

CHRONOLOGY OF SALMON DECLINE  
IN THE COLUMBIA RIVER  
1779 TO THE PRESENT  
Based on the historical record

By Bill M. Bakke, Director

## **Native Fish Society**

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1775 - Bruno de Heceta, aboard the Santiago, sights the Columbia River, Naming it Rio Dan Roque. Estimated historic Columbia River Salmon Runs fluctuate between 11 million and 16 million fish, of which Native North Americans may have captured 4.5 to 6.3 million. (Bottom, 2005)

1779 - Captain James Cook looked for the Northwest Passage, found the Columbia River and started the trade in beaver pelts. Trapping beaver was the first major change in salmon habitat on the west coast.

1789 McKenzie crossed the Rocky Mountains to the British Columbia Coast

1790- Britain gains rights to territory in treaty with Spain (Bottom, 2005)

1800 Up to 16 million Salmon and Steelhead return each year to the Columbia and Snake rivers

### **1800s-**

1890s Effects of mining, logging, farming, and fishing cause decline in salmon runs

1806 Lewis and Clark crossed the continent to the mouth of the Columbia River, spend winter at Fort Clatsop and return east.

1811 David Thompson followed the Columbia to its mouth

1811 John Jacob Astor established fur trading post at Astoria

1813 Astor's Company, the Pacific Fur Company, sold to the Northwest Company

1818 Spring Chinook salmon harvest begins. (Bottom, 2005)

1821 The Northwest Company merged with the Hudson's Bay Co

1823 Astor Company exports pickled salmon to London (Bottom, 2005)

1824 Hudson's Bay Company located at Fort George (Astoria)

1825 Hudson's Bay Company establishes Fort Vancouver and Fort Colville; disease reduces Lower Chinook Indian population to half its historic level. (Bottom, 2005)

1826-

1834 The average number of beaver pelts taken is 3,000. The trapping of beaver in the Northwest was the first major ecological change of salmon habitat by humans.

- 1828 The first saw mill established at Mill Plain on the lower Columbia River by Hudson's Bay Company.
- 1829 Capt. John Dominis brings the brig Owyhee into the Columbia River to fish salmon and trade. During two summers in the area, they put up 50 barrels of salted salmon that sold in Boston in 1810 for \$.10 per pound.(Bottom, 2005)
- 1830s The depletion of beaver in the 1830s took place 100 years before the first extensive surveys of salmon habitat.
- 1840 From 1840 to 1855 is the most severe and persistent drought on record. The 1830s and 1890s are also periods of sustained low flows. Other notable low flows occur in 1775, 1805, and 1925. (Gedalof et al. 2004)
- 1843 The center for the fur industry moved north to Vancouver Island
- 1843 Irrigation begins in watershed.
- 1846 Brittan and America settle their boundary dispute and Americans continue to take beaver pelts.
- 1848 The Columbia River Basin covers an area of 259,000 square miles. Before any water resource development, over 163,000 square miles of the basin was accessible to anadromous salmonids.
- Aug. 14, 1848 Oregon Territory created
- 1848 The citizens of Oregon were concerned enough about salmon stream protection to include a provision for salmon protection in their territorial constitution of 1848. That provision required fishways at all dams. Since this law went into effect it has been poorly enforced.
- 1850 Pre-development run size is estimated to be from 10 to 16 million wild salmonids.
- 1851 Tansey Pt. Treaties with Lower Chinook Indians; only about 8,000 native peoples survive in Columbia River basin. (Bottom, 2005)
- 1852 James G. Swan was traveling by sea from San Francisco when he recorded in his diary at the Columbia River was in flood stage and that the water 30 miles off the mouth was covered with sawdust and boards.
- Mar. 2, 1853 Washington Territory created
- 1854 It was believed that humans would assume control over salmon production with hatcheries the same way agriculture controlled the production of plants and animals.
- 1855 Treaties between the United States and Columbia River Indian tribes is signed and the tribes secure the right to fish in usual and accustomed places.
- 1859 First irrigation project constructed in the Columbia Basin
- Feb.-Mar. 1865 return of smelt after 17 years absence

- 1866 First salmon cannery built on the river at Eagle Cliff by Hume and Hapgood. **It is the area's first intensive fishery; 275,000 lb Chinook catch.** Washington State adopted its first fishing gear restrictions.
- 1866 -- dredging and snagging operations conducted by Corps of Engineers on Willamette River near Portland
- 1867 **Hume and Hapgood can 18,000 cases of Chinook. Fishermen earn \$.15 per fish. (Bottom,2005)**
- 1869 On May 10<sup>th</sup> the last spike was driven into the transcontinental railroad in Promontory, Utah, opening the west coast up to fish transfers from the east coast.
- 1870 California creates a board of fish commissioners.
- 1870 **10,200,000 lb Chinook catch. (Bottom, 2005)**
- 1870 Timber around estuaries and along navigable rivers was nearly exhausted, causing a major impact on salmon spawning and rearing areas.
- 1870 The American Fish Culturists' Association was founded. It later was renamed the American Fisheries Society, a professional organization that has numerous technical journals in fisheries.
- 1871 Shad introduced from the Hudson River in New York state into the Sacramento River in California. These fish were transported over the newly constructed transcontinental railroad.
- 1872 First game laws passed by the Oregon Legislature making it illegal to use explosives or poisons to take salmon.
- 1872 On October 23<sup>rd</sup>, 30,000 chinook salmon eggs are shipped from California to the East Coast; all but 7,000 die in transit. About 200-300 hatch and are raised to fingerling size and planted unsuccessfully in the Susquehanna River in March 1873. These eggs were collected by Livingston Stone from the McCloud River in California and used the transcontinental railroad to ship the eggs.
- 1873 Stone, with a special railway car, the California Aquarium Car, leaves Charlestown, N.H. for the Pacific coast on June 3<sup>rd</sup>. Approximately 300,000 fish, including catfish, eels, bullheads, perch, bass, trout, and lobsters, are accidentally planted in Nebraska's Elkhorn River when a railroad bridge collapses. This does not end the enthusiasm for moving these species west.
- 1874 Payette River, Idaho, produced a commercial catch of 30,000 pounds of sockeye salmon or 7,000 fish.
- 1875 The U.S. Fish Commissioner, Spencer Baird, told the fishing industry that artificial propagation would eliminate the need to regulate the harvest.

- 1876 Camp Creek, a tributary to Crooked R in Oregon degraded from a meadow and willow sheltered creek to a gully of raw banks devoid of fish habitat. This creek is still degraded in 2005. This was caused by over grazing that set the creek up for failure during severe thunder storms.
- 1876 Introduced shad show up in the Columbia River.
- 1877 Oregon and Washington legislatures approve laws to temporarily close fisheries by provide no Enforcement.(Bottom, 2005)
- 1877 There are three salmon hatcheries on the West Coast. Hume begins releasing chinook salmon fry at his Rogue River hatchery. This hatchery joins the McCloud River Hatchery in California and the Clackamas Hatchery in Oregon.
- 1877 Approval granted for establishment of 20 foot Columbia River channel by means of dams, dikes and revetments
- 1878 The first salmon hatchery is built in the Columbia Basin on Clear Creek, a tributary of the Clackamas River. It was started by salmon canners to increase the supply of salmon from the Columbia River. The salmon runs were declining.
- 1878 Oregon creates a state fish commission and passed the first conservation law which restricted mesh size on the gillnet fishery.
- 1878 The Oregon Legislature enacted a one day fishing closure in this state's coastal streams, but enforcement was a problem.
- 1879 One hundred and fifty east coast striped bass are successfully transplanted by Livingston Stone to the Pacific near Martinez, Calif. Striped bass are predators and consume salmon smolts.
- 1880 In 1880, Alvin Anderson, British Columbia inspector of fisheries, realized that Pacific salmon are organized into separate local populations, with each river having its own distinct stock. He recognized that the supply of salmon in a river depended upon the number of spawners in that river. Andersons' views reflected earlier recognition that Atlantic salmon faithfully returned to their home stream. Accepting the stock concept led managers in British Columbia's salmon fishing to limit fishing effort by restricting both the timing of fishing and the type of gear permitted. Pacific salmon were believed to be genetically uniform in the U.S., spawning in rivers at random.
- 1880 Sockeye salmon runs declining and the Payette River sockeye fishery is commercially extinct.
- 1880 The number of salmon canneries on the Columbia reaches the peak of 39.
- 1880 The Woods Hole Marine Biological Laboratory in Massachusetts was established as the first government-run center for fisheries research in the United States.1880's—Corps of Engineers carried out snag removal in lower Chehalis River, throughout decade
- 1883 The year when the harvest of chinook salmon peaked on the Columbia River. There were 1,700 gillnet boats in the fishery. They took 42,799,000 pounds of fish which is about 3

