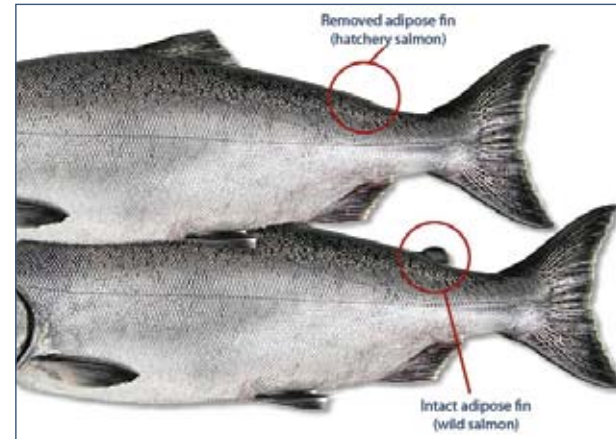


SELECTIVE HARVEST, THE OKANOGAN FISH WEIR AND SCIENCE SUPPORTS CHIEF JOSEPH HATCHERY



Selective harvest is an important tool for collecting natural-origin broodstock for the hatchery and helps minimize the proportion of hatchery salmon on the spawning grounds. “Studies have shown that too many hatchery fish on the spawning grounds are a competitive and genetic risk to wild spawners. Removing excess hatchery fish is critical to the long term viability of the population,” said Casey Baldwin, senior research scientist for the CTFW Department. Our fishermen have been selectively harvesting hatchery salmon (clipped) while at the same time releasing wild salmon unharmed using a purse seine deployed from the fishing boat. While fishing from the boat, fisheries staff use a large seine (a net with sinkers on one edge and floats on the other) and when it’s ends are pulled together they can capture a large amount of fish at one time. Another selective harvest method we use is called a fish weir. The weir is set up in the Okanogan

River near Malott, Washington. It is used by our fisheries staff to survey fish, catch hatchery salmon and allow natural-origin salmon to continue to the spawning grounds. Some natural-origin broodstock will be collected for the hatchery program. Weirs are a traditional fishing structure that was once used to capture salmon by tribal fishermen. Today, the modern structure looks similar to the traditional weir but is built of metal and PVC pipe instead of wood.

The science behind Chief Joseph Hatchery guides everything we do. Data collection and analysis, combined with structured decision-making is at the center of this modern fish production facility. The CJH Science Program has designed and implemented a robust research, monitoring and evaluation program to ensure that learned knowledge is used in the annual decision and planning cycle.

“The Chief Joseph Hatchery represents an important step forward for the Colville Confederated Tribes, and the long awaited promise of returning salmon to the Upper Columbia. This program is unique in its management and seeks to find a balance between artificial and natural production and address the often conflicting goals of increased harvest and conservation of natural occurring resources.”

- Patrick Phillips, Chief Joseph Hatchery Manager

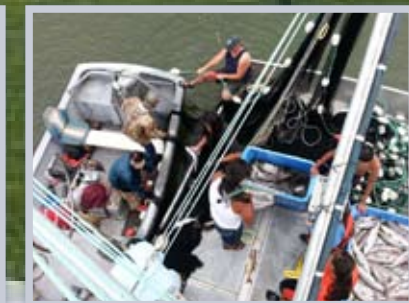


CHIEF JOSEPH HATCHERY

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For more information about Chief Joseph Hatchery, go to www.colvilletribes.com/cjhp.php

CHIEF JOSEPH HATCHERY



**“PRODUCING SALMON
FOR GENERATIONS TO COME”**

Chief Joseph Hatchery (CJH) is a state-of-the-art facility that was built to increase spring, summer, and fall Chinook salmon in the Okanogan and Columbia Rivers. The hatchery will produce up to 2.9 million Chinook salmon annually and will provide salmon for tribal ceremonies, subsistence needs for tribal members, and increase recreational fishing opportunities for all. The \$50 million hatchery was completed in May of 2013 and is located in Bridgeport, Washington next to Chief Joseph Dam.

RAISING SALMON IN THE HATCHERY

- As many as 4 million salmon eggs can be raised in the incubation room at one time. Once the male sperm and female eggs are activated by water, the fish eggs will remain in this room until they grow to one inch in length and are then transported to larger tanks.
- The Chinook salmon fry are placed in the rearing raceways where they grow to fingerling size. The raceways can hold up to 50,000 fish.
- The salmon grow to smolt size in the rearing ponds. The rearing ponds can hold up to 250,000 summer Chinook and 700,000 spring Chinook.
- Salmon raised at the hatchery will have their adipose fin removed when they are (about 4 inches in length) prior to release. The hatchery's

staff uses a trailer that has an automated system that can sort, clip and tag juvenile salmon. This system can process over 60,000 fish in an eight hour period. This mass marking system assists fish managers and fishermen alike to easily identify which fish are hatchery fish.

- Omak and Riverside ponds can hold up to 400,000 Chinook juveniles for release into the Okanogan River.
- Approximately 700,000 spring Chinook salmon and 900,000 summer/fall Chinook salmon will be released from the hatchery directly into the Columbia River each year.

THE LIFE CYCLE OF THE SALMON

ALEVIN - An alevin looks like a fish with a huge pot belly, which is the remaining egg sac. Alevin remain protected in the gravel riverbed, obtaining nutrition from the egg sac until they are large enough to fend for themselves in the stream.

