Bonneville Hatchery sits on Tanner Creek in the Columbia River Gorge, about 40 miles east of Portland, Oregon. Tanner Creek flows into the Columbia approximately 145 miles upriver from the ocean. The hatchery, managed by the Oregon Department of Fish and Wildlife, raises salmon and steelhead for sport, commercial and tribal fisheries in the lower Columbia River and along the northern Oregon Coast.

Tanner Creek and nine hatchery wells provide water for rearing fall chinook salmon, coho salmon, and summer and winter steelhead. A waterfall not quite a mile above the creek’s mouth prevents fish passage beyond that point.

History
Bonneville Hatchery opened in 1909 as Central Hatchery—so-called because the facility served as a central hatching and rearing site for eggs taken at other hatcheries. Bonneville is one of the oldest hatcheries in Oregon and the largest in terms of fish production.

Following the construction of Bonneville Dam in the 1930s, the hatchery was expanded to increase juvenile fish-rearing capacity from 6 million to 11 million salmon. Another expansion took place in the mid-1950s as part of the Columbia River Fisheries Development Program.

The 1968 construction of the John Day Dam flooded the spawning grounds of 30,000 fall chinook. To compensate for half of the loss, the U.S. Army Corps of Engineers spent $8 million in the 1970s to enlarge Bonneville Hatchery and increase its fish-rearing capacity.

In 1998 the hatchery added a specialized rearing building to house the Grande Ronde Basin captive broodstock program for spring chinook, a threatened species. This experimental conservation hatchery program rears salmon for the Grande Ronde Basin, which drains into the Snake River, a main tributary of the Columbia. The facility is closed to the public to minimize stress and other impacts on the fish.

WELCOME TO BONNEVILLE HATCHERY – Supporting salmon runs since 1909

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Each female chinook salmon carries about 4,500 eggs, which serve as parents for the next generation. These fish return to the stream or hatchery of origin to spawn where their life began. Steelhead trout generally migrate at 6 to 12 months old. They swim back upriver to their stream or are raised in a hatchery. For example, of every 1,000 salmon that Bonneville Hatchery releases, only three return as adults. On their journey, salmon encounter predators, dams that impede their travel, river and shore environments that may be harmful, and variable ocean conditions. Sport, commercial and tribal fisheries also catch salmon to provide food for people. All salmon die after spawning, which completes their life cycle.

Chinook return from the ocean when they are 3 to 5 years old and coho when they are 3 to 4 years old. Steelhead trout generally return the first time after they are 3 years old. They swim back upriver to their stream or hatchery of origin where their life began. These fish serve as parents for the next generation. Each female chinook salmon carries about 4,500 eggs, and each coho about 2,800 eggs. This is a useful survival strategy, because most of the young do not survive the long journey to the ocean and back, whether they hatch in the wild or in hatcheries called redds.

When fish are ready for spawning, a hatchery technician operates a mechanical crowder that moves fish toward a lift. The lift raises fish to an anesthetic tank and onto the sorting table in the spawning room. Hatchery workers place eggs taken from females into buckets where they are fertilized with sperm from males. All salmon die naturally after spawning. But in the hatchery setting adult fish are killed humanely prior to the artificial spawning process.

Hatching occurs in as few as 50 days with 52° water. Fish that hatch in the incubators are known as sac fry. After these small fish have absorbed the yolk—a process called “buttoning up”—they are called fry and instinctively swim around in search of food. Hatchery technicians then move the fry to the rearing ponds.

Incubation
Bonnieville Hatchery can incubate up to 30 million eggs annually. After spawning, the fertilized eggs are transferred to trays in the incubation room. The eggs develop at a rate controlled by the temperature of the water that continuously flows over them. Incubation of every 1,000 salmon that Bonneville Hatchery releases, only three return as adults. On their journey, salmon encounter predators, dams that impede their travel, river and shore environments that may be harmful, and variable ocean conditions. Sport, commercial and tribal fisheries also catch salmon to provide food for people.

Chinook and 50,000 adult coho are handled each year. Until they are “ripe” or ready to spawn, up to 30,000 adult fall chinook and coho are released as 8-inch smolts one year after spawning. Nets on the ponds reduce predation by birds feeding on the young fish.

Feeding
Hatchery workers feed the fry each hour during daylight hours. As the fry grow, automatic feeders supplement hand feeding. Fry receive dry pellets made from animal, vegetable and mineral products. The pellets come in various sizes for feeding fish of different ages. Each pound of young fish gains requires about one pound of fish food.

Fish reared and released
Each year, Bonneville Hatchery raises 1.2 million coho, 8.5 million fall chinook, 215,000 summer steelhead and 60,000 winter steelhead. The coho are released into a pipeline that takes them to Tanner Creek and out into the Columbia River directly from the ponds. The fall chinook are split between Tanner Creek, the Umatilla River and Ringold Hatchery, which is located in the Hanford Reach on the Columbia River.

Bonneville Hatchery also rears fish for hatcheries in other river basins. Summer steelhead are spawned at South Santiam Hatchery and the eggs are transferred to Bonneville Hatchery. The eggs are incubated and reared in the outside ponds for one year. They then are transferred to Sandy and Clackamas hatcheries for acclimation and are released into each river. Winter steelhead are spawned at Sandy Hatchery and the eggs are transported to Bonneville. The eggs then are incubated and reared for one year before being transported back to Sandy Hatchery for acclimation and release into the Sandy River.

Fish diseases
Hatchery fish can be susceptible to disease due to the large numbers of fish in rearing facilities and the stress of the crowded environment. Fish pathologists routinely take fish tissue samples and treat any diseased fish.

Before release, crews mark a portion of the young salmon and all steelhead by clipping their adipose fins or by mechanically inserting a tiny coded wire tag into each salmon’s snout. Fisheries technicians working on docks or at canneries or conducting creel surveys remove the snouts of fin-clipped fish caught in sport and commercial fisheries. They freeze the snouts and later recover the tags using a metal detector.

The information recorded on the tags helps fisheries managers determine the hatchery of origin, the release date and location, and where and how many fish have been harvested.