

FURTHER PAPERS

RELATIVE TO

THE FISHERIES OF THE COLONY.

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PRESENTED TO BOTH HOUSES OF THE GENERAL ASSEMBLY, BY COMMAND OF  
HIS EXCELLENCY.

---

WELLINGTON.

—  
1869.



# FURTHER PAPERS RELATIVE TO THE FISHERIES OF THE COLONY,

WITH REPORTS FROM COMMISSIONERS FOR CANTERBURY AND OTAGO.

## No. 1.

Dr. HECTOR to the UNDER COLONIAL SECRETARY.

(No. 27.)

SIR,—

Colonial Museum, Wellington, 1st June, 1869.

I have the honor to inform you that the Commissioners appointed to report on the Fisheries in the Colony are engaged in making investigations under the heads mentioned in the attached letter which has been addressed to them, but considerable difficulty is experienced in procuring the required information, as no funds are placed at the disposal of the Commissioners to defray the necessary expenses.

Only one report, that from the Commissioners for the Province of Canterbury, has been received, and is enclosed herewith; and, as the term of the Commissions will expire this month, I beg to suggest that the period for reporting should be extended for twelve months longer.

I have, &c.,

The Under Colonial Secretary.

JAMES HECTOR.

## Enclosure 1 in No. 1.

Dr. HECTOR to the COMMISSIONERS in the Provinces.

SIR,—

Colonial Museum, Wellington, February, 1869.

I have the honor to forward a copy of the *New Zealand Gazette* notifying your appointment on a Commission for the purpose of investigating the Fisheries on the New Zealand Coasts, together with printed papers on the subject.

With the view of facilitating the preparation of a Report from the results obtained by the Commissioners for the various Provinces, I venture to suggest the following points as appearing worthy of your attention:—

1. For the general object for which the Commissions have been issued, I would refer you to *Hansard*, Vol. III., No. 15, 1868, p. 311.

2. The information on which it is desirable to collect evidence may be divided as follows:—

State of existing fisheries in District of

(a.) Number of men employed.

(b.) Their native place, &c.

(c.) The means they employ, and value of gear.

(d.) Degree of regularity of their fishing.

(e.) Kinds of fish obtained, with a return of the usual market value and seasons of each variety.

(f.) Total value of fish sold in year.

(g.) Fishing grounds, with chart showing—(1.) Situation and depth of water. (2.) Extent and probable reason for their existence.

(h.) Fishes that visit the district occasionally, which are of value.

3. Report on the sources of information available on the above points.

4. Report of examination of witnesses.

5. General conclusions and suggestions from the district.

Guided by this general programme, the Commissioners for the various Provinces may at once appoint a Secretary and proceed with the performance of their duties as soon as convenient.

Where possible, it would be advisable to preserve specimens of all the rare species of fish which the Commissioners obtain in the course of their investigations, and in every case to ascertain all the synonymes by which each species of fish is known, so as to permit of accurate comparison with the results obtained by the other Commissioners.

Any suggestions which may occur to you, in addition to the above, if forwarded, as extracts from the Minutes of the Commission for your Province, to this office, will be immediately sent to the Commissioners in other Provinces for their information and guidance.

I have, &c.,

JAMES HECTOR,  
Chairman.

## Enclosure 2 in No. 1.

REPORT OF THE COMMISSIONERS FOR THE PROVINCE OF CANTERBURY.

SIR,—

Christchurch, 27th May, 1869.

The Commissioners appointed to investigate the Fisheries on the Sea-coast of the Province of Canterbury have the honor to report as follows:—

The nature of the sea-coasts of Canterbury, consisting of long unsheltered ocean-beaches stretching from the north and south of Banks' Peninsula to the extreme limits of the Province, confines the field of inquiry almost exclusively to the inlets and coasts of the Peninsula itself, the

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adjacent Lake Ellesmere, and, on the north, to the estuary of the Avon and the mouths of the Waimakariri and Saltwater Creek.

There can be no doubt that the fish supply of Canterbury falls far short of that of the neighbouring Provinces, both in quality and quantity. The large shoals of barracouta said to be found off the coasts of other parts of the Island are very unfrequent here. The hapuka are limited in number, and the rock cod are inferior in size and firmness to those found in the Otago Province.

As regards the state of the existing fisheries in the district: They are principally confined to the bays of Port Lyttelton, Port Levy, and the outlying rocks at their heads, the estuary of the Avon, and the mouths of the Waimakariri and Saltwater Creek, together with Lake Ellesmere, which, communicating with the sea by a narrow outlet, is abundantly supplied with the flounder and herring.

