Page

1947 Report	I. P. S. F. C.
1. Public Law 255 - 80th Congress, the Commissions regulations for the protection, preservation and extension of the Fraser River Sockeye fishery.	Chapt. 345 - 1st Section gives the force of law to

19. The decrease in 1947 catch as compared to 1943 was caused by the regulations which shortened the season more than a month over that of the previous years of this cycle. In 1947 the main bulk of the sockeye apparently had moved through the fishing area before the opening date.

21. The total catch of 1947 was greater than that for the previous year of the cycle, an increase of almost 38%. (Note. And this despite the main bulk of the runs having passed up river before the season opened.

23. The largest increase was shown in the Nechaco area. The Stuart area came next in its gain over 1943. Only 6 sockeyes were found in a careful examination of the entire Quesnel - Horsefly area.

1948 Report

3. Since 1913 the economic loss in one cycle alone based on U.S. Government prices for 1947 was over $ 279,000,000. On 1948 values over $500,000,000. would have to be assigned to the factors causing the depletion of the Fraser Sockeye. The obstruction at Hell's Gate was the major cause of the depletions in the runs. Other factors were the Adams River dam built in 1908 and the Quesnel dam constructed in 1898.

4. The dam on Adams river was removed in 1945. The Quesnel dam had been removed in 1921. In 1948 the Fraser river became relatively free of major obstructions.

~~25~~ ~~The cycle to~~
Three out of four cycles to the Quesnel area are practically non existent, (Note. And were known to be so since the early 1800s) and in the fourth cycle only a remnant of 1,050 fish was found in 1941 as compared with the 4,000,000 fish recorded in 1909. Upper Adams River once a major producer of "early run" fish, has no spawning run whatsoever. The Fraser - Francois Lake system, once a major producer, had annual runs of 1,500 to 5,700 adult sockeyes from 1938 to 1941

Page

1948 Report continued

5 The Commission's power of regulation became operative in 1946.

Where a race has been exterminated, rehabilitation cannot be accomplished by regulation. A new race must be artificially established if that area is again to become productive.

21. ~~In~~ The Tweedsmuir Park area (Nechaco system) waters are at present inaccessible to salmon because of a series of falls and rapids which they cannot negotiate. It was not possible during the preliminary surveys to establish definitely any of the environmental limitations to the introduction of sockeye runs to this area. (Note. See photo of Nechaco Canyon falls on page 26 and compare to the Medziadin Falls on Naas river where a fishway was successfully built and has operated since the early 1900s) Construction of a proposed dam on the Upper Nechaco River would remove a large part of the flow from this stream and information was desired as to what effect this would have on the section of this river now used by sockeye salmon.

26. A number of potential lake areas are now inaccessible to spawning sockeye salmon owing to natural river obstructions, one such river being the Upper Nechako, which is blocked by the Nechako Canyon. Only the mapping has been completed at the end of this year Such work indicates it is possible to eliminate the blocks existing in the Nechako Canyon

1949 Report

19. The sockeye runs of 1949 included the first returning progeny of fish using Hell's Gate fishways. The block to ascending adults had been removed in 1945 but the effects of its removal could not be ascertained until a return from unblocked fish occurred. The Commission's expectations were realized when the 1945 escapement to all spawning districts above Hell's Gate except the one to Chilko produced at a very high rate. The Stuart Lake escapement including both the early and late

19. run was the largest recorded since 1913. Takla Lake received a good seeding where few if any fish had been observed since the start of the Commission's investigations in 1938. The number of spawners actually taxed the physical capacity of the parent streams in this area.

The early escapement to the Stellako system numbering 26,562 (Note. A six-fold increase over 1945) was likewise encouraging. The early runs to the Bowron (Note. A five-fold increase over 1945 and a twenty-fold increase over 1941) and South Thompson River showed a substantial increase. The number of spawning sockeye in the Fraser district increased 400 per cent.

21. From the data presented it appears that the Adams River district will be the major producer of sockeye in 1950* followed in importance by the Stellako and Birkenhead systems. (Note. In the record of the consistent ~~fa~~ practically total failures in all the Upper Fraser areas in this cycle from 1906 on it is doubtful if 1950 will be good in any portion beyond Bridge River and possibly not even there. The Fraser Canyon fishways might work to perfection but except for the Nechaco area (Stellako River) ~~here~~ sockeyes were very scarce everywhere in the Cariboo district in 1938, ~~and~~ 1942 and 1946 and without parent runs little or no returns can be expected).