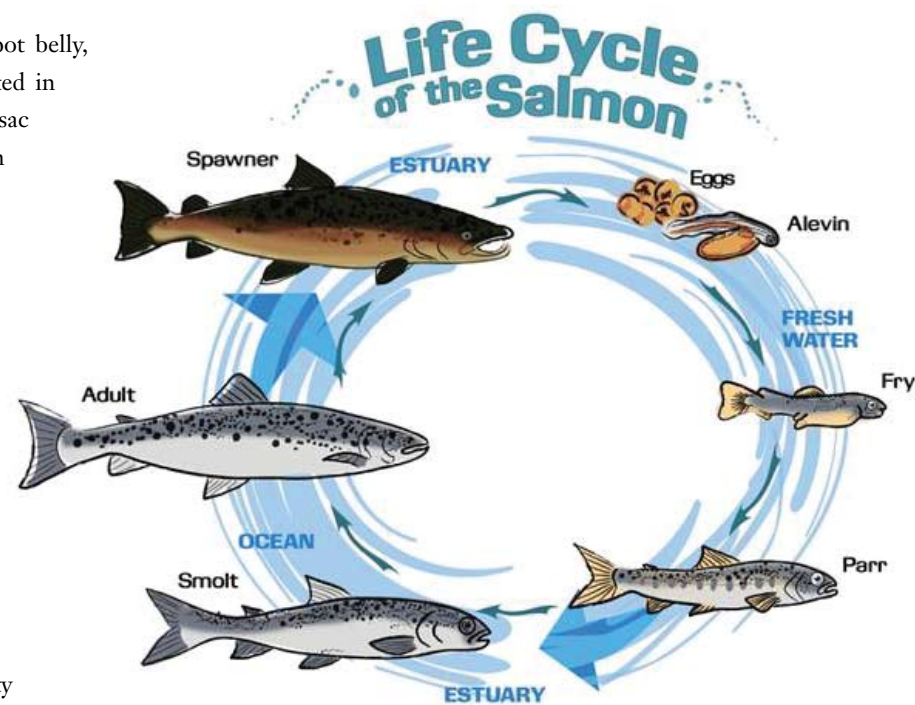
EMERGENCE - The act of salmon fry leaving the gravel nest.

FRY - A juvenile salmonid that has absorbed its egg sac and is rearing in the stream.

PARR - Also known as fingerling is a large juvenile salmonid, between a fry and a smolt.

SMOLT - A juvenile salmonid which has reared in-stream and is preparing to enter the ocean. Smolts exchange the spotted camouflage of the stream for the chrome of the ocean.

ANADROMOUS - Fish that live part or the majority of their lives in saltwater, but return to freshwater to spawn.



CHIEF JOSEPH HATCHERY AT A GLANCE

1. RESERVOIR WATER INTAKE

On the upstream face of Chief Joseph Dam, a screened intake draws water from the dam's reservoir for use at the hatchery. A 36" steel pipe on the downstream face of the dam delivers the water to a buried pipeline starting near the foot of the dam.

2. RESERVOIR WATER PIPELINE

The buried pipeline conveys water drawn from the dam's reservoir to the hatchery headbox.

3. FISH LADDER

Cool water from the hatchery flows through this ladder to attract adult Chinook salmon that have returned after several years in the ocean.

4. ADULT SALMON RACEWAYS

Adult salmon ("broodstock") that are collected on the purse seine fishing boat, weir, or enter the fish ladder are directed to raceways where they are held until their eggs ripen.

5. SPAWNING BUILDING

In the spawning building, fish culturists collect and fertilize eggs from the returned adult fish. The fertilized eggs are transferred to the main hatchery, where they are placed in incubators.

6. MULTI-USE PIPELINE CORRIDOR

Major pipelines run through the corridor between the main hatchery and the broodstock area. These include the reservoir-water supply line going to the headbox, a groundwater supply line going to the spawning building, and a hatchery water discharge line going to the fish ladder.

7. ADMINISTRATION BUILDING

Hatchery managers and administrative staff work in this building, which also features meeting space and an educational display area.

8. PUBLIC USE TRAIL

A trail outside the fenced hatchery grounds has been reconstructed for public use.

9. GROUNDWATER PIPELINE CORRIDOR

A pipeline buried in this corridor delivers groundwater to the hatchery from five wells at Bridgeport State Park.

10. HEADBOX

The headbox is the central arrival point for water supply to the hatchery. Groundwater and reservoir water are aerated, excess nitrogen is removed, the river water is filtered, and the water is conveyed to various end uses at the hatchery.

11. STORAGE BUILDING

This building is the hatchery's home for supplies, spare parts, vehicles and trailers.

12. HATCHERY BUILDING

This 14,000-square-foot building is where salmon eggs are incubated and salmon fry are raised. It also houses a laboratory, a shop area, some offices, fish food storage, and equipment for treating and chilling water.

13. REARING RACEWAYS

Chinook salmon fry are raised to small fingerlings in these two banks of 20 raceways, each 10 feet wide and 110 feet long.

14. REARING PONDS

Chinook salmon are raised from fingerlings to smolts in 210-foot-long rearing ponds, one that is 80 feet wide and two that are 50 feet wide.

15. CLEANING WASTE POND

Fish waste from the rearing raceways and ponds settles in this pond for later removal from the site.

16. GENERATOR

A generator is available on site to provide power in the event of failure of the main power source for any reason.