i. Proposal number.# 2001 - B200.*

ii. Short proposal title .# Development of an Effective Management Strategy for the introduced Chinese Mitten crab, Eriocheir senensis: Investigation of recruitment dynamics.*
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APPLICABILITY TO CALFED ERP GOALS AND IMPLEMENTATION PLAN
1a1. Link to ERP Strategic Goals: What Strategic Goal(s) is /are addressed by this proposal? List the letter(s) of all that apply.

A. At-risk species
B. Rehabilitate natural processes
C. Maintain harvested species
D. Protect-restore functional habitats
E. Prevent non-native species and reduce impacts
F. Improve and maintain water quality# E*

1a2. Describe the degree to which the proposal will contribute to the relevant goal. Quantify your assessment and identify the contribution to ERP targets, when possible.# This project will provide information to be utilized in developing potential actions to undertake or avoid to minimize favorable conditions for the reproduction of Chinese Mitten Crabs. The documented impacts on the Bay-Delta systems have been economic in the form the crabs' effect on:
- fish recovery operations at federal and state water diversion plants
- reliability of water deliveries to water contractors
- efficiency of the operation of cooling system operations for power plants in North Bay and
- efficiency of commercial and recreational fishing activities

Anticipated ecosystem impacts based on events in other ecosystems that the mitten crab has established include:
- changes to predation and competition relationships
- habitat destruction due to its burrowing habit

Economic quantification would incorporate the amount of time, the time of year and the intensity of the problem relative to mechanical operations.*

1b. Objectives: What Strategic Objective(s) is/are addressed by this proposal? List Objective (from the table of 32 objectives) and describe potential contribution to ERP Goals. Quantify your assessment, when possible.# Objective 6: Reduce the impact of non-native mammals on native birds, mammals, and other organisms.
- This would primarily be achieved through the reduction of the Mitten crab and avoidance of anticipated ecosystem impacts.

Objective 7: Limit the spread or, when possible and appropriate, eradicate populations of non-native invasive species through focused management efforts.

- The information developed in this proposal will be used directly in Mitten crab management efforts.*

1c. Restoration Actions: Does the proposal address a Restoration Action identified in Section 3.5 of the PSP? Identify the action and describe how well the proposed action relates to the identified Restoration Action.# This proposal focus on providing information on the efficacy of management and control of the Mitten crab but the crab is not a plant species.*

1d. Stage 1 Actions: Is the proposal linked directly, indirectly or not linked to proposed Stage 1 Actions? If linked, describe how the proposal will contribute to ERP actions during Stage 1.# Item number 8 refers to completing targeted research and scientific evaluations needed to resolve the twelve Scientific uncertainties identified in the ERP strategic plan. One of the uncertainties refers to work associated with Non Native Invasive Species.

Perhaps more significantly, the presence the mitten crab could affect the efficiency of operational aspects of many Stage 1 actions.*

1e. MSCS: Describe how the proposal is linked to the Multi-Species Conservation Strategy and if it's consistent with the MSCS Conservation measures. Identify the species addressed and whether the proposal will "recover", "contribute to recovery" or "maintain" each species.# This proposal can provide information for the development of a management program for the Mitten crab. If the numbers of the crab are reduced, the operation of the federal and state fish recovery facilities can be maintained at a higher level. Through the increased in fish screen efficiency, recovery of entrained listed species is improved.*

1f. Information Richness/Adaptive Probing related to the proposal: Describe the degree to which the proposal provides information to resolve one of the 12 scientific uncertainties (Section 3.3 of the PSP), and whether the proposal offers a prudent approach to answer these uncertainties.# This proposal directly provides information to address the Non-Native Invasive Species uncertainty. It is a reasonable approach to developing specific information called for in this uncertainty.*

1g. Summarize comments from section 1a through 1f related to applicability to CALFED goals and priorities. Identify the strengths and weaknesses of the proposal, highlighting the applicability of the proposed project to CALFED and CVPIA goals and priorities. Focus on aspects of the proposal that may be important to later stages in the project review and selection process.# The unknown is the extent of the impacts of any introduced species to the Bay-Delta system. The severity of mitten crab impact on water project operations has varied from year to year. However, the severity in one of the years was extraordinary. The data provided by this proposal could be useful in potentially avoiding or minimizing that level of severity again. *

