

Carrying capacity of habitats used seasonally by coho salmon in the Kametolook River, 2002-2003, Alaska Peninsula National Wildlife Refuge

Abstract: Coho salmon *Oncorhynchus kisutch* are an important subsistence resource for residents of the Native Village of Perryville. Recent returns to local streams (Kametolook, Three Star, and Long Beach rivers) have declined and cannot support subsistence needs of the village. This project was implemented to assess the quantity and quality of freshwater habitats used for spawning and rearing by coho salmon in streams near Perryville, and to use these data to conduct a limiting habitat analysis. The habitat inventory was repeated on Clear Creek, a small drainage that supports viable runs of coho salmon. Work was completed in 2002 and 2003 and includes: 1) a habitat inventory on Kametolook and Long Beach river tributaries, Three Star River, and Clear Creek, 2) sampling juvenile coho salmon in Clear Creek, 3) spawning escapement monitoring in Clear Creek (weir) and streams near Perryville (walking surveys), and 4) application of a habitat limiting factor model to all systems. Over 43 km of stream were inventoried in the Kametolook, 42 km in the Long Beach, 27 km in the Three Star, and 12 km in the Clear Creek drainages. Habitat composition and quality were similar between systems, except for a 7-ha drainage lake in the Clear Creek system. Juvenile coho salmon densities in Clear Creek in 2002 were similar to values reported in the literature for streams fully seeded. Juvenile densities were lower in 2003 and not at carrying capacity. Minimum estimates of coho salmon spawning escapement in Clear Creek were about 1,100 in 2002 and 1,000 in 2003. Estimates are minimum values due to weir failures. Age and sex compositions of adult coho salmon were similar between years. Two hundred ninety adult coho salmon were observed in Perryville streams during walking surveys in 2002, and 800 were observed in 2003. Results from the habitat limiting factor analysis indicate that winter habitat availability limits production in all systems and each system has the production potential of over 2,000 adult coho salmon given adequate marine survival. Results of the model are comparable to other reported population parameters for coho salmon throughout their range. Model predictions indicate that the physical habitat of the Kametolook, Three Star, and Long Beach drainages can support coho salmon populations in excess of current spawning escapement levels.

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