- million fish and processed 600,000 cases of canned salmon. Form then on the runs decline rapidly with 18,135,000 pounds taken in 1889.
- 1883 Livingston Stone surveys the Columbia River to locate a suitable hatchery site. In the United States, the influential Livingston Stone maintained that salmon ran up rivers randomly, fostering the misconception that salmon were readily transplantable from river to river. Stone's rejection of the home-stream concept encouraged reliance on hatcheries, and transplanting of stocks became a cornerstone of salmon management in the United States. If salmon had no real dependence on their home streams, then why not move them around so as not to conflict with other desired uses of the land.
- 1883 David Starr Jordan, the first president of Stanford University and the leading academic salmon biologist of his day, shared Stone's view, stating, 'It is the prevailing impression that salmon have such special instinct which leads them to return to spawn on the same spawning grounds where they were originally hatched. We fail to find any evidence of this in the case of Pacific Coast salmon, and we do not believe it to be true.
- 1884 George Brown Goode tells the World Fisheries Congress that salmon on the Columbia are under complete control of the fish culturists, even though there was no solid evidence of success. The U.S. Fish Commission viewed hatcheries as the primary management activity, saying that it was easy to make fish so abundant through artificial propagation that regulation of the harvest would be unnecessary.
- 1885 In summer, Atlantic shad are transported in a railroad car to the Pacific coast and planted in Washington Territory and Oregon waters
- 1885 Dam at Willamette Falls put in service
- 1885 Early hydroelectric development at Spokane Falls
- 1886 Columbia River chinook salmon stocks continue to show visible signs of depletion.
- 1887 Oregon establishes a three person State Board of Commissioners to enforce fish and game laws.
- 1887 Congress Directs U.S. Army Corps of Engineers to investigate causes of declining salmon runs.
- 1889 There are 57 fish wheels operating in the area 30 miles above Bonneville and near Celilo Falls. The best wheels catch 6,000 fish a day.
- 1889 The canneries began processing sockeye salmon and steelhead for the first time. A few years later chum salmon and coho were being canned. These are species that had previously been considered inferior, but the chinook catch had decline so much that other fish were needed to keep the canneries operating.
- 1889 Hydroelectric development at Willamette Falls
- Nov. 11, 1889 Washington achieves statehood

- 1890 Washington State creates the Washington Fish Commission.
- 1890 The salmon decline at Kettle Falls on the upper Columbia is severe and has been in sharp decline since 1882.
- 1890s In the Grande Ronde valley logging accounted for 15 to 20 million board feet per year and loggers used a system of splash dams which blocked salmon migration and destroyed spawning and rearing habitat.
- 1892 The Oregon Legislature establishes a hatchery fund from license fees.
- 1892 The Columbia River fishery employed 5,545 workers, and salmon were harvested by 378 pound nets, 38 seines, 1,314 gill nets, 57 fish wheels, and 75 dip nets.
- 1893 Oregon establishes the State Game and Fish Protector position beginning the combined fish and game administration in Oregon.
- 1894 Salmon investigations are started by the U.S. Fish Commission because there is an “alarming decrease in the salmon catch of the Columbia River within recent years.”
- 1894 Marshall McDonald, U.S. Commissioner for Fish and Fisheries, said, “We have relied too exclusively upon artificial propagation as a sole and adequate means for maintenance of our fisheries. We have been more disposed to measure results by quantity rather than quality, to estimate our triumphs.”
- 1895 Columbia River salmon harvest reached 30 million pounds.
- 1895 Marshall McDonald, U.S. Commissioner of Fish and Fisheries, conducted the first study of Columbia River salmon stocks and concluded that over-harvest was evident and predicted salmon abundance would decline.
- 1896 The Oregon State Fish and Game Protector said, “I am convinced that not more than 10% of the ova spawned in the open streams are hatched, owing principally to spawn-eating fish that prey on them... while from artificial propagation 90% are successfully hatched. What more need be said in favor of fish culture?”
- 1897 Federal Little White Salmon and Upper Clackamas Hatcheries begin production. (Bottom, 2005)**
- 1898 Oregon splits the fish and game management programs and creates the Board of Fish Commissioners comprised of the governor, secretary of state, and the fish commissioner. A Board of Game Commissioners followed in 1899.
- 1899 The salmon harvest declined to 18 million pounds.
- 1899 Oregon and Washington established a joint fishery management program involving two committees of both state legislatures. The purpose was to reach coordinated agreement on Columbia River fishery regulations.
- 1900 Gas engines were added to salmon boats, leading to the creation of the ocean troll fishery. It started with 500 boats and by 1915 there were 1,500.

- 1900 Log drives started on the Minam and John Day rivers. Splash dams were built on the John Day R between Spray and the Columbia River. Log drives and splash dams lasted until 1936.
- 1901 The first hatchery coho salmon fry released in Oregon.
- 1901 Oregon established the Master Fish Warden position to enforce regulations.
- 1902 H.D. Langille, Federal Surveyor of timber lands, said, "All sections contiguous to the Grande Ronde R. have been logged over and left in hopelessly denuded condition.
- 1902 The McKenzie R Hatchery began taking spring chinook eggs and the highest egg collection was in 1935 with 25.1 million eggs from 4,780 adults or 40% of the entire run above Willamette Falls. See 1946, 1948,1950, 1958, 1966,1968, (Willamette L Col R TRT 2005)
- 1903 Log drives on the McKenzie River started and lasted through 1915. This period was the heyday of log drives on the upper Willamette River.
- 1903 The abundance of spring chinook in the Molalla River had already decreased dramatically (ODF 1903).
- 1903 By this time the prime spring chinook decline was evident and to compensate, more of the harvest shifted to the fall chinook run, a fish the canners considered inferior.
- 1903 The Boise River enters the Snake River 379 miles above the mouth. This stream use to support large runs of chinook salmon and steelhead, but irrigation development exterminated the runs.
- 1903 Washington established a game code and county commissioners appointed game wardens.
- 1904 W.H.B. Kent reported that the foot hills are entirely cut, burned, and denuded by sheep grazing and all the lower elevation ponderosa pine were cut on in the Grande Ronde basin.
- 1905 Lewis and Clark Rod and Gun Club placed an order for carp (called European Wonder Fish) through Outdoor Life Magazine and released these fish in the Snake River near Lewiston, Idaho. (Keith Stonebreaker personal communication 5-05)
- 1907 The U.S. Forest Service in eastern Oregon recommended fencing creeks to keep cattle out of riparian areas for recovery. The remedies recommended in 1940 were the same and in 1991 the Malheur National Forest supervisor stated the same solutions to over grazing. The problem is that riparian areas along salmon spawning and rearing streams are still over grazed. Burning willows in along creeks is still practiced by ranchers to benefit cattle.
- 1907 Swan Falls Dam on the Snake River built by Idaho Power Company, reduces all salmon and steelhead runs above the dam. The fish ladder did not work well. In 1940 the fishway was rebuilt and fish can pass upstream.

- 1909 Sport anglers required to buy a license to fish in Oregon
- 1909 Oregon constructed Central Hatchery (later named Bonneville Hatchery) on Tanner Creek. This hatchery had the capacity to handle 60 million eggs and served as a central clearing house and incubation station for eggs collected throughout the region. Eyed eggs and fry from Central Hatchery were distributed throughout the Columbia Basin and beyond. For example, chinook eggs from the McKenzie River were stocked in the Alsea River on the Oregon coast.
- 1909 Willamette River Hatchery started and took 11,389,000 spring chinook eggs in 1918 (Wallis 1962) corresponding to 3,559 females. See 1948, 1950, 1953, 1965.
- 1909 Oregon and Washington establish for the first time consistent fishery seasons. The upper deadline for the fishery is at the mouth of Oregon's Deschutes River.
- 1910 -- Clackamas River dams put in service
- 1910-1920 - Columbia River salmon canneries reach peak production.
- 1911 Oregon's Fish and Game Boards are combined to form the Board of Fish and Game Commissioners made up of three members appointed by the governor.
- 1911 Egg take for spring chinook in the N Santiam River was 1.5 million. It was the policy to capture as much brood stock as possible. See 1934, 1947, and 1950. (Willamette, Lower Col TRT 2005)
- 1912 Ocean commercial trolling for salmon begins off mouth of Columbia
- 1912 Bull Run and Marmot Dams (Sandy River) put in service
- 1913 The position of Washington Chief Game Warden is created to enforce fishery rules.
- 1915 The legislatures of Oregon and Washington create the Columbia River Fish Compact for joint regulations of Columbia River commercial fisheries.
- 1915 Washington commercial and game fish regulations are combined under the authority of the State Game Warden.
- 1915 Oregon abolishes the Board of Fish and Game Commissioners and replaces it with the Fish and Game Commission with the governor serving as the chair of the three member commission.
- 1917 Purse seines are prohibited in the Columbia
- 1918 The Willamette River is closed to commercial salmon fishing.
- 1918 The U.S. Congress ratifies the Columbia River Fish Compact created in 1915 by the states of Oregon and Washington to provide cooperative regulation of the Columbia River commercial fishery.

