



Hatchery Update

Carson National Fish Hatchery



Introduction

Carson National Fish Hatchery (CNFH) is one of 12 National Fish Hatcheries operated by the U.S. Fish and Wildlife Service (USFWS) in the Columbia River basin. CNFH works closely with a USFWS Fish Health Center (FHC) Fish Technology Center (FTC) and Fisheries Program Office (FPO) also located within the Columbia River basin. The Columbia River Fisheries Program Office (CRFPO) works with 6 of these hatcheries as part of a Hatchery Evaluation Team (HET) to conduct research on, and implement Hatchery Reform issues.

About Carson National Fish Hatchery

CNFH is located 13 miles northwest of Carson, in Skamania County, Washington. Situated at the confluence of the Wind River and Tyee Springs, the facility began producing fall Chinook salmon and resident trout in 1938. Early attempts to introduce spring Chinook salmon into the Wind River between 1938 and 1940 met with little success due to impassable Shipherd Falls, two miles upstream from the mouth of the Wind River.

The hatchery was remodeled in 1956 under the Mitchell Act in order to establish a run of spring Chinook salmon in the Wind River. At that time, a fish ladder was also built at Shipherd Falls to allow salmon passage.

Spring Chinook salmon production began to take precedence over other production until 1976, when the last fall Chinook salmon were released into the Wind River. Carson NFH currently produces spring Chinook salmon exclusively. Support for the hatchery is through Mitchell Act funds, which are administered by the Department of Commerce.

Facilities at Carson NFH include 46 raceways, two earthen rearing ponds, two adult holding ponds, an egg incubation building, and several administrative and support buildings. Four residences provide on station housing for staff. Staff residence provides for emergency and security support for the fish resources and physical facility. The primary water supply at CNFH is Tyee Springs, and secondarily the Wind River.

Hatchery Purpose / Goal

CNFH operates as part of the Columbia River Fisheries Development Program under the 2008–2017 United States v Oregon Management agreement. The primary purpose of CNFH under this agreement is to release 1.14 million healthy spring Chinook salmon smolts directly into the Wind River from the hatchery site. These releases help mitigate for fish losses in the Columbia River basin due to the impacts of main stem hydropower, and other basin development. Releases also contribute to important terminal tribal ceremonial, and subsistence fisheries as well as non-tribal sport fisheries. Management strategies also provide for adequate adult escapement (approximately 1,200 adult fish) back to the hatchery in order to ensure continued production goals. Spring Chinook salmon from Carson NFH are also an important part in restoration and mitigation programs.

In addition to its primary responsibilities under US v OR, CNFH currently produces spring Chinook salmon under cooperative agreements with several Northwest Indian Tribes. CNFH produces 250,000 spring Chinook salmon smolts for the Confederated Tribes of the Umatilla Indian Reservation, Pendleton, Oregon (CTUIR). These smolts are transported to the Walla Walla River drainage for release. CNFH also produces 50,000 spring Chinook salmon smolts for the Confederated Tribes of the Warm Springs Reservation of Oregon (CTWSRO). These smolts are part of an on-going research program and are transported to the Hood River sub-basin for release.

Hatchery Operations

Hatchery operations are guided by current USFWS Policies, a Comprehensive Hatchery Management Plan established in 2002 and a Hatchery Genetic Management Plan established in 2004. These policies, plans and on-going review by the Hatchery Evaluation Team and the Hatchery Review Team ensure that the USFWS and CNFH meets its responsibilities and obligations under all management plans, agreements, treaties, and Congressional actions; including the Endangered Species Act.

Adult Escapement Goal

A return of approximately 1,200 adult salmon is needed to collect enough eggs to meet production goals. On station release is for 1.17 million spring Chinook salmon.

Sampling of Returning Fish

A proportion of returning adults is sampled at the hatchery for biological information. Sex and length are recorded and scales are collected so that age can be determined. 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, each release year. On average, since 1982, 1% of CNFH spring Chinook salmon have returned as three year old adults, 76% as four year old adults and 23% as 5 year old adults.

The number of fish returning from a hatchery release is influenced by many factors including the size, condition and health of fish at release, impact of dams, predators, and water flow during downstream migration, ocean conditions during the entire oceanic life span, harvest rates on returning adults in the various fisheries, upstream migration barriers, water temperatures throughout the life cycle, habitat obstructions as well as opportunities, a host of behavioral characteristics unique to each stock and the genetic attributes specific to each discrete population unit.

Contribution

Returning adult fish are also sampled for microscopic coded-wire tags implanted in their snouts during juvenile rearing. Analysis of the returned coded-wire tags enable highly accurate determinations of survival rates among and between differentially marked groups of fish as well as their differential contribution to various fisheries.

The coded-wire tag marking also makes it possible to determine total survival rates and contribution to several fisheries. Since 1982, on average, approximately one half of returning adults go to the hatchery while the

remaining recoveries occur almost exclusively in the Columbia River and the Wind River fisheries. This included harvest in the freshwater sport fishery, tribal treaty and subsistence fishery, and Columbia River gill net fishery.

PIT Tag Detection System

CNFH also implants 15,000 PIT tags into each release group. PIT tags are 'Passive Integrated Transponders' that transmit a unique individual coded signal. This signal is passive in that it requires no internal power source such as a battery. The PIT tag signal is activated by a reader or PIT tag 'detector'. The detector powers or excites the PIT tag circuitry by radio frequency induction and receives the unique code back from the tag. Radio frequency identification does not require line of sight,

and tags can be read as long as they are within the range of a detector. These tags can be detected through many materials such as water, wood, plastic, fabric, fiberglass, rock, most ferrous metals as well as animal bone and tissue.

PIT tag 'detectors' are located throughout the Columbia River basin at dams, hatcheries, and other fish passage facilities. Detections of individually coded tags provide information for assessing migrational timing as well as survival rates for each release year.

In spring 2007, a PIT tag detector was installed in the adult fish ladder at CNFH allowing better estimates of age composition, and timing of returning adults. Additionally, by having other PIT tag detectors along salmon migratory routes, greater details and accuracy about return run timing and age composition may be obtained.

For more information, please contact:

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