

THE EFFECTS OF INCIDENTAL ELECTROFISHING ON ADULT SPRING  
CHINOOK SALMON (*Oncorhynchus tshawytscha*)

Stanley D. Smith  
National Biological Survey  
Pacific Northwest Natural Science Center  
Columbia River Research Laboratory  
M.P. 5.48L Cook-Underwood Road  
Cook, Washington 98605  
(509) 538-2299  
Fax: (509) 538-2843

Alec G. Maule and Thomas P. Poe  
National Biological Survey  
Pacific Northwest Natural Science Center  
M.P. 5.48L Cook-Underwood Road  
Cook, Washington 98605  
(509) 538-2299  
Fax: (509) 538-2843

We experimentally exposed adult female spring chinook salmon to an electric field (i.e., under typical boat electrofishing operations) to determine its effects on the migration behavior and long-term health of these salmonids.

Fifty adult spring chinook salmon (FL = 811 cm  $\pm$  SE) from the Little White Salmon NFH, adjacent to the Columbia River, WA., were tagged around the caudal peduncle with colored plastic electrical cable ties, anesthetized, measured, transported 21 km downriver, and released into a barrier net enclosure. This treatment group was then electroshocked with an electrofishing boat at a strength 45% of range at 4.5 amps, 60 pulses/second DC during a 78 second pass just outside the net. Another fifty adult fish were tagged (non-shocked controls) and treated similarly except that no electricity was emitted from the boat. Both groups were immediately released and allowed to return to the hatchery. A third group of fish (hatchery controls) were tagged and placed back into the hatchery holding area to compare the effects of handling and tagging against the treatment and non-shocked controls that were transported downstream and released.

Seventy-two percent of the treatment group and 70% of the controls were recovered at the hatchery indicating no significant differences between return migration rates. However, there may have been some effects from the electric field on the long term health of the treatment group because only 22% of the treatment group survived to spawn while 32% of the controls survived.

Sixty-five percent of a third group that were tagged and held at the hatchery survived to spawn indicating that handling and moving may have an effect on pre-spawning survival.

The eggs of the treatment and non-shocked control fish were fertilized with non-study hatchery males. Eighty-three percent of the non-shocked progeny survived to eye-up while 93.5% of the shocked progeny survived. The reason for the variation is unknown.

This was a preliminary test for a larger, more comprehensive study where we plan to examine various physiological indices as well. Depending on the availability of Columbia River spring chinook salmon, that study will be conducted in late spring 1994 or 1995 using early, middle, and late run adults.