



Last Gasp

Bio-technician Ken Calica tossed a fresh-killed chinook salmon into the elevator, to be hoisted to the spawning area.

## Cornerstone Of Fishery Enhancement

**A Little-celebrated Event That Holds The Key To The Future Of Anadromous Fish In the Columbia River System**

While hundreds of people celebrated the dedication of the Warm Springs National Fish Hatchery, dozens of chinook were ripening in the holding ponds below, and a handful of men were preparing for the first salmon spawning at the hatchery.

For countless years mature salmon have migrated up the Warm Springs River to deposit their eggs and sperm in the gravel beds of the hospitable tributary, swapping their own lives for the next generation.

This year, 170 salmon have met a rather different fate. Detoured from the river through fish ladders, the mature spawners found themselves corralled in cement ponds never to reach their natural destination but ultimately to accomplish their mission.

It was the first artificial salmon spawning in the Warm Springs River, a little celebrated event that is the cornerstone of fishery enhancement.

In recent years, returning salmon and steelhead have had an obstacle course of nets, dams, and other evidences of humanity to negotiate, and their numbers have diminished dramatically. In the sixties the Tribes and the U.S. Fish and Wildlife Service cooperated on the planting of fertilized salmon eggs in the Warm Springs River. But not until the hatchery was built was native stock used to replenish itself.

The steelhead had their day last April, their spawning having created 190,000 fingerlings that will head downstream next spring.

Early returning chinook salmon first wiggled and leaped their way up the hatchery ladder in June and have been swimming circles in the holding ponds ever since. Late arrivals were still coming in hours before the spawning.

Fish and Wildlife monitoring in the Warm Springs River during the last four years has indicated at least two peaks in chinook returns and spawning

was done within each grouping. In fact, the hatchery is committed to maintaining the natural genetic characteristics and variability of the native stock. This will be accomplished partly by spawning wild fish in the same proportion as hatchery fish. Since this was the first year, all the spawners were wild.

The goal for this season's spawning is 600,000 eggs, 90 per cent of which will survive beyond hatching, according to hatchery manager Gary White. An average of 120,000 are collected and fertilized in one day.

### A SPAWNING DAY

A spawning day starts in the holding ponds where "ripe" fish are separated from the green. Bio-technicians in hip boots wade among the throngs of anxious fish, struggling one to the surface, squeezing its belly to check for readiness, and tossing it into the appropriate pond. "Male! Female!" are about the only words exchanged except for light oaths when a thrashing tail drenches a technician.

The ripe fish are forced down an alley by an electric crowder and the bio-tech joins them in the tank to deal sharp blows to their skulls, killing them instantly. They are hoisted by elevator to the spawning area.

When the hatchery is in full operation, a neater, more humane method of preparing the salmon will be employed. Anaesthetic will be administered in the tank, and the elevator will deliver the subdued fish to a guillotine which will sever the spinal cord and cut a major artery, draining the body of all its blood.

The fish bodies slither down a chute, are sorted by sex and placed in "early" and "late" groups, determined by a fin marking.

The very simplest of equipment and methods are used for the actual spawning. Grasping the female by the gills, the staff person holds her over a bucket,

and slits her belly open. Out pours a stream of orange-red eggs — about 3500 from the average spring chinook.

For every few females, one male gets into the act. He is poised over the bucket and squeezed firmly, thus releasing the sperm in a milky stream. The eggs and sperm are stirred together by hand but since there is little or no activity between the eggs and sperm until they are in a water environment, water is added almost immediately. After sitting for a few minutes, the bucketful of fertilizing eggs is rinsed several times to wash out excess sperm, blood, and other foreign matter as well as to prevent fungus from growing.

Eggs are transferred to screen trays, four cups or about 6500 eggs per tray. Hand-carried upstairs to tubs, the trays are placed in a chemical solution for one hour, to insure that the deadly kidney fungus common in

adult fish is not passed on to the eggs. Every transfer is done as gently as possible because jarring can affect fertilization and the early stages of fetal growth.

Trays are then slid into shelves, much like drawers, where they are kept for two months, while water at a regulated temperature constantly bathes the eggs.

When the eggs "eye up," or develop to the point where the eye is identifiable, the unfertilized or unhealthy ones are sorted out. A 10 per cent loss is expected at this stage.

