

Timing and origin of Chinook salmon stocks in the Copper River and adjacent ocean fisheries using DNA markers, 2004, Project No. 04-507

This report serves as a second-year summary of progress of a study intended to document the timing and origins of Chinook salmon *Oncorhynchus tshawytscha* stocks in the Copper River and adjacent ocean fisheries using DNA markers. The project is intended to investigate the genetic structure of Chinook salmon from the Copper River drainage using both microsatellite and single nucleotide polymorphisms (SNPs). Identification of genetic stocks of Chinook salmon within the Copper River drainage and knowledge of their run timing and migration patterns will provide valuable information to optimize management and provide for sustainable fisheries. The first objective of this study is to develop a DNA database to delineate major geographic and temporal stocks of Chinook salmon within the Copper River. This objective requires collection of tissue samples as well as the laboratory DNA analyses of those tissues. A second objective is to investigate run timing and entry patterns within the Copper River through the analysis of radio-tagged and fishwheel samples from Baird Canyon. A third objective is to characterize the timing of Copper River stocks in the ocean fisheries and estimate the contribution to this fishery by stocks of non-Copper River origin. Finally, these data will be standardized and contributed to a coastwide DNA database so that Copper River Chinook salmon can be tracked throughout their marine migration. This report reviews the first two years of the study. A total of 1,635 individual Chinook salmon were sampled from the Upper Copper, Gulkana, Tazlina, Klutina, Tonsina, and Chitna river drainages for the baseline collections. In addition, 477 and 496 radio-tagged individuals were collected at the Baird Canyon fishwheel in 2003 and 2004, respectively, in collaboration with another contracted study, FIS01-020 (Feasibility of using fishwheels for long-term monitoring of Chinook salmon escapement on the Copper River). In 2005, 1,418 additional samples were collected from the Baird Canyon fishwheel. Collection of the Copper River fishery samples was completed for 2005. Analyses of the baseline collections for 25 SNP and 13 microsatellite markers have been completed. Preliminary results indicate diversity among the major drainages of Chinook salmon of the Copper River at a scale that should prove useful for in-river stock identification studies. Laboratory analyses of the Baird Canyon and ocean fisheries samples are underway.

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