(a.)—The number of men and boats employed are as follows:—

*Lyttelton*: Three boats, with two hands each.

*Lake Ellesmere*: Three boats, with two hands each.

*Estuary of the Avon*: Three boats, with two hands each.

*Saltwater Creek*: One boat.

*Kaipoi and Mouth of Waimakariri*: Two boats.

The above must be understood as applying only to those cases where fishing is the sole or principal means of livelihood. It would be impossible to ascertain the number of those who only take to fishing in default of other more profitable employment.

(b.)—They are principally English, with some Italians.

(c.)—They use the seine, the set net, hand line, &c.; and the average value of the gear is about £25 per boat.

(d.)—As regards the regularity of their fishing: This entirely depends upon the place, the season, and the weather. During the winter, net fishing is confined to the shoals for flat fish, or, with hook and line, for the few varieties then on the coast. Generally speaking, fish fetch 2d. to 5d. per lb.

## (e.)—KINDS OF FISH OBTAINED.

1. *The Flounder or Patiki*.—This fish is most generally supplied of any, and is brought to market nearly all the year round. In fine weather 300 lbs. or 400 lbs. a day are frequently caught in Lake Ellesmere, and considerable quantities are also obtained from the flats in the estuaries and bays.

2. *The Moki*.—Considerable quantities of this fish appear on the coasts during the months of September and October, and also from the middle of January to the end of March, but their supply is very uncertain.

3. *The Red Rock Cod*.—These are caught with hand line all the year round, but the supply is not great, nor is it properly sent to market. They vary in weight from  $\frac{1}{2}$  lb to 2 lbs.

4. *The Mullet or Herring*.—These are generally in the market in small quantities. The best are obtained from Lake Ellesmere.

5. *The Kawai*.—These are taken with net in the bays in the months of September and October, but in small numbers; not 500 during the season.

6. *The Hapuka*.—Few of these come to market, not many being taken.

7. *The Skate*.

8. *The Conger*.

9. *The Ling*.

10. *The Butter-fish*.—A few of these are brought to market during the moki season.

11. *The Guard-fish*.—There is a very small supply of this fish, but it is much prized.

12. *The Guffie or Rock-fish*.—Not much esteemed.

13. *The Sting Ray*.

14. *The Elephant-fish*.

15. *Three Varieties of Dog-fish and young Sharks*.

16. *The Sardine*.—These are not brought to market, and are not numerous.

17. *The Frost-fish*.—Very few get to market, as the beaches are too distant. They are much esteemed.

18. *The Craw-fish*.—These are tolerably abundant on the coasts of the Peninsula, but, owing to the exposed situation, the supply brought to market is very uncertain. They are also procured off Motunau Island.

19. *The Shrimp*.—An unimportant supply.

20. *The Oyster*.—There are two natural oyster-beds in Port Lyttelton—one in Charteris Bay and the other in Purau Bay. Besides these, small patches of oyster-ground are found in different parts of the harbour. Pigeon Bay, Port Levy, and Akaroa Harbour have been prospected, and very fine oysters have been found, but no regular beds which would pay for dredging. The Charteris Bay bed consists of narrow belts and patches, extending over the space of about 100 acres. It has been worked for the last fourteen years, but now barely affords wages. The Purau bed is very small, and nearly worked out. The situation of the oyster-beds of Port Lyttelton are indicated in the accompanying map by red dots.

(f.)—It is impossible to arrive at any approximate estimate of "the total value of fish sold in the year," as they are mostly disposed of by hawkers.

The Commissioners recommend that Charteris Bay be reserved for the purpose of establishing artificial oyster-beds on the site of the present natural ones, and that the sites for such beds should be leased to competent persons, who would undertake to fence, plant, and cultivate them, under the supervision of an officer appointed for that purpose; all other persons being forbidden to dredge for oysters within the limits of the bay.

As regards the other fisheries, the Commissioners are of opinion that they are conducted fairly and properly, and need no legislative interference.

The Chairman of the Fisheries Commission.

MARK P. STODDART.  
JULIUS HAAST.  
ALFRED C. BARTON.

No. 2.

REPORT OF THE COMMISSIONERS FOR THE PROVINCE OF OTAGO.

SIR,—

The Commissioners, in making the following Report in accordance with your circular of 20th February, beg to state that the evidence and information which they have succeeded in obtaining does not enable them to give such a full Report as they would have desired.

