

# ANN CD WIRE TAG PROG-MISSING PROD OR HTC (ODFW) 8906900

## SHORT DESCRIPTION:

Expand coded wire tag program to include all ODFW Columbia Basin hatchery coho and chinook salmon production releases not tagged by other programs. Use data to evaluate trends in hatchery survival, hatchery rearing and release strategies, and as in put to salmon management decisions.

## SPONSOR/CONTRACTOR: ODFW

Oregon Department of Fish and Wildlife

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## SUB-CONTRACTORS:

N/A There are no sub-contractors on this project.

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## GOALS

### GENERAL:

Adaptive management (research or M&E)

### ANADROMOUS FISH:

Research, M&E

### NPPC PROGRAM MEASURE:

8.4C.3; 8.4D.1; 8.4D.3

### RELATION TO MEASURE:

The expanded coded-wire tagging and the photonic marking section of the project relates to measure 8.4C.3 (feasibility of marking hatchery salmon). The expansion of coded-wire tagging to represent all ODFW Columbia Basin hatchery salmon production groups relates to measure 8.4D.1 (Develop expanded catch sampling and marking programs). The expanded coded-wire tagging provides information necessary for the refinements and improvements to model estimates of abundance and fishery impacts (measure 8.4D.3).

### BIOLOGICAL OPINION ID:

NMFS BO - Basic Monitoring

### TARGET STOCK

Youngs Bay Hatchery Coho

### LIFE STAGE

Smolt to Adult

### MGMT CODE (see below)

Monitoring for Stock  
Management Approach (A)

Yakima River Coho

Smolt to Adult

Monitoring for Stock  
Management Approach (S)

Umatilla River Coho

Smolt to Adult

Monitoring for Stock  
Management Approach (S)

Tualatin River Coho

Smolt to Adult

Monitoring for Stock  
Management Approach (S)

Sandy Hatchery Coho

Smolt to Adult

Monitoring for Stock  
Management Approach (A)

Klaskanine Hatchery Coho

Smolt to Adult

Monitoring for Stock  
Management Approach (A)

Bonneville Hatchery Coho

Smolt to Adult

Monitoring for Stock  
Management Approach (A)

Big Creek Hatchery Coho

Smolt to Adult

Monitoring for Stock  
Management Approach (A)

Sandy River Spring Chinook

Smolt to Adult

Monitoring for Stock  
Management Approach (S)

Molalla River Spring Chinook	Smolt to Adult	Monitoring for Stock Management Approach (S)
South Santiam Hatchery Spring Chinook	Smolt to Adult	Monitoring for Stock Management Approach (A)
McKenzie Hatchery Spring Chinook	Smolt to Adult	Monitoring for Stock Management Approach (A)
Clackamas Hatchery Spring Chinook	Smolt to Adult	Monitoring for Stock Management Approach (A)
Bonneville Hatchery Upriver Bright Fall Chinook	Smolt to Adult	Monitoring for Stock Management Approach (A)
Big Creek Hatchery Tule Fall Chinook	Smolt to Adult	Monitoring for Stock Management Approach (A)

**AFFECTED STOCK**

N/A

**BENEFIT OR DETRIMENT**

We anticipate no affect on non-target populations from this coded wire tagging program.

**BACKGROUND**

**Hydro project mitigated:**

N/A Some of the groups tagged by the project may be for mitigation but the project is not directly related to the mitigation requirement.

**Project is an office site only**

**Subbasin:**

N/A Project monitors hatchery production in multiple sites but does not directly yield biological benefits in a specific location.

**Acres affected:**

40

**Habitat types:**

N/A Project is not involved with habitat types.

**HISTORY:**

This project began in 1989 with the goal of production monitoring of all ODFW Columbia Basin hatchery salmon production releases. The tool chosen for this task was the coded wire tag (CWT). Since some of the production was already being tagged by other programs this project funded tagging of the remaining "missing" production groups. This project works closely with the other tagging projects, ODFW stock assessment, Pacific Salmon commission tagging, and ODFW research to create a complete database of release and recovery information for all ODFW hatchery salmon in the Columbia Basin system. Similar projects funded by BPA with WDFW and USFWS complete the goal of total hatchery production monitoring for the entire Columbia Basin. This database is necessary to measure present and future levels of fish production by various hatchery and natural production components and to evaluate the success of BPA's goal of doubling the size of fish runs in the Columbia Basin.

**BIOLOGICAL RESULTS ACHIEVED:**

This project is a production monitoring program and is not designed to improve habitat or result in new production of fish or wildlife. The data provided by this program has been used to improve the survival of hatchery fish through evaluation of hatchery techniques. By representatively marking all hatchery releases it has become clear that certain release times generally produce higher survivals but that releasing fish at several different times reduces the risk of releasing in an unfavorable environment.

