

It will be noted that neither in length nor in weight is there any considerable overlapping between grilse and the older fish. Of 500 grilse examined, only two reached a length of $21\frac{1}{2}$ inches and a weight of 4 lb. Of 1,500 adults, only two were as small as 21 and $21\frac{1}{2}$ inches long, respectively, and only one weighed as little as 4 lb. This does not include two highly emaciated and obviously abnormal females, $20\frac{1}{2}$ and 21 inches long, of the same size as male grilse, but four years old. They were evidently dwarfed by malnutrition, but they had successfully matured their eggs. No female grilse were seen in 1912.

No attempt will be made here to discuss in detail the early history of individuals comprising the 1912 run of sockeyes, as we infer it from the structure of their scales. But certain differences were obvious when comparison was made with the run of the previous year. In 1911 there was a number of interesting individuals having scales distinguished by large centres with widely spaced rings. These were interpreted as having migrated oceanwards immediately on reaching the free-swimming stage. In the run of 1912 there was an almost total absence of this form. Practically the entire run had developed from fingerlings which spent their first year in fresh water. The centres of the great majority of scales exhibited a structure identical with that found in migrating yearlings, taken in the early spring in the Fraser. The number of rings varied from seven to twenty; the outermost rings intimately crowded, tenuous, and usually more or less broken and interrupted. Immediately beyond them, begin abruptly the wide rings which signal the rapid growth of the second spring, begun either while still in the lower reaches of the river—in which case an intermediate zone is formed—or later after they have reached the sea. A very small percentage, however, do not entirely agree with the above, and have not been satisfactorily accounted for. Their scales have the centres with closely crowded rings as in those noted, but the nuclear area is larger than the scales of any yearlings yet captured on their downward migration. The rings may be as numerous as thirty to thirty-five in number, but give no indication of more than one year having been spent in the lake. Two alternative theories suggest themselves. Either these remained in their native lake for one year, like the others with similar but smaller scale centres, and represent exceptionally large individuals which have thus far eluded capture on their seaward migration; or they ran to sea immediately on reaching the free-swimming stage, but found the conditions in the ocean less favourable than in other years, and hence failed to reach the usual size for yearlings in the sea. The first of these seems the more probable hypothesis.

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