

Estimated Abundance of Adult Fall Chum Salmon in the Middle Yukon River, Alaska, 2003.

Abstract: Mark and recapture data were collected to estimate the abundance of fall chum salmon *Oncorhynchus keta* during 2003 in the middle Yukon River, above the Tanana River confluence. A seasonal abundance estimate and weekly stratum estimates of migrating fall chum salmon were generated for a period of approximately eight weeks between 28 July and 18 September 2003. Fish were captured using two fish wheels for marking and one fish wheel for recovery. The mark and recovery sites were separated by a distance of 52 km. Spaghetti tags were applied to 5,532 fish at the marking sites. Throughout the season, 35,138 fish were examined for marks at the recovery site, the tag status of 369 of these fish could not be determined and 422 of these fish were recaptured with color-coded tags. Using a Darroch estimator, the estimated abundance of fall chum salmon migrating through the mainstem of the Yukon River in 2003 was 485,102 (SE 25,737). Comparisons of our estimate and run reconstructions, with data from other projects, indicated that our estimate was approximately 16.4% higher than the combined figure for tributary escapement (Chandalar, Sheenjek, and Fishing Branch rivers), harvest above the study area (average of previous five years), and Canadian border passage of fall chum salmon. In addition to producing in-season and annual estimates during the past couple years, we have also focused on identifying factors that increase the potential impact our project has on captured fall chum salmon. As a result, we have worked to improve our protocol to reduce the effect we have on captured fish by: (1) upgrading the quality of fish wheel materials (padding on and around chute and netting on the baskets); (2) reducing the amount of time fish are held in nets and in the fish wheel live-box before and after they are marked; and (3) switching to a video recovery system. This field season was the first time that we completely switched to video recapture and eliminated holding at both the marking and recovery sites throughout the season.

Citation: Apodaca, C. K., T. J. Underwood, J. F. Bromaghin, and D. W. Daum. 2004. Estimated abundance of adult fall chum salmon in the middle Yukon River, Alaska, 2003. U.S. Fish and Wildlife Service, Fairbanks Fish and Wildlife Field Office, Alaska Fisheries Technical Report 71, Fairbanks, Alaska.