

# **Enumeration of Chilko River Chinook Salmon Escapement (Mark-Recapture) 2010.**

## **Interim Report**

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**ABSTRACT**

The summer-run (age 1.3 Stock Group) Chinook salmon (*Oncorhynchus tshawytscha*) escapement to the Chilko River in 2010 was generated using a two event mark-recapture and helicopter-based peak count salmon escapement estimation methods. Fish behavior was monitored using radio telemetry. Marks were applied to 1,467 adult Chinook salmon, and 583 of them were recovered from a total recovery sample of 2,360. No jack estimate was calculated as only one of the 14 tags applied to jacks was recovered from a total recovery of five jacks. Spatial bias was detected in the application sample for both sexes and in the recovery sample for females; therefore, the Stratified Population Analysis System (SPAS) was employed. For both sexes, SPAS results showed inconsistent recovery probabilities and an unequal ratio of marked to unmarked fish between the two spatial strata (upper and lower); therefore, the maximum likelihood (ML) Darroch method was recommended as the most reliable escapement estimate. Based on the radio telemetry and aerial survey data, the assumption of closure was met, however telemetry data also indicated incomplete mixing, as the majority of male and females spawned and were recovered in the area they were released in (upper and lower). The ML Darroch estimate of escapement was 7,490 adult Chinook salmon (lower 95% CI=6,917, upper 95% CI=8,063). Sex-specific escapement estimates were 3,678 males (lower 95% CI=3,335, upper 95% CI=4,021) and 3,812 females (lower 95% CI=3,353, upper 95% CI=4,271). The estimated escapement based on aerial counts was 6,345; 18% less than the Darroch estimate.