

ART. XIII.—*Notes on Sea-fishes.*

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THE late Mr. W. Arthur, a former member and president of this Institute, when secretary of the Otago Acclimatisation Society, prepared a somewhat elaborate form, which he supplied to a few enthusiastic friends and correspondents, such as the late Captain Hayward of Catlin's River, Mr. Sutherland of Milford Sound, and others, in which he got them to record all the fish caught by them, with sundry particulars as to contents of stomach, condition of ova, &c. On his death, all his papers dealing with this subject were handed over to me, as I had shown some little interest in the work, and had made a few suggestions which Mr. Arthur thought worthy of adoption. It seemed to me advisable to widen, if possible, the scope of these observations, and with this object in view I wrote to Mr. Lewis H. Wilson, of the Marine Department, a gentleman who takes much interest in the sea-fish of this colony, and asked his co-operation. Mr. Wilson obtained printed forms drawn up somewhat on the lines of those prepared by Mr. Arthur, and issued them, through the department, to all the principal lighthouse-keepers on the coast. These forms have been filled in more or less regularly for some years past—many necessarily in a very perfunctory way—and duplicates have been forwarded to me. From these the following notes have been compiled and condensed. A considerable proportion of the returns sent in contain no new information whatever. On the other hand, some of the recorders have undoubtedly been stimulated to exercise their observational powers to a gratifying extent, and there can be little doubt that in time, and with better direction,—which I hope will be forthcoming,—we shall obtain from the lighthouse-keepers of this coast—one of the most intelligent bodies of men in the public service—a mass of observations which will prove to be of very considerable scientific value. Already I have obtained from some of these correspondents many species of Crustacea (fish-parasites and others) which I could hardly have got in any other way.

The returns tabulated by me in this paper, including those obtained by Mr. Arthur, cover a period extending from 1884 to the present time. Their examination and summarisation have produced only a very small addition to our existing knowledge—an amount, indeed, which may seem out of all proportion

to the work involved; but if this paper is thought worthy of publication, and if copies of it are distributed to those who have aided in accumulating the material dealt with, I have little doubt it will stimulate many to fresh exertion.

The public at large do not know much about the fishes of our coast, except as far as the commonest kinds only are concerned. They cannot even name the majority of them. This is seen in the returns examined by me, where in several cases wrong names or unknown names are given, so that I cannot identify them, and have had to reject the observations. It is quite evident that the people require to be educated in regard to the asset this country possesses in her fishes. And it is by headmark, and not by any amount of scientific description, that this will be best done. The most satisfactory mode would be to issue large-sized drawings, accurately printed in colours, in the best style of art, with brief accompanying letterpress, and distribute these among schools in the coast districts, to lighthouses, pilot-stations, &c., as well as selling them to the public at as low a figure as possible. The expenditure incurred by such a publication would be recouped to the country in many ways.

The following is a list of the localities from which fish have been recorded. Those which are not lighthouses are marked with an asterisk. It must be borne in mind, in going over such a list, that, situated as most of the lighthouses are on rocky promontories or islands, the conditions are not often favourable for fishing, even from the shore, and still less often for boat fishing. Hence in some cases the number of fish recorded as taken is very small:—

1. *Cape Maria van Diemen*.—Kahawai, snapper, moki, trevally, king-fish (haku or yellowtail), rock-cod.

2. *Mokohinou Islands*.—Hapuku (or groper), kahawai, snapper, hiwihwi, *Scorpena bynoensis*, barracouta, trevally, maomao, rock-cod, spotty, parrot-fish, *Cymolutis sandageri*, leather-jacket (*Monacanthus*), korokoro-pounamou.

3. *Tiritiri (Auckland)*.—Snapper.

4. *Bean Rock (Auckland)*.—Kahawai, snapper, king-fish, conger-eel.

5. *Ponui Passage*.—Kahawai, snapper, king-fish, mullet (kanae), dog-fish, stingaree.

6. *Cuvier Island*.—Hapuku, snapper.

7. *Portland Island*.—Hapuku, kahawai, snapper, tarakihi, moki, frost-fish, barracouta, trevally, king-fish, john-dory, warehou, maomao, parrot-fish, flying-fish, smooth-hound, soldier-fish (?).

8. *Pencarrow Head*.—Butter-fish (kelp-fish).

9. *Somes Island (Wellington)*.—Rock-cod.

10. *Kaipara Heads*.—Snapper, frost-fish.

