Washington Department of Fish and Wildlife

1997 Electronic Sampling Tests

R-8 Detector Sampling of Coho Hatchery Rack

Methods

Coho hatchery rack sampling using the R-8 CWT detector was conducted at three Washington Department of Fish and Wildlife (WDFW) hatcheries; Marblemount, Voights Creek, and George Adams. Sampling was designed to test the throughput (fish/person/hour), accuracy of coded wire tag (CWT) detection and reliability of the diverter gate. At each hatchery tests were performed identically except at Marblemount where the throughput was not measured due to the exceptionally high rate of CWT returns and time constraints. At George Adams and Marblemount hatcheries CWT coho returned with and without adipose fin clips. If a CWT was detected the snout was taken regardless of the presence or absence of an adipose fin.

Throughput was measured as processing time of individual totes of coho. The technique used to test throughput was tote to tote sampling using a fiberglass funnel with a water bath attached to the R-8. During sampling, coho were separated into tagged and non-tagged totes using the diverter gate attached to the R-8. When testing, two samplers fed coho through the R-8, two samplers were monitoring the counters on the diverter gate and assuring coho were diverted into the correct tote, and one sampler was timing and watching for adipose clips which did not beep. Only the two samplers supplying coho to the R-8 were used to determine throughput.

When a coho was diverted into the wrong tote or the gate did not count correctly it was recorded for each tote. Adipose clipped non CWT coho were sampled and the snout taken to determine if the R-8 missed the CWT. The snout was subsequently run through a Northwest Marine Technology 6 inch omni-directional CWT detector. If no CWT was detected it was considered a no tag. All snouts were processed in the WDFW coded wire tag recovery lab.

Wand and R-8 Detector Sampling in Recreational and Commercial Fisheries

The primary focus was to increase commercial and recreational fishery samplers experience level and awareness of capabilities and limitations of Wand and R-8 detectors. Wand detectors were used to sample Coastal, Columbia River, and Puget Sound Recreational fisheries for coho and chinook. All adipose fin clipped coho and chinook electronically sampled

were identified with an individual snout label and the head removed regardless of the CWT detection status. The type of electronic detection equipment used and CWT detection status was recorded for each fish on the snout label.

R-8 CWT detectors were used in Coastal and Puget Sound Net fisheries. Again, the main focus was for samplers to familiarize themselves with the electronic detection equipment. Sampling was conducted at fish processing plants and individual buyers for commercial fisheries using mainly tote to tote sampling with the diverter gate and funnel attached. All adipose fin clipped chinook and coho electronically sampled using the R-8 were identified with an individual snout label and the head removed regardless of the CWT detection status. The type of electronic detection equipment used and CWT detection status was recorded for each fish on the snout label.

Results

The results presented in table 1 shows a total of 18,488 coho were sampled using the R-8 at three hatcheries for the presence of a CWT. A total of 4,528 CWT's were recovered. The R-8 did not miss a single coded wire tag. There were a total of 77 false detections (no tags) from the R-8 which was 1.7% of the total CWT's recovered. The average rate of no tags for WDFW hatchery rack for the past three years was 10.2% using the visual sampling method. There was a gate counting error rate of 0.3% during the hatchery rack tests. There were two types of errors associated with gate counting errors: 1)gate not counting small fish (door didn't open far enough) and, 2)non-tagged fish diverted to tagged tote (not enough lag time between fish). Tagged fish never ended up in the non-tagged tote.

The results presented in tables 2 and 3 shows in excess of 19,000 coho and 4,000 chinook were electronically sampled in recreational and commercial fisheries during the 1997 season using Wand and R-8 CWT detectors. There were 175 CWT's recovered using the R-8 detector in commercial fisheries. The R-8 missed 3 CWT's for the season. Wands detected 1,338 CWT's during the sampling season missing a total of 49 CWT's.

Results from these trials will be used to structure training, sampling effort and equipment needs for 1998 Washington recreational and commercial fisheries to achieve a sampling rate of 20%.

Table 1. 1997 R-8 Electronic Sampling for Marblemount, Voights Creek, and George Adams Coho Hatchery Rack

Hatchery	Total Sampled	CWT's Detected	False Detections	CWT's Missed	AD Clip No CWT	Gate Counting Errors
Marblemount	3,381	2,254	8	0	44	no data
Voights Cr.	4,185	187	13	0	8	9/3,690
George Adams	10,922	1,794	56	0	68	35/7,438
Totals	18,488	4,528	77	0	120	44/11,128 = 0.3%

Average Processing Time of 1,482 fish per hour per person

Table 2. 1997 R-8 electronic sampling data for chinook and coho salmon in commercial fisheries.

Species	Fishery	Total Sampled	CWT's Detected	False Detections	CWT's Missed	AD Clip No CWT
Chinook	Puget S. Net	89	3	0	0	0
Coho	Puget S. Net	5,155	172	32	3	4
	Coastal Net	NA	0	10	0	0
	TOTALS	5,244	175	42	3	4

NA: not available

Table 3. 1997 Wand electronic sampling data for chinook and coho salmon in sport and commercial fisheries.

Species	Fishery	Total Sampled	CWT's Detected	False Detections	CWT's Missed	AD Clip No CWT
Chinook	Ocean Sport	1,787	170	2	12	10
	Puget S. Net	1,995	34	4	0	0
	Puget S. Sport	NA	8	0	0	1
	TOTALS	3,782	212	6	12	11
Coho	Coastal Net	NA	4	0	0	2
	Col. R. Sport	87	7	1	0	10
	Ocean Sport	5,851	556	14	9	62
	Puget S. Net	7,371	234	10	4	17
	Puget S. Sport	NA	325	18	2	18
	TOTALS	13,309	1,126	43	15	109

NA: not available