On many points the evidence (as will be seen from copies herewith) is vague, and in some instances unsatisfactory; many of the men engaged in fishing, as well as those trading in fish, seeming to be unable to give any definite information.

At present there are three regular fisheries at work on the coast of Otago, viz., Otago Heads, Moeraki, and Molyneux Bay; the first mentioned including harbour and outside fishing. These fisheries are at work pretty nearly all the year round, at some seasons there being a larger number of men employed than at others.

The average number of men employed the Commissioners estimate at about seventy, distributed as follows: About sixty at Otago Heads; about eight or ten at Moeraki; and about two to four at Molyneux Bay. The latter fishery has fallen off during late years; this is attributed by the witnesses to the mud from the diggings discharged by the Molyneux, which they say has driven the fish out of the bay.

The number of boats employed on the coast is at present about thirty, the value of which may be estimated at £20 each.

The means employed are principally set and hand lines for outside fishing, and seine nets for the fishing inside Otago Heads.

The value of the gear used cannot be correctly estimated. Nets are worth from £10 to £20 each; each boat generally using one net besides lines. The Commissioners estimate the number of nets at about twenty.

Boats fishing outside, using lines only, can be fitted out for about £3 each. Fishing inside the harbour is carried on during the whole year; each boat, it is estimated, can work about six tides, or say four days a week. Outside fishing is carried on as weather permits all through the year, but the season when fish are most numerous extends from about October to March; most kinds of fish are however caught on the coast during the whole year.

The following are the principal kinds of fish caught on the coast, viz.:—Hapuka, groper, ling, red and blue cod, moki, trumpeter, barracouta, and skate. Inside the Heads the kinds caught are principally flounder, red cod, mullet or herring, guard-fish, trevally, whiting, and occasionally Colonial salmon. Crayfish are also caught in large numbers, and meet with ready sale.

The prices reported from the different places are as follows:—At Moeraki: Hapuka and ling, 2s. per dozen; red and blue cod, 5s. to 8s. per dozen; trumpeter, 12s. to 18s. per dozen; barracouta, 4s. per dozen; crayfish, 3s. per dozen. At the Molyneux, 3d. to 4d. per lb. all round. At Otago Heads: Red cod, 1s. 6d. per dozen; groper, 2s. 6d. each; ling, 1s. 3d. each; flounders, 1s. 6d. per dozen; mullet, 9d. per dozen; guard-fish, 2s. per dozen; trevally, 9d. per dozen. These prices are wholesale quotations.

It is difficult to arrive at a proper estimate of the value of fish caught per annum. The following is the nearest approximate which can be made:—

At the Molyneux, about	...	...	...	...	...	...	£250
„ Moeraki	...	...	...	...	...	...	400
„ Otago Heads—at an average of £200 per boat	...	...	...	...	...	...	5,000
Total	...	...	...	...	...	...	£5,650

being about £75 per annum for each man engaged. The retailing of these fish to the public gives employment to a large number of men, such as fishmongers, hawkers, &c.

At Port Chalmers there is a fish-curing establishment, which keeps the Dunedin market fairly supplied, principally with cured red cod, which resemble very much the Findon haddock known at home. Barracouta are also cured in large numbers.

As to the depth of water, the Commissioners have no definite information. At the Molyneux Bay it is said to be fifteen to twenty fathoms. As, however, the fishing is all carried on on the coast, this may be taken as an average.

The probable reasons for the existence of fisheries at these places appears to the Commissioners to be principally their proximity to centres of population, where a market can be found; also, that at the places mentioned there is no doubt some protecting or resting place for the fish, such as a bay protected by reefs or some bluff would afford.

Of fishes that only visit the coast occasionally, the most notable is the frost-fish, which is found on banks during frosty weather with an off-shore breeze. This fish is highly prized and fetches the highest price; in Dunedin it has been sold retail at 1s. 6d. to 2s. 6d. per pound.

The sources of information from which the foregoing Report is based are principally from the fishermen themselves, and from those connected with the trade. The evidence taken is annexed to the Report for the information of the other Commissioners.

The evidence taken tends to show that there is no regular fishing-ground on the Coast of Otago, there being no reefs, banks, or natural spawning-grounds known at present; there is also a want of reefs capable of affording shelter or resting-ground for the fish while on the coast.

From the fact that fish seem to visit the coast only from time to time, it is the opinion of some experienced persons that there must be some large banks many miles off the coast, which the fish frequent in the breeding season, similar to those known off the Coast of Scotland.

