

18th January, 1896 (Batley).—*Messrs. Ewing* informed me, in continuation of their former return, that the following number were taken in the last three months of the season since my former visit: October, 428 dozen; November, 388 dozen; December (to 17th), 450 dozen. A take was made for me about two miles below the factory: forty-two fish were taken, of which thirty-eight were females and four males. The average length was  $17\frac{1}{2}$  in., and weight 23 oz.; lateral line, 43 scales; and transverse, 15 scales. The male fish showed no reproductive development, the testes being like packthreads. Only six of the thirty-eight female fish showed the slightest ovarian development. All the fish were in prime condition—very fat, and fit for canning.

21st January, 1896.—Obtained a sample of forty fish taken on the banks outside of the Otamatea, and beyond the close boundary. Notwithstanding the absence of restraint, this is the first take of the season since the 17th December. Twenty-seven were male, and only thirteen female. They were from 15 in. to 17 in. in length, and from 18 oz. to 20 oz. in weight. Their snouts were rounded, not pointed, and the forehead was only slightly convex. They were a light-grey on the back, and the sides and the abdomen were not brightly silvery, as in the black-backed kanea. They were all good prime fish, except six females that were slightly muddy. The hard muscular first stomach, or pharynx, was, in every case examined, filled with a muddy slime, consisting of 80 per cent. of Kaipara Channel mud and the rest of Copepods, &c., in a fragmentary condition. At Otamatea it therefore appears that in the month of January inside and within the forbidden fishing-ground there are 90 per cent. females and 10 per cent. males. Outside Komiti, on the banks which are open for fishing, there are 40 per cent. female and 60 per cent. males. Of the female fish caught inside, 16 per cent. might spawn this year, but not for several months hence. Of the fish caught on the banks, only 5 per cent. of the females could possibly spawn this season, but not for four months; and 6 per cent. of males might mature, but they would be very late. The following measurements were made of a mullet, the largest specimen in a haul of 20 dozen, taken outside Otamatea, on the banks: Weight, 27 oz.; length, snout to mid-cordal, 18 in., less caudal middle ray, 1.5 in.; outer ray, 3 in.; length of body without caudal, 16.5 in.; length of head, 3.7 in.; height of body (2 in. before vent), 4.2 in.; snout pre-orbital, 1.1 in.; orbital diameter, 0.7; gape, 0.8 in.; first dorsal ray from snout, 7.5 in.; first ray, second dorsal from snout, 9 in.; anterior insertion of pectoral from snout, 4 in.; anterior insertion of ventral from snout, 9 in.; anterior insertion of anal from snout, 11.5 in.; length of base of first dorsal, 1.5 in.; length of base of second dorsal, 1.8 in.; length of base of pectoral, 0.8 in.; length of base of ventral, 1.5 in.; length of base of anal, 2 in.; stretch of caudal, 6 in. Fin-rays—pectoral,  $\frac{1}{2}$ ; line, ventral,  $\frac{1}{2}$ ; dorsal,  $\frac{3}{8}$ ; anal,  $\frac{3}{8}$ ; caudal,  $\frac{3}{8}$ . Lateral, 45 scales; transverse, 16 scales. Female, ovaries, 5 in. long, but no ova developed; surface slightly spotted and marked. Shape, profile of head and back arched. The backward position of the first dorsal, the larger number of scales in the lateral and transverse lines, the extra soft ray in anal fin, and few rays in the caudal fin, mark this as a distinct fish from those examined at Russell and in Wellington, and differing greatly from *Mugil cephalotus*, to which species the New Zealand grey-mullet has been referred.

21st January, 1896 (Pouto).—*Captain Smith*, Harbourmaster, says that mullet has been scarce this season, as there has been few easterly winds. It is only then that the mullet enters the heads. A cast of the net was made near the Pilot Station, but only one mullet was caught. It was a male fish, 15 in. in length, and quite undeveloped, and in prime condition. Mullet appeared to be very abundant with the flood-tide, but they cannot then be caught. Ohara Bay was tried with nets, as it is a favourite fishing-ground, but none were obtained, although many were leaping. A scrim net was used to capture young fish that were supposed to be immature mullet, but they proved to be only the young of the sea-mullet (*Agonostoma fosteri*), and of the kahawai (*Arripis salar*).

16th April, 1896.—*Mr. Stephenson* reports that from the commencement of the open season he has, at short intervals, visited the factories and inspected several lots of mullet caught, and finds, with the exception of an odd fish or so, that the spawn had almost disappeared. He goes on to say that the fishermen are using at present  $3\frac{3}{4}$  in. mesh, the same as used from about the middle to end of last season. They give as a reason that it would not pay otherwise, as the large fish are very scarce, and in deep water. At the commencement of the open season of 1895, the fishermen were using nets double the length, and a smaller mesh—viz.,  $3\frac{3}{4}$  in.—with the result that so far the take is about equal with the corresponding period of last year. From this, he says, it would seem as though the supply were diminishing, and adds that the same number of boats and men are employed this year as last. He offers, as his opinion, that a close season is very necessary, for the reason that the mullet fishing-grounds are, to his mind, very limited compared with other food-fishes.

24th June, 1896.—*Mr. Stephenson* further reports that during the month the take of mullet has been less than usual, and the fish are small in size. No roes have been seen since March. On the same day, *Mr. Ewing* reports that in Kaipara this season mullet are of splendid quality, but fewer in number than last year at this season. He also forwarded samples of mullet-roe in an advanced stage of development, taken on the 21st June. In the take, which was a fairly large one, about one in ten of the fish had similar ovaries, which are much more advanced than any I saw in Kaipara during the month of January.

3rd July, 1896 (Wellington).—A number of fine mullet were brought to market from Queen Charlotte Sound. All that were examined were females in prime condition, and with roes about half-grown. They were of the dark-backed variety, but not so large as those seen in the North during the summer.

15th October, 1896.—*Mr. Stephenson* reports that mullet are now abundant, the take at Russell being now about 300 dozen per week, and the fish being of much larger size than those caught a few months ago, and adds: "I now see that the weather has a great effect on the movements of the fish." Writing on the 29th, he says: "When visiting the factories a few days ago I found a few of the larger mullet had roes about 3 oz. in weight, and fairly developed. These larger fish are caught with a  $4\frac{1}{2}$  in. mesh. Smaller fish caught with a  $3\frac{1}{2}$  in. mesh had no roes."

Wellington, 12th November, 1896.

JAMES HECTOR,