

by falls or other obstructions which they cannot surmount. These waters furnish the feeding-grounds of the young salmon during their early life, which is spent in the fresh waters. Their migration seaward does not begin until they are at least a year old and have attained a length of from 8 to 10 inches. These streams are the nurseries of the great salmon fisheries of the lower Columbia. From each goes out every year a colony, more or less numerous, to swell the aggregate of young salmon necessary to repair the waste by natural casualty and by capture.

The area of natural distribution has not as yet been very materially abridged. Certain streams, such as the Bruneau and the Boise, have been obstructed by dams near their mouths, but the vast extent of waters still accessible to salmon and affording suitable breeding and feeding grounds, indicates that we must look to other causes to explain any ascertained deterioration in the salmon fisheries of the Columbia.

#### DECREASE OF SALMON IN THE HEAD WATERS OF THE COLUMBIA RIVER.

The investigations made by Prof. Evermann and the parties under his direction establish conclusively the fact that there has been a very great reduction in the number of salmon frequenting the head waters of the Columbia River and its tributaries. This decrease is more notable in the main river. In the early history of the fishery salmon were found in the head waters in marvelous abundance. According to the information obtained by Prof. Evermann:

They were abundant in the Columbia River at Kettle Falls as late as 1878. Since then there has been a great decrease. They have been scarce since 1882. Since 1890 there have been scarcely any at Kettle Falls. The Meyers Brothers say that they have been almost unable to buy any salmon for their own table from the Indians for three years. Certain Indians with whom we talked at Kettle Falls said salmon were once very abundant there, but that very few are seen now. Other persons testified to the same effect. Essentially the same information was obtained regarding the decrease of salmon in other parts of the upper tributaries of the Columbia, viz: at Spokane, in both the Big and Little Spokane rivers, and in the Snake River and its various tributaries.

Dr. O. P. Jenkins, an assistant of Prof. Evermann, makes the following report in reference to the Yakima River, Washington:

The Yakima is the main stream of the valley. It receives many tributaries, the main ones being Manistash and Wilson creeks. The river near the city (Ellensburg) is 160 feet wide, by an average of 10 feet deep, and flows with a velocity of 1 foot per second. Temperature at 9:15 a. m., August 24, 1893, 60° F.; water clear. Those acquainted with the facts state that formerly, up to about 1885, salmon of three or four kinds, including the quinnat, ran up the stream to this valley and spawned in the river in great numbers; at present very few make their appearance.

There is no reason to doubt—indeed, the fact is beyond question—that the number of salmon now reaching the head waters of streams in the Columbia River basin is insignificant in comparison with the number which some years ago annually visited and spawned in these waters. It is further apparent that this decrease is not to be attributed either to the contraction of the area accessible to them or to changed conditions in the waters which would deter the salmon from entering them. We must look to the great commercial fisheries prosecuted in the lower river for an explanation of this decrease, which portends inevitable disaster to these fisheries if the conditions which have brought it about are permitted to continue.

The relations of the decreased number of salmon in the head waters to the development of the commercial fisheries is brought out in a very instructive way by an analysis of the following table:

*Summary of the salmon-canning industry of the Columbia River from its origin to the present time.*

Year.	Gross weight of salmon utilized.	Number of cases packed.	Value.	Average value per case.	Year.	Gross weight of salmon utilized.	Number of cases packed.	Value.	Average value per case.
	<i>Pounds.</i>					<i>Pounds.</i>			
1866.....	260,000	4,000	\$64,000	\$16.00	1881.....	35,750,000	550,000	\$2,475,000	\$4.50
1867.....	1,170,000	18,000	288,000	16.00	1882.....	35,184,500	541,300	2,600,000	4.80
1868.....	1,820,000	28,000	392,000	14.00	1883.....	40,911,000	629,400	3,147,000	5.00
1869.....	6,500,000	100,000	1,350,000	13.50	1884.....	40,300,000	620,000	2,915,000	4.70
1870.....	9,750,000	150,000	1,800,000	12.00	1885.....	35,997,000	553,800	2,500,000	4.51
1871.....	13,000,000	200,000	2,100,000	10.50	1886.....	29,152,000	448,500	2,135,000	4.76
1872.....	16,250,000	250,000	2,325,000	9.30	1887.....	23,140,000	356,000	2,124,000	5.97
1873.....	16,250,000	250,000	2,250,000	9.00	1888.....	24,211,005	372,477	2,327,981	6.25
1874.....	22,750,000	350,000	2,625,000	7.50	1889.....	20,685,495	309,885	1,809,820	5.84
1875.....	24,375,000	375,000	2,250,000	6.00	1890.....	28,781,385	435,774	2,407,456	5.52
1876.....	29,250,000	450,000	2,475,000	5.50	1891.....	26,450,635	398,953	2,240,964	5.62
1877.....	24,700,000	380,000	2,052,000	5.40	1892.....	32,185,995	487,338	2,679,069	5.50
1878.....	29,900,000	460,000	2,300,000	5.00	1893.....	24,050,000	370,000	2,107,500	5.70
1879.....	31,200,000	480,000	2,640,000	5.50					
1880.....	34,450,000	530,000	2,650,000	5.00	<b>Total.</b>	<b>658,424,515</b>	<b>10,098,427</b>	<b>59,029,790</b>	<b>5.85</b>

Canning operations on the Columbia River began in 1866, when 4,000 cases were packed and sold at an average of \$16 per case. As early as 1872 the total pack reached 250,000 cases, the price per case having declined to \$9. Each succeeding year operations were extended and reached their culmination in 1883 and 1884, when upwards of 600,000 cases were packed each season. From this time on the catch declined, having reached its lowest point in 1889, the number of cases packed that season being 309,885, or less than half the number of cases packed in 1883 and 1884.

Up to 1888, practically the entire pack consisted of the king or chinook salmon, and the fishing season did not extend beyond the first of August. In 1889 the packers began canning bluebacks and steelheads to make up the deficiency in the supply, and extended their operations to the first of September.

## DETAILED STATISTICS OF THE SALMON INDUSTRY OF THE COLUMBIA RIVER, 1889-92.

The following series of tables shows, in some detail, the extent of the salmon fishery and canning industry of the Columbia River during the years 1889 to 1892, inclusive, as determined by the inquiries conducted by this Commission.

The number of fishermen and shore employes connected with the salmon industry in each of the years named is indicated in Table A:

**A.—Table showing the number of persons employed in the salmon industry of the Columbia River from 1889 to 1892.**

How engaged.	1889.	1890.	1891.	1892.
<b>Oregon:</b>				
Fishermen.....	1,606	1,648	1,929	2,064
Shoresmen and cannery employes.....	870	1,028	1,057	1,100
<b>Total</b> .....	<b>2,476</b>	<b>2,712</b>	<b>2,986</b>	<b>3,164</b>
<b>Washington:</b>				
Fishermen.....	1,535	1,510	1,575	1,677
Shoresmen and cannery employes.....	594	602	654	704
<b>Total</b> .....	<b>2,129</b>	<b>2,112</b>	<b>2,229</b>	<b>2,381</b>
<b>Total for river:</b>				
Fishermen.....	3,141	3,194	3,504	3,741
Shoresmen and cannery employes.....	1,464	1,630	1,711	1,804
<b>Total</b> .....	<b>4,605</b>	<b>4,824</b>	<b>5,215</b>	<b>5,545</b>