It has been suggested that some restrictions should be placed as to the size of fish killed within the Otago Heads or other harbours. This is a matter, however, which will have to be considered in connection with some general Fisheries Act.

His Honor the Superintendent has supplied the Commissioners with a Report from Mr. Dawbin as to the salmon experiment, which is herewith annexed.

The Commissioners annex some evidence as to oyster fisheries, which seems worthy of notice, and desire to call your attention more particularly to the term of lease allowed under "The Oyster Fisheries Act, 1866," to lessees of, namely, a term not exceeding fourteen years. This the Commissioners are informed is far too short a tenure to induce parties to form artificial oyster-beds, and it is in their opinion a matter worthy the consideration of the Government.

The Commissioners also annex a Report from the Manager of the Otago Acclimatization Society, concerning the introduction of trout from Tasmania by the Society.

The Chairman of the Fisheries Commission, Wellington.

A. J. BURNS.

A. CARRICK.

### Enclosure 1 in No. 2.

Mr. G. P. CLIFFORD to Mr. A. CARRICK.

SIR,—

Dunedin, 8th June, 1869.

In accordance with your request to be furnished with the mode adopted by the Otago Acclimatization Society in conveying and hatching out trout ova, together with any remarks relative to the subject, for the purpose of forwarding the same to the Fishery Commission, I herewith give the result of our labours.

According to instructions I left Dunedin, July 18th, for Tasmania, for the purpose of obtaining trout ova. I reached Hobart Town August 13th, by which time most of the trout at the Plenty Ponds had spawned. I was detained in Tasmania till the beginning of September, being unable to obtain a passage to Otago before.

The ova that I obtained was not artificially impregnated, but was taken from the rids made by the fish in the race at the Plenty Ponds. The quantity of ova I obtained was 800, the most of which fortunately was well developed, the eyes being in nearly all visible.

I packed them thinly in well-washed fresh moss in four boxes, about a foot square, with small holes in the tops and bottoms; these boxes were again packed two deep in a box three feet by two and two deep, and surrounded by moss. The lid of this box was sunk a few inches, and perforated with holes. On this was kept a quantity of frozen snow, which served the double purpose of retarding the hatching of the ova, and also as it melted keeping the ova damp. The last-mentioned box was suspended by strong elastic springs to the inside of a much larger box, and also held from the sides by elastic springs which acted as guys. The outside box was made fast to the deck of the ship, and covered with blankets, which were kept wet. By this means the box containing the four small boxes swung with the motion of the ship free from any chance of concussion.

I left Tasmania September 5th, and reached Dunedin on the 14th. On opening the box I found only forty-nine dead ova; these showed no signs of development. The ova were then placed in covered boxes, on a bed of small gravel which had been well boiled and washed, over which ran a small stream of filtered water about an inch and a half deep. During the time the fish were hatching the temperature varied from 40° to 55° Fahr., the greater portion of the time never exceeding 46°. The first fish hatched out September 28th, the last October 29th. The total number hatched were 729, two only being deformed. It will be seen that the hatching, after placing the ova in water, occupied from one to two months, but as the ova was spawned naturally it was impossible to tell its age. The few ova which did not hatch were I believe unimpregnated. The fish, as near as I could calculate, exhausted the umbilical vesicle in about six weeks; directly this took place I gave them unfiltered water, and fed them with grated liver. As the fish grew older I gave them flyblows and maggots, which they evidently preferred to the liver.

I have only very limited pond accommodation, namely, an oval pond twelve feet by eight at the widest part, and varying from a few inches to about two feet deep; a good supply of water passes through the pond, and there is plenty of artificial shelter in the shape of stones and slates. Before any were removed I observed the fish always appeared restless, so much so that I have had them throw themselves out of the water, and a few died on the banks. This was obviated by placing boards so that the fish fell again into the water. After a number were removed this never again took place, and as every batch of fish were taken away, the remainder showed a marked improvement in a short time. I am perfectly convinced they were overcrowded, and am also of opinion that the more room fish have the better they will thrive.