- 1919 Warm Springs Dam is constructed by the Bureau of Reclamation on the Middle Fork Malheur River with no fish passage. This dam ends spring chinook and summer steelhead runs in the river.
- 1919 The Washington State Fish Commissioner said “The most important reason for artificial propagation is the fact that the natural method is extremely wasteful, which is not true of the artificial method.”
- 1919 The first school of fisheries was launched at the University of Washington
- 1920 Oregon once again changes the fish and game board, replacing it with a commission.
- 1920 The U.S. Forest Service planners knew they were authorizing logging that would ensure that harvest levels would collapse by the 1990s in eastern Oregon watersheds.
- 1921 Oregon established separate fish (3 members) and game (five members) commissions with members appointed by the legislature and then later they were appointed by the governor. Oregon establishes a tax on commercial fishery landings.
- 1921 Washington abolished the State Fish Commission and replaced it with the Departments of Fisheries and Game.
- 1923 Whip seines are prohibited in the Columbia
- 1926 The Columbia River fishery had expanded to 1,790 gill nets, 506 traps, 94 seines, 48 fish wheels, 291 dip nets and 342 trollers.
- 1927 Fish wheels are banned on the Columbia in Oregon followed by Washington in 1935.
- 1928 The peak chum salmon harvest of 8.4 million pounds or 700,000 fish takes place.
- 1928 There are 15 hatcheries operating in the Columbia Basin and a total of 2 billion fry are released into the river.
- 1930s In eastern Oregon and Washington watersheds there was a prolonged drought with less than one third of the normal rain fall during the summers. Rain fall averaged only 0.16 and 0.25 inch of rain fall in July and August during the 1930s. This compared to the period 1911 to 1922 when rain fall averaged 0.45 inch. In the interior Columbia River Basin the 1930s drought was probably matched only once for length in the last 250 years; although the drought of the 1840s was probably more server in terms of sustained low flows. The 1930s drought should not be regarded as an anomalous event, but is likely a typical fluctuation of the Columbia River system. (Gedalof et al. 2004)
- 1930 John Cobb, University of Washington concluded that artificial propagation could become a threat to the Pacific salmon fishery. Fish managers had to put aside their optimism and stop relying on hatcheries alone to increase or maintain the fishery.
- 1930 On May 21<sup>st</sup>, the Preservation of Fishery Resources Act (Mitchell Act) is passed to provide for the conservation of the fishery resources of the Columbia River.

- 1931 Merwin Dam is completed on the N.F. Lewis River in Washington, blocking this large tributary to the lower Columbia River to salmon and steelhead. It is later followed by Yale Dam, 1953, and Swift Dam in 1958.
- 1932 The Washington Legislature separated food and game fish management and created the Department of Fisheries under an appointed director and the Department of Game under a six member commission.
- 1932 Powder River is a large tributary to the Snake River in Oregon. It was a magnificent salmon and steelhead stream. Thief Valley Dam was constructed in this year by the Bureau of Reclamation. No fish passage was provided and the salmon runs were eliminated. People at the dam reported that large numbers of coho salmon and steelhead blocked by the dam showed up for several years and then disappeared.
- 1933 Rock Island Dam is constructed on the upper Columbia and has fish passage problems.
- 1933 Owyhee Dam is constructed on the Owyhee River terminating salmon and steelhead in that river and the only salmon run in the state of Nevada. This dam was built to serve irrigation interests by the Bureau of Reclamation. No fish passage was provided.
- 1934 The commercial sale of steelhead in Washington is prohibited.
- 1934 The Columbia River Investigations program begins at the Montlake Laboratory and is closely associated with the water use development program for the Columbia River basin. An early and major part of the program is a comprehensive survey of all accessible salmon streams in the Columbia system.
- 1934 The largest egg collection for spring chinook in the North Santiam River happened this year with 13.2 million eggs from 4,125 females. (Willamette L Col R TRT 2005)
- 1935 Fish wheels, haul seines, traps and set nets are prohibited in Washington.
- 1935 Beulah Dam is constructed by the Bureau of Reclamation on the North Fork Malheur River without fish passage. This dam ends the chinook and steelhead runs in this river. The Malheur watershed is 4,750 square miles supporting large runs chinook and steelhead. Irrigation development and dam construction terminated these unique runs of wild salmon and steelhead.
- 1937 Oregon and Washington fisheries officials permitted to change fishing seasons. Prior to this the state legislatures were the only body to change seasons.
- 1938 Bonneville Dam is constructed on the Columbia 140 miles above the mouth. This dam was originally designed without fishways by the Army Corps of Engineers. Commercial fishing was prohibited five miles below and 15 miles above the dam.
- 1938 The peak steelhead harvest is 2.6 million pounds or 293,000 fish.
- 1938 The fish management agencies consider a 50% harvest rate excessive to the maintenance of the runs, yet 80% of the spring chinook and 65% of the fall chinook are taken in the commercial fishery.

- 1938 Willis Rich developed the Home Stream Theory of salmon management based on salmon tagging studies. He determined that salmon home to the streams where they were hatched. He held that proper conservation of salmon required protection of the salmon in each stream and the habitats that supported them. Rich's work confirms what Canada's Anderson determined in 1880, and runs counter to the U.S. concept of random spawning advocated by Livingston Stone and David Starr Jordan in 1883. But did Rich's home stream theory transform U.S. salmon management?
- 1938 Congress passes the Mitchell Act and authorizes \$500,000 to correct the impacts of mainstem dams and other human activities in the basin. This money was used primarily to count salmon populations and inventory habitat conditions in the Columbia River tributaries, but morphed into hatchery development from Bonneville Dam down river.
- 1938 The Payette River was first surveyed for salmon production in this year. This river supported a large run of sockeye salmon, chinook and steelhead. It is a large Idaho tributary to the Snake River Dam construction ( Black Canyon, 1923; and numerous smaller dams without fish passage) and irrigated agriculture destroyed the river for salmon and steelhead.
- 1939 Unity Dam is completed on Burnt River, a tributary of the Snake River, 326 miles above the mouth. This dam was completed without fish passage. Its purpose is to provide irrigation water. A watershed of 1200 square miles and is removed form salmon and steelhead production.
- 1939 Waltherville Dam on McKenzie River put in service
- 1939 Fisheries biologist Rich predicts rapid "extermination of a large part of the remaining runs of Chinooks and bluebacks. (Bottom, 2005)
- 1940 Abiqua Cr., a tributary of the Pudding River had 250 spring chinook adults (Parkhurst 1950). **Is this run extinct?**
- 1941 Grand Coulee Dam is completed, eliminating 1,100 miles of salmon habitat in the upper Columbia for chinook, sockeye and steelhead. It is estimated that 90% of the sockeye runs in the Columbia were exterminated by this dam. The Spokane River salmon runs were terminated. This was one of the rivers that Livingston Stone identified in 1894 for a hatchery sight due to its strong salmon runs. A massive salmon transplanting effort moved upper Columbia River salmon to tributaries below the dam, believing that this would somehow rescue the runs.
- 1942 Eastern Oregon and Idaho salmon and steelhead streams are surveyed. This U.S. Fish and Wildlife Service report published in 1950 evaluates the environmental conditions of rivers for salmon production. This is the first extensive inventory of these watersheds. The early settlement of this area and irrigated agriculture has degraded most watersheds, ruining their value for salmon production. In addition, turn of the century irrigation dam construction by the Bureau of Reclamation eliminated salmon and steelhead runs from most watersheds. These dams were build without fish passage and there was no mitigation for any fish losses. However, some streams still had native runs of summer steelhead and spring chinook. An example is Eagle Creek, a tributary of the lower Powder River in Oregon.
- 1942 Weiser River, Idaho, still had a few chinook and summer steelhead using it. The biologists recommended that this watershed be saved by screening irrigation diversions and providing fish passage around irrigation dams. The headwaters of this river has a large amount of good spawning gravel.

