

Falls Lake subsistence sockeye salmon stock assessment project, 2001

Abstract: The return of adult sockeye salmon to Falls Lake in 2001 was estimated through a survey of subsistence and sport harvest in the terminal area, weir counts verified with a mark-recapture study, and an independent spawning grounds mark-recapture study. Age, length, and sex composition of the escapement was estimated using standard measurements and scale sampling and analysis. Sockeye salmon fry populations in Falls Lake were estimated using hydroacoustic and trawl sampling. Baseline information was collected on the physical characteristics and productivity of lake rearing habitat in Falls Lake using standard limnological sampling procedures. A return of about 4,600 sockeye salmon was documented, with a total harvest in the terminal area of at least 2,000 fish and an escapement of about 2,600 fish. The mark-recapture estimate validated the weir count and indicated that few sockeye salmon passed through the weir uncounted. Most of the sockeye salmon sampled from the Falls Lake escapement were age-1.3, representing 89% of the fish sampled. Sockeye salmon fry density was low to moderate, compared to that in similar Southeast Alaska sockeye rearing lakes. Results of limnology sampling were comparable for the most part to those from previous studies in the 1980's. Falls Lake becomes thermally stratified during the summer and has a moderate euphotic zone depth averaging 10 m. Although total zooplankton density and biomass and species composition were similar, there was an apparent reduction in the number and biomass of *Daphnia*, a large cladoceran and preferred prey item for sockeye fry, from levels found in the 1980's. Good baseline data was gathered at Falls Lake in 2001, and most can be directly compared with data collected by ADF&G and the USFS between 1981-89. More years of data will be needed to show trends in population and lake productivity over time, in order to set sustainable harvest limits and escapement goals.

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