With reference to transporting young trout, the mode I have adopted has been as follows. The can—an ordinary fish kettle, fifteen inches by nine inches, and nine inches deep—is well filled with watercress, which acts as packing, preventing the fish from being so much knocked about as they otherwise would be. In the transport of our fish we have been obliged to use a wheeled conveyance. The can is then suspended by elastic springs from a beam, and steadied by hand. The water changed at intervals of from a quarter to half an hour, and poured into the can from a height of about two feet, so as to aerate it. The number of fish carried in a can has not been more than from twenty-five to thirty, overcrowding being most injurious. We have thus been able to carry six batches of fish distances of from twelve to eighty miles with the loss of only one fish, the batches varying in number from fifty to sixty each, and two cans being employed. When practicable, carrying by hand is preferable to any other method. Our last attempt to take trout from Dunedin to Queenstown—a distance of 208 miles, over rough bush roads, with at times a bad supply of water—proved a failure. The time occupied was four days, and I cannot better express myself than by saying the fish were being churned best part of the time. Out of fifty-five, the number that left Dunedin, twenty-five were successfully carried a distance of 170 miles. From the result of the journey, I am convinced that by taking time to allow the fish to recover, they can be carried from one end of New Zealand to the other.

I am, &c.,

G. P. CLIFFORD,

Manager, Otago Acclimatization Society.

A. Carrick, Esq.

## Enclosure 2 in No. 2.

Mr. R. DAWBIN to His Honor the SUPERINTENDENT, Otago.

SIR,—

Waiwera Ponds, Kaihiku, 31st May, 1869.

In accordance with the terms of your indorsement on Mr. Burns's letter to you of the 12th May, requesting information on the state of the salmon-breeding ponds here under my charge, and the success that has attended the experiment, &c., I have the honor to report as follows:—

The breeding boxes and ponds are on the same principle as the old Stormontfield establishment. The first shipment of ova per "Celestial Queen," arrived here in my charge on the 4th May, 1868, and I proceeded to open and inspect them upon the 5th and 6th instant. Out of the 300 boxes, seventy-seven were found presenting no signs of vitality; the remaining 223 all contained living ova. The contents varied as mentioned in my report at the time, and I then attributed the difference to the description of the moss in which they were packed. Those packed with a light brown moss, dry and full of fibre, were in a great deal worse condition than those packed in a dark green tree moss, which was moist and growing when the boxes were opened. On opening the boxes brought out this year by the "Mindora," I found exactly the same thing.

When the ova per "Celestial Queen" had been nine days in the water, I found that after removing those that had turned bad, I had left 8,000 eggs looking very healthy, fully two-thirds having the eye well developed. I had great hopes up to this time, indeed up till the 19th May, that I should have a thorough good hatching; but on the 20th the rain fell in torrents, flooding the river, which became very dirty. The filter proved to be of no use; the race was washed away in several places, and my time was fully occupied in endeavours to supply comparatively clean water from some of the drains and in repairing the race. Had the flood been of short duration, I believe I should have been able to prevent much of the damage; but the rains continued up to the 27th of the month, and by that time the ova were pretty well covered with mud. On the 28th the water was a little clearer, and I discovered that some of the fish were breaking the eggs. This continued for some days, and I believe in all between 500 and 600 fish were hatched. Out of this number all that were deformed died, except seven or eight, which I have in the feeding pond still, and see occasionally.

In about ten or twelve weeks all of the fish had made their way into the tank at the end of the shed and thence dropped into the feeding pond. It was some time before they began to show again, and although I supplied them with plenty of food I am inclined to believe that they mostly lived on the natural food in the water. It was not very long before two or three began to appear round the edge of the pond, grown wonderfully; and after a time, by regular feeding, I could collect little mobs of them at every corner of the pond. I have now fish five, six, and I believe one or two seven or eight inches long, and thick in proportion, which in a few months will be ready to go to sea, and if they return safely it might be possible to get ova from them and hatch fish enough to stock a river well. I have only seen three dead ones since they went into the ponds, which, however, are so large and deep that I am not able to keep so accurate an account of them as I should like. The size and depth of the ponds, however, is advantageous in this respect, that the fish are kept supplied with abundance of natural food. The water of the Waiwera, like, I have no doubt, that of all the New Zealand rivers, seems to be admirably adapted for salmon, but the river itself I do not consider good for breeding. The bottom is rocky, and although there are said to be gravel banks high up, I should be afraid of the floods, which here occur in the winter and spring. The supply of food in the river is most abundant.

The filter having now been put to rights, and the race rendered flood-proof, I had great hopes, on seeing the condition of the ova brought out by the "Mindora," that this year's hatching would be good. For the first fortnight or so very few went wrong, and in the great majority the eye was fully developed, so much so that I considered they would break sooner than last year. Two or three days after their arrival here, we had one of the largest floods I have seen yet, but no damage was done: the new filters which I had fixed at the head of each row of boxes working well, and preventing any deposit of mud.

