

# **SALMON AND STEELHEAD RUNS BEFORE 1900**

---

## **INTRODUCTION**

In the early 1800s, large runs of salmon and steelhead returned each year to the Clackamas River. Estimates of run size are unavailable, but harvest and hatchery records from the mid- to late-1800s suggest that the fish returned in significant numbers. Native anadromous fish runs to the basin included spring chinook, fall chinook, coho salmon, and winter steelhead. The drainage also supported several resident fish species, including cutthroat, rainbow and bull trout, and mountain whitefish. A small run of summer steelhead may have also existed. In 1889 Rudyard Kipling described catching bright steelhead in what was late spring or early summer, when winter steelhead are not typically bright in color.

Pristine conditions in the watershed provided excellent habitat for salmon and steelhead production at the turn of the 19th century. It was an environment containing majestic forests with a dense understory and rivers of clear, cold water with rapids and long, shallow gravel beds that filled each year with an abundant supply of salmon.

As discussed previously, natural salmon and steelhead production began to drop sharply in the Columbia River and tributaries, including the Clackamas, in the 1870s. The primary cause of the decline is believed to have been overharvest in the Columbia River. Commercial harvest of spring chinook peaked around 1873 with a take of 43 million pounds. When this run began to decrease in size, fishing pressure moved to fall chinook and coho. Fish harvest also escalated on the Clackamas and lower Willamette rivers in the late 1800s — sometimes almost completely closing the river to upstream fish passage.

Destruction of habitat conditions in the lower basin contributed to the decline of Clackamas River salmon runs. The lower river area was undergoing tremendous growth and development during the late 1800s. Heavy harvest of forests in the lower basin resulted in erosion, silting of spawning gravels, loss of streamside vegetation and poor water quality. Other developments in the basin also restricted fish migration. Records show that upstream salmon migration was restricted as early as 1868 after a dam was built on the Clackamas River near Gladstone. This, or another dam near it, continued to impede passage until a fish ladder was provided in 1895. Dams also existed on Clear Creek. Further, while records are scarce, dams probably were also built at other sites on the Clackamas and tributaries to provide water for mills operating at the time. Thus, by the late 1800s fish runs faced overwhelming pressure to adapt to changing habitat conditions.

## FISH PRODUCTION

The drop in salmon and steelhead runs in the Columbia River fostered the development of fish culture. In the mid-1870s, cannery personnel in the Pacific Northwest began looking at hatchery production as a means to improve salmon harvest in the Columbia River. Upon the recommendation of Livingston Stone, an agent for the U.S. Commission of Fish and Fisheries, they decided to construct their first hatchery on the Clackamas River. Stone had previously explored potential hatchery sites throughout the Columbia River Basin and found conditions on the Clackamas most acceptable for propagation. Hatchery interests acted quickly after salmon runs dropped significantly in 1876. Cannery personnel in the Pacific Northwest formed the Oregon and Washington Fish Propagating Company and began developing a hatchery on the Clackamas River at the mouth of Clear Creek.

Hatchery practices during this early period evolved through a process of trial and error. Fish propagators knew little about spawning, hatching and growing fish and generally learned by doing. Often they would hatch millions of fry and then release the unfed fry soon after they hatched. Consequently, the mortality rate was very high. A report by Waldo Hubbard, a superintendent of the Clackamas Station, describes some difficulties that early fish propagators faced. He reported that in January 1891 hatching took place very rapidly. They had to use troughs from a previously improvised hatchery to prevent the fry from suffocating. The hatching period ended in February. During and after this period, hatchery personnel released the fry within a three-mile stretch of river when they arrived at the age where they could begin taking food (U.S. Commission of Fish and Fisheries 1890-91). Other reports by early hatchery operators mention problems with disease, water supplies, and food sources that also resulted in high mortality.

Hatchery operators often gathered their brood stock from nearby streams. For many years, fish propagators on the Clackamas placed racks, or fences, with long pickets across streams to capture fish for egg-taking. The rack, placed in the stream before the fish arrived, kept the adults from passing above that point. As the fish neared the spawning period, they were driven downstream into collection traps. The females and males were then stripped for eggs and milt. This method was an adaptation of Indian fishing methods. Gillnets were also used to catch fish at the racks or in deep holes such as at the base of dams.

The hatching house above the mouth of Clear Creek on the Clackamas was completed in late summer 1877 with a capacity for 1 million eggs (U.S. Commission of Fish and Fisheries 1877). Livingston

Stone began operating the facility for the United States Commission of Fish and Fisheries immediately after its completion. The site was named Stone, and the hatchery became the first such operation in Oregon and second in the United States (Lynch 1973).