25. The run to Seymour River (Upper Shuswap Lake) was not entirely destroyed by the effects of Hell's Gate and is now increasing at a substantial rate. At one time the Upper Adams River had a large early run but Hell's Gate and the Adams River dam destroyed the entire population.

Note

* The sockeye ~~run~~ to the Adams River, Shuswap district was an absolute failure in 1950 contrary to all expectations. The loss cannot be ascribed to overfishing since the spawning beds were amply seeded in 1946 and the resultant fry were plentiful. The ultimate result indicated the disaster occurred on the feeding areas either through lack of food or the presence of too many competitors and destruction of sockeye fry by enemy species

11. There is the hope that every year can be made a "big" year such as 1913.
(2) If this is possible the world has already missed the opportunity to secure one and a quarter billion dollars worth of Salmon (at our present prices) since 1913. (Note. 1949 the price was nearly double that of 1943)

(1) Had the "big" year only been maintained it would have reoccurred seven times since 1913 to give a total of 17 million cases, over 2 million a year, whereas these same seven years have actually yielded 1,630,000 cases in all. The loss has been over 90 per cent. At $18. per case this loss was 279 million dollars. The estimate is a minimum since the three "off" years of the cycles have not been included.

52. Table 6. Extract from Babcock's reports of Sockeye runs at Fraser dam. The 1895 run produced the run of 1899. There was no dam on the Fraser in the first mentioned year yet "few, if any" sockeyes entered the lake in 1899. The like applies to the 1896-1900 cycle and that of 1898-1902. The "big" year cycle of 1897-1901 was well supplied while the 1901-1905 returns showed the
53. "reliable observers" were well informed who assured Babcock in 1901 that "considerable numbers did pass the dam in 1901. The 4,000,000 sockeyes recorded in 1909 as passing into Fraser Lake in the latter year demonstrated they successfully passed the dam in 1905 as well.

56. The Chilcotin has NOT always been known as one of the major spawning areas above the canyon of the Fraser River. The records of the early fur traders show its history was that of a poor and erratic producer.

57. The numbers reaching Chilko Lake are at present greater in two out of each four years. (Note. This confirms the records of fur traders in the last century).

65. A dam was built at the outlet of Adams Lake in 1907 so that logs could be flushed through Adams River into Shuswap Lake. The water levels in lower Adams river were made to rise and fall sharply and frequently during the spawning season and during the later fall, winter and spring months when eggs were in the gravel. Violent changes in level, as great as 5 feet, due to storage and abrupt release of water occurred during August and September when sockeye must have been passing.

Page

Bulletin 1. Continued

65. Sharp fluctuations in level would have either exposed the eggs and fry to drying and freezing, or washed them out of the redds.

66. The time the early runs to the Shuswap arrived in Kamloops Lake and Little Shuswap was early August. The main ~~early~~ run must have passed Hell's Gate in June and July. (Note. This confirms Simon Fraser's observations in 1808). It passed Hell's Gate earlier than other runs. In some years the first emigrants reached there as early as the last of May. (Note. This confirms the canners packing sockeyes in 1886 from May to November fish brought down from the Canyon area, and also Alex. Ewen's report he packed in other years as many as 10,000 May caught sockeyes).

67. A run was said to have been developed for the small stream at the hatchery on Lake Harrison, where none previously existed. Other than this, evidence of individuality bearing on the existence of separate races has not been recorded. (Note. This latter sentence is contrary to fact. The Harrison River race, whose scale markings so puzzled Dr. Chas. H. Gilbert, was not known before the Bon Accord hatchery was established. The fry output of this hatchery from 1884 to 1906 were all deposited in Harrison River just above the railway bridge. These fry plantings averaged nearly 7 million a year for the 22 year period).

The Birkenhead has been one of the most consistent spawning areas in the Fraser river system. The annual reports give no indications of any such periods of depletion as has been noted for the runs to the Fraser above the canyon. There appears to have been no dominant year in the four-year cycles. The Harrison - Birkenhead District has given no indication of the periods of depletion which were common to the districts above the lower canyon of the Fraser.

71. The Seaton - Anderson Lakes run of 1911 was far below that of the cycle year 1907 and confirms the evidence of depletion beginning in 1911 - No eggs could have been collected ~~at either~~ during the last three years,

71. presumably 1915, 1916 and 1917. The parent years of 1915 and 1916 were 1911 and 1912 therefore cannot be associated with the difficulties of 1913 and 1914 in the Fraser canyon. It is apparent by this evidence that depletion covered a period of several years, probably 1911 to 1917.