Last year the fish began to break the egg twenty-one days after being deposited in the boxes; and after that time passed this year without any sign of their doing so, I began to get very anxious, especially as the ova turned bad with alarming rapidity. At the present time I have only about 2,000 good eggs left. The majority of these appear very healthy, but I confess I do not like to hazard an opinion as to whether they will hatch or no. This year's shipment arrived in much better condition to all appearance than the last, and have had a much better chance, and I cannot give any reason why they should fail. The only thing that occurs to me is, that the length of time they were in the ice tank on both occasions was too long, and that, as with the last shipment, a small percentage may hatch yet. I have no doubt that if there had been an ordinarily good passage, both shipments would have turned out well.

I believe I have given what is required by Mr. Burn's letter, but I shall be happy to furnish the Fishery Commissioners with any information in my power, if more is wanted.

His Honor the Superintendent, Otago.

I have, &amp;c.,

R. DAWBIN.

## No. 3.

## EVIDENCE OBTAINED FROM MOLYNEUX BAY.

*By Mr. Burns.*] 1. Has any change taken place in the fishing ground lately?—Material change within the last four years.

2. Have the fish deserted the bay within a radius of the action of the river lately?—Yes, more especially N. and N.E. weather.

3. Where is the best fishing-ground in the bay?—None to be depended upon, except in S.W. weather; then fish has been got at the north side of the Nuggets.

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4. General remarks, if any?—It is the opinion of the fishermen that the washing of the diggings has materially affected the fishing on this part of the coast.\*
5. Number of men employed fishing?—Two at present, sometimes four.
6. The means they employ?—Set and hand lines; depth of water from fifteen to twenty fathoms.
7. Value of gear?—About £40.
8. Degree of regularity of their fishing?—Very irregular.
9. Kinds of fish obtained?—Native hapuka or groper, blue and red cod, crayfish, sometimes barracouta.
10. Usual market value?—From 3d. to 4d. per lb.
11. Seasons for each variety?—From November until May.
12. Total value of fish sold in a year?—About £140 each boat.

George Wiseman, examined.

*By Mr. Burns.*] 13. What are you?—I am a fishermen, and have been a fisherman in Otago for seven years.

14. How many men employed?—I am engaged in seine fishing inside Otago Harbour. There are twenty-four men employed in seine fishing in the harbour.

15. What means are employed?—Eleven boats, and one seine net in each boat; occasionally lines are used.

16. Value of gear?—Nets vary in value from £10 to £20. Boats vary in value from £10 to £20; some boats have two nets.

17. Regularity of fishing?—This fishing is tide work, at low water, and average six tides a week.

18. Kinds of fish?—Flounders principally, cod, mullet or herring, guard-fish, trevally, whiting, occasionally Colonial salmon, crayfish (with nets made for the purpose).

19. Value?—Flounders, 1s. 6d. per dozen; average cod, 1s. 6d.; mullet, 9d. per dozen; guard-fish, 2s. a dozen; trevally, 9d. a dozen; crayfish, 1s. a dozen—wholesale prices. These prices vary according to season.

20. Seasons?—No particular season for the kinds of fish above stated; they are caught at all seasons inside the harbour.

21. Yearly value?—My boat's fishing during the year will gross about £200; the rest of the boats will average a like amount.

George Henry Sherwood, examined.

*By Mr. Burns.*] 22. How long have you been a fisherman?—I have been a fisherman in Otago for about eighteen months.

23. Number of men employed?—Twenty-eight men inside the harbour of Otago, and thirty-three outside.

24. The means employed?—Fourteen boats inside the harbour, and eleven boats outside. Common seine nets are used inside, and hooks and lines outside, with codfish for baiting the lines.

25. Value of gear?—£2 sterling will fit out any one of the boats fishing inside. I cannot say what the seine nets cost. Boats for outside fishing cost about £25 each.

26. Regularity of fishing?—Fishing very irregular, the bar at the entrance of Otago Harbour being often dangerous for boats, but would say about four days per week average during the year.

27. Kinds of fish obtained?—Groper, ling, barracouta, red cod, skate; these are found within a short distance of Otago Heads. Blue cod and trumpeter very plentiful off Cape Saunders. Crayfish at Purakinui and Blueskin Heads.

28. Prices obtained?—Red cod, 1s. 6d. per dozen; groper, 2s. 6d. each; ling, 1s. 3d. each; barracouta vary in price, and are sometimes unsaleable; crayfish, 1s. per dozen; skate, not saleable. These fish are sold at those prices to the hawkers.

29. Season for each variety?—Barracouta and cod are caught more readily in the summer months. The other kinds are caught all the year round.