**PROJECT REPORTS AND PAPERS:**

An annual report "Annual Coded Wire Tag Program: Oregon Missing Production Groups" is produced for this project. This report includes release and recovery data for all CWT groups released by ODFW in the Columbia Basin system (including those funded by other programs). Data from this project is also used in an ODFW annual report "Stock Assessment of Anadromous Salmonids" that reports release and recovery information for CWT groups released from coastal hatcheries and some Columbia Basin hatcheries.

**ADAPTIVE MANAGEMENT IMPLICATIONS:**

The methods used in this project are well established standard procedures for the coded-wire tagging of juvenile salmon. Survival data from proir tagging is used to adjust future tagging needs to insure adequate tag recovery for analysis. This program provides information fundamental to evaluation of ODFW hatchery salmon production in the Columbia Basin. The information is used to calculate percent survival, ocean catch distribution and contribution rates, and freshwater recovery rates. It also provides information on age composition and size at age. The information provided is also used for evaluation and setting of salmon fishing seasons both in the Columbia River and the Pacific Ocean fisheries. This program also helps establish a long-term database that may be useful in evaluating environmental trends and their effects on salmon.

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**PURPOSE AND METHODS**

**SPECIFIC MEASUREABLE OBJECTIVES:**

Coded wire tag a representative sample from all ODFW Columbia Basin hatchery production releases of coho and chinook salmon that are not being tagged by other programs. Calculate survival, catch distribution and catch contribution rates of all Columbia Basin CWT groups released by ODFW.

**CRITICAL UNCERTAINTIES:**

Uncertainties include: 1) funding and regulation of hatchery production. Changes in hatchery production levels or release strategies may affect tagging needs for the project. 2) Funding and staffing for sampling harvest and/or adult recovery areas. Without complete and adequate sampling of these areas we will be unable to collect the data necessary to accurately calculate survival, catch distribution and catch contribution rates. Risks: Since this project monitors existing activities we anticipate no change in existing risks to habitat, wild fish or wildlife directly related to this coded wire tagging project. Results of the project may provide data that can be used to reduce risks to other stocks through changes in management of hatchery production.

**BIOLOGICAL NEED:**

Without this program, assessment of hatchery production, survival, catch distribution and catch contribution rate would have to be based on data from other hatcheries or release strategies. Different hatcheries and release strategies have been shown to effect all these measurements of hatchery production, thus invalidating the assumption that they represent the otherwise unmarked production. This project is needed to provide data for evaluation at all hatcheries and for data input to the fishery management decision making process. This project does not assume present performance or current trends but measures these variables for the target populations. The project measures survival of hatchery salmon from the smolt stage to harvest or adult return.

**HYPOTHESIS TO BE TESTED:**

N/A Since this is a monitoring program there is no testable hypothesis.

**ALTERNATIVE APPROACHES:**

Currently the coded-wire tag is the only generally accepted method for this kind of large scale hatchery monitoring. The 1997 contract added a task to evaluate a new marking technique for possible future use (Photonic marking).

**JUSTIFICATION FOR PLANNING:**

The project focuses primarily on monitoring ongoing anadromous fish production projects. The monitoring of these projects is critical for evaluating there success or failure as well as providing information on the affects/interactions with other stocks/populations.

**METHODS:**

Groups to be tagged are selected by comparing hatchery production schedules and tagging requests from other coded wire tagging programs. Any ODFW Columbia Basin salmon production groups not scheduled for tagging are then candidates for tagging under this program. Tagging is done by the ODFW fish identification section using the same techniques used for all coded wire tagging in Oregon. A pre-release check of fin clip quality and tag retention is performed on 400-500 fish a minimum of two weeks after tagging. Fish are then released according to the hatchery production schedule. Returning adults are sampled from the catch of ocean and freshwater fisheries, the hatchery, and the spawning ground surveys. Ocean and Columbia River freshwater fisheries are sampled by the fishery management agency responsible for each fishery, using statistical sampling

techniques to estimate the total catch and total number of CWT fish. All fish that return to hatcheries or carcasses recovered on spawning grounds are checked 1) Post release survival. If survival of the tagged fish after release is substantially less than anticipated not enough tags will be recovered to provide for statistical analysis. 2) Incomplete or inadequate sampling of harvest and/or adult recovery areas can lead to inadequate or biased tag recovery.

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## PLANNED ACTIVITIES

### SCHEDULE:

**Planning Phase**            **Start** 09/97                            **End** 10/97                            **Subcontractor**

**Task** Identify the specific groups to be tagged. This will depend on production and funding changes each year and is done as part of the contracting agreement.

