

Estimating the inriver abundance of Copper River sockeye salmon, Final report Study 06-502

The objective of this project was to estimate the inriver abundance of Copper River sockeye salmon *Oncorhynchus nerka* at Baird Canyon (rkm 66) using fishwheels and two-sample mark recapture methods. For the first sampling event, 11,309 adult sockeye salmon received passive integrated transponder (PIT) tags from 25 May to 24 July at three fishwheels located in Baird Canyon. For the second sampling event, 73,888 sockeye salmon were counted using digital video recording (DVR) systems from 4 June to 14 August at two fishwheels located near Canyon Creek (rkm 157). A total of 713 PIT-tagged sockeye salmon were detected at the Canyon Creek recovery fishwheels using automated PIT-tag readers and rectangular pass-through antennas mounted on the fish wheel slides. The median travel time of fish tagged at Baird Canyon and recaptured at Canyon Creek was 9 d (range = 3-31 d).

No size selectivity was detected during either sampling event. The proportion of PIT-tagged sockeye salmon recaptured at the Canyon Creek fishwheels averaged 5.8% and varied significantly over the study period ($\chi^2 = 129.2$, $df = 4$, $P = 0.000$). The marked fraction of fish examined at Canyon Creek averaged 0.9% and also varied significantly over time ($\chi^2 = 275.7$, $df = 4$, $P = 0.000$). Unfortunately, due largely to unquantifiable errors associated with the automated DVR and PIT-tagging equipment used at Canyon Creek, recovery data were not considered reliable enough to generate an unbiased or defensible abundance estimate. This report was submitted as the annual report to U.S. Fish and Wildlife Service, Office of Subsistence Management, Subsistence Fisheries Resource Monitoring Program for project number 06-502.

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