30. Value of fish sold in a year?—Being only a short time at Dunedin, cannot say; but, at the Molyneux, about £40 a year.

31. General remarks?—I was obliged to leave the Molyneux as the fish have almost entirely left the bay since so much mud has come down the river from the diggings up-country. Before the river became so muddy the bay was swarming with fish, and a boat-load could be caught in a few hours; but now you may fish a whole day and not catch a single fish. The fish are very plentiful off the mouth of Catlin River.

William L. Leggatt, examined.

*By Mr. Burns.*] 32. Number of men employed in fishing?—Eight in the season (three at present).

33. The means they employ?—Two open boats, one half-decked cutter; chiefly hand-lines, but sometimes nets.

34. Value of gear?—About £180, including horses, carts, &c.

35. Degree of regularity of their fishing?—When the weather suits during the season, which continues from about October to March.

36. Kinds of fish obtained?—Hapuka (groper), ling, red and blue cod, barracouta, moki, trumpeter, crayfish, porpoises for oil.

37. Usual market value?—Hapuka and ling, at per dozen, 24s.; red and blue cod, 5s. to 8s.; barracouta, 4s.; moki, 8s. to 12s.; oil, 5s. per gallon; trumpeters, 12s. to 18s.; crayfish, 3s.

38. Seasons for each variety?—October to March, except for red cod, ling, and crayfish, which extends into winter, sometimes all through it.

39. Total value of fish sold in a year?—About £360.

\* I am of the same opinion. Six years ago red cod could be got in abundance in the bay, just off the entrance of the river. I may mention, also, that porpoises are not so plentiful in the bay as they were three or four years ago.—JOHN BURN, Deputy Harbourmaster.



40. Any general remarks?—I consider that red cod, ling, and barracouta, are the kinds of fish which possess the highest commercial value, as they are more readily cured, and when well cured (smoked and hermetically packed), would be a saleable article in any part of the world where fish is used; the other varieties are of too oily a nature to dry readily, and I am unable to say to what extent curing and packing them in brine would succeed. The first appearance of frost is usually the signal for the fish taking off. The opinion is prevalent that they go off the land into deeper water; and many are of opinion that in winter, fishing in craft better suited to keep to sea, and with long lines, would succeed.

There is a small crustacean resembling a shrimp, and usually known as whale-feed, which frequents our coasts in immense quantities in the season. As a fertilizing agent I have used this, and found it vastly superior to any kind of manure I ever used, even guano, of which it possesses all the stimulating powers without being exhaustive; it comes in such immense quantities as often to extend as far as the eye can reach, and may be "shovelled" into a boat or small craft by means of hand nets under the lee of reefs off shore. I have always considered that the visitation of this little animal will in time come to be an event of the utmost importance to Otago, as the supply is inexhaustible, very light of carriage, and in it we have an agent by the employment of which we can defy impoverishment or exhaustion of soil.

There is a fish called the "frost-fish" which throws itself on beaches during the winter months, usually during frosty weather with off-shore winds; it is highly prized for its delicate flavour, and, as it comes in a season when fish is scarce, it commonly fetches a high price.

Mr. James Seaton, M.P.C., examined.

41. Does the provision of "The Fisheries Act, 1866," give sufficient inducement to parties preparing oyster-beds?—No, as only fourteen years' lease can be given under the Act, and in very many cases beds cannot be brought into full bearing at a shorter period of time than ten years; consequently the tenant would have no inducement to expend money with anything like a certainty of a profitable return.

42. If not, what amendments would you propose?—I would propose that the lease should be granted for at least fifty years, because, by doing so, an inducement would be held out to parties to improve the beds let to them; whereas, if a much shorter time be determined upon, they would very naturally hesitate to do so, as they would consider that the improvements made at their expense would induce other parties to bid against them when the lands were to be re-leased, before the lessee has had time to repay himself for his outlay.

43. Can you suggest any alterations to simplify the working of the Act, and what would be the effect of those amendments?—Yes; in the first place I would recommend that the power be vested in one officer, instead of two as at present, to lease and give licenses to collect spat or spawn, as there seems to be a good deal of doubt in the minds of the two officers named in the Act to whom the duty belongs. Clause 4 down to clause 10 of the Act gives certain powers to the Crown Lands Commissioner, but from that clause to the end of the Act it would seem as if his jurisdiction got mixed up somehow in an incomprehensible manner with that of the Collector of Customs, which I found to my great inconvenience when wanting to get permission to collect spat or spawn during the last close season. I would therefore suggest as an amendment, that one officer should have the carrying out of the Act, as in that case no misunderstanding could arise.