**Implementation Phase**   **Start** 01/98                            **End** 12/98                            **Subcontractor**

**Task** The plans call for tagging the juvenile fish in 1998. These fish will be released in 1998 and spring 1999.

**O&M Phase**                **Start** 06/99                            **End** 12/02                            **Subcontractor**

**Task** Returning adults will be sampled and tags read from 1999 to 2002. Data will be analyzed yearly as it becomes available.

### PROJECT COMPLETION DATE:

Ongoing

### CONSTRAINTS OR FACTORS THAT MAY CAUSE SCHEDULE OR BUDGET CHANGES:

Production and release of hatchery salmonids in the Columbia Basin is regulated by NMFS under the Endangered species Act. The groups to be tagged depend on funding for the production and tagging of hatchery salmon in Oregon. Once the fish are tagged the program is dependent on the various fishery management agencies for sampling of salmon fisheries to recovery the coded wire tags.

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## OUTCOMES, MONITORING AND EVALUATION

### SUMMARY OF EXPECTED OUTCOMES

#### Expected performance of target population or quality change in land area affected:

This project monitors performance of the target populations but is not expected to directly affect that performance. Project data will be used to evaluate hatchery production techniques which may lead to increased performance of hatchery fish as well as reduced risks and/or increased benefits to natural production.

#### Present utilization and conservation potential of target population or area:

All the target populations are hatchery stocks with varying levels of utilization and conservation potential. Other programs targeting 100% marking of coho salmon and Willamette Basin spring chinook salmon should increase the utilization potential of these stocks. As hatchery stocks the conservation potential has yet to be determined, however, there is some potential for these stocks in rebuilding or restoring natural production in specific cases.

#### Assumed historic status of utilization and conservation potential:

Historic utilization status is based on historic fisheries management strategies. The conservation potential for hatchery fish is still being evaluated.

#### Long term expected utilization and conservation potential for target population or habitat:

The conservation potential for hatchery fish is still being evaluated.

#### Contribution toward long-term goal:

We expect to achieve production monitoring on all ODFW Columbia Basin salmon releases. We also expect to continue development of the CWT database for evaluation of hatchery salmon production and salmon fisheries.

**Indirect biological or environmental changes:**

Evaluation of the project data may lead to changes in hatchery production techniques. These changes should result in increased performance of hatchery fish, reduced risks and/or increased benefits to natural production. This project also helps to establish a long-term data set that can be used for a variety of evaluations, such as correlation of measured environmental factors and salmon survival.

**Physical products:**

The 1997 plans call for tagging 150,000 fall chinook, 190,000 spring chinook, and 500,000 coho. We anticipate recovery of 4,322 tags from fish marked under prior contract phases. The 1998 plans will depend on funding and production levels for ODFW hatcheries in 1998 and anticipated survival rates for fish already tagged.

**Environmental attributes affected by the project:**

N/A The project has no direct or indirect affect on environmental attributes.

**Changes assumed or expected for affected environmental attributes:**

N/A See above.

**Measure of attribute changes:**

N/A See above.

**Assessment of effects on project outcomes of critical uncertainty:**

Uncertainties about hatchery funding and regulation will be resolved by the time each group of fish is released. This should result in adaptation of the tagging schedule to accommodate the tagging requirements. This will be monitored by reviewing final release data from ODFW Columbia Basin hatcheries to insure all production groups have an associated tag group. Uncertainties about complete and adequate sampling of harvest and adult recovery areas will be assessed by reviewing the tag recovery data.

**Information products:**

This program provides information fundamental to evaluation of ODFW hatchery salmon production in the Columbia Basin. The information is used to calculate percent survival, ocean catch distribution and contribution rates, and freshwater recovery rates. It also provides information on age composition and size at age. The information provided is also used for evaluation and setting of salmon fishing seasons both in the Columbia River and the Pacific Ocean fisheries. This program also helps establish a long-term database that may be useful in evaluating environmental trends and their effects on salmon.

**Coordination outcomes:**

Successful coordination of the various Columbia Basin tagging operations will result in production monitoring of all Columbia Basin hatchery salmon releases.

**MONITORING APPROACH**

The project will have no direct biological or environmental outcomes. The region should measure the projects indirect outcomes through the use of the information to affect management of Columbia Basin salmon.

**Provisions to monitor population status or habitat quality:**

The main purpose of the project is to monitor the production and status of all ODFW Columbia Basin coho and chinook hatchery populations.

**Data analysis and evaluation:**

Data generated will be used to calculate percent survival, ocean catch distribution, catch contribution, and freshwater recovery rates for ODFW hatchery coho and chinook salmon. It also provides information on age composition and size at age.