- 1944 In September the Hanford Plant begins operation to produce plutonium
- 1945 A study on the population dynamics of salmon spawning in the tributaries of the Columbia River begins with funding by U.S. Army Corps of Engineers.
- 1946 The Mitchell Act is amended by Congress to permit the Secretary of Interior to enter into agreements with the states of Oregon, Washington and Idaho to use their hatcheries to enhance Pacific salmon runs. The Lower Columbia River Fishery Development Program was established which authorized the construction of 31 hatcheries in the Columbia Basin, but only 21 were built.
- 1946 Craig and Townsend observed that spring chinook juveniles moved downstream from February throughout the year. This 0-age juvenile migration was noted in other Willamette R tributaries. It was believed these fish were rearing in the lower Willamette and Columbia rivers. Scale analysis showed that 13.5% (8 out of 59) fish entered the ocean as subyearlings. See 2005 (Willamette, L Col R. TRT 2005)
- 1947 Molalla River run size estimated to be 500 spring chinook (Mattson 1948) In 1903 ODF surveys indicated the Molalla spring chinook run was already dramatically decreased and surveys in 1940 and 1941 recorded 882 and 993 spring chinook respectively, he estimated that the basin could support 5,000 adult spring chinook. (Parkhurst 1950)
- 1947 Mattson (1948) the spring chinook run size in the North Santiam River is estimated to be 2,830 fish. (Willamette, L Col TRT 2005)
- 1948 The McKenzie R historic spring chinook spawning areas included the mainstem McKenzie R, Smith R, Lost Cr., Horse Cr., South Fork, Blue R., and Gate Cr. (Mattson 1948). “Currently the McKenzie River is the only basin above Willamette Falls to sustain any level of natural production” (Willamette, L Col R TRT 2005).
- 1948 The Middle Fork of the Willamette spring chinook had declined to 60 fish (Mattson 1948).
- 1948 The USFWS (1948) reported that suitable spawning gravel existed in the lower Row River (Willamette R) and Mosby Cr, but spring chinook were exterminated by flash dams constructed during logging operations.
- 1949 Drag seines, traps and set nets are prohibited in Oregon effective Sept. 14, 1950. The salmon wars between gill netters and other harvesters are being won by the gill net fishermen.
- 1949 Lewiston Dam on the Clearwater River in Idaho is built. It is a partial block to steelhead and spring chinook salmon. This dam was taken out in 1972.
- 1950 Parkhurst estimated that there was sufficient habitat in the North Santiam to accommodate at least 30,000 adults.
- 1950 Parkhurst estimated the Calapooia had habitat for 9,000 spring chinook, but the 1941 run was only 200 adults and Mattson (1948) estimated the run to be 30 fish in 1947. See 1995. (Willamette, L Col TRT 2005)
- 1950 Parkhurst (1950) estimated the McKenzie R had suitable habitat for 80,000 spring chinook.
- 1950 Parkhurst estimated that Fall Cr tributary to the Middle Fork Willamette R could support several thousand spring chinook. (Willamette, L Col R. TRT 2005)
- 1950 From 1950 to 1987 is notable for having no multiyear droughts in the bottom 15 percentile. (Gedalof et al 2004)

- 1953 McNary Dam is completed just downstream from the mouth of the Snake River. This dam removed mainstem spawning areas for fall chinook and created passage problems.
- 1953 Federal dam construction in the Willamette River Basin begins. Seven large dams are built between 1953 and 1968. These dams block wild spring chinook and winter steelhead from most of the high quality spawning grounds in the basin.
- 1953 Lookout Point and Dexter dams are completed on the Middle Fork of the Willamette R eliminating 345 km of salmon habitat (Cramer et al. 1996). Only Fall Cr basin remains accessible to spring chinook and winter steelhead. See 1965 and 1995.
- 1955 Chief Joseph Dam is completed and eliminates mainstem spawning on the upper Columbia.
- 1956 The Dalles Dam is completed just downstream from the mouth of the Deschutes River. The reservoir behind this dam flooded historic Native American fishing grounds at Celilo Falls. This dam was supported by the states because they believed the Indian harvest of salmon would be eliminated and the salmon would be saved.
- 1957 Pelton Dam is completed on the Deschutes River in Oregon, blocking spawning areas for spring chinook, steelhead and sockeye salmon. The national fight to save the Deschutes was lost.
- 1958 Brownlee Dam is completed on the Snake River, blocking all salmon migration into the Snake above that point, eliminating salmon spawning in the Boise, Weiser, Payette, Malheur, Powder, Salmon Creek, and many other watersheds.
- 1958 The original and long standing objective of hatcheries is to maintain the supply of salmon, i.e., replace natural production lost to habitat destruction and over-harvest. But the evaluation of hatchery programs focused on whether hatcheries contribute to the fisheries. This divergence between the goal and evaluation lead to an outcome where salmon could continue to decline but hatchery program were considered a success as long as the cost of artificial propagation was less than their economic contribution to the fishery. The cost of hatchery production did not include the loss of natural production resulting from watershed development or from hatchery operations.
- 1958 From 1921 through 1958 the harvest of chinook in the Columbia averaged 15 million pounds, down from the average catch of 25 million pounds in the period 1889 to 1920. From 1954 to 1958 the average harvest was only 6.9 million pounds. Some of this decline is attributed to an expanding ocean troll fishery, but a chinook decline in the river is still evident for this period.
- 1958 A OFC survey observed 3,198 spring chinook redds in the McKenzie River (Willis et al. 1960) See 1963.
- 1959 Priest Rapids Dam is completed on the Columbia above the mouth of the Snake River. This dam removes mainstem spawning for fall chinook and presents a passage problem for all species.

- 1959 Two new fishways are completed on Columbia River tributaries for a total of 20 major fishways constructed since the Columbia River Fishery Development Program began in 1948.
- 1960 Hatchery production increased rapidly due to improved diets and disease control. The release of chinook in the Columbia increased from 61 million fish in 1960 to 144 million in 1989 and a peak of 160 million in 1988. But as releases of hatchery fish increased, the return of adult chinook decreased.
- 1960 Doubling the hatchery program for chinook salmon did not result in a sustained reversal of the decline from earlier years. Hatchery fish now make up 80% of the returning salmon and steelhead in the Columbia. By limiting the focus of hatchery evaluations on cost-benefit analysis fish managers declare the hatchery programs a success even though the program failed to achieve its mitigation objectives and total abundance in the Columbia continues to decline.
- 1960s Spring and summer chinook smolt to adult return rates of these populations fell from greater than 4% in the mid to late 1960s when only four dams were in place, to generally less than 2% during the 1970s after seven or eight dams were in operation on the Columbia and Snake rivers. (Raymond 1988, Williams et al. 2001).
- From 1966 to 1968, with only four or five dams in place on the Columbia and Snake rivers, the per dam survival estimates for chinook and steelhead was 45%. Survival estimates decreased to 20% as dams were added in the 1970s. During low flow conditions of 1973 and 1977 survival for chinook was 1-3% and for steelhead less than 1%. For the years 1993-1999 per project survival estimates ranged from 31% to 59%. In some years system survival rates exceeded that of the 1960s when only four dams and reservoirs existed. (Williams et al. 2001).
- 1960 Introduced shad have increased greatly from 1960 to 1990 with 2-4 million adults per year migrating up the Columbia past Bonneville Dam. They migrate 600 km up the Columbia and Snake. Interactions with salmonids is unknown, but they share the same food resources in the river and may be competitive in the ocean. The transformation of the Columbia by dams has created the spawning and rearing environment that favors shad.
- 1961 Rocky Reach Dam on the Columbia and Ice Harbor and Oxbow dams on the Snake are completed. Oxbow is a block to upstream migration. When the Oxbow reservoir was filled, the Snake River downstream was dewatered, killing thousands of salmon.
- 1961 The first comprehensive program to study juvenile salmonid migrants in the Columbia and Snake Rivers is initiated.
- 1961 Hills Dam (Willamette River) put in service
- 1963 Mayfield Dam on the upper Cowlitz River, a large tributary to the lower Columbia River is completed, blocking wild spring chinook, coho, fall chinook, winter steelhead and summer steelhead from most of the high quality rearing grounds in the basin. In 1968 Mossyrock Dam is built.
- 1963 Wanapum Dam is completed on the upper Columbia.

