

**Genetic changes associated with in-basin
supplementation of a population of sockeye salmon.
Phase 2**

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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 2008, 2009, 2010, and 2011. We have extracted DNA and explored microsatellite variation in part of the samples.

In 2008 samples were collected from 1265 adult sockeye at Auke Creek; DNA was isolated from all of them. All samples from 2008 (n=1265) have been genotyped at 14 microsatellite loci:

The analysis was broken into two groups, the first 646 fish (Early, referring to the relative return timing of the fish) and the second 620 fish (Late). Microsatellite analysis of early fish has been completed at 14 loci.

DNA was plated and shipped to the ADF&G gene conservation laboratory in Anchorage for genotyping at 96 SNP loci. The majority of the samples (n=1234) have been run at 96 SNP loci. A subsample of samples have been reextracted and will be plated with other samples and rescored to conform with quality control protocols at the ADF&G gene conservation lab.

In 2009 samples were collected from 4066 fish. DNA from all 2009 samples (n=4064) has been extracted. Microsatellite analysis has been completed for 2353 samples at 4 loci (One102,109&114) and 672 samples at two loci (Oki10&Omy77).

In 2010, we sampled 2057 individuals. We have extracted DNA from all individuals. Those samples are awaiting 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).

Project Schedule

The project is on schedule for release of brood year 2011 fry in 2012. In consultation with the technical oversight committee we are proposing in concept a plan to continue the research by completing a further year's sampling of the Auke Creek sockeye and 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.