APPLICABILITY TO CVPIA PRIORITIES

1i. Describe the expected contribution to natural production of anadromous fish. Specifically identify the species and races of anadromous fish that are expected to benefit from the project, the expected magnitude of the contribution to natural production for each species and race of anadromous fish, the certainty of the expected benefits, and the immediacy and duration of the expected contribution. Provide quantitative support where available (for example, expected increases in population indices, cohort replacement rates, or reductions in mortality rates).# There are no demonstrated relationships between the presence of Chinese Mitten crabs and the natural production of anadromous fish or of other special status species. Consequently, there is no basis at present to predict the expected magnitude of the contribution to natural production of anadromous fish production from controlling mitten crab production. This project would support the Anadromous Fish Restoration Program if a reliable relationship could be demonstrated to exist between the presence of mitten crabs and the reduced natural production of anadromous fish. If this relationship exists, then a reduction in the population of mitten crabs could result in a commensurate increase in the natural production of anadromous fish. The activities in the proposal include field data collections to determine peak larval settlement period and factors associated with the settlement, identify brooding sites and brooding periods, identify frequency of broods production, and measure the sizes of crabs from the juvenile through the adult life cycle stages. The products will be an internet database of all field data collected in this study, work progress updates at project work team meetings, of articles for publication in the IEP Newsletter, presentation(s) at the CALFED Science Conference(s), and a publication in the international journal, Biological Investigations. This project will not implement measures to reduce mitten crab populations - this will have to be funded from other sources. The certainty of expected benefits is low. The immediacy of the expected contribution is low - tangible benefits would not occur until the management plan recommendations from this project, which will not be available until October 2002, could be implemented; there is no plan currently in place to fund the implementation of these measures. The duration of the expected contribution cannot be determined pending development of the management plan recommendations.*

1j. List the threatened or endangered species that are expected to benefit from the project. Specifically identify the status of the species and races of anadromous fish that are expected to benefit from the project, any other special-status species that are expected to benefit, and the ecological community or multiple-species benefits that are expected to occur as a result of implementing the project.# There is no basis at present to predict the benefits to anadromous fish production or to special-status species from implementation of the project. There are no demonstrated

relationships between the presence of Chinese Mitten crabs and the status of anadromous fish or other special status species. The ecological community or multiple-species benefits that would be expected to occur as a result of implementing the project cannot be determined either. Obviously, the rapid expansion in the size of the mitten crab population has come at the expense of some species, presumably some benthic/epi-benthic species and crayfish, but the impact on the aquatic food web has not been identified.*

1k. Identify if and describe how the project protects and restores natural channel and riparian habitat values. Specifically address whether the project protects and restores natural channel and riparian habitat values, whether the project promotes natural processes, and the immediacy and duration of benefits to natural channel and riparian habitat values.# The project neither protects nor restores natural channel or riparian habitat values or natural processes.. The object of this proposal is to develop information that can be utilized in developing mitten crab management strategy.*

1l. Identify if and how the project contributes to efforts to modify CVP operations. Identify the effort(s) to modify CVP operations to which the proposed project would contribute, if applicable. Efforts to modify CVP operations include modifications to provide flows of suitable quality, quantity, and timing to protect all life stages of anadromous fish as directed by Section 3406 (b)(1)(B) of the CVPIA, including flows provided through management of water dedicated under Section 3406(b)(2) and water acquired pursuant to Section 3406(b)(3).# If the mitten crab populations expand as they did in 1998 to the point where they accumulate in such high densities that they would again(in the absence of mechanical or other schemes currently being evaluated) block flows through the fish protective screens at the Tracy Fish Collection Facility, CVP operations would have to be modified by curtailing or reducing diversion flows through the Tracy Pumping Plant.*

1m. Identify if and how the project contributes to implementation of the supporting measures in the CVPIA. Identify the supporting measure(s) to which the proposed project would contribute, if applicable. Supporting measures include the Water Acquisition Program, the Comprehensive Assessment and Monitoring Program, the Anadromous Fish Screen Program, and others.# This project could contribute to both the Tracy Pumping Plant Mitigation Program and the Anadromous Fish Screen Program through the reduction in the numbers of the Chinese mitten crab, a major pest organism, that accumulate on fish protective screens at water diversion facilities.*

1n. Summarize comments from section 1i through 1m related to applicability to CVPIA priorities (if applicable, identify the CVPIA program appropriate to consider as the source of CVPIA funding [for example, the Anadromous Fish Restoration Program, Habitat Restoration Program, Water Acquisition Program,

Tracy Pumping Plant Mitigation Program, Clear Creek Restoration Program, Comprehensive Assessment and Monitoring Program, and Anadromous Fish Screen Program]). Identify the strengths and weaknesses of the proposal, highlighting the applicability of the proposed project to CALFED and CVPIA goals and priorities. Focus on aspects of the proposal that may be important to later stages in the project review and selection process.# This project is appropriate for funding support from the Anadromous Fish Restoration Program, the Tracy Pumping Plant Mitigation Program and the Anadromous Fish Screen Program. The proposal will investigate larval crab settlement patterns, reproductive events and age at maturity to determine whether any of these life cycle factors can be utilized to develop a management strategy. This is consistent with CentralValley-Wide Evaluation No.10 (Evaluate the effects of exotic species on production of anadromous fish.) in the Revised Draft Restoration Plan for the Anadromous Fish Restoration Program, May 30, 1997; this is considered a low priority in the draft plan. The proposal focuses on research of mitten crab ecology with the objective of identifying a management strategy to limit the numbers of crabs to acceptable levels. The strength of the proposal is that the entire process from evaluation of the problem to the development of potential solutions will be done in one contiguous effort and under the singular control of one program manager. The weakness of the proposal is that the ultimate implementation of the recommended actions, and the subsequent evaluation of the effectiveness of these actions, will have to be funded and carried out under a separate proposal; there is no guarantee if/when funding of the work in the subsequent phases will be secured. Also, it is not certain that an effective management strategy will be developed as a result of the efforts in this proposal; additional efforts may be required.*