After two months, hatched

eggs appear as tiny fish with yolk sacs attached to their bellies. This sac is absorbed by the fish, which then becomes known as a "button-up fry."

It is then to the almost-real world of the rearing ponds, where fingerlings swim and eat until they are released into the river.

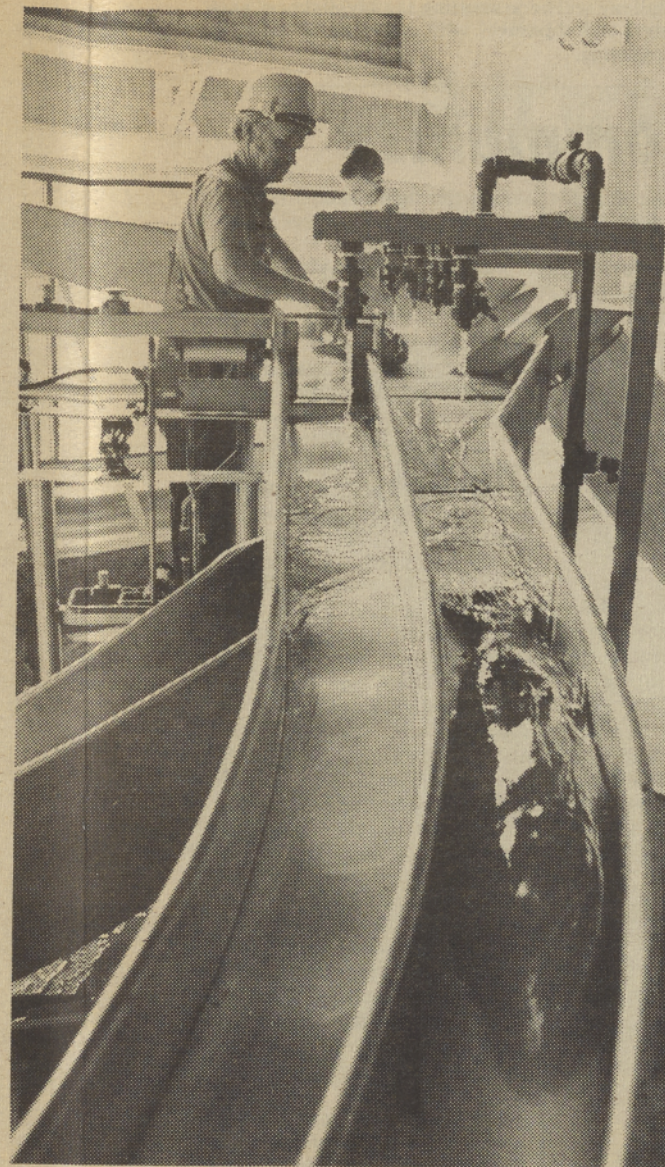
That is indeed the real world — holding in store a long journey to the ocean and a return trip fraught with the frustrations of man's obstacles.

Only a fraction of the released fish will make it back, but the hatchery will maximize those returns with its annual artificial spawning.

Story And Photos

By Cynthia Stowell

## Spawning



Down The Chute

Hatchery Manager Gary White guided salmon down the chute to the spawning table for sorting. The apparatus, when in full operation, will sever the spinal cord and bleed the fish prior to egg and sperm taking.



Shelf Life

A biologist with the U.S. Fish and Wildlife Service and assistant hatchery manager Paul Hemerick carefully moved fertilizing eggs from a fungicidal chemical solution to shelves where the eggs incubate for two months in a constant bath of water.

## Cooperation The Theme Of Dedication

by Cynthia Stowell

The anadromous fish of the Columbia River system were saluted at the dedication of the Warm Springs National Fish Hatchery August 26. But the stars of the show were the people and agencies who have cooperated to assure a future for that threatened resource.

A crowd of about 300 gathered at the nearly completed facility on the Warm Springs River to hear more than a dozen speakers laud the efforts of the Confederated Tribes, the U.S. Fish and Wildlife Service, the Oregon Department of Fish and Wildlife and the congressional delegation in the realization of a dream that began to take shape in 1966.

It was then that the need for a fish hatchery was confirmed by a U.S. Fish and Wildlife Service study. Since that time, funding for the non-budgeted \$6.3 million project has been obtained on an annual basis with the help of Rep. Al Ullman (R-Ore).