11. *Manukau Heads*.—Kahawai, snapper, king-fish, mullet (kanae).
12. *The Brothers (Cook Strait)*.—Hapuku, moki, rock-cod, spotty, butter-fish, red-cod, conger-eel.
13. *French Pass*.—Snapper, moki, barracouta, king-fish, rock-cod.
14. *Cape Campbell*.—Hapuku, kahawai, rock-cod.
15. *Akaroa Heads*.—Rock-cod.
16. *Moeraki*.—Hapuku, frost-fish, barracouta, rock-cod, gurnard, parrot-fish, butter-fish, red-cod, sprats, conger-eel.
17. *Taiaroa Head*.—Trumpeter, moki, pig-fish, frost-fish, rock-cod, Maori chief, butter-fish, red-cod, ling, flounder.
18. *Cape Saunders*.—Hapuku, trumpeter, barracouta, rock-cod, Maori chief, parrot-fish, butter-fish, red-cod, skate.
19. *Nuggets Point*.—Hapuku, rock-cod, red-cod, skate.
20. **Catlin's River*.—Kahawai, moki, mullet (sea), butter-fish, flounders, sole, sardines, eels.
21. *Waipapapa Point*.—Hapuku, kahawai, trumpeter, moki, rock-cod, red-cod, flounders, Forster's brill (?), soles, herrings, conger-eels, skate.
22. *Dog Island*.—Hapuku, tarakihi, trumpeter, moki, barracouta, rock-cod, butter-fish, red-cod, conger-eel, skate.
23. *Centre Island*.—Hapuku, trumpeter, moki, rock-cod, butter-fish, red-cod, conger-eel.
24. *Puysegur Point*.—Hapuku, kahawai, trumpeter, moki, pig-fish, trevally, rock-cod, perch, butter-fish, red-cod, dog-fish.
25. **Caswell Sound*.—John-dory, rock-cod.
26. **George Sound*.—Tarakihi, john-dory, rock-cod, flounder.
27. **Bligh Sound*.—Tarakihi, trumpeter, barracouta, john-dory, rock-cod, wrasse, butter-fish, flounder.
28. **Poison Bay*.—Hapuku, tarakihi, moki, blue-cod, gurnard.
29. **Milford Sound*.—Hapuku, tarakihi, trumpeter, moki, barracouta, horse-mackerel, john-dory, rock-cod, gurnard, mullet, wrasse, butter-fish, red-cod, *Macrurus australis*, flounder, pilchard.
30. **Martin's Bay*.—Hapuku, tarakihi, moki.

The following list of the fishes recorded in these returns summarises as far as possible their distribution, food, state of reproductive organs, &c. :—

1. HAPUKU, or GROPER (*Oligorus gigas*).

Number of Fish recorded and reported on.—141.

Localities where taken.—Mokohinou, Cuvier Island, Portland Island, the Brothers, Cape Campbell, Moeraki, Cape Saunders, Nuggets Point, Waipapapa, Dog Island, Centre Island, Puysegur Point, Poison Bay, Milford Sound.

Dates of Capture.—Every month of the year.

Weight of Fish taken.—Average, 40lb. to 45lb.; largest recorded, 122lb., taken at the Brothers, Cook Strait.

Food.—In almost every case the stomachs were found to contain various kinds of fish, as “red-cod,” “herrings,” “sprats,” “sardines,” “garfish,” and “rock-cod.” In a few instances “crayfish” and “shellfish” are reported.

Reproduction.—The observations on this head are quite contradictory. Some are recorded as containing “ripe” ova in January, April, May, June, July, and December; as “near ripe” in June; as “well advanced” in May; as “full of ova” in March. Others, however, are recorded as “unripe” in the very same months.

2. KAHAWAI (*Arripis salar*).

Number of Fish recorded.—101.

Localities.—Cape Maria van Diemen, Mokohinou, Bean Rock, Ponui Passage, Portland Island, Manukau Heads, Cape Campbell, Catlin’s River, Waipapapa Point, Puysegur Point.

Dates.—Taken every month of the year.

Weights.—Average, 3lb.; largest recorded, 16lb., from Cape Maria van Diemen.

Food.—“Small fish” is the most frequently recorded; but “mussels,” “pipi,” “shellfish,” “crayfish,” “shrimps,” and “kelp” are also stated as being found in the stomachs.

Reproduction.—Specimens taken at Cape Campbell and the Bean Rock are reported as “ripe” in January and February, while the large fish taken at Cape Maria in March are stated to have been “full of roe.”

3. SNAPPER (*Pagrus unicolor*).

Number of Fish recorded.—510.

Localities.—Cape Maria, Mokohinou, Tiritiri, Bean Rock, Ponui Passage, Cuvier Island, Portland Island, Kaipara Heads, Manukau Heads, French Pass.

Date of Capture.—Every month of the year.

Weights.—Average, 3½lb.; largest recorded, 20lb., from Portland Island.

Food.—“Shellfish” is the most common record (sometimes “mussels” or “barnacles”); but Crustacea (“crayfish,” “crabs,” and “shrimps”) are almost as numerous. Less frequently we have “small fish;” while other records give “Hippocampus,” “Medusæ,” “jelly-fish,” “young octopus,” and “sea-eggs” (?). In several instances a quantity of sand was present in the stomach.

Reproduction.—In the majority of the records the ova are stated to be “ripe” from November to February.

4. HIWIHIWI (*Chironemus fergussoni*).

This fish is only once recorded, a single specimen having been taken at Mokohinou in September, 1887. The stomach contained "Algæ and crabs."

It is more than likely that the fish was taken elsewhere in the North Island; but, not being known, it has not been recorded.