- 1963 Cougar Dam on McKenzie River put in service, eliminating 56 km of spawning habitat on the South Fork McKenzie R. The SF McKenzie was considered the best salmon producing stream in the drainage (USFWS 1948). (Willamette, L Col R TRT 2005)
- 1965 Summer chinook fishing is closed on the Columbia to protect the stock. A total of 63,500 adults passed Bonneville Dam in that year.
- 1965 Fall Cr Dam included fish passage, but they worked only during high flow years.
- 1966 Lower Columbia River coho salmon have a spawner abundance of 38 fish per mile
- 1966 Fall chinook spawners number 12,800 in the Snake River.
- 1966 Dams on Santiam River put in service
- 1967 Hells Canyon Dam is completed on the Snake River. This dam is a complete block to fish passage and removes about 80% of the fall chinook spawning habitat in the Snake River.
- 1967 Wells Dam completed on the upper Columbia. This dam inundated important spring chinook spawning areas.
- 1968 The tribes file the U.S. v Oregon law suit to protect their treaty fishing rights and gain commercial fishing rights to the Columbia above Bonneville Dam...
- 1968 The governors of Oregon, Washington, and Idaho establish the Columbia River Fisheries Advisory Council composed of the fish and game directors of these states. This later becomes the Columbia Basin Fish and Wildlife Authority.
- 1968 John Day dam is completed on the Columbia just downstream from the John Day River. This dam remains a major problem for fish passage.
- 1968 Leonard A. Fulton, a biologist with the NMFS, estimated that an average of 34,000 fall chinook spawned between John Day and McNary Dams. He indicated that significant numbers spawned in the area inundated by McNary Dam.
- 1968 Blue River Dam on McKenzie River put in service, eliminating 32 km of spring chinook spawning habitat. (Willamette, L Col R TRT 2005)
- 1969 Lower Monumental Dam is completed on the Snake River creating passage problems and high concentrations of gas bubble disease.
- 1969 Commercial fishery rules above Bonneville Dam are established to include the area from the Bridge of the Gods to the mouth of the Umatilla River, with closures at mouths of rivers, dams, and with gear restrictions.
- 1960s-1970s Nitrogen supersaturation kills thousands of salmon due to spill at dams.
- 1970 Little Goose Dam completed on the Snake River, creating passage problems.

- 1972 Dworshak Dam is built on the North Fork Clearwater River in Idaho, blocking this large productive tributary to B-run steelhead and spring chinook. The reservoir is 50 miles long and the dam is near the mouth of the river. A hatchery was constructed to mitigate for the dam.
- 1973 Severe drought in the Columbia River Basin caused low flow conditions and extreme mortality for salmon and steelhead passing through eight hydro dams from the Snake River to below Bonneville Dam. Spring chinook juveniles survival was 1-3% (97-99 percent mortality) and summer steelhead survival was less than 1% (>99 percent mortality) (Williams et al. 2001). See 2001.
- 1973 The Endangered Species Act passed by Congress. Fish agencies begin review of salmon and steelhead status for upper Columbia and Snake rivers under the ESA. This review was suspended in 1978 in anticipation of the N.W. Power Planning Act passed by Congress in 1980. It was believed that the Power Act would supply the money and measures to recover depleted salmon and steelhead runs.
- 1974 Dworshak Dam is completed on the North Fork Clearwater River in Idaho. This blocked the major production area for B-run summer steelhead in the Columbia Basin. Dworshak Hatchery was built to rescue this unique steelhead run.
- 1975 The Columbia River sockeye salmon fishery is closed.
- 1975 Chum salmon harvest in the lower river is a record low of 5,700 pounds or 500 fish. This represents a 99% reduction in chum salmon abundance since 1928.
- 1975 By initiative measure the citizens of Oregon prohibit the sale of steelhead by commercial fishermen. The tribes are excluded from this law and continue to sell steelhead.
- 1975 The Oregon Fish Commission and Wildlife Commission are merged to create the Oregon Department of Fish and Wildlife.
- 1975 Lower Granite Dam is completed on the Snake River. Salmon and steelhead in the Snake Basin have eight dams to cross twice in their life cycle.
- 1976 Spring chinook fishery is closed in the Columbia River.
- 1976 Scientists discover a shift in ocean productivity resulting in lower survival in northwest salmonids for the next twenty years. The combination of poor ocean survival and freshwater mortality caused by dams create a severe decline in upriver stocks.
- 1976 Foster Dam blocks nearly all historical spring chinook spawning areas in the Middle Santiam River, Quartzville Creek, and South Santiam River. (Willamette, L Col R TRT 2005).
- 1977 Since 1957 summer chinook decline is 75%, the spring chinook decline is 50%, and fall chinook decline is 90%.
- 1977 Low flows in the Columbia and Snake rivers are caused by a severe drought causing a 97 to 99 % smolt mortality passing the eight mainstem dams.

- 1977 The federal court approved a five year management and allocation agreement between the states and tribes for salmon and steelhead.
- 1977 The four Columbia River treaty Indian tribes (Warm Springs, Nez Perce, Umatilla, and Yakima tribes) form the Inter-Tribal Fish Commission to represent their interests in the salmon fishery above Bonneville Dam.
- 1978 The Oregon Department of Fish and Wildlife establishes for the first time in its history a wild fish policy. The policy is primarily concerned about where hatchery fish will not be released rather than an ecologically based protection plan. This policy is adopted as a result of public insistence.
- 1978 Evaluation of hatchery steelhead on the Deschutes River showed that interbreeding between hatchery and wild fish reduced survival and adult production. This study showed that hatchery fish survive better in the hatchery environment than in natural streams and that wild fish survival was poor in the hatchery while performing much better than hatchery fish in streams. This was the first study to raise concerns about using hatcheries as the primary mitigation tool for habitat destruction.
- 1979 Only 30 sockeye salmon cross Ice Harbor Dam on the Snake River.
- 1979 Idaho closes its spring chinook fishery.
- 1979 Oregon approves a policy to forego spawner abundance goals for coho salmon on the lower Columbia River in order to maximize the harvest of hatchery coho. Hatchery fish would be out-planted into tributaries to supplement the lack of natural spawners.
- 1979 The wild coho spawner abundance declines to 2 spawners per mile in tributaries to the lower Columbia River.
- 1980 Fall chinook in the upper Columbia River decline 50% over the past ten years.
- 1980 Congress passes the N.W. Power Act and makes salmon protection and enhancement equal with power production in the Columbia Basin.
- 1980 Congress passes the Salmon and Steelhead Enhancement Act to create a coordinated management structure for the fisheries and to plan for enhancement. Planners met for several years and held public hearing on their plan but it was never funded.
- 1981 Prior to 1981 the investment of funds on salmon in the Columbia has been about \$500 million with 43% going toward hatcheries, 37% to passage, less than 1% for habitat, and 20% for research.
- 1982 161 million salmon smolts are released annually into the Columbia River, yet the runs continue to decline.
- 1982 The first fish and wildlife program of the N.W. Power Council is adopted for the Columbia River. The fish agencies argue: "Mixed stock fisheries successfully operated for many years on upriver stocks without causing depletion, prior to full hydroelectric dam development on the mainstem Columbia and Snake rivers." These agencies take

- exception to the Power Council's emphasis on restoration of wild fish and take a stand for more hatcheries.
- 1982 No specific recommendations were received regarding the maintenance of wild stocks on the Columbia River by the fish management agencies on the Columbia River in the first regional fish and wildlife plan adopted by the Power Planning Council for the Columbia Basin.
- 1983 A very powerful El Nino event warms the ocean causing poor returns of salmon, but increased rain and snow fall through 1985 improve rearing conditions in the Columbia Basin and survival of fish increase. Salmon that migrate to ocean rearing areas off Alaska survive at a higher rate than stocks that have a more southern distribution during El Nino events.
- 1985 The Columbia River salmon resources have been harvested by non-Indians for 124 years and the management of the salmon resources have been in place for 90 years.
- 1985 The U.S. and Canada sign a salmon interception treaty after 20 years of negotiations. The runs are so depleted in both countries the treaty is needed. However, this treaty will not be renewed and remains unsigned in 1998.
- 1985 The current Columbia River salmon and steelhead run size is about 2.5 million fish of which about 80% are of hatchery origin. The new Fish and Wildlife Program seeks to double the runs.
- 1985 The estimated loss of anadromous salmonids in the Columbia is between 7 and 16 million fish. Wild salmon and steelhead represent just 3% of their historic abundance.
- 1985 In the Columbia Basin 31% of the stream miles that use to be available for salmon spawning and rearing have been blocked or degraded so they are no longer in production. This means that 55% of the total watershed has been removed from production, or 9,000 miles of stream.
- 1985 In Oregon over 4,000 miles of streams once available to anadromous fish have been removed from production.
- 1986 Coho salmon in the Snake River go extinct. Fish management agencies did not regulate the fisheries to meet spawner abundance goals to perpetuate this species.
- 1986 The Mitchell Act fish recovery funding spent 79% on hatcheries and 10% on habitat improvement and screening of irrigation diversion.
- 1988 The federal court approves an agreement between the states and tribes under U.S. v Oregon that creates the Columbia River Fish Management Plan. Fisheries management and hatchery production will be managed through this court ordered agreement. This plan also gives the tribes a certain allocation of the fish and the states must restrict their harvests before they can restrict the tribes.
- 1988 The NW Power Planning Council adopts the Protected Areas Program placing 44,000 miles of salmon and steelhead streams off limits to hydroelectric dam development. The