"I am proud to be associated with this effort," said Ullman in his keynote speech at the dedication. "A thousand years from now this great Columbia River and its tributaries will still be producing this wonderful resource — the anadromous fish resource — and producing not only for mankind and the use of mankind but for the perpetuation of a great natural system."



HATCHERY PRAISE - Keynote speaker Rep. Al Ullman lauded cooperative efforts that made the federal hatchery possible. CDS Photo

cooperation in the spectacular setting of the Warm Springs River valley, but also discovered an efficient, operating fish hatchery.

More than 65,000 rainbow trout and 190,000 steelhead fingerlings swam in the complex of rearing ponds, the result of the hatchery's first steelhead spawning last spring and trout imports from another hatchery.

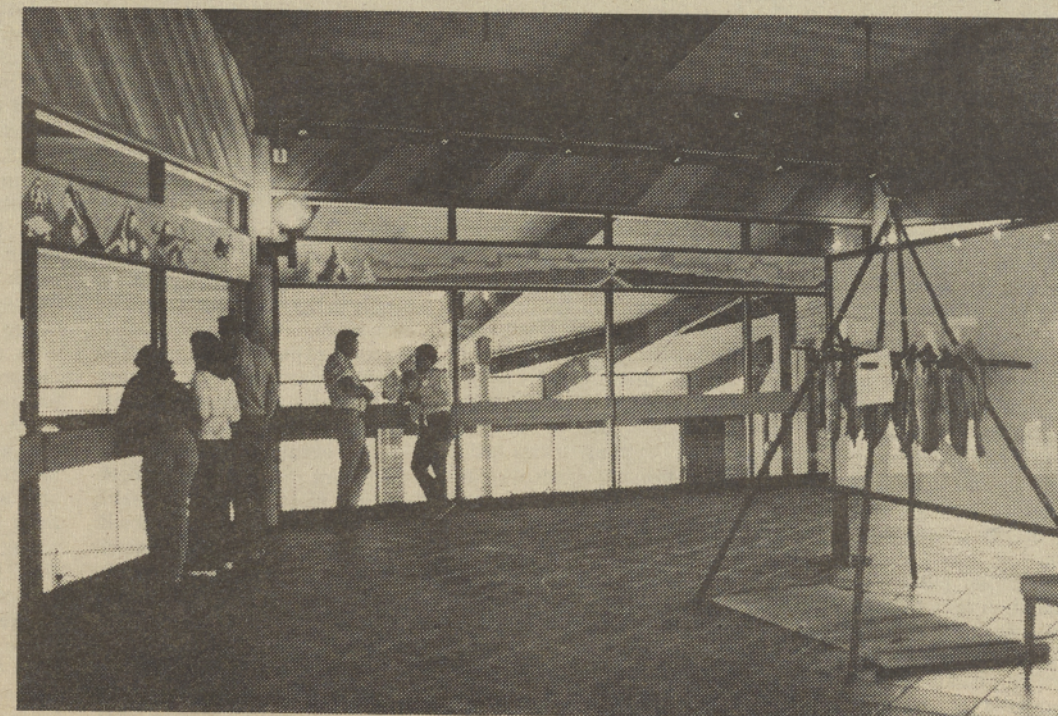
Visitors also found that the hatchery was equipped with the latest in electric crowders in the holding area, up-to-date spawning tables and equipment, and a unique escape slide for fish returning to the river. They learned of the hatchery's chillers, which regulate water temperatures throughout the facility to obtain ideal rearing conditions.

After the ceremonies and a salmon and eel dinner, local high school students gave tours of the facility, which many are calling one of the most modern in the world. Visitors found much more than a handsome monument to

The information center, which will be open to visitors daily during working hours, offered an explanation of the life cycle of anadromous fish, and a glimpse into the history and tradition of Indian fishing.

Currently employed at the hatchery are manager Gary White, assistant manager Paul Hemerick, bio-technicians Ken Calica and Guy Wallulatum, maintenance supervisor Vern Campbell and secretary-receptionist Louise Campbell.

The Warm Springs National Fish Hatchery may be reached by proceeding north on the Simnasho road from the Kah-Nee-Ta junction for three miles, taking a left onto Road No. S-115, and continuing down the hill for about a mile to the facility.



OPEN TO VISITORS - The information center of the Warm Springs National Fish Hatchery offers mosaic murals, a view of hatchery operations and displays on the life cycle of anadromous fish and traditional Indian fishing. CDS Photo