

Assessment of Chinook, chum, and coho salmon escapements in the Holitna River drainage using radiotelemetry, 2001

Abstract: In 2001, radio telemetry was used to estimate the proportion of Chinook salmon *Oncorhynchus tshawytscha*, chum salmon *Oncorhynchus keta*, and coho salmon *Oncorhynchus kisutch* returning to the Holitna River drainage that passed through the Kogruklu River weir, and to estimate the abundance of Chinook, chum, and coho salmon escapement into the Holitna River drainage by proportional expansion of the weir counts. We captured 150 Chinook salmon, 409 chum salmon, and 276 coho salmon fishing with drift gillnets near the mouth of the Holitna River. Eighty-five Chinook salmon, 127 chum salmon, and 115 coho salmon were fitted with radio transmitters and had resumed upstream migrations. Coho salmon were fitted with two types of transmitters, esophageal and externally mounted, to evaluate which allowed for higher rates of sustained upriver movement. Subsequent movements of all radio-tagged salmon were monitored with two stationary tracking stations placed approximately 50 km upstream of the capture site, one tracking station placed at the weir, and by aerial and boat surveys. Estimated proportions were 0.26 (95% C.I.=0.15-0.37) Chinook salmon and 0.31 (95% C.I.=0.22-0.40) coho salmon that migrated through the Kogruklu River weir. The proportion of chum salmon passing through the weir and abundance of chum salmon in the Holitna River drainage were not estimated because sampling biases were apparent and insufficient numbers of chum salmon passed the weir (17) to correct for the bias. An estimated 25,405 (SE=6,207) Chinook salmon > 650 mm MEF and 63,442 (SE=10,063) coho salmon >510 mm MEF returned to the Holitna River drainage. Between coho salmon fitted with esophageal-implanted and externally-attached radio tags, there was no difference in the proportion of fish that resumed upriver migrations, the proportion of fish that migrated past the Kogruklu River weir, and the average time required to recover from tagging and migrate to the upstream tracking stations. Esophageal-implanted tags, however, were preferred because they were easier and faster to apply and cause less injury than the externally-attached tags. Radio-tagged Chinook, chum, and coho salmon were located in numerous areas throughout the Holitna River drainage. Chinook and coho salmon predominantly spawned in first and second order tributaries, and most chum salmon spawned in the mainstem Holitna River. Numbers of radio-tagged fish located upstream from Nogamut, a proposed replacement site for the Kogruklu River weir, indicated that larger proportions of the total runs would be enumerated if the weir were moved to this location. It is recommended, however, that the weir remain at the current site until completion of this study in 2003.

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