- Council found that hydro development and salmon health were incompatible. The protected areas rule advises the Federal Energy Regulatory Commission.
- 1990 Coho salmon in the lower Columbia River decline to less than one spawner per mile, and citizens prepare a petition to list the wild coho as an endangered species.
  - 1990 The Shoshone-Bannock tribes petition to list sockeye salmon in the Snake River as an endangered species. In 1991 no adult sockeye returned to their natal waters of Redfish Lake in the Salmon River Basin. This sockeye run had not been managed to deliver enough adults to perpetuate the run.
  - 1990 This year only 75 wild fall chinook, 135 wild summer chinook and 244 spring chinook pass above Lower Granite Dam. Extinction is at hand.
  - 1991 Total expenditures for salmon protection on the Columbia River from 1981 to 1991, based on a GAO report, were \$1,400,000 with 40% going toward more hatcheries, 34% for fish passage at dams, 7% for habitat protection, and 20% for research. The salmon runs continue to decline.
  - 1991 Snake River sockeye salmon are listed as an endangered species. This is the only sockeye population in the world that migrates so far inland to spawn and at such a high elevation. <http://www.nwr.noaa.gov/1salmon/salmesa/socksnk.htm>
  - 1991 The first status assessment of west coast anadromous salmonids was published by the American Fisheries Society in the March-April edition of *Fisheries*. This study is called Pacific Salmon at the Crossroads, identified 214 native wild populations in Oregon, Washington, Idaho, and California. Of these 101 are at high risk of extinction, 58 are at moderate risk of extinction and 54 are of special concern. There are 76 stocks in peril within the Columbia Basin.
  - 1991 Senator Hatfield of Oregon organizes a formal meeting of all interest groups in the Columbia Basin in an effort to resolve the salmon decline and build a recovery program. It became known as the Salmon Summit. A few commitments were made, but it did not result in a recovery plan of salmon.
  - 1991 The U.S. Forest Service re-evaluates the number and size of large pools in streams that were first evaluated in 1940. They looked at 204 stream miles in 15 watersheds. In all managed watersheds large pool habitats decreased 30 to 70% while in all wilderness watersheds, the number of large pools were either stable or grew in size.
  - 1992 The Snake River spring, summer, and fall chinook are listed as a threatened species under the Endangered Species Act. This was in response to a petition from the public not the fish management agencies. The spring and summer chinook had escapement goals but they were never achieved and the fall chinook had no escapement goal and were managed, like the Snake River sockeye and coho, for extinction.  
<http://www.nwr.noaa.gov/1salmon/salmesa/chinsrs.htm> (spring/summer chinook)  
<http://www.nwr.noaa.gov/1salmon/salmesa/chinsrf.htm> (fall chinook)
  - 1992 The National Marine Fisheries Service finds that lower Columbia River coho salmon are not warranted for listing under the ESA because no distinct native wild populations can be found in the lower river. The conclusion is that lower Columbia River wild coho

- salmon are extinct and the fish that are found in spawning streams are stray hatchery stocks. The extinction of lower Columbia River coho is the result of Oregon and Washington fishery management that maximized harvest of hatchery coho and set no conservation standards for wild coho salmon. This official approach to fish management set the stage for coho salmon extinction.
- 1992 The Oregon Department of Fish and Wildlife revised its wild fish management policy setting out gene conservation goals for wild fish management for the first time. The agency also establishes a natural production program with five biologists for the first time in history. Public advocacy rather than agency initiative created this change.
- 1992 The Washington Department of Fish and Wildlife complete the first status report for sea-run salmonids in the state called the SASSI (Salmon and Steelhead Stock Inventory) <http://wdfw.wa.gov/fish/sassi/sassi.htm>
- 1993 The Washington legislature caused the Washington Department of Fisheries and the Department of Wildlife to merge into the department of fish and wildlife. The commissioners are appointed by the governor.
- 1993 U.S. District Judge Malcolm F. Marsh orders the federal government to improve dam operations on the Columbia to reduce their hazards to salmon.
- 1994 The U.S. Fish and Wildlife Service conducted a review of the national fish hatchery program and they found the program needed a fundamental redirection toward supporting ecosystem management that restores depleted populations and recovers ESA-listed stocks. A well defined national fish hatchery program with definite goals, objectives, and evaluation did not exist.
- 1994 Ocean salmon fishing is banned for first time off the northern Oregon and Washington coasts.
- 1994 Washington fish and game biologists file ESA petitions on behalf of 9 coho salmon runs in Puget Sound. This is the first time a fish management agency initiated action under the ESA to protect wild salmon.
- 1994 Native Fish Society requests independent scientific evaluation of harvest on ESA-listed salmonids in the Columbia River. This evaluation is not completed until 2005. A reason noted by the Power Planning Council is that this evaluation is resisted by the fish management agencies.
- 1995 The federal government dictates that more water in the Columbia and Snake rivers must be used for salmon instead of power production and irrigation.
- 1995 Nicholas (ODFW 1995) considered the Calapooia R spring chinook run extinct and Fall Cr spring chinook, tributary to the MF Willamette R to be extinct. (Willamette, L Col R TRT 2005).
- 1996 The second independent scientific review of Pacific salmon status is published by the National Research Council. The NRC states that management of hatcheries has adverse effects on natural salmon populations. The book, *Upstream*, makes recommendations for salmon management and recovery, but there is no institutional means by which they can be implemented in the Columbia Basin. This status review was secured by Senator

- Hatfield, following the Salmon Summit. The NRC concludes that current hatchery practices do not operate within a coherent strategy based on the genetic structure of salmon populations and lack genetic guidance from an explicit conservation policy.
- 1996 Senator Gorton, ® Washington, required the NW Power Planning Council to establish independent science advisory panels to review projects before funding approval by the Council and the Bonneville Power Administration. This required, for the first time, that salmon projects be submitted for scientific review. This requirement set in motion the use of independent scientific teams at the state level, resulting in the formation of the Oregon Independent Multidisciplinary Scientific Team and the Hatchery Scientific Review Group in Washington state.
- 1996 The Independent Scientific Group of the NW Power Council reviewed the hatchery program and said hatcheries can have adverse effects on wild fish and have failed to replace or mitigate for lost natural production of salmonids. All three evaluations agreed that hatcheries have failed to meet objectives, they created adverse effects on natural populations, and performance evaluation is lacking.
- 1997 The native steelhead of the upper Columbia River are listed endangered under the ESA by the NMFS. This includes all populations upstream from the Yakima River.  
<http://www.nwr.noaa.gov/1salmon/salmesa/stlhucr.htm>
- 1997 Native steelhead in the Snake River Basin are listed threatened under the ESA by the NMFS. <http://www.nwr.noaa.gov/1salmon/salmesa/stlhsrb.htm>
- 1997 Washington Department of Fish and Wildlife adopt the Wild Salmonid Policy after years of debate. Director Bern Shanks advocated the policy and was removed from office. The goal of the policy is to protect, restore, and enhance the productivity, production, and diversity of wild salmonids and their ecosystems...
- 1997 The U.S. Congress directed the Northwest Power Planning Council, with the assistance of the Independent Scientific Advisory Board, to conduct a thorough review of all federally funded hatchery programs in the Columbia River Basin.
- 1998 Native steelhead in the lower Columbia River are listed as a threatened species by the NMFS. The ESU includes all naturally spawned populations of steelhead (and their progeny) in streams and tributaries to the Columbia River between the Cowlitz and Wind Rivers, Washington (inclusive) and the Willamette and Hood Rivers, Oregon (inclusive). Excluded are steelhead in the upper Willamette River Basin above Willamette Falls and steelhead from the Little and Big White Salmon Rivers in Washington.  
<http://www.nwr.noaa.gov/1salmon/salmesa/sthlcr.htm>
- 1998 Human development of the basin has reduced the area available to salmon and steelhead to just 73,000 square miles. Of all salmon and steelhead habitat in the basin, 55% of the area and 31% of the stream miles have been eliminated by dam construction.
- 1998 The Oregon Department of Environmental Quality completes a list of water quality limited streams. Excessive stream temperatures that do not support salmonids are found in 5,863 miles of streams in Oregon's part of the Columbia Basin.

