UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Environmental & Technical Services Division (FNW
811 N.E. Oregon Street, P.O. 4332,
Portland, Oregon 97208

November 15, 1977

Mr. Kenneth Johnson
Oregon Department of Fish & Wildlife
Research and Management Laboratory
17330 S. E. Evelyn Street
Clackamas, Oregon 97015

Dear Ken:

I am enclosing a table to help you determine the number of fish to sample for wire tag retention. To use the table you must first make two decisions.

First Decision: I assume tag loss at XYZ Hatchery will be no greater than:
a. 20%
b. 10%
c. 5%
d. We didn't mark at that hatchery.

Second Decision: I want my estimate of the tag loss to be within plus or minus _____% of the true tag loss at the 95% confidence level.
a. 1%
b. 2%
c. etc. %
d. I tell ya', we didn't mark at that hatchery!

Once you have made these two decisions you can use the tables to decide how many fish to examine. Let's suppose you decided the tag loss at XYZ Hatchery is not greater than 10%. Also suppose you want your estimate to be $\pm$ 1% of the tag loss in the entire population (at the 95% confidence limit). You then use Portion B of the table and .010 under the "Tag loss range" column and you should sample 3457.1684279 fish.

If you sample this many fish and find the tag loss is 7.48326% you can be 95% confident the tag loss in the entire population is somewhere between 6.48326% and 8.48326%.

To obtain the 3457.1684279 fish for sampling you "MUST" go through the entire population of marked fish. The way you remove the sample is up to you. You may use the ten-part sampler (ugg), the table sampler, or dip netting the whole population from one side of a crowder to the other taking every 20th, or something, net full for the tag check.

If this memo or table is not intuitively obvious to the most casual observer, give me a call and I will see if I can confuse you more.

Sincerely,

Robert R. Vreeland

Robert R. Vreeland
Fishery Biologist

Enclosure

NUMBER OF FISH TO SAMPLE FOR TAG RETENTION, AT THREE DIFFERENT ASSUMED TAG LOSS LEVELS, TO BE 95% CONFIDENT THE ESTIMATE IS WITHIN + OR - A SPECIFIC PERCENTAGE OF THE LOSS IN THE TOTAL POPULATION.

A		B		C	
$P \leq .20$		$P \leq .10$		$P \leq .05$	
Number of Fish to sample (n)	Tag loss range $\pm$ (k)	Number of Fish to sample (n)	Tag loss range $\pm$ (k)	Number of Fish to sample (n)	Tag loss range $\pm$ (k)
6,147	.01	3,457	.010	7,300	.005
1,537	.02	1,537	.015	1,825	.010
683	.03	865	.020	812	.015
385	.04	385	.030	457	.020
246	.05	217	.040		
97	.08	139	.050		
62	.10	55	.080		
43	.12	35	.100		
28	.15	25	.120		
		16	.150		