

# Hatchery nears 25 years of success



**ABOVE:** Fish culturist Kevin Blueback moves anaesthetized hatchery chinook salmon through a chute in preparation for inoculations.

**LEFT:** Hatchery worker inoculates a chinook salmon against a deadly kidney disease.

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It wasn't always easy but after 25 years of efforts, nearly 5,000 more chinook salmon struggle their way back upstream to the Warm Springs National Fish Hatchery each year.

"Our job is to raise fish. We know we've been successful because we're getting more fish back every year and they are healthier," said Mavis Shaw, fish biologist and assistant manager at the hatchery.

But several near catastrophes could have ruined it all.

In 1999 a large gas spill on Beaver Butte Creek forced the hatchery to pack up all the small fry and move them in a truck to the Round Butte state hatchery.

The smolts were quickly released in the river in hopes they would be far enough downstream before the gas reached the hatchery.

All the animals living on the river near the hatchery left on their own accord. Bugs were the main casualties at the hatchery.

"We'll never know what would have happened to our fish, if we hadn't taken the actions we did. But we do know that lots of fish died directly where the spill happened," said Shaw.

During the 1996 flood, dedicated staff worked around the clock shoveling mud away from the machinery to keep the hatchery running and to keep the fish alive.

Sandbags were stacked against the back door to prevent rapidly rising river water from flooding the hatchery.

Again, due to staff efforts, not a single fish was lost.

Another year, a wild fire surrounded the hatchery on all sides.

Now, as the hatchery nears its 25th anniversary celebration, the facility releases nearly 450,000 juvenile salmon into the river each year.

The Warm Springs National Fish Hatchery opened its doors Aug. 26, 1978, and began to stock reservation waters with salmon and trout.

It is located on the Warm Springs River, a tributary of the Deschutes River, which flows into the Columbia.

The Warm Springs River system boasts the only healthy wild salmon run on the reservation.

Some 1,200 wild salmon pass through the hatchery each year.

The wild salmon are separated from the hatchery fish and allowed to pass upstream.

A small percentage is kept for genetic stock at the hatchery.

The U.S. Fish and Wildlife Service operates the hatchery, but the tribes have sole management responsibility for fishery resources on the reservation.

Shaw says ocean conditions have been ideal the last five years, assisting in the high rates of salmon return.

Also, she believes, overall water quality of the rivers has improved.

The general population has become more aware of major river polluters, like agricultural pesticides, and large spills are less likely.

"Fish are a major indicator of your water supply," she says.

Commercial fishing regulations banning large mesh nets in favor of tangle nets, minimizing damage to the fish, have aided salmon in their journey home.

But close observation of what the salmon respond to in the hatchery is equally responsible for rising numbers of salmon in the rivers.

Fish are inoculated two times each summer to prevent spread of disease.

Shade covers were erected over spawning pools, after staff observed the hot sun was burning the backs of fish.

Many of the presently un-

ainted cement pools will eventually be painted camouflage to match the color of river stones, helping create an environment similar to the river.

Staff believes this will create an environment more conducive to spawning.

Populations in the 30 spawning pools have been lowered to 25,000 juveniles per pool, down from 60,000 juveniles that was once common.

Lower density populations have resulted in better salmon return rates.

An experiment with three pools will help the hatchery find the ideal population density for each pool.

Over time, the hatchery will record the rate of return for each pool in hopes of discovering the ideal density.

After trial and error, the hatchery has found that moist fish food, primarily consisting of herring, keeps the fish healthier.

Staff, though, is careful to not overfeed the fish. They use measurements and weights from wild fish to gauge the ideal size for hatchery fish.

"There was a time early on when we were raising hogs. But we realized big fish were not necessarily ideal," said Shaw.

"We're just always keeping our eyes open to see how we can make improvements," explained Shaw.

Hatchery visitor hours are daily from 9 a.m. to 4 p.m.

Full-size salmon models and exhibits are displayed in the visitor center, and a self-guided walking tour provides a view of the hatchery and its operations. Guided tours are available upon request.

Throughout the year, visitors can observe different stages of salmon rearing.

The 25th anniversary celebration of the hatchery is scheduled for Aug. 26 at the hatchery grounds.

For more information call (541) 553-1692.

## The hatchery's role in restoring fish populations

The Confederated Tribes of Warm Springs realized long ago the need to restore the fishery resource, not only for the benefit of Indians, but for everyone.

