

A Mark-recapture Study of Kuskokwim River Chinook, Sockeye, Chum and Coho Salmon, 2005.

Anchor tags were deployed on Chinook *Oncorhynchus tshawytscha*, sockeye *O. nerka*, chum *O. keta*, and coho *O. kisutch* salmon caught in the mainstem Kuskokwim River and recovered at several upstream tributaries to determine stock-specific run timing and stock-specific travel speed, and to estimate total coho salmon run abundance using a two-sample mark-recapture design. Fish were captured near Kalskag using fish wheels and drift gillnets, and then fitted with uniquely numbered anchor tags. Tags were then recovered, or at least observed, at 5 upstream tributary escapement projects (Takotna, Tatlawiksuk, Kogrukluuk, and George river weirs, and Aniak River sonar), plus recoveries were made from carcass surveys conducted in selected tributaries and from opportunistic voluntary tag returns. Tag deployment in 2005 included 1,198 Chinook, 4,648 sockeye, 28,416 chum, and 5,512 coho salmon. Subsequent recovery of the unique tag numbers from the 5 upstream tributary projects included 129 Chinook (11%), 234 sockeye (5%), 624 chum (2%), and 322 coho salmon (6%), plus total observed tags for coho salmon was 338 fish, inclusive of recovered tags. Tags were also recovered from carcass surveys in Oskawalik River and Telaquana Lake, which added to the analysis of stock-specific run timing. Overall, salmon run timing past Kalskag was earliest for stocks traveling to tributaries farthest upstream and progressively later for stocks traveling to less distant tributaries, which is consistent with findings from previous years. Average stock-specific travel speed was greatest for salmon traveling farthest upstream, and progressively slower for fish traveling to less distant tributaries. In addition, the travel speed of Chinook and coho salmon tended to increase relative to the tagging date as the season progressed, with fish tagged early in the season traveling slower than fish tagged later in the season. Coho salmon abundance upstream from Kalskag in 2005 was estimated to be 640,736 fish (95% CI=547,011 to 746,953; SE=52,541) using the Chapman estimator. This project also served as a platform in support of radiotelemetry studies focused on Chinook salmon, sockeye salmon, and broad whitefish *Coregonus nasus*, which are described in separate reports.

Citation: Pawluk, J., J. Baumer, T. Hamazaki, and D. Orabutt. 2006. A mark-recapture study of Kuskokwim River Chinook, sockeye, chum and coho salmon, 2005. Alaska Department of Fish and Game, Fishery Data Series No. 06-54, Anchorage.