**Information feed back to management decisions:**

Information resulting from this project will be available through the annual report, other ODFW reports, and on the Pacific States Marine Fisheries Commission's on-line CWT computer database. Future hatchery management decisions based on this and other information will determine hatchery production programs and thus the need for future tagging operations.

**Critical uncertainties affecting project's outcomes:**

Improvements in the stability of hatchery and sampling funding would help resolve the critical uncertainties associated with this project. Broader scale research needs include the relationship between post-release environmental conditions and hatchery salmon survival, the affects of hatchery operations on natural production, and the conservation potential of hatcheries.

**EVALUATION**

- 1) Representative tagging of all ODFW Columbia Basin hatchery coho and chinook salmon production releases.
- 2) Data available for yearly monitoring of hatchery production in the Columbia Basin and evaluation of harvest management strategies.
- 3) Hatchery monitoring data available in scope board enough and long enough for evaluation of long-term region wide biological and ecological factors.

**Incorporating new information regarding uncertainties:**

It will be used to determine which groups to tag and how many fish to tag for each group. Development of new tagging techniques or improvements to existing techniques will affect the type and method of tagging used for this project.

**Increasing public awareness of F&W activities:**

The coded-wire tagging process involves a visible external mark (removed adipose fin) that is recognized by many in the general public. Tags from marked fish are collected in public fisheries and voluntarily turned in by many people who then receive information related to their fish. This demonstrates the regions commitment to scientific management and monitoring of the regions salmon resource. Data generated from the CWT program is also used in much of the analysis presented to the public.

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**RELATIONSHIPS**

**RELATED BPA PROJECT**

8906500 USFWS missing production groups

8906600 WDFW missing production groups

**RELATIONSHIP**

Complementary project to insure complete Columbia Basin hatchery production monitoring.

Complementary project to insure complete Columbia Basin hatchery production monitoring.

**RELATED NON-BPA PROJECT**

Pacific Salmon Commission tagging program for Oregon.

ODFW Stock Assessment Program.

**RELATIONSHIP**

Works in conjunction with this project to insure complete hatchery production monitoring for ODFW salmon hatcheries.

Works in conjunction with this project to insure complete hatchery production monitoring for ODFW salmon hatcheries.

**OPPORTUNITIES FOR COOPERATION:**

Tagging requirements and funding of tagging at ODFW hatcheries is planned cooperatively between this project, the above listed projects and ODFW field staff. All tagging, tag recovery and data reporting for ODFW (irrespective of funding source for the tagging) is done through a central ODFW Fish Identification Section. Thus equipment, personnel and expertise is shared among all projects funding tagging at ODFW hatcheries. Coordination and regulation of region wide tagging and tag recovery is handled through the Pacific States Marine Fisheries Commission. This provides for region wide consistence in tagging programs, data collection and data sharing.

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**COSTS AND FTE**

**1997 Planned:** \$175,000

**FUTURE FUNDING NEEDS:**

**PAST OBLIGATIONS (incl. 1997 if done):**

<u>FY</u>	<u>\$ NEED</u>	<u>% PLAN</u>	<u>% IMPLEMENT</u>	<u>% O AND M</u>	<u>FY</u>	<u>OBLIGATED</u>
1998	\$190,000	2%	56%	42%	1989	\$117,993
1999	\$190,000	2%	56%	42%	1990	\$110,000
2000	\$200,000	2%	56%	42%	1991	\$294,991
2001	\$200,000	2%	56%	42%	1992	\$35,000
2002	\$210,000	2%	56%	42%	1993	\$98,950
					1994	\$45,341
					1995	\$125,000
					1996	\$125,689
					1997	\$140,000
TOTAL:						\$1,092,964

Note: Data are past obligations, or amounts committed by year, not amounts billed. Does not include data for related projects.

**OTHER NON-FINANCIAL SUPPORTERS:**

N/A No other groups provide financial or other support for the project. However, other programs fund much of the tagging of ODFW hatchery salmon in the Columbia Basin. This project only funds those groups not funded by these other programs.

**LONGER TERM COSTS:**

No costs for tagging performed under the 1998 contract will occur after the year 2002. Tagging operations are expected to continue indefinitely as long as hatchery salmon are released by ODFW in the Columbia Basin. The last tag returns of fish tagged in 1998 are expected in the year 2002.

**1997 OVERHEAD PERCENT:** 22%

**HOW DOES PERCENTAGE APPLY TO DIRECT COSTS:**

[Overhead % not provided so BPA appended older data.] Total direct project costs.

**CONTRACTOR FTE:**

There is one person directly employed on this project (employed for 4 months/year or 0.33 FTE). Tagging supervisors and temporary taggers are paid for by this project but not directly employed.

**SUBCONTRACTOR FTE:** N/A There are no sub-contractors.