

a sport fish but is used extensively in the fresh fish trade and to a certain extent in canning. In this connection I wish to give the house an illustration of what can be done through hatchery methods. I can remember the time some years ago when there were very few steelhead in the rivers leading to Cultus lake. Eggs were secured from other sections and hatched and the fry placed in the creeks. Here are the results, obtained entirely from hatchery methods. In 1932 there were collected from returning steelhead 18,600 eggs; in 1933, 98,900; in 1934, 125,163; in 1935, 133,560; and when I was home this year they had finished collecting and I was informed that the total collections for 1936 stood at 410,000 eggs. I do not think that one can get better evidence than this of the efficacy of hatcheries, and this is recent evidence. These fish stood the so-called hazards of the sea and returned, and if this is true of steelhead it is surely true of sockeye. This, I submit, should surely be satisfactory evidence, and it comes from the department itself, which has carried on this work for a number of years.

I wish now to refer to the order in council, and in this regard I should like to know the reason for this right about face in the department's policy. Perhaps I had better read the order in council:

The committee of the privy council have had before them a report, dated 21st February, 1936, from the Minister of Fisheries, submitting as follows:

As it was not clear that the hatching of sockeye salmon in British Columbia was justifying the cost involved, it was decided in 1925 to have the biological board undertake a thorough investigation into the relative efficiency of artificial and natural reproduction of sockeye salmon, and at the time it was anticipated that it would take twelve years to complete it, but it found it possible to report finally in the premises at its recent annual meeting. The basis of determination as to the efficiency of reproduction in any year was the number of young fish that of their own volition left the lake for the sea. This young sockeye do in the second year of their age and they remain at sea until they reach maturity. The results of the investigation, which comprehend different methods of hatching and also the rearing of the young fish to various ages up to nearly one year, are summarized in the following statement:

Natural Reproduction	1925	1927	1930
Migrants as percentage of total eggs available.	1.13	1.05	3.16
Artificial Propagation With Liberation of Fry	1926	1929	1932
Migrants as percentage of total eggs available.	3.93	2.38	1.71
Migrants as percentage of total eggs obtained from the adult salmon that were stripped.	4.54	2.76	2.43

Artificial Propagation With Eyed Egg Planting	1928	1933
Migrants as percentage of total eggs available.	0.95	3.55*
Migrants as percentage of total eggs obtained from the adult salmon that were stripped	1.44	4.67*

* Indicates that possible two year old migrants of the 1936 migration have yet to be added.

In the light of the above, the following conclusion was reached by the biological board:

On the whole it may reasonably be concluded that in an area such as Cultus Lake, where a natural run of sockeye occurs with a reasonable expectancy of successful spawning, artificial propagation, for purposes of continuing the run to that area, is unnecessary and, if producing any additional results over natural spawning, these would not appear to be in any way commensurate with the cost.

This conclusion may not apply to areas where there is no reasonable expectation of successful natural propagation.

The minister observes that it was the hatching of sockeye salmon only that was in question, and the investigation does not reflect adversely on the hatching of trout and Atlantic salmon that is being carried on in different parts not only of Canada but of several countries in the world, the good effects of which so far as Canada is concerned, have already been reasonably established.

The following sockeye salmon hatcheries in British Columbia are being operated by the Department of Fisheries:

Babine lake and Lakelse lake on the Skeena river;

Rivers inlet;

Anderson lake and Kennedy lake on Vancouver island;

Cultus lake—Smith's Falls; Pitt lake, Harrison lake and Pemberton on the Fraser river.

In the light of the findings of the board, and as a natural run of salmon with a reasonable expectancy of successful spawning occurs to all the areas in which the above named hatcheries are operated, the minister, on the advice of the Deputy Minister of Fisheries, recommends that when the present season's operations in the above named hatcheries are complete, they be closed, and disposed of to the best advantage, and that the employees therein be then retired under the conditions provided by law.

The committee concur in the foregoing recommendation and submit the same for approval.

When this investigation was undertaken eleven years ago, hatchery methods as they then existed were taken as the basis of trial and no deviation has been permitted to this day. Four systems of fish culture have been tried at Cultus lake. The first is fry planting, the second egg planting, the third fingerling planting, and the fourth natural reproduction. The first, fry planting, was abandoned long before the biological board started the investigation; the second, egg planting, has never had a fair trial, a point I shall deal with later on; the third, fingerling planting, was altogether too expensive; and the fourth, natural reproduction, particularly in these mountain streams, has been too destructive.