The Warm Springs National Fish Hatchery was started as a cooperative effort to make more fish available on the Columbia, Deschutes, and Warm Springs rivers. Each year young chinook salmon are released into the Warm Springs River to replenish and restore fish populations.

The hatchery provides a safe environment for the development of eggs, fry and fingerlings. Controlled conditions allow the fish to grow as large as possible before release, giving them a better chance of surviv-

ing the 298-mile journey to the Pacific Ocean.

### Simulating a natural environment

The hatchery simulates the salmon's natural growing environment by providing clean, cold water.

Fresh river water enters the hatchery and is filtered before being pumped to the various tanks and ponds. Large debris, such as leaves and twigs, is removed as water passes through screen filters. Smaller debris is removed at sand filters, and harmful bacteria are removed as the water passes through ultraviolet lights.

### Salmon return

Salmon rearing begins with adult spring chinook returning upstream from April through

August. The hatchery barrier dam requires all fish to climb the fish ladders into the hatchery, where wild and hatchery fish are separated.

Wild fish are released above the hatchery barrier, while hatchery fish, identified by tags, remain in holding ponds until they are ready to spawn. Holding ponds are kept at 50 degrees Fahrenheit because warmer water causes the fish to spawn too soon. As river temperatures rise above 60 degrees in the summer, chillers cool the water before it is pumped into the holding ponds.

### Spawning

Spawning begins in August and continues through September. The brood stock, or adult fish used for spawning, in the holding ponds are moved to the

spawning area where hatchery employees remove eggs from the females and fertilize them with milt from the males.

To gather enough eggs to restock the river at optimum level, up to 700 adult fish are needed for spawning. When available, 1 percent of the wild salmon coming through the facility are added to the hatchery brood stock to retain genetic traits.

### Incubation

The fertilized eggs are poured into incubation trays. Clean, cold, oxygen-rich water is pumped through the tray stack, which holds 6,250 eggs per tray. Optimum water temperature for proper growth at this stage is 50 degrees.

Winter river temperatures drop to freezing, so boilers heat the water before being pumped

through the trays.

By late October the eyes of the developing embryos can be seen through the eggshells. By late December and January eggs hatch into sac fry.

### Nursery tanks

In December and January fry are transferred to nursery tanks and fed frozen fish protein. The hatchery water is warmed to increase feeding activity and speed up the growth process.

### Outdoor runways

By March, fry develop into fingerlings and are put into the outdoor raceways after being acclimated to cooler outside temperatures.

In April and May, hatchery fingerlings are tagged with a coded wire tag in the snout and an adipose fin clip to distinguish

them from wild fish.

Most young salmon stay in the raceways to develop until the following spring, although some early developers are ready to migrate in the fall.

### Smolt release

At about 16 months, the fingerlings have developed into smolts and are ready for migration.

Each year approximately 750,000 smolts are released into the Warm Springs River and join wild smolts on their journey to the Pacific Ocean, where they will feed and grow for one to four years before making their return to the Warm Springs River to spawn, continuing the salmon's life cycle.

## Indian education organization meets at Kah-Nee-Ta

The Warm Springs Tribal Council sponsored a dinner at Kah-Nee-Ta High Desert Resort and Casino to welcome the National Indian Education Association board before the association kicked off a three-day quarterly meeting at the resort. "We chose this location because it's owned by a tribe," said Robin Butterfield, NIEA presi-

dent.

The dinner served as an opportunity for Warm Springs to discuss local efforts to enhance Indian education in relation to the national efforts of the NIEA.

The NIEA board devoted much of its meeting time to making further arrangements for their upcoming annual con-

vention in North Carolina.

Issues surrounding continued national legislative activities, advocacy in Washington D.C., and website development were also discussed.

The NIEA is planning a youth leadership development conference in Spokane, Aug. 18-20.

The organization has played

a prominent role in getting important legislative bills passed for Native Americans.

A recent success of the organization is the Civics Education Bill, an effort to help promote improvements in how teachers convey American history in the classroom.

Also, a native language revitalization bill recently passed.

The organization is in the process of revising President Bush's executive order on Indian education.

NIEA is working on the reauthorization of national Headstart, higher education, and special education programs for Native Americans.

The NIEA was founded in 1969 to give American Indians

and Alaskan Natives a national voice in their struggle to improve access to educational opportunities.

It is the largest and oldest Indian education organization and strives to keep Indian education moving towards equality.

For more information, log on to [www.niea.org](http://www.niea.org).