- 1999 Chum salmon in the lower Columbia River are listed as a threatened species under the ESA. <http://www.nwr.noaa.gov/1salmon/salmesa/chumcr.htm>
- 1999 Fall chinook in the lower Columbia River are listed as a threatened species under the ESA. <http://www.nwr.noaa.gov/1salmon/salmesa/chinlcr.htm>
- 1999 Spring chinook in the Willamette River above the falls and the Clackamas River listed as threatened. <http://www.nwr.noaa.gov/1salmon/salmesa/chinuwr.htm>
- 1999 Spring chinook in the upper Columbia River are listed as endangered. The ESU includes all naturally spawned populations of chinook salmon in all river reaches accessible to chinook salmon in Columbia River tributaries upstream of the Rock Island Dam and downstream of Chief Joseph Dam in Washington, excluding the Okanogan River. Chinook salmon (and their progeny) from the following hatchery stocks are considered part of the listed ESU: Chiwawa River (spring run); Methow River (spring run); Twisp River (spring run); Chewuch River (spring run); White River (spring run); and Nason Creek (spring run). <http://www.nwr.noaa.gov/1salmon/salmesa/chinuhrs.htm>
- 1999 Winter steelhead in the Willamette River above the falls are listed as a threatened species under the ESA. <http://www.nwr.noaa.gov/1salmon/salmesa/stlhuwr.htm>
- 1999 Winter and summer steelhead in the middle Columbia are listed as threatened under the ESA. The ESU includes all naturally spawned populations of steelhead in streams from above the Wind River, Washington, and the Hood River, Oregon (exclusive), upstream to, and including, the Yakima River, Washington. Excluded are steelhead from the Snake River Basin. <http://www.nwr.noaa.gov/1salmon/salmesa/stlhmcr.htm>
- 1999 The state of Oregon lists the lower Columbia River coho salmon as an endangered species. The National Marine Fisheries Service continues to refuse to list these salmon, continuing their status reviews following the initial petition from the public to list them in 1991.
- 1999 The NW Power Planning Council responds to direction from Congress to evaluate the Columbia River hatchery program and develop a coordinated policy for future operation of federal hatcheries. This resulted in the Artificial Production Review <http://www.nwr.noaa.gov/1hgmp/template/APR99-15.pdf>
- 2000 For the first time in 125 years, the National Marine Fisheries Service requires Hatchery and Genetic Management Plans be written for each hatchery in the Columbia Basin. The primary purpose of the HGMP is to provide a single, comprehensive source of information regarding anadromous salmonid hatchery programs. The National Marine Fisheries Service (NMFS) will use this information in its Endangered Species Act (ESA) processes to assess impacts on listed anadromous fish. An additional, important purpose of the plans is the creation of a source for comprehensive hatchery program information for use in regional fish production and management planning by federal, state, and tribal managers.
- 2001 Oregon Department of Fish and Wildlife adopt a recovery management plan for lower Columbia River coho salmon. The NMFS considers these fish as a candidate for listing, but have taken no action to list them.

- 2001 A federal judge in Oregon rules that NOAA Fisheries, a federal agency, could not define salmon as including both hatchery and wild salmon but then only protect the wild salmon under the ESA. As a result, the judge removed protection for Oregon coastal coho salmon. Rather than appealing the “Hogan decision,” NOAA Fisheries decided to re-evaluate the status of every federal listed salmonid species in the Pacific Northwest, and began rewriting their hatchery policy. See 2004
- 2001 NMFS concludes that even though the Columbia River hydropower system contributes to salmonid mortality, it is much lower than in the 1970s , and “the hydropower system may no longer represent the most important factor leading to the present low smolt to adult survival.” (Williams et al. 2001).
- 2002 In response to the “Hogan decision” industry and private property rights groups petition the federal government to take all salmon and steelhead off the Endangered Species Act list. The environmental groups submitted petitions to protect only the wild portion of 15 salmon and steelhead groups. The federal government accepts both the petition to delist and to list only wild salmonids. The petition to list only wild salmonids was rejected.
- 2003 NOAA Fisheries convened a team of scientists to update the biological status of all 27 groups of listed salmonids in the Pacific Northwest. They found that none of these groups had improved and that three had declined since they were originally listed under the ESA.
- 2003 Judge Redden ruled that the federal government could not conclude that they were adequately protecting salmon from dam operations on the Columbia River. He remands the 2000 Biological Opinion to NOAA Fisheries to make it consistent with federal law.
- 2003 Representative Norm Dicks of Washington State launched a new requirement to mark all hatchery fish in the Interior Appropriations Bill signed by President Bush in February. Hatchery fish reared in federal hatcheries or paid for with federal money are to be marked. This is normally done by removing the adipose fin near the tail on the dorsal side of the fish. A salmon or steelhead with a missing adipose fin is legal to take home. This law continues to be opposed by state and tribal fish managers and was never fully implemented.
- 2003 NOAA Fisheries proposes lower Columbia River for listing as a threatened species and proposes to change the listing of upper Columbia River steelhead from endangered to threatened.
- 2003 In response to the Congressional request for an evaluation of federal hatcheries in the Columbia River Basin (1997) the Power Planning Council issues a report on hatcheries. This report includes all hatchery programs in the Columbia basin not just federally funded ones. The report finds the following: 1) Many segregated hatchery programs contribute significantly to wild spawning populations, despite the intention to separate hatchery and wild fish. The amount of mixing was unknown in a third of segregated programs. In addition, 41 percent used non-local broodstock and 63 percent transferred or released fish from outside the stream system. 2) Harvest remains the primary reason for hatchery programs in the Columbia River Basin. This is particularly the case in the lower river. 3) Identification of hatchery funding is a complex issue because most programs are funded from a variety of direct and indirect sources. 4) Information on the number of recruits per spawner was collected for less than 5 percent of programs, smolt-to-adult

survival figures were available for 35.6 percent of programs, escapement figures were collected for 20.7 percent of programs, and about 33 percent of programs had information on escapement. <http://www.nwppc.org/library/2003/2003-17.htm>

- 2003 The Oregon Legislature diverts \$4 million from habitat funds to establish a research salmon hatchery proposed by ODFW to make hatchery salmon like wild salmon. The money was committed to this project prior to the development of an operational or research plan. In addition, ODFW does away with its habitat division and fires the program administrator.
- 2003 The Oregon Department of Fish and Wildlife reforms its Wild Fish Policy (1978) and adopts a Native Fish Conservation Policy to provide conservation management plans for all native fish populations in the state and requires a complete stock status assessment. [http://www.dfw.state.or.us/nfcp/NFCP\\_091203.pdf](http://www.dfw.state.or.us/nfcp/NFCP_091203.pdf)
- 2004 Columbia River flows at The Dalles Dam are 10% higher and winter flows are 3% lower than 1900 conditions. (Gedalof et al. 2004)
- 2004 The federal government (NOAA Fisheries) in response to Judge Redden proposes a new draft Biological Opinion on the federal hydroelectric dams in the Columbia River to include these dams as part of the natural ecosystem of salmon, thus removing them from jeopardy evaluation for recovery of ESA-listed salmon.
- 2004 The federal government (NOAA Fisheries) proposes a hatchery policy that includes hatchery salmon as a listed species along with wild salmon. The hatchery salmon would be included in the listing determination. This proposal advances the idea that hatchery and wild salmon are equal and the same. <http://www.nwr.noaa.gov/reference/frn/2004/69FR31354.pdf>
- 2004 An independent scientific group invited to help develop the NOAA Fisheries new hatchery policy recommended that hatchery salmon should not be listed. NOAA Fisheries rejected their input and the scientists had to publish their findings in *Science* to get their recommendations out to the public. They said do not list hatchery fish along with wild salmonids under the ESA.
- 2004 The NOAA Fisheries public hearing on the proposed hatchery and listing policy in Portland, Oregon is delayed because it would take place when President George W. Bush is in Portland on a re-election campaign swing.
- 2004 The lower Columbia River Salmon recovery Plan identifies 21 separate populations of chinook salmon within the tule component of this ESU. The populations in this ESU are thought to have been greatly affected by out-of-basin hatchery strays. Recovery of tule fall chinook depends upon more selective and reduced harvest in the ocean and in the Columbia River as well as separating naturally spawning hatchery fish from wild tule fall chinook.
- 2004 The Native Fish Society asks NOAA Fisheries and ODFW to conduct harvest accounting to evaluate the effect of harvest on the status and recovery of ESA-listed salmon. The NOAA Fisheries says the accounting is needed but takes no action. ODFW, however, says that it will begin this evaluation at the end of 2004.