44. Is sufficient protection afforded to licensees by "The Fisheries Act, 1866"?—No, as no provision is made for preventing parties from anchoring or otherwise trespassing upon lands laid out as oyster-beds. From my own experience I find that any one may go upon and by that means learn where and how they are laid, and are thus in a position to go in the dark and rob the beds. Now, if sufficient protection was given, lessees should have the power to prevent trespass in any shape, and then they would be in no better position than the general public, as they can prevent intrusion upon their property of any other kind. I consider, also, that lessees are hampered by unnecessary restrictions; for instance, they are required to take out a license from the Collector of Customs—for what? why to collect the produce of their own farms, and are prevented from prosecuting for more than one offence, when it is possible that half-a-dozen may be committed before it is possible to institute proceedings for the first offence. Why not allow them to be cumulative, within a certain time, say ten days, or any time within reasonable limits, so that it would not be oppressive upon any one?

45. General remarks?—Another thing that I think ought to be referred to, is the duration of the close season. It seems to me that parties who have gone to great expense in planting beds would not be very likely to rob their own property by gathering oysters when out of season, but would very likely use the liberty granted them judiciously, as they would be the parties to suffer most if they acted otherwise; however, I admit that some restriction ought to be put upon parties collecting from natural beds, as their interest is to get as much as they can without any thought of the future.

Captain Tall, examined.

*By Mr. Burns.*] 46. What experience have you in oyster fishing?—Four years in England and Wales and Jersey Island, eight years in Victoria, Melbourne, Western Port, Port Albert, Corner Inlet, Gipps Land, &c., &c.

47. What months of the year would you recommend to be closed against fishing?—I would recommend the three summer months in any country.

48. What quantity of oysters are taken on the coasts of Otago in a year, and what may be the marketable value?—The bulk of oysters are brought from Stewart's Island; there has been a considerable quantity taken from the Cross Channel, within Otago Heads. Estimated quantity, 40,000 dozen. Value, £2,000, more or less.

49. How many men are employed in fishing, and what means are used?—There are many men employed in connection with oyster fisheries, shops and hawkers—I should think about fifty, more or less. The means used are by dredging along the ground with iron dredges dragged by means of small

cutters about eight or ten tons register. In some places at low water they can be gathered with the hands.

50. Have you any experience in oyster-breeding?—Yes.

51. What length of lease should be given to parties to induce them to prepare oyster-beds, and how many years must elapse after the first laying down the bed before oysters can be taken for sale?—The lessee's life, and his family and their family's lives. Due care should be taken that the beds do not interfere with the proper working of the ships, and that the selection should be out of the main channel. Oysters take from four to five years before they are fit for market.

52. What protection should be given to those parties owning oyster-beds?—The same as if a man stole a sheep from another, providing he marks off his boundary with beacons or buoys, or other approved means, and that a notice board be put up in a conspicuous part of the bed, cautioning people not to trespass.

53. Should vessels be allowed to anchor on the oyster-beds?—Due care should be taken that oyster-beds are not in the navigation of the river: I mean artificial beds. I would not stop the passage of boats, nor prevent boats anchoring; if they stole my oysters, and I found it out, I would summons them.

54. Any other general remarks?—Oysters spawn three months in the summer; the spawn floats in the water for a period of seven days, and then it sinks to the bottom; if it falls on good and clean ground, it prospers; if on the contrary, it perishes. Oysters should not be removed from natural beds during the three summer months. As to artificial beds there should be no restriction; the owner knows best what to do to protect his own interest. Oysters take four or five years before they are fit for market. The best way to catch oysters is by means of dredges. Care should be taken to destroy the enemy of the young brood; the enemies are the five-fingers, the dog welk, the starfish, the borer, the stingaree, with his tail. Transplanting of oysters should not be done during the three summer months, or spawning month. Oysters do not move from where they are first deposited, unless by some artificial means. It is my opinion that natural oyster-beds are to be found on the coast of Otago, such places as Blueskin Bay; I have dredged up large quantities of oyster shells in that vicinity, apparently not been dead long; but it is like gold digging, wants prospecting. A good sign of the whereabouts of oysters is where the burrs are to be found; they also destroy the oyster. Oysters improve by working among them; it makes them grow thicker, and breaks off the fin. The oyster spawns are too numerous to mention. Care should be taken to part them as often as convenient, to enable them to grow to their proper shape.

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