

SNAPPER OBSERVATIONS.

The task of obtaining measurements of snapper caught by vessels fishing in the Hauraki Gulf has been continued with the help of the Inspectors of Fisheries stationed at Auckland. Up to date the sample catches so measured make up a total of over twenty-five thousand fish. It is believed that the data so obtained will yield a reliable representation of the size composition of the snapper stocks in the waters fished. Their significance would be better shown if similar measurement data were available from former years, when the fisheries were nearer their virginal condition. It is proposed to obtain similar data from other fishing-grounds as soon as facilities for this work are available.

For the past two years the conditions of the Hauraki Gulf fisheries has been a subject of considerable controversy between parties practising different methods of fishing. By far the greater proportion of the fish landed of late years has been caught either by the trawl or by the Danish seine, and these methods of fishing have been subject to general condemnation on the part of the set-net and line fishermen, and more particularly amateur fishermen, who now find that it is very difficult to catch fish in places where formerly it was present in abundance. It is suggested that depletion is due to "power" fishing—*i.e.*, to the operations of the aforesaid trawlers and Danish-seiners. In the absence of definite statistics it was difficult to judge the true position or to say precisely how the fishing-conditions in 1926 compared with those in, say, 1923; but on gathering evidence from whatever sources were available there was no avoiding the conclusion that considerable depletion had taken place.

As a measure to diminish the danger of overfishing, special regulations were brought in during the spring of 1926, by which net fishing by trawl, Danish seine, or any other kind of net was prohibited in that part of the Hauraki Gulf which includes the chief spawning-grounds of the snapper from the 15th November until the end of January (the period in which the spawning season of this species normally occurs). The areas in which Danish-seining is entirely prohibited were extended to include the western portion of Tamaki Strait and the whole of the Coromandel Harbour. Moreover, in order to obviate the capture of undersized fish, an evil which had resulted from the use of the European patterns of Danish-seine first introduced, a new mesh regulation was brought in by which the mesh in the cod end of the Danish-seine was enlarged to 4½ in. The effect of this closure of the schooling-grounds to power fishing-vessels was to induce the trawlers to go farther afield for their catches. Some of the Danish-seining boats stopped working entirely and their crews devoted themselves to the old method of line fishing for snapper, and in most cases made fairly good catches on the schooling-grounds. Others continued to fish outside the restricted area. The result of the restriction was to save very considerable quantities of fish which would otherwise have been destroyed before they had time to shed their spawn; and there is no doubt but that this will be of appreciable benefit to the future supplies, though, of course, the return will not be seen in the case of the increased factor of propagation for some three or four years. The embarrassment caused to the industry can be said to be negligible. The present conditions of the snapper-fishery in the gulf are such that I have no hesitation in recommending not only that the same closure be applied during the coming schooling season, but that the period be extended to include from the 15th November to the 15th of the following February, and the closed area extended to a line from Rodney Point to Cape Colville. I would further recommend that the area in which trawling is entirely prohibited be extended so as to keep a greater part of the Hauraki Gulf free from the operations of these vessels, and that the waters of Tamaki Straits be closed against Danish-seining, which, although not so destructive to undersized fish as trawling, is too intensive a method of fishing for such narrow waters. For this reason also it is recommended that the prohibition of Danish-seining should be enforced in Whangarei Harbour (above the Heads), Whangaroa Harbour, and Kaipara Harbour.

Meanwhile I would recommend that the Department should undertake Danish-seining investigations in all parts of the Hauraki Gulf, to determine with more precision than can be obtained by any other method of gaining information the degree of productivity of the different fishing-grounds and the exact nature of the catches made by this method of fishing, so that adequate information may be secured not only as to its productiveness, but also as to its destructive effects. Such a scheme of investigation would also provide for observations upon the feeding habits of fishes and other marine biological phenomena which have an important bearing upon fishery problems.

OYSTERS.

The services of Mr. M. W. Young, the Marine Biologist of the Portobello Fishery Investigation Station, having been made available, a commencement has been made upon the investigation of the Foveaux Strait oysters. During the 1926 season Mr. Young made observations and measured a large number of oysters on commercial oyster-dredgers, and in January, 1927, the steam oyster-dredger "Despatch" was chartered for ten days for a special survey of the grounds in the Foveaux Strait. Unfavourable weather curtailed the work in the open strait in the first three or four days, but the opportunity was taken to dredge in the sheltered waters of Port Adventure, and to examine the rock-oyster beds which occur there. The catches, made with a 10 ft. dredge, were recorded with regard to position, quantity, and duration of haul. Samples were measured and examined as to condition. Records were made of the general fauna of the oyster-grounds, and water temperature and salinity observations were made. The detailed results of these investigations are given in a separate report prepared by Mr. Young.

So far as possible the rock-oysters of the Hauraki Gulf beds have been kept under observation during the year, a series of biological records having been kept by Captain C. Daniel in continuation of observations which I had commenced in the summer of 1925-26. These records show sex, sexual condition, and state of nutrition of samples of oysters taken from different beds at monthly intervals.