- 2004 The Native Fish Society compiles information on remaining wild salmonids in the Northwest, but discovers there is no specific documentation. The criteria is to identify those wild salmonids that have no direct hatchery fish releases or a hatchery fish stray rate of 5 percent or less. Because the wild populations are not identified and have no specific program for conservation management, the region is unable to maintain or protect the legacy of biological diversity that has evolved over the last 40 million years.
- 2004 The Oregon Department of Fish and Wildlife develops the first comprehensive stock status report for all native fish in Oregon.
- 2004 There is no indication that the Washington Wild Salmonid Policy, adopted in 1997, has been implemented. The WDFW is recommending that the promise of future management actions be use to recover lower Columbia River wild coho salmon rather than have them listed as an endangered species. <http://wdfw.wa.gov/fish/wsp/wsp.htm>
- 2004 A \$12 million fish slide is prepared for Ice Harbor Dam on the Snake River. A prototype was tested at Lower Granite Dam and credited with improving the survival of juvenile salmon. It also uses less water than spill, which excites BPA because the “wasted water” can be run through the turbines to make electricity that BPA sells. Each of the federal dams is to be fitted with this new fish slide. Independent evaluation, however, says that survival improvements for salmon and steelhead smolts are not statistically significant.
- 2004 Every spring eight million hatchery steelhead smolts are released to migrate to the ocean by Idaho Fish and Game. About 1.1 million or 14 percent of these juvenile fish do not have their adipose fin clipped off. When the steelhead return as adults, the unclipped hatchery steelhead are left in the rivers to spawn naturally. When unclipped hatchery fish stray into other watersheds they cannot be removed legally by angling, yet they interbreed with wild fish in those watersheds reducing the reproductive success of the wild population, many of which are listed under the ESA.
- 2004 The Bush Administration proposes to remove 80% of the critical habitat designation for ESA-listed salmonids on the West Coast.
- 2004 The Technical Review Team for the lower Columbia and Willamette rivers publish a status report for salmonids. They find that all spring chinook and winter steelhead populations are either at very high risk or high risk of extinction and that there are no wild populations that are viable.
- 2005 Oregon and Washington fish management agencies propose to increase the kill of ESA-listed wild winter steelhead in the lower Columbia and Willamette rivers from 2% of the run to 6% in order to gain access to harvest more hatchery spring chinook in the commercial fishery. The Washington fish and wildlife commission supports an increase to 4% while the Oregon commission rejects the proposed increase, keeping it at 2%.
- 2005 The Department of Fisheries and Oceans publishes the first wild salmon policy draft for public comment in British Columbia.
- 2005 Research results sponsored by the City of Portland (2005) indicate that naturally produced spring chinook subyearlings rear in the lower Willamette in the urban part of the river and are concentrated along shallow natural beach areas in the winter and spring.

- 2005 Canada scientists recommend Okanogan River Chinook salmon be listed as an endangered species under the Species At Risk Act. (The Committee on the Status of Endangered Wildlife in Canada, May 6, 2005)
- 2005 Fish agencies do not count wild spring chinook in the Columbia River basin as these fish move past the dams or in the Willamette River over the falls. They estimate the number of ESA-listed fish rather than measure actual numbers. Not all hatchery chinook in the Columbia are marked so an accurate count of wild chinook is not possible. The Willamette wild chinook count is not required by the state fish agency.
- 2005 On June 16<sup>th</sup> NMFS issues its final hatchery policy, its final updates of ESA listings for 16 West Coast salmon populations and extends for six months a final decision on Oregon Coast coho salmon and ten populations of steelhead.
- 2005 Lower Columbia River Coho Added as “Threatened.” The lower Columbia River coho, which had previously been denoted a “candidate” species, was listed as “threatened” in the final determination, increasing the total ESUs listed from 26 to 27. (see 1991 and 1999) [http://www.nwr.noaa.gov/AlseaResponse/20040528/hlp\\_esufs6\\_05.pdf](http://www.nwr.noaa.gov/AlseaResponse/20040528/hlp_esufs6_05.pdf)
- 2005 Federal judge James Redden rejects NMFS Hydro Biological opinion and remands it to the agency to fix so that salmon are protected. He previously rejected the 2000 Biological opinion and now the one that replaced it in 2004.
- 2007 Federal Judge rules against NMFS on upper Columbia River steelhead listing. NMFS wanted to count hatchery fish and say the steelhead qualified for threatened status rather than endangered. The judge said that only natural fish count under the ESA and upper Columbia River steelhead are listed as an endangered species.
- 2007 Federal Magistrate rules in favor of Oregon Coastal Coho listing under the ESA following a review of NMFS proposal to not list coho salmon based on the ODFW coho salmon assessment. The magistrate relied on science in the decision saying that NMFS acted were relisted in 2008 as a threatened species.
- 2007 In April BPA sold more power from Columbia River dams than it could produce and it could not buy more in the market to cover the shortfall. A cold snap increased the power demand so BPA, in the middle of the salmon smolt outmigration to the sea, cranked up the turbines to produce power to cover its shortfall. Judge Redden, who is overseeing the hydro-salmon case, learned about what happened only through an anonymous phone message. The judge said, “BPA’s sales commitments to customers always trump its obligation to protect ESA listed species. This was a marketing error and ESA-listed fish paid the price. This, the law does not permit.” (Milstein, The Oregonian June 21, 2007)
- 2007 Federal Judge James Redden says the federal plan to protect salmon at federal dams falls so far short it may be worse for salmon than the two plans he’ already rejected. The judge warned the government that it is unlikely they will get another chance to do the right thing for salmon. The judge said “I instructed federal defendants to consider all mitigation measures necessary to avoid jeopardy (to salmon), including removal of the four lower Snake River Dams, if all else failed. I also instructed the federal defendants to ensure that any mitigation measures are reasonably certain to occur.” But the judge was disappointed again by the government plan and said “...federal defendants seem

- unwilling to seriously consider any significant changes to the status quo dam operations.” (Milstein, The Oregonian, Dec 11, 2007)
- 2008 This proposed agreement between the Bonneville Power Administration, the Army Corps of Engineers, the Bureau of Reclamation and four Columbia River tribes would provide the tribes with \$900 million over ten years. In exchange for this money the tribes agree to not seek removal of federal dams or to take legal action to enforce federal Clean Water Act regulations covering gas bubble disease or water temperatures that affect the survival of salmonids. Nearly \$1 billion would be added to the \$9 billion already spent on salmon recovery with no measurable benefit to salmon, nonetheless, this money is very important to the agencies and tribes involved with salmon recovery programs. Three Columbia River tribes signed this “Accord”.
- 2008 The Coastal Conservation Association is formed by Gary Loomis to protect wild salmon and regulate harvest so that only the most selective fisheries are allowed to harvest salmon.
- 2008 As a result of NMFS’s continuing review, “we have taken action to reduce the total exploitation rate on tule fall chinook from 49% in 2006 to 42% in 2007 and then to 41% in 2008.” (NMFS Guidance Letter to PFMC March 3, 2009) The NMFS requests that PFMC harvest not exceed 38% in the 2009 ocean fishery. The NMFS based this harvest rate reduction on the Coweeman River fall chinook stock which is believed to have less hatchery influence and to be relatively productive. However, Grays River tule fall chinook are exposed to the same harvest rate and scientific evaluation concludes this natural stock has a low tolerance for harvest. The Grays River tule fall chinook harvest rate ranges from zero to 8% impact.
- 2008 Lower Columbia River wild coho are found in only a few streams. They have a history of being overharvested (60% to 90%) and to compensate for the decline of natural spawners the states of Oregon and Washington have released hatchery fish in the tributaries to boost natural production. A more scientifically sound approach to harvest and hatchery impacts on wild coho after they were listed as a threatened species in 2005. The NMFS guidance letter to PFMC requests that the total exploitation rate limit on lower Columbia River coho not exceed 13.0%. (NMFS Guidance Letter to PFMC March 3, 2009) This harvest impact is 12% higher than it was in 2008, but it is justified on models developed by the states who regulate harvest for their constituents. The NMFS questions these models and requests that the states refine their models to “ensure that it addresses the needs of priority populations in particular and all populations in general.”
- 2008 The Hatchery Science Review Group (HSRG) has been reviewing all hatchery programs in the Columbia River basin with the purpose of improving protection of wild salmon and steelhead. The HSRG is proposing to either block hatchery fish from spawning naturally with wild fish or integrating hatchery and wild salmonids so that the reproductive fitness of the wild population is not excessive. One proposal for hatchery programs in the lower Columbia River is to build weirs on tributaries to keep hatchery fish from spawning naturally with wild salmonids.
- 2009 In 1980 Congress created the Northwest Power Planning Council and its purpose is to balance hydroelectric supply with salmon production. In the last 27 years since the first

fish and wildlife program was adopted and a goal was set to double the runs of salmon and steelhead, the Council is now reviewing whether the abundance can grow to 5 million fish. Since the program was first adopted most salmon and steelhead in the Columbia River basin have been listed under the Endangered Species Act. The Council takes recommendations from state, federal and tribal fish agencies and the public, runs them through a scientific filter and proposes actions to be funded by the Bonneville Power Administration. Since the program was started about \$9 billion have been spent to recovery salmon with no measurable effect.