Yolo Wildlife Area: An Evolving Model for Integration of Agriculture and Habitat Restoration in a Flood Control Setting

*Applicant Organization:* Yolo Basin Foundation

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

**No.**

2. Does the Budget Form include a detailed budget for each task identified on the Task and Deliverables Form and in the proposal text?

**Yes.**

3. Are the costs associated with each task and deliverable reasonable costs for performing the services?

**No.**

If no, please explain:

**Not enough detail provided.**

4. Is each person (employee, consultant, subcontractor, etc.) identified on the Personnel Form also included on the Budget Form?

**No.**

If no, please explain:

**Not enough detail provided.**

5. Are there estimated hours and an associated hourly rate of compensation for each person identified on the Personnel, Tasks and Deliverables, and Budget forms?

**No.**

If no, please explain:

**Not enough detail provided.**

## Budget Review

6. Does the budget include the benefit rate for all personnel identified on the Personnel and Budget forms?

**No.**

If no, please explain:

**Contractor only is identified at 25%. But most work is proposed to be done by sub.**

7. Are the proposed labor rates comparable to state rates?

**No.**

If no, please explain:

**The contractors rates are. Can't evaluate most of the proposed work by subs is not identified.**

8. Is more than 25% of the work proposed to be performed by subcontractors?

**Yes.**

If yes, what is the exact percentage to be performed by subcontractors?

**Approx. 95%**

9. Are project management expenses appropriately budgeted?

**Yes.**

10. Does the proposal clearly state the type of expenses encompassed in indirect rates or overhead costs? Are indirect rates, if used, appropriately applied?

**No.**

11. Does the proposal adequately explain major expenses? Are the labor rates and other charges proposed reasonable in relation to current state rates?

**No.**

If no, please explain:

**No major expenses identified, assumed there weren't any.**

## Budget Review

12. For equipment  $\geq$ \$5,000, was a separate worksheet filled out?

Please note: No overhead or indirect rate charges are allowed on the equipment purchases

**No.**

13. Is the purpose for all travel clearly represented in either the proposal itself, or in the Tasks and Deliverable Form?

Please note: Recurring travel costs for a specific task or subtask may be combined into one entry on the Budget Form, but the number of trips and cost for each trip must be clearly represented.

**No.**

14. Are travel and per diem at rates specified by the California Department of Personnel Administration for similar employees?

**No.**

15. Are other agencies contributing or likely to contribute a share of the projects? costs?

**Yes.**

If yes, when sufficient information is available, please total the amount of matching funds likely to be provided:

**\$68,470.19**

16. If the applicant identified cost share or matching funds, are they also described in the text of the proposal?

**Yes.**

17. Does the applicant take exception to the standard grant agreement's terms and conditions? If yes, are the approaches the applicant proposes to address these issues a reasonable starting point for negotiation a grant agreement?

**Yes.**

If no, please explain:

**Non-compliant. No answer was provided.**

18. Are there other budget issues or "red flags" that warrant consideration?

## Budget Review

**Yes.**

If yes, please explain:

**Is 15% markup taken by prime contractor or sub's?**

19. Provide revised amount requested based upon your review:

\$