

# Assessing the contribution of genetic sub-stocks to the lower Kuskokwim River subsistence fishery

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## **Abstract:**

We propose to use genetic mixed stock analysis (MSA) techniques to evaluate the proportion of headwater sub-stocks captured in the 2003–2007 Kuskokwim River Chinook salmon subsistence harvests in order to better understand stock specific exploitations of these stocks. Genetic differences identified in Kuskokwim Chinook salmon correspond to stock groups that spawn in different geographic areas; in particular, fish from spawning areas in the headwaters are genetically distinct from those spawning in lower and middle river tributaries. First, we propose to enhance the existing genetic baseline for Kuskokwim River Chinook salmon by collecting additional samples from unrepresented populations. MSA results will then be compared to results from upriver tagging studies to determine if the proportion of the upper river stock group in subsistence harvests has differed from the proportion of upper river spawners estimated in drainage-wide escapements in those years. Results of this proposal will provide basic information about stock specific exploitation, which is critical for sustainable fisheries management. This project will provide context for early season fishery closure strategies currently under consideration by management agencies, in order to achieve escapement goals and harvest objectives during years of low Chinook salmon abundance. In addition, the results of this project will contribute to broader efforts aimed at determining if historical harvest practices could have led to differential reduction of the upper river stock group, and if so, whether long-term conservation strategies are warranted for this stock group.

## **Project Objectives:**

Objective 1: Enhance the existing Kuskokwim River Chinook salmon genetic baseline to identify the upper Kuskokwim River sub-stock in mixed stock fisheries.

Objective 2: Determine the relative contribution of the upper Kuskokwim River stock to the subsistence fishery executed in lower portion of the Kuskokwim River.

Objective 3: Determine if the upper Kuskokwim River sub-stock has been exploited at a higher rate compared to fish returning to other areas of the Kuskokwim River.