RELATIONSHIP TO OTHER ECOSYSTEM RESTORATION PROJECTS
2a. Did the applicant explain how the proposed project relates to other past and future ecosystem restoration projects, as required on page 57 in the PSP? Type in yes or no.#yes*

2b. Based on the information presented in the proposal and on other information on restoration projects available to CALFED and CVPIA staff, describe how the proposed project complements other ecosystem restoration projects, including CALFED and CVPIA. Identify projects or types of projects that the proposed project would complement, now or in the future. Identify source of information.#This project complements other ongoing projects studying the effects of Chinese mitten crab and potential management strategies, including two CALFED funded projects and two IEP funded projects. Source: Proposal*

RESULTS AND PROGRESS ON PREVIOUSLY FUNDED CALFED AND CVPIA PROJECTS, INCLUDING REQUESTS FOR NEXT-PHASE FUNDING
3a1. Based on the information presented in the proposal and on project reports and data available to CALFED and CVPIA staff, has the applicant previously received CALFED or CVPIA funding? Type CALFED, CVPIA, both, or none .#none*

3a2. If the answer is yes, list the project number(s), project name(s) and whether CALFED or CVPIA funding. If the answer is none, move on to item 4.#*

3b1. Based on the information presented in the proposal and on project reports available to CALFED and CVPIA staff, did the applicant accurately state the current status of the project(s) and the progress and accomplishments of the project(s) to date? Type yes or no.#yes*

3b2. If the answer is no, identify the inaccuracies:#*

3c1. Has the progress to date been satisfactory? Type yes or no.#yes*

3c2. Please provide detailed comments in support of your answer, including source of information (proposal or other source):#*
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REQUESTS FOR NEXT-PHASE FUNDING
3d1. Is the applicant requesting next-phase funding? Type yes or no.#*

3d2. If the answer is yes, list previous-phase project number(s) here. If the answer is no, move on to item 4.#*

3e1. Does the proposal contain a 2-page summary, as required on pages 57 and 58 of the PSP? Type yes or no.#*

3e2. Based on the information presented in the summary and on project reports available to CALFED and CVPIA staff, is the project ready for next-phase funding? Type yes or no.#*

3e3. Please provide detailed comments in support of your answers, including source of information (proposal or other source):#*

LOCAL INVOLVEMENT

4a. Does the proposal describe a plan for public outreach, as required on page 61 of the PSP? Type yes or no.# Yes.*

4b. Based on the information in the proposal, highlight outstanding issues related to support or opposition for the project by local entities including watershed groups and local governments, and the expected magnitude of any potential third-party impacts.# Entities/Organizations that would be negatively impacted by proliferation of the Chinese mitten crab would be expected to support this proposal. This includes water purveyors whose diversion/delivery capabilities would be impeded by the presence of the crabs, agricultural interests whose levees could be weakened by crabs burrowing into the levees, sport and commercial fisheries whose catches could be reduced due to the negative effects of the crabs on the desirable harvest species, and fish and wildlife managers whose management strategies could be negatively affected by the presence of the crabs. There are no apparent third party impacts associated with this project**.***

ENVIRONMENTAL COMPLIANCE

4d. List any potential environmental compliance or access issues as identified in the PSP checklists.# None*

4e. Specifically highlight and comment on any regulatory issues listed above that may prevent the project from meeting the projected timeline.# None*

COST

5a. Does the proposal include a detailed budget for each year of requested support? Type yes or no.#Yes, this is a two year project. There is a miscalculation on the Laboratory Assistant's salary.*

5b. Does the proposal include a detailed budget for each task identified? Type yes or no.#Yes.*

5c. Is the overhead clearly identified? Type yes or no.#Yes, it is 26% of all costs.*

5d. Are project management costs clearly identified? Type yes or no.#Yes, it

is included in the investigation salaries.*

5e. Please provide detailed comments in support of your answers to questions 5a - 5d.#All information requested has been provided by project proponent in a clear, concise, and understandable format.*

COST SHARING
6a. Does the proposal contain cost-sharing? Type yes or no.#No.*

6b. Are applicants specifically requesting either state or federal cost share dollars? Type state, federal, or doesn't matter.# Doesn't matter.*

6c. List cost share given in proposal and note whether listed cost share is identified (in hand) or proposed.

6c1. In-kind:#n/a*

6c2. Matching funds:#n/a*

6c3. Show percentage that cost sharing is of total amount of funding requested along with calculation.#n/a*

6d. Please provide detailed comments in support of your answers to questions 6a - 6c3.#n/a*