

Piston, A.W. 2004. Limnological and Fisheries Investigation at Virginia Lake, 2003

Abstract: Fisheries research has been conducted at Virginia Lake for the past 17 years, primarily to monitor the progress of a sockeye salmon enhancement project, cooperatively implemented by the U. S. Forest Service, the Alaska Department of Fish and Game (ADF&G), and Southern Southeast Regional Aquaculture Association in 1988. In 2003, we conducted our final season of limnological sampling at Virginia Lake in order to assess the lake's reaction to the end of the nutrient enrichment program, which was first implemented in 1991. The levels of several key nutrients, along with primary production, declined in 2003 to the low levels observed in past years where fertilization did not take place. Zooplankton densities were below the 17-year average in 2003, but an increase in the copepod *Diaptomus franciscanus* led to total zooplankton biomass being above the 17-year average. The original goal of the Virginia Lake enhancement project was to enhance the small, naturally occurring run of sockeye salmon to a level that would allow targeted fisheries harvests on this stock. Sockeye fry of McDonald Lake stock were planted in the Lake from 1989 to 1996, but these fry planting efforts were apparently not successful in establishing a larger sockeye salmon run in the lake. Virginia Lake's natural productivity is sufficient to support the very low sockeye fry densities observed in recent years.

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