

waste, has not exceeded two million fish, a number that would be produced from the spawn of four or five females. It is not the number of fish taken, but the improper disturbance of the fish when breeding, that has to be guarded against. In former years, when the waters of the Kaipara were navigated only by the silent Maori canoe, the consumption of fish was probably as great as now, but the disturbing influences were less. Nearly every fisherman seemed to consider that a great change has been caused in the estuaries of the Kaipara and Wairoa Rivers at the south and north ends of the harbour by the paddle-steamer "Osprey," and to a less extent by the five or six screw-steamer that ply in the harbour.

If the fish spawn on the banks, then spawning-grounds should be carefully defined and closed against all fishing, unless, as is indicated by some of the evidence, that whereas early in the season there is only about one male to every fifteen or twenty females in a school on the banks, later on (in February and March) it is quite exceptional to find a single female in a haul of fish. The females appear to slink singly down the channels into deep water and out to the ocean immediately before the act of spawning, as spent fish seem to be very rarely met with in the Kaipara. The other causes suggested in the evidence for the scarcity of summer rushes of leaping fish up the creeks no doubt require verification, as they are given only as matters of opinion. I examined a large number of fish, especially at Batley, where, on the 30th October, I saw the largest individual specimen. It was a female, 18 in. in total length, and weighed 2 lb. 7 oz. The ovaries were quite undeveloped, and, so far as the formation of roe or ova was concerned, they were of a reddish-brown colour, and measured 5 in. in length. The fish was taken in a haul of twenty dozen on that morning outside Komiti. I watched a great many of the fish being opened and saw only one male fish. The average weight of these fish was a little under 2 lb.

With regard to the probable age of the fish, I was informed by Mr. Ewing that in May, 1893, a bucket with six very small mullet was emptied into the freshwater dam, from which there is no outlet except by the boiler supply-pipe. In May last (1895) it was necessary to drain off the water, and these six fish were captured. They were fine bright fish, 18 in. long, and about 2½ lb. weight, and were all males with large milts.

At Helensville I examined the three smallest mullets I saw. They were caught off Shelly Beach. Two of them were 10 in. in length and weighed 7 oz., and contained ovaries, smaller, but in a similar undeveloped condition to the large fish I examined from off Komiti. The third fish was 8 in. long, weighed 4 oz., and showed no trace of sexual development. The fishermen considered it to be a one-year-old fish.

In conclusion, I have to report that I found that no one gave any reason why the close season should be extended to four months, so as to include the month of March. Even if any change is made I think it would be only fair that a longer notice should be given, as the matter affects the livelihood of a large number of persons who cannot readily turn to any other means of support on short notice.

The Collector of Customs at Auckland, and also the Harbourmaster at Kaipara, who have had experience in the practical control of such matters, are clearly of opinion that the only way to stop the over-fishing of mullet and the disturbance of the fish at breeding times is to close the canning-factories for that period, and, if the breeding-grounds can be discovered, to prohibit all fishing there for some years at least. In these views I concur; but there are many points in this most interesting investigation which cannot be solved until the proper season, which will be in January. In the meantime much can be done by the collection from week to week of a few fish, both male and female if possible, and sending them, packed in spirits, to me for examination.

I have, &c.,

The Secretary, Marine Department.

JAMES HECTOR.

EVIDENCE.

Henry Bailey, Kaipara: Has fished in the Kaipara for twenty years. Mullet are not so scarce as they were many years ago, but less plentiful again of late; still, plenty. Some years are better for fishing than others, and the fishing varies with the seasons and the weather. The fish are mostly in full roe about Christmas time, but it varies, as you will see small roe in the fish at present. The date varies very much; this year you will find the spawning is very late. Last year it was a month earlier at this end of the harbour—at least, where we fish. It all depends on the season, whether warm or cold. This has been a very cold season, and the fish are late. Fish do not come into the shallow water or run up the rivers till the weather is warm. They are not active when cold. They spawn up the creeks, as young fish are first noticed there, but they are not very small or like fry. This is in the end of December and beginning of January. H. B. only knows that these large fish are to be found at all seasons; his nets do not catch small fish. The fishes of different ages keep in separate shoals. We use set-nets, and shoot them round the shoal of fish in the same manner as a seine-net. Our nets are 4½ in. mesh, and made of strongish twine. They are of about 500 yards long, and 25 mesh, or 5 ft. deep. About Christmas the full-sized fish come in great shoals, and run up the creeks, leaping out of the water in thousands with flood-tide. Never see them in shoals going out with ebb-tide. They sometimes enter the harbour in enormous shoals; and large shoals can be seen outside along the shore. The fish are in best condition from April to December. The best prices are got in the winter time, but chiefly because they keep better, and stand carriage. They are out of condition when the roe is fully swelled, and for two months after spawning; say, from 15th December to 1st March. They are only caught when out of condition by the foreign fishermen, as no price can be got for them. They are then lean and soft, and would not keep in hot weather. The fish are quite thin when the roe is full-sized, and it is the warm weather that brings them on. The sea-mullet that are caught