

SIR,—

Auckland, 14th March, 1910.

I have the honour to supply the following report on my recent visit to Rotorua to investigate and advise the Tourist Department with regard to the unsatisfactory condition of the fisheries there at the present time.

As instructed by you, I proceeded to Rotorua and met Mr. Robieson, Director of the Tourist Division, there on Tuesday, the 8th instant. On that date we inspected the mouths of the Fairy Creek, Ngongotaha, Waititi, and Awahou Streams to decide on the best plan and way to block them in order to prevent all fish from getting up in the spawning season. On the 9th I inspected the Ohau Channel and Hamurana Creek, and on the 10th the creeks flowing into Lakes Rotorua and Rotoiti on the east side, and Lake Rotoehu. During my visit I had the opportunity of seeing a good many fish which were caught by anglers in Rotorua Lake, among them a large catch taken off the Hamurana Creek.

Of the fish which I saw myself, quite 30 per cent. were in poor condition, and a good many of them affected with the parasite disease.

I also had the opportunity of seeing a catch of fish from Rotoehu. These were all in fine condition, and perfect specimens of the rainbow trout.

I also had the opportunity of discussing fishery matters with some of the leading anglers of Rotorua and district, and with the president and some of the members of the Rotorua Rod and Gun Club.

In 1906, when taking trout-eggs at Rotorua, I had an opportunity of handling a large number of trout and getting a practical insight into the deterioration of the fish in that lake.

While ill-conditioned and diseased fish were first found some years ago in Rotorua and Rotoiti Lakes, and while the evil is still much more prevalent there than anywhere else, yet it seems that the trouble has now extended to Tarawera and Rerewhakaiteu Lakes, and this season reports from Taupo indicate that it now exists there to a considerable extent.

With regard to the extent to which the deterioration of the fish exists in Lakes Rotorua and Rotoiti, it is apparent that a very large percentage of the fish are affected. Some of the leading anglers and residents who have made careful observations say 30, some 40, and some say that at least 50 per cent. are affected.

There would seem to be little doubt but what the cause of the large number of ill-conditioned and diseased fish in these lakes is due to overstocking and the consequent depletion of the natural feed, and to the parasite disease which is now prevalent among the fish. There is, however, the probability that the natural life-limit of the rainbow-trout, and the reversion of this fish to its natural size, may to some extent be contributing causes. A careful study of the life habits of these fish in this country, and particularly in the lakes and streams of the thermal region, having in mind their probable relationship to that seagoing fish the steelhead trout (*Salmo Gairdneri*) of the Pacific coast, would not only be an interesting study, but would also be of great value in determining the conditions under which these fish can exist in a healthy state in such waters.

Had this Rotorua fishery been handled in a skilful manner from the commencement, the present very unsatisfactory condition would not have existed so far as overstocking is concerned, and a great deal could have been done long before this to check the disease which exists. In order to restore the fishery to a healthy condition, vigorous, systematic, and skilful measures will have to be adopted, and a considerable amount of money will have to be spent in order to carry out what is required.

The recommendations I have to make, and which I consider necessary in order to effect a decided improvement in the condition of the fisheries, are as follows:—

- (1.) The proposed killing-off of ill-conditioned and diseased fish to be done thoroughly, skilfully, and systematically.
- (2.) Careful and systematic investigation of the worm disease to be commenced at once.
- (3.) A thoroughly skilled fish expert to be appointed to work the fisheries for the Department which controls them.
- (4.) The systematic introduction of natural feed, such as some species of the *Coregonus*, shrimps, &c., and the protection of the koura, the fresh-water crayfish.
- (5.) The importation of a shipment of rainbow-trout eggs every three or four years from California, in order to introduce new blood.
- (6.) The sale of surplus well-conditioned fish to be allowed and carried out by the Department controlling the fishery.
- (7.) Taking of trout-eggs to be done only by those what have a thorough knowledge of the work.
- (8.) Trout-eggs to be supplied to outlying districts in the Dominion either free or at the actual cost of production.
- (9.) Making it illegal for anglers to throw back into the water any ill-conditioned and diseased fish taken by them. All such fish to be taken ashore and buried.

Taking the above recommendations seriatim,—

No. 1: I have to say with regard to the first that in order to prevent ill-conditioned and diseased fish having access to the spawning-grounds, and in order to assist in the capture of these fish, I would recommend the construction of substantial wooden "racks" at the mouths of all streams flowing into Lake Rotorua. Wire-netting barriers I consider useless, as they are very liable to be washed out when the streams are in fresh. The racks can be made by driving strong stakes, say, not less than 4 in. by 4 in., on an angle of about 45 degrees up-stream. These stakes must be put in firmly about 6 ft. apart, right across the stream, and braced as shown in the rough sketch attached. Nail a 4 in. by 2 in. rail along the top and bottom on the up-stream side of the stakes, then drive the slats (2 in. by 2 in. stuff) well into the bottom about 1½ in.