

shingle banks extend from the shore out to in places 20 fathoms, beyond that depth the bottom was similar to what we found further north, being soft sand, shell, and mud. To the south of Oamaru reefs exist with a considerable extent of sand bottom between. Even where good bottom was found very few fish were taken in the trawl-net. Uneven bottom was found from Moeraki to abreast of Waikouaiti—soundings taken showed the bottom in places to be sand, but when the net was put down it soon got foul of rocks. In Blueskin Bay and to the north of the Otago Peninsula an even sand bottom was found with fish fairly plentiful. In Blueskin Bay flat-fish were taken in considerable quantities.

Owing to unfavourable weather, both going to and returning from the South, very little work could be done off Taieri Beach and in Molyneux Bay. In Toitoti Bay the gravelly bottom extends well in shore, but a good piece of trawling-bottom was found off the mouth of the Mataura River with fish in considerable quantities. Riverton Bay has a considerable extent of good bottom with flat-fish plentiful. There are, however, patches of gravel, and rocks exist well into the bay. The result of our operation in Tewaewae Bay were eminently satisfactory. Splendid even bottom was found wherever soundings were made or the net was put down, while large quantities of flat-fish were taken at every haul of the net. Soles were particularly plentiful, also a considerable number of flounders and turbot.

The survey made of the bays and inlets round Stewart Island shows that the extent of trawling-grounds round the Island is limited. Soundings made showed an uneven bottom, patches of sand with rocks jutting out here and there. In Mason Bay a sand bottom was found, but the net came up at every haul full of weed and with very few fish.

Although Cloudy Bay was not, owing to bad weather, as carefully prospected as was intended, the results obtained from what we were able to do were satisfactory. Good bottom was found all over, with fish fairly plentiful.

In Tasman and Golden Bays rough bottom was only found at one station (136). A mud bottom was found all over out to the line of sounding- and trawling-stations from D'Urville Island to off Farewell Spit.

The best hauls of fish taken during the cruise were made here, while our best market fish were well represented, including flounders, soles, john dory, hake, gurnard, schnapper, moki, tarakihi, and oysters were taken up in the trawl-net in different parts of the bays.

The bad weather experienced, and the short time available, owing to the expiration of the charter of the "Doto," prevented Wanganui Bight and the coast south to Kapiti Island from being properly tested. From the survey we were able to make the results obtained were not very satisfactory. From five miles south of Wanganui River to about the same distance north of Patea the bottom was tested at depths ranging from 7 to 22 fathoms, and was found to be coarse sand, gravel, and rocks. As stated in the record of hauls made, the quantity of fish taken in this locality was very poor, and the nets were badly torn. From abreast of the Turakina River to the Waikanae a fine sand bottom was found wherever the net was put down or soundings made, but very few fish were taken in the net.

In reading the record of each haul made with the trawl-net the actual time towing should be noted, as the time it was kept down varied according to circumstances. On several occasions the net was not towed more than half an hour at a time, but the hauls were generally from an hour to an hour and a half, unless where night-work was undertaken, when longer hauls were made so as to allow the crew by turns to get some rest.

In prospecting new grounds a great deal of time is taken up in steaming between each shot of the net, and to the different areas to be tested.

Round all the coast-line prospected fish-life was found to be most prolific in from 5 to 25 fathoms. Over the 25-fathom line soft bottom was generally found, but very few fish were taken at this season.

As the migrations of fish are affected by temperatures, tides, and weather conditions, the extent of the fish-supply in any locality can only be ascertained correctly by having each locality fished at different seasons, so that areas mentioned in this report as showing good trawling-bottom but with a very poor supply of fish at the time they were prospected may at another season prove to be prolific fishing-grounds.

The charter term of the "Doto" extended for thirteen weeks. In that time fifteen days were lost through bad weather. One hundred and fifty-four hauls of the trawl-net were made, and the bottom was tested with the lead at 122 stations. The trawl-net was towed altogether 501 miles, while the steaming distance was 2,893 miles, making the total distance travelled 3,396 miles.

With regard to the value of the work done for the colony by this expedition, I maintain that the favourable conditions for successful trawling that we have proved to exist in Tasman, Golden, Pegasus, Riverton, and Tewaewae Bays is worth to the colony ten times more than the whole amount expended on the cruise, while the knowledge gained of the nature of the ocean's bottom, and fish-life existing round other parts of the coast that were explored, is of considerable value and interest in dealing with our fisheries.

The Government can assist the fisheries of the colony in no better way than by carrying on the experimental trawling round other parts of the colony. I would therefore respectfully recommend that experimental trawling be continued round the coast of the North Island, and that a suitable vessel should be chartered sufficiently early to allow her to be fitted out and the work commenced by the beginning of January. And also that a scientific expert be appointed to accompany the expedition, so that a biological survey of the areas prospected may be carried out.

In future work of the kind I propose that the vessel shall carry, besides the trawl-nets, an oyster-dredge, a seine, a purse-seine, and a lining outfit, so that when circumstances are not favourable for trawling the value of the fisheries in certain localities may be ascertained by other suitable means.