

**Genetic changes associated with in-basin  
supplementation of a population of sockeye salmon**

***Final Report***

to the

Pacific Salmon Commission

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by

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### ***Project Deliverables and Objectives***

The primary objective of the project, i.e. genetic analysis of polymorphisms in all members of the Auke Lake sockeye population (developing a baseline against which future samples potentially including offspring of 'supplemented' salmon can be compared, i.e. parentage analysis) has been partially met.

We successfully sampled tissues from all sockeye adults passing through Auke Creek Weir in 2009 as well as in 2008, extracted DNA and explored microsatellite variation in part of the samples.

Detectable microsatellite polymorphisms in the Auke Creek population have not proven adequate for parentage analysis. Further work is continuing with the support of the Alaska Sustainable Salmon Fund and the Alaska Department of Fish and Game. Design and analysis of this work is being reviewed by a Technical Oversight panel consisting of members from Alaska Dept of Fish & Game (Eric Volk, Bill Templin, Chris Habicht, Stuart Grant), NOAA Fisheries (Eric Anderson SW Fish. Sci. Cent, John Joyce & Andy Gray Alaska Fisheries Science Center).

Other objectives of the feasibility research, maintenance of adult sockeye until maturation after capture at Auke Creek Weir were fully met. We maintained 19 immature adults in captivity, in covered tanks supplied with cool, deep-sourced, dechlorinated lake water; they were successfully spawned as a demonstration of success of the fish culture technique. Data from these trials are on file with John Joyce, NOAA Fisheries Alaska Fisheries Science Center.

### ***Project Schedule***

The project was delayed by the insufficient detectable microsatellite polymorphisms in the Auke Lake population and by our loss of key personnel in 2009. We do not plan any release of cultured salmon fry until 2011 at the earliest. In consultation with the technical oversight committee we are proposing in concept a plan to continue the research by completing a third year's sampling of the Auke Creek sockeye and renewed efforts to detect the polymorphisms necessary for parentage analysis, including

examination of single nucleotide polymorphisms by the Alaska Department of Fish & Game Gene Conservation Lab.

### ***Quality Assurance/ Quality Control and Implementation Monitoring***

Methods of QA/QC standard in the UAF SFOS and ADFG laboratories were and are being applied to molecular genetic analyses.

Implementation of the project is being actively monitored by the Technical Oversight committee.

### ***Benefits***

The benefits anticipated for the project, an understanding of the risks of supplementation in sockeye populations, are not yet realized. As noted above, progress toward those benefits has been made.