

# Hatchery Update

## *Eagle Creek National Fish Hatchery*

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### Introduction

The U.S. Fish and Wildlife Service (USFWS) operates 12 National Fish Hatcheries (NFH), one Fish Health Center, and one Fish Technology Center in the Columbia River basin. The Columbia River Fisheries Program Office (CRFPO) works with 6 of these facilities to help evaluate release programs and conduct special studies. The CRFPO maintains the Service's hatchery database as well.

### About Eagle Creek National Fish Hatchery

The hatchery is located on Eagle Creek, 12.4 miles upstream from its confluence with the Clackamas River, in Clackamas County, Oregon. The facility began producing tule fall and spring Chinook salmon in 1956. The hatchery abandoned fall Chinook production very quickly, but continued to raise spring Chinook salmon until 1987, when production was discontinued due to funding and other production priorities. Eagle Creek NFH currently produces coho salmon and winter steelhead exclusively. Funding for the hatchery is through Mitchell Act funds, which are administered by NOAA Fisheries.

Rearing facilities at Eagle Creek NFH include 75 8'x80' raceways and one adult holding/rearing pond. The main water source for the hatchery is Eagle Creek.

### Hatchery Goal

Today the U.S. Fish and Wildlife Service operates Eagle Creek National Fish Hatchery to restore and maintain coho salmon and winter steelhead to provide sport and commercial fisheries and provide a source of coho salmon for Tribal restoration programs upstream of Bonneville Dam.

### Hatchery Assessment

All hatcheries must consider their potential for adversely affecting the aquatic community. Wild steelhead in Eagle Creek are part of the Lower Columbia River population listed as threatened under the Endangered Species Act (ESA). To help us assess our impacts, we revised our Draft Hatchery and Genetic Management Plans for National Fish Hatcheries in the lower Columbia River, including Eagle Creek NFH, in 2004. These management plans are written to assess our program and meet ESA requirements. In addition to completing documentation to comply with our ESA responsibilities, we must also meet our mitigation responsibilities under the Mitchell Act as well as meet Tribal Trust and U.S. v Oregon obligations. In order to balance these sometimes conflicting mandates, we regularly meet with our co-managers to discuss operation and management of the hatchery. More research is needed to assess the impacts of both hatchery releases and natural spawning coho and winter steelhead on wild steelhead in Eagle Creek. To help guide hatchery operations in Eagle Creek a Comprehensive Hatchery Management Plan is being prepared and will be finalized, later in 2005.

### Hatchery and Wild Fish Interactions

The Service has developed monitoring and evaluation programs to determine the extent of ecological interactions between fish released from the hatchery and wild fish populations in the Eagle Creek subbasin. For example, the migration timing of hatchery juveniles released volitionally in the spring was determined using

radio-telemetry. A monitoring program is in place to (1) determine the movement and behavior of adult hatchery fish using radio telemetry; and (2) estimate the reproductive success and contribution to smolt production of hatchery fish using genetic analyses.

### Steelhead Density Study

A three year density study has been initiated to determine which rearing density will maximize survival and adult yield of winter steelhead at Eagle Creek NFH. The results of this study may be applicable to other hatchery programs that support recreational and Tribal fisheries.

Reports on various hatchery evaluations and monitoring programs can be found on the web at: <http://www.fws.gov/columbiariver/>

### Adult Escapement Goal

A return of 4,000 adult coho salmon is needed to collect enough eggs for a full production of 0.5 million fish for on-station volitional release, in addition to a 1.3 million egg and 1.05 million pre-smolt transfer for Tribal and the State of Idaho restoration programs, above Bonneville Dam.

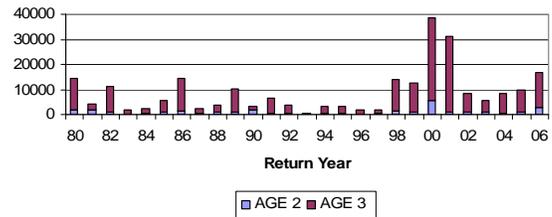
A return of 500 adult winter steelhead is needed to collect enough eggs for full production for the on-station volitional release of 150,000 smolts.

