

## Comparison of Survival of Coho Salmon Coded Wire Tagged With Standard and Double Length Coded Wire Tags and Adult Electronic Detection

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The Washington Department of Fish and Wildlife (WDFW) began conducting a study in March 1994 to determine the effect on survival and possible straying of coho salmon (*Oncorhynchus kistutch*) tagged with standard and double length coded wire tags (CWT). A second aspect of the study was to test the effectiveness of electronic detection using wand CWT detectors on returning adult coho. The study was conducted at the WDFW George Adams hatchery on 1992 brood coho averaging 16 g per fish (115 mm fl).

Two groups of coho were tagged simultaneously to ensure random specimens for each group. The first group (N= 45,084) were CWT with old tag wire at the standard (1 mm) length. The second group (N= 44,666) were CWT with the newest tag wire at a double length (2 mm). The newer tag wire at double length increased the magnetic moment 5.2 times over the old single length wire. Each group was given a distinct tag code. The fish were reared in the same raceway until their release in July 1994 at an average size of 50 g per fish (171 mm fl).

Also 634963 (N=44,284)

### Quality Control Checks

At 18 d post tagging quality control checks were performed on 1,700 fish from each group to determine coded wire tag loss and poor adipose clips. The single length CWT group had 0.77% CWT loss and 0.71% poor adipose clips. The double length CWT group had 0.48% CWT loss and 0.83% poor adipose clips.

### Adult Sampling

During the fall of 1995 all adipose clipped returning coho to the George Adams hatchery were electronically sampled for the presence of a CWT using a Northwest Marine Technology Wand CWT detector. If a CWT was detected the fish was identified with an individual head label indicating a CWT was detected. If a CWT was not detected the fish was identified with an individual head label indicating a CWT was not detected. For both groups the fish were measured to the nearest centimeter and the snout removed to retrieve the CWT. When a CWT was not detected the fish was subsequently passed through a Northwest Marine Technology 6 inch omni-directional CWT detector. If a CWT was not detected the fish was considered a No Tag. If a CWT was detected it was noted on the individual head label.

One hundred and thirteen coho heads were X-rayed prior to dissection to determine CWT placement. Each head was assigned a number and then a lateral and vertical X-ray was taken to give a three dimensional view. The number was then printed on the X-ray to correspond with each head. The results presented in Table 2 shows tag placement for each group.

### Results

The results presented in Table 1 show no significant difference in survival to the hatchery rack for single length and double length CWT groups which was 2.1% and 2.0% respectively. There was no significant difference in the mean forklength between the single length (47.8cm) and double length (47.8cm) CWT groups. There was no significant difference in detection rates using a Wand CWT detector with the single length and double length CWT's with detection rates of 99.9% and 100% respectively. This may have been due to the relatively small average size of coho returning to the George Adams Hatchery and the experience of the samplers.

Upon completion of data entry of all Washington, Oregon, and Canadian coho hatchery rack recoveries, a search of the data base will be conducted to determine if coho with either tag code strayed to another facility.

Table 1. Numbers of adult coho hatchery rack recoveries of standard length and double length coded wire tags.

<u>Standard Length</u>	<u>Double Length</u>
937 Recoveries = 2.1% Survival to Rack	898 Recoveries = 2.0% Survival to Rack
Average length = 47.8 cm SD = 4.6 cm	Average length = 47.8 cm SD = 4.9 cm
45,084 Released	44,666 Released
4.8% Difference in Returns	

Table 2. Tag placement of standard length and double length coded wire tags from X-Rays. Tag placement was defined as Good if the coded wire tag was within the target area, Marginal if the tag was located on the edge of the target area, and Bad if the coded wire tag was outside the target area.

<u>Single Length</u>	<u>Double Length</u>
# X-Rayed = 63	# X-Rayed = 50
Good = 77.8%	Good = 84.0%
Marginal = 14.3%	Marginal = 10.0%
Bad = 7.9%	Bad = 6.0%