The hatchery operated four years. During the first year, about 200,000 eggs were secured, but most were lost with a sudden rise of the river. Hatchery records show that 88,680 eggs were taken in 1877 at the hatchery site, and that 2,085,000, 2,035,100 and 2,838,000 eggs were taken in 1878, 1879 and 1880, respectively (Wallis 1960). Hatchery personnel estimated that they caught 2,000 adults in the racks in 1878 (U.S. Commission of Fish and Fisheries 1878). They released the young fall chinook fry in the Clackamas River soon after they hatched. Hatchery operations stopped in 1880 (Table 2).

In 1882, the U.S. Commissioner of Fish and Fisheries again directed Livingston Stone to explore the Columbia River Basin for potential hatchery sites. After completing his search in 1883 he suggested that if Washington Territory and the State of Oregon could agree upon a code of protective laws for salmon (to prevent further overfishing), the Clackamas River would again teem with salmon as before and, in that event, perhaps the best point for a breeding station would be on that river (the Clackamas) where the (previous) station was built in 1877 (Mattson 1950).

In 1887, the newly created Oregon Fish Commission leased the abandoned hatchery at Clear Creek. They operated the facility for about one year, then shared operations with the U.S. Commission of Fish and Fisheries in 1888 after funds fell short. The federal commission bought the facility in 1889. The property, purchased for \$5,155.60, included a rack 400 feet long, a 160-foot dam across Clear Creek, a flume, filtering tanks, a dwelling house, a house for workers, a hatching house and a stable — all in good condition. Fry from the station were planted in the Clackamas River and tributaries.

In the late 1880s, hatchery operators moved some egg-taking operations to the lower Clackamas River after changes at a dam near Gladstone made it difficult for salmon to pass. Waldo Hubbard, superintendent at the Clackamas station, wrote that by July 1889 many quinnat<sup>2</sup> salmon had collected below the obstructing dam across the Clackamas River. Records show that from late August to early November the propagators collected 4,314,000 eggs from 957 females. They caught many more males than females. The fish were collected using four traps, one below the dam and the others in shallows downstream. Fish propagators placed another obstruction rack below the Gladstone area dam in 1890 and captured 1,094 females that September producing 5,860,000 eggs

---

2 “Quinnat” salmon is believed to be a word for spring chinook adapted from the Indian tongue (Smith 1974).

(Hubbard 1889-90). They went below the dam again in 1891 after collecting only 800,000 eggs near the hatchery and gathered the remainder of the 2,036,000 eggs secured that year (McGuire 1894). Records suggest that many of the fish taken below the dam may have been fall chinook since spring chinook could pass except during low flows.

The number of adults reaching the Clackamas Hatchery egg station continued to disappoint hatchery operators in 1892. As a result, they decided to establish an egg-taking station on the Sandy River and look for other opportunities to secure hatchery eggs. In 1894, hatchery managers decided to stop further egg-take operations at Clackamas Hatchery until passage could be provided at the Gladstone Dam. The hatchery managers resumed egg-taking operations in 1895 after the Columbia River Packers Propagating Company put a ladder into the Gladstone Dam, providing satisfactory passage. From 1896 to 1900, the Clear Creek Hatchery operated with salmon eggs from the Clackamas. The hatchery also received eggs from outside the basin, including Michigan, California, and from the Salmon (a tributary of the Sandy River) and Little White Salmon rivers.

In 1895, the Columbia River Packers Propagation Company built a hatchery on the upper Clackamas near the mouth of the Collawash River. The remote site, about 50 miles above the town of Clackamas, was considered especially valuable because it was believed to be the only place in the Columbia River Basin where chinook eggs could be secured before July. Access to the hatchery was by trail only. Hatchery workers spent two or three days traveling about 30 miles to outfit the station. The facility was turned over to the U.S. Commission of Fish and Fisheries in 1897. In June 1897, hatchery personnel placed racks across the Clackamas River and Oak Grove Creek. Fish began collecting below the racks in late June. Between July 17 and August 26, about 5,045,000 eggs were taken from 2,250 salmon after part of the run escaped during high water (USFWS 1950). After hatching, the eggs were liberated as fry into the Clackamas River.

In May 1898, fish propagators again built racks across the upper Clackamas River and Oak Grove Fork. This time they captured 675 females for eggs from mid-July through August. Afterward, hatchery managers concluded that the upper Clackamas station was of little value for egg collection. They decided to use the station to hatch and rear eggs collected at the site or transferred from substations on the Salmon and Little White Salmon. The hatchery was abandoned in 1906.