### Sampling of Returning Fish

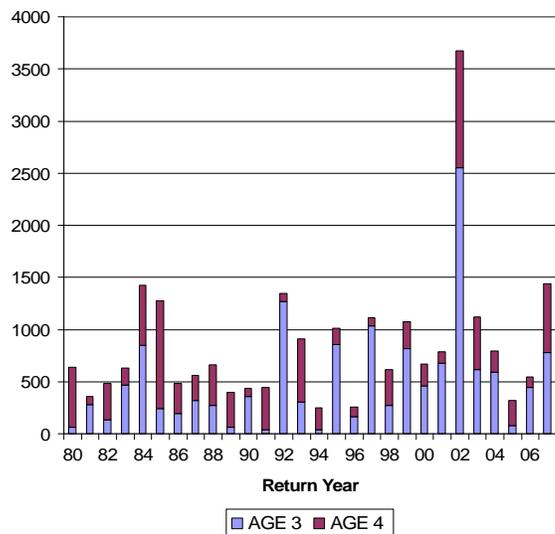
A proportion of returning adults are sampled at the hatchery for biological information. Sex and length are recorded and scales are collected so that age can be determined. Fish are also sampled for coded-wire tags implanted in the snouts of fish during juvenile rearing. By using sample information and the number of returning fish, it is possible to calculate the number of returning fish for each age group and, consequently, the number of fish returning from each brood year or release year. On average, 12% of Eagle Creek's coho have returned as two year old male jacks, and 88% as three year old adults. On average, 60% and 40% of Eagle Creek's winter steelhead have returned as 3 and 4 year old fish respectively. Occasionally, some 5 year old steelhead have been observed.

The number of fish returning from a hatchery release is influenced by early rearing at the hatchery, downstream migration, ocean conditions, and the harvest rate in the various fisheries.

Number and Age Composition of Returning Coho Salmon Adults



Number and Age Composition of Returning Winter Steelhead



### Contribution

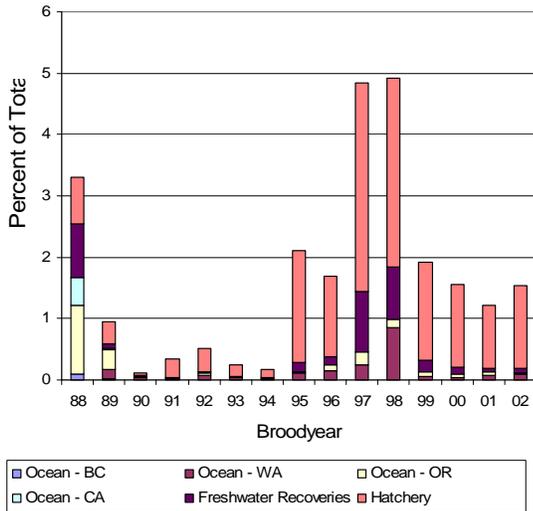
The coded-wire tag marking program makes it possible to determine total survival rates and contribution to several fisheries. Since broodyear 1988, an average of 65% of Eagle Creek NFH coho salmon return to the hatchery

while remaining recoveries of Eagle Creek coho occur in the lower Columbia River and tributary fisheries, followed by the ocean sport and commercial fisheries.

Survival for Eagle Creek NFH coho salmon averages 1.7% of the total number of fish released for the brood years 1988 through 2001.

Eagle Creek winter steelhead, contribute significantly to recreational fisheries in the lower Columbia, Willamette, Clackamas Rivers and Eagle Creek. Past studies have indicated that for every fish returning to the hatchery another two to three fish are caught in the sport fishery.

Eagle Creek Coho Salmon  
Percent Recoveries



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