

Salmon Resource and the Fraser River Watershed

Mr. John P. Babcock, assistant to the Commissioner of Fisheries for the Province and "attorney for the fish" makes an important presentation of the value of the watershed of the Fraser River to the salmon industry and the steps necessary to take to preserve the run. Delivered before the American-Canadian Fishery Conference at Vancouver.

"The outstanding features in the salmon fishery of the Fraser River District, in my judgment, are the depletion of the runs, and the potentialities of the watershed. Because depletion has been shown, and is universally admitted, I shall confine attention to the latter.

"The watershed of the Fraser River contains a greater area of tributary fresh water lakes than are found in any other on the coast. The Fraser drains the major portion of the south-eastern section of the Province of British Columbia. Three of the largest lakes on the Pacific slope and five others of large area contribute their waters to the Fraser, and afford spawning areas and rearing waters for a countless number of sockeye salmon. No other known watershed affords such an extended spawning area. No other watershed produced, in a single year, such vast numbers of sockeye. The great runs of 1901, 1905, 1909 and 1913 demonstrate the harvest that watershed will afford when abundantly seeded. The great catches of those years—ranging from 1,572,000 to 2,401,000 cases demonstrates the number of fish that may safely be taken without injury to the runs of the future, because, notwithstanding such great catches, every section of the spawning area of the watershed was shown to have been abundantly seeded in 1901, 1905 and 1909, and there is evidence to show that its spawning area would have been as abundantly seeded in 1913 but for an accident.

"Since 1901, I have made a study of conditions on the fishing and spawning grounds of the Fraser River. I first inspected its spawning area in 1901. As the agent of the Provincial Government I have inspected that watershed during the spawning period every year since, with the exception of the years 1910 and 1911. The annual publication of the Provincial Government contains my yearly reports.

"As the result of my inspections, I feel fully justified in submitting that the major portion of the great runs of 1905, 1909 and 1913, were the product of the sockeye that spawned in that section of the watershed of the Fraser that lies north of the great canyon in the coast ranges, commonly termed "the Fraser River Canyon." And that the major portion of the runs in the alternate years—the lean year—were the product of the sockeye that spawned in that section of the watershed that lies to the south and west of the Fraser River Canyon. In the discussion of this question the former is here termed the Upper Section of the Fraser River Watershed, and the latter, the Lower Section of the Fraser Watershed. In my judgment, the great runs of the big years have very largely consisted of fish propagated in the Upper Section, plus the normal yearly product of the Lower Section. The runs in the alternate, or lean years, have been the normal yearly product of the Lower Section plus the small numbers produced in the lean years from the beds of the Upper Section.

"In the big year 1901, 1905 and 1909 every spawning bed in the Upper Section was crowded with sockeye. They were found there in incredible numbers. The beds of that section in 1913 showed an alarming decrease. While over four million of sockeye were recorded as entering Quesnel Lake in 1909, but five hundred and fifty thousand were shown to have entered that lake in 1913, and less than twenty-eight thousand in 1917. Furthermore similar conditions were shown to have existed in all the lake districts of the Upper Section in 1913 and 1917. The number of sockeye that reached the beds of the Upper Section in 1917 were shown to have been very much less than in 1913, and little,

if any, more numerous than in some recent lean years. The records of the Upper Section in 1913 and again in 1917, demonstrate that the conditions which produced the big run in 1905, 1909 and 1913, no longer exist, that the big year run has been destroyed and that hereafter the runs of those years must be classed with the runs in the lean years. In the alternate—the lean—years the spawning beds of the Upper Section were but sparingly seeded up to 1906 and have not been as well seeded since. Gradually, with one or two exceptional years, the number of sockeye which reached the Upper Section in the lean years has notably declined. Every district in the Upper Section shows a decline. Hatcheries located at Shuswap and Seton Lakes, the only hatcheries in the Upper Section, have been closed because a sufficient number of sockeye have not reached those lakes in recent years to afford a supply of eggs. No eggs were, or could have been collected at either of those lakes in the last three years.

"Passing to the spawning area of the Lower Section of the Fraser, the record discloses that from 1901 to 1917 there was no pronounced increase in the run in the big years over the run of the lean years. That there has been as many fish on those beds in the lean years as in the big years. This is especially true of the runs to Lillooet and Harrison Lakes, the two great lakes of the Lower Section. The runs to this section have shown a steady decline. There were less sockeye in this section in 1917 than in any former year, big or lean, on record, and less eggs were secured for the hatcheries.

"Because the bulk of the run of the big years issues from the Upper Section of the Watershed, and because there has been no noticeable increase in the number of sockeye on the beds of the Lower Section in those years, it appears that the condition which originally brought about the phenomenon of the big run and the three following small runs of sockeye to the Fraser was of such a character as to have affected only the run to the Upper Section and yet did not affect the run to the Lower Section.

"Because the run to every lake district of the Upper Section was equally affected we are warranted in assuming that the point of obstruction was located below the junction of the Thompson and the Fraser Rivers.

"Because the run was affected for three years only, it is assumed that the barrier, or blockade, was of such a character as to have affected the run in those years only and did not affect the run in the fourth year, that in the fourth year it had worn away or been removed by high water to an extent that permitted the run of that year to reach the spawning beds of the Upper Section.

"The channel of the Fraser through the canyon extending from Yale to Cisco is exceedingly narrow at many points. Towering cliffs of rock line its banks. A rockslide such as the one that occurred in that canyon, at Hell's Gate in 1913, could easily have produced a similar result at an earlier period of time, and just as effectively cut off the run for a number of years as the slide of 1913 would have done had it not been removed by the Dominion Government in 1914. Great as was the slide of 1913, it did not cut off all of the early run of sockeye of that year. Owing to extreme high water in July, numbers of sockeye were enabled to pass through, as was demonstrated by the fish reaching Quesnel and Chilco Lakes.

"Assuming then that we have here a reasonable theory of the origin and the nature of the barrier that cut off the sockeye from the spawning area of the Upper Section of the Fraser which resulted in the phenomenon of the one big year and three lean year runs of sockeye, let us speculate as to the extent of its effect upon the runs of the three lean years. The barrier may have been sufficient to have cut off a portion of the run only, or it may have cut off the entire run. If a portion of the run at extreme high or low water was enabled to pass, that portion would have furnished the nucleus—the seed—for a run four years later.