

Draft Individual Review Form

Proposal number: 2001-K-201-2

Short Proposal Title: Genetic Structure Chinook

1a) Are the objectives and hypotheses clearly stated? Yes, but some have been addressed in previous research

The objective is to provide a population model of Chinook population structure in the Central Valley that incorporates genetic variability and life history. The hypotheses are (i) genetic characterization can be used to describe population structure at ecosystem, ESU and local levels, (ii) population structure includes both old lineages and new, recently diverged lineages, and (iii) some streams support more than one population which retain reproductive isolation.

Some of the objectives in this proposal have been the goals and objectives of Central Valley Chinook genetic characterization research conducted throughout the last 6 years. The most recent publication was this year in the Canadian Journal of Fisheries and Aquatic Sciences 57:915-927, "Analysis of Microsatellite DNA resolves genetic structure and diversity of Chinook Salmon in California's Central Valley. These research projects should be thoroughly evaluated before funding \$1.3 million of additional research to prevent redundant research.

1b1) Does the conceptual model clearly explain the underlying basis for the proposed work? Yes

Traditionally, phenotypic or behavioral characteristics were used to distinguish Central Valley Chinook into several "races". The genetic basis for these characteristics was unknown, and the phenotypic characteristics do not necessarily reflect ancestral relationships. Genetic characterization methodologies provide the potential for independent assessment of reproductive isolation and ancestral relationships.

CALFED, the Interagency Ecological Program and the CVPIA have funded genetic characterization research on Central Valley Chinook using microsatellites over the last 6 years. These research projects should be thoroughly evaluated before funding \$1.3 million of additional research to prevent redundant research.

1b2) Is the approach well designed and appropriate for meeting the objectives of the project? Maybe

Allozymes have been used in the past and by the collaborators of this proposal. Proteins have been useful to distinguish Chinook salmon at a gross resolution, but not a finer resolution. Microsatellites are a newer class of genetic markers and have been useful to distinguish at a finer resolution. The collaborators proposed comparing the results of using the protein markers to the results of using microsatellite markers on some of the objectives. Since proteins are useful for gross resolution and microsatellites are useful for fine resolution, the two may not be appropriate to use as comparisons. The collaborators of this proposal have already collected samples from the Central Valley in 1998 and 1999. They should have an estimate of the diagnostic power of their protein markers in the Central Valley and their comparative power to microsatellites. Genetic characterization research using microsatellite markers has been ongoing for 6 years at UC Davis, Bodega Marine Lab. They have screened several hundred microsatellites and found about 20 that have diagnostic power for distinguishing winter and spring runs, but not much power for late-fall and fall runs. Another ongoing research project at UC Davis is aimed at finding more diagnostic markers for fall run. The results of these research projects and the results of the protein analyses from 1998 and 1999 should be evaluated thoroughly before funding \$1.3 million for similar research.

1c1) Has the applicant justified the selection of research, pilot or demonstration project, or a full-scale implementation project? Yes

This is a targeted research project. The goal is to reduce the uncertainty in Central Valley Chinook population structure to improve restoration and conservation of a CALFED "First Priority Species".

1c2) Is the project likely to generate information that can be used to inform future decision making? Maybe

Genetic characterization of Central Valley Chinook using microsatellites has been funded for 6 years at UC Davis. The collaborators of this proposal should have an estimate of the diagnostic power of the protein markers from samples collected in 1998 and 1999. The results of these research projects should be thoroughly evaluated before funding \$1.3 million for similar research.

2a) Are the monitoring and information assessment plans adequate to assess the outcome of the project? No.

A major omission in this proposal is the Monitoring and Assessment Plan.

2b) Are data collection, data management, data analysis, and reporting plans well-described, scientifically sound and adequate to meet the proposed objectives? No

The data analysis or report plans were not described. The data collection was described as collecting 50 – 100 samples from each population and may not be adequate for fine resolution distinction. Also, preservation techniques for microsatellites were not described as they were for protein samples.

3) Is the proposed work likely to be technically feasible? Maybe

The success of either proteins or microsatellites in defining Central Valley Chinook population structure depends on finding proteins or microsatellites with diagnostic power for distinguishing Central Valley Chinook races. Based on the samples collected in 1998 and 1999, the collaborators should have an estimate of degree of diagnostic power in the existing protein markers. Ongoing research at UC Davis has been successful at identifying microsatellite markers diagnostic for distinguishing winter and spring run Chinook, but not late-fall and fall yet.

4) Is the proposed project team qualified to efficiently and effectively implement the proposed project? Yes.

The NMFS has demonstrated expertise in population genetics techniques.

Miscellaneous comments

Overall Evaluation Summary Rating	Provide a brief explanation of your summary rating
<input type="checkbox"/> Excellent <input type="checkbox"/> Very Good X <input checked="" type="checkbox"/> Good <input type="checkbox"/> Fair <input type="checkbox"/> Poor	<p>The objectives and hypotheses being tested were well thought out and described, but 6 years of genetic characterization research using microsatellites on Central Valley Chinook has been funded by CALFED, IEP and CVPIA. The results of these research projects should be thoroughly evaluated before funding \$1.3 million dollars to prevent funding redundant research. The collaborators of this proposal have samples collected in 1998 and 1999 and should have an estimate of the power and usefulness of the already existsing protein markers. I suggest funding parts of this proposal as a pilot project at a much smaller amount of money until the results of previous and ongoing research are thoroughly evaluated and the results of the samples collected in 1998 and 1999 are analyzed and evaluated.</p>