

Falls Lake and Kutlaku Lake Subsistence Sockeye Salmon 04-607 2004 Annual

Abstract: We estimated that about 2,900 sockeye salmon (*Oncorhynchus nerka*) were harvested at the Falls Lake marine terminal area in 2004, and 3,300 sockeye salmon escaped to spawn in the lake. Despite a one-week midseason closure, daily escapement numbers were small until the fishery ended. We used a stratified, closed population model to estimate the number of sockeye salmon entering the lake. We also tagged fish on the spawning grounds, and used an open population model (Jolly-Seber) to estimate the sockeye spawning population. Compared with the closed population estimate of 3,300 sockeye salmon entering the lake, we estimated a spawning population of about 2,600 fish within the study area using the open population model. By means of visual surveys, we estimated that these fish comprised 87% of all sockeye spawners in the lake, and from this percentage, we estimated a total spawning population of 3,000 fish. The most likely reason for the small difference between the closed and open population estimates was that natural mortality reduced the size of the effective spawning population after fish entered the lake. We sampled sockeye smolt migrating out of Falls Lake and estimated about 75% were age-1 fish. By comparison, about 80% of sockeye adults in the 2004 escapement were age 1.2 and age 1.3 with one freshwater year. Both smolt and adult age compositions showed higher percentages of age-1 smolt than during the 1980s. Zooplankton biomass and numbers were lower than in previous years and in other similar sockeye-producing lakes in Southeast Alaska. The changes in smolt size and age composition suggest improved habitat conditions for sockeye fry, but with limited prey populations.

Conitz, J.M and MA Cartwright.. 2007. Falls Lake and Kutlaku Lake subsistence sockeye salmon projects 2004 annual report. U.S. Fish and Wildlife Service, Office of Subsistence Management, Fisheries Resource Monitoring Program, 2004 Annual Report (Study No. 04-607). Alaska Department of Fish and Game, Fishery Data Series No. 07-47, Anchorage.