72. The Lower Fraser did not suffer a period of depletion while the Upper Fraser did. Babcock reported his experience to be the ~~lower~~ spawning grounds in the lower Fraser were always "well seeded" to their capacity even during the years of the poor runs. Despite his conclusion as to depletion being

73. confined to the upper Fraser his reports in years subsequent to 1913 maintained that the run to the river was overfished. In support he gave no factual proof but urged international action to restore the run.

76. The primary assumption, (of Babcock and others interested), was that the blockade of the river in 1913 and 1914, once removed made the river as passable as ever. If this does not ~~take~~ to be proven to be true, the direct assumption of overfishing becomes subject to question. The river however was not clear.

79. Babcock in 1920, speaking of the Harrison-Lillooet Lake section said:-

80. "The number of sockeye that spawn in that section has not declined; on the contrary, there is evidence that it has increased. The question then naturally arises why has the sockeye run to that section been maintained while the runs to the other sections have declined? ~~The annual appearance of undiminished numbers of sockeye in the Lillooet Lake section~~ It is not apparent why they should be less subject to the heavy drain by fishing than those that spawn in other sections. If these sockeye enter the river prior to 1st July when the fishing season opened it is obvious that such a run would not be subject to the drain of the traps and nets, and in consequence would easily maintain itself."

The surmise that sockeye enter the Harrison system early and thus evade the fishery is not plausible. This Commission has found the contrary in its extensive work in the Harrison system, the fish not appearing earlier than August.

There seems to be no escape from the question which Babcock put so frankly

Page Bulletin 1, continued

80. in this report. Its answer is that some cause of depletion other than
81. overfishing must be sought. While there is no exact analysis of what happened throughout the river system they are not of the character expected in case overfishing were the cause

Bulletin 3.

73. The Stellako River has had good increases in its spawning population each year since 1945, and gives promise, especially in the 1946 cycle, of becoming one of the first of the depleted areas to be of value to the commercial fishery.

94 In 1916 John McHugh, Resident Engineer, Department of Fisheries reported ~~to the Ottawa~~ data concerning the water conditions in the Fraser canyon should "be submitted to a board of engineers for consideration and approval or amendment and then dealt with in the speediest manner possible."

95. For a few years Hell's Gate appears to have been forgotten except for brief mention in the annual reports of the Fisheries Branch It was apparent that the runs of sockeye to streams above Hells Gate were greatly depleted while runs to streams below sustained themselves.

In 1926 the "board of engineers of which McHugh had spoken ten years before was formed. The final report of the board, ~~with~~ July 1928, may be summarized as follows:

If the Department decided that conditions at the Gate should be ameliorated the following proposals were made:

96. A. Eight thousand five hundred cubic yards of material should be excavated on the left bank between the 10 and 50 foot contours (Datum: lower guage) through a length of 145 feet in the slide material above the Gate.

B. Following the left bank excavation the "upper control" (see Right Jutting Rock, Figure 2) should be excavated between the -5 and 50-foot contours for a distance along the stream of 150 feet. approximately 10,300 cubic yards of rock were involved in this plan.

Bulletin 3, continued

A fishway should be built through what is now called the Right Jutting Rock, the fishway to be approximately 175 feet long and to function to a lower gauge height of 30 feet.

These proposals were not carried out; the board of engineers having no data on the movements of the salmon through Hell's Gate, were unable to determine whether or not Hell's Gate was a point of difficulty or blockade.

(2) From 1918 until 1945 Hell's Gate continued to influence the movement of sockeye to the upper tributaries of the Fraser River.

(1) In 1938 the Salmon Commission began its biological studies of the movement of salmon through Hell's Gate and in 1941 began physical studies of the flow and topography in this vicinity. Fishway construction at Hell's Gate began in 1942. In 1944 the construction of permanent fishways began; the right bank main fishway was completed for the 1945 runs, as was a functioning portion of the principal left bank fishway. The two main structures were entirely completed by early 1946. (Note 30 years elapsed between the time Mr. Hugh asked the Department in 1916 to have further work done to improve the passage of sockeyes through the Fraser canyon and the time this was accomplished. For 22 years of this ~~time~~ period the Dominion Fishery officials were solely responsable and they did nothing to implement the suggestions of their own departmental engineers, nor were they responsible in any sense for the work when it finally was carried through. Even ~~at in the beginning~~ in 1913 it was Mr. Babcock of the Provincial Fisheries Department who initiated and carried through the restorative measures then effected.