Hatchery managers also moved to limit operations at the lower Clackamas hatchery in 1898. They decided to stop egg collection at the station since arrangements had already been made to collect eggs on the upper river, the Salmon River and the Little White Salmon. Instead, they began using the

facility for hatching and rearing fry from eggs received from other stations (Hubbard 1898-90). In 1899, egg-taking operations began in September at the lower station. Very few fish were seen below the rack. Eggs for the hatchery were purchased from a Mr. Oldenburg who collected the eggs at a point about four miles below the station and sold them at a rate of 40 cents per 1,000 eggs (Downing 1900).

**Table 2.** Chinook Salmon Egg-Takes at Clackamas River Hatcheries Before 1900 (Wallis 1960).

Year	Lower Clackamas Hatchery	Upper Clackamas Hatchery
1877	88,680	
1878	2,085,000	
1879	2,038,100	
1880	2,838,000	
----		
1887	1,500,000	
1888	4,500,000	
1889	4,314,000	
1890	5,860,000	
1891	2,036,000	
1892	3,265,000	
1893	277,000	
1894		
1895		4,000,000 <sup>3</sup>
1896	1,062,500	2,500,000
1897	1,672,275	5,045,000
1898	704,000	3,421,000
1899	775,000	2,200,000

## SUMMARY

Salmon and steelhead runs to the Clackamas River Basin fell significantly below historic levels by the late 1800s. The decline has been largely attributed to overfishing in the Columbia River. Scores of fish destined for the Clackamas were caught by fishing parties in the Columbia River and in the lower Willamette and Clackamas rivers, and never returned to their spawning grounds. Activities in the basin during the middle and late 1800s also contributed to the fall. Escalating timber harvest and related activities, such as driving logs down streams, damaged habitat conditions along parts of the lower Clackamas and tributaries. A dam across the Clackamas River near Gladstone seriously restricted salmon passage to upper basin spawning and rearing areas. The runs were further reduced by hatchery efforts. When the runs began to drop, cannery personnel tried to increase them through hatchery production. However, operations were very experimental. Many would-be natural

<sup>3</sup> Estimate (Wallis, 1960)

spawners were captured and used as brood stock in hatchery operations that encountered high mortality.

Many of the key events or developments that occurred in and outside the basin before 1900 are recapped below. Together, these events provide a snapshot of activities that caused salmon and steelhead runs in the Clackamas basin to enter a period of decline.

<b>Key Events and Developments Before 1900</b>	
1700	Explorations and settlement by early people and Clackamas Indians.
1806	Lewis and Clark and other early Euroamericans explore basin.
1820	Timber harvest in lower basin begins.
1840	Barlow Road brings new settlers to area, lower basin population grows with demand for resources.
1856	Steamboat operations begin on Willamette River
1868	Dam built on Clackamas River, frequently prevents salmon migration.
1873	Commercial harvest for spring chinook peaks on Columbia River.
1875	Livingston Stone explores Columbia River for U.S. Fish Commission and selects Clackamas as most suitable spot for hatchery.
1876	Salmon and steelhead runs in Clackamas drop sharply. Cannery personnel from Oregon and Washington Fish Propagating Company and begin developing a hatchery on the Clackamas River near Clear Creek.
1876	Salmon harvest heavy at mouth of Clackamas River, both traps and nets used.
1877	Hatchery on Clackamas at mouth of Clear Creek begins operating.
1877	Over 1,000 drift nets on Columbia River, each about 1,200 feet long.
1878	Commercial gear regulations first adopted for Columbia River fisheries.
1880	Hatchery operations at station near Clear Creek stopped after nearly three million eggs taken.
1887	Hatchery operations near Clear Creek resume.
1888	Over 4.5 million eggs taken at hatchery near Clear Creek.
1889	Dam on Clackamas below Gladstone continues to block some salmon migration. Fish propagators move some racks below dam to catch hatchery brood stock.
1893	Willamette Bridge Railway Company begins operating electric railroad service between Portland and Oregon City — the first interurban electric railroad in the United States.
1893	About 12,000 spring chinook caught by gillnets in lower Clackamas River.
1895	Fish propagators build fish ladder at Gladstone Dam to restore passage.
1895	About 82 commercial parties fishing for salmon on Clackamas and Willamette.
1895	Fish propagators build hatchery at headwaters of Clackamas River. Site believed to be spawning ground of earliest chinook run.
1897	About 5,045,000 eggs taken from 2,250 salmon at Upper Clackamas station racks after part of the run escaped during high water.
1896	Hatchery at Clear Creek operated with eggs from Clackamas River, California Michigan and Salmon River, a Sandy River tributary.
1899	Few fish caught at lower station. Eggs bought from Oldenburg at 40 cents/1,000.