5. TARAKIHI (*Chilodactylus macropterus*).

Number of Fish recorded.—108.

Localities.—Portland Island, Dog Island, George Sound, Bligh Sound, Poison Bay, Milford Sound, Martin's Bay.

Date of Capture.—Every month of the year.

Weights.—Average, 2½ lb.; largest recorded, 9 lb., from coast north of Milford Sound. Mr. Sutherland, however, states, "I have got them up to 18 lb. in weight."

Food.—"Shellfish" is the record in the great majority of cases. Occasionally the food-material is stated to consist of "fish," "seaweed," "Crustacea," "squids," and "sand-worms."

Reproduction.—Only one entry of "ripe" occurs in January. Other entries give "unripe" during the months of March, May, June, and November. Apparently the observers were not well able to make out the reproductive organs in this species.

6. TRUMPETER (*Latris hecateia*).

Number of Fish recorded.—573 (often, however, reported as occurring in enormous quantities).

Localities.—Taiaroa Head, Cape Saunders, Waipapapa Point, Dog Island, Centre Island, Puysegur Point, Bligh Sound, Milford Sound.

Dates of Capture.—Every month of the year.

Weights.—Average, 6 lb.; largest recorded, 11 lb., from Milford Sound.

Food.—In a large number of cases the entries under this head are "gravel," "sand," or "empty." In two or three instances we have "fish," "weed," and "crayfish."

Reproduction.—Hardly any observations on the condition of the ova are made. The probability is that all the fish taken were young and sexually immature. I believe that fish under 15 lb. weight are seldom found with fully-formed ova, and such large fish are only found in deep water.

7. MOKI (*Latris ciliaris*).

Number of Fish recorded.—711.

Localities.—Cape Maria van Diemen (only a single specimen), Portland Island, the Brothers, French Pass, Taiaroa

Head, Catlin's River, Waipapapa Point, Dog Island, Centre Island, Puysegur Point (very abundant), Poison Bay, Martin's Bay.

Dates when caught.—Every month of the year.

Weight.—Average, 4lb.; largest recorded, 15lb., at the Brothers.

Food.—Crustacea (crabs, whale-feed, sea-lice, &c.) form the most common food of this fish. But nearly as many entries of "seaweed" occur, as if it was the habit of the fish to grub closely along the kelp-covered rocks. "Shells," "sand-worms," "fish," and "mussels" are the only other food-materials recorded. In about one-third of the fish examined the stomachs were empty, or contained a little gravel or fine sand.

Reproduction.—Very few notes occur on this point, and they are contradictory. Some record them as containing ripe ova in December and January; but others give them as unripe during the same months. One entry gives them as "ripe" in August; another gives "a few ripe" in May.

8. *Scorpena bynoensis.*

This fish is given as occurring at Mokohinou, where three examples were taken by Mr. Sandager in the month of September, 1887 and 1888. The weight of one is given as 2½lb. The entries under the head "Contents of stomach" are "fish," "crab," and "empty."

9. PIG-FISH (*Agriopus leucopæcilus*).

This is called "leather-jacket" in Dunedin, where the fish occurs in immense numbers. It is only recorded from Taiaroa Head, in the month of October (twelve examples, averaging ¼lb. each), and from Puysegur Point, where three specimens, ranging from ¾lb. to 1½lb. in weight, were taken in November and January. The stomachs were either empty or contained a little gravel.

10. FROST-FISH (*Lepidopus caudatus*).

Number of Fish recorded.—31.

Localities.—Portland Island, Kaipara Heads, Moeraki, Taiaroa Head.

Dates.—May to August (all taken on the beaches).

Weight.—Average, 4lb.; largest, 6lb.

Food.—Mr. Johnson records one fish taken at Moeraki as having the stomach full of sprats, and as some of these were perfect he infers that they had evidently been caught by the frost-fish just before it was stranded. No other reports are made as to food.

Reproduction.—No observations.

11. BARRACOUTA (*Thyrssites atun*).

Number of Fish recorded.—39.

Localities.—Mokohinou, Portland Island, French Pass, Moeraki, Cape Saunders, Dog Island, Bligh Sound, Milford Sound.

Dates.—January to October.

Weight.—Average, 5lb.; largest recorded, 8lb.

Food.—In every case but one the stomachs contained small fish (herrings, sprats, mullet, trevally, &c.). One opened at Dog Island contained shellfish and crabs.

Reproduction.—The record is unsatisfactory. One fish taken at Mokohinou in September was said to contain "ripe" ova, and others taken in January in Milford Sound were also ripe. The late Captain Hayward, of Catlin's River, was of opinion that this species spawned twice a year, but I do not know on what data his conclusions were based.

12. HORSE-MACKEREL (*Trachurus trachurus*).

Number of Fish recorded.—49 (examined), but immense numbers stranded on the beaches.

Locality.—Milford Sound.

Date.—November to January, but seen in the sound for the greater part of the year.

Weight.—Average, 2lb.; largest, 4lb.

Food.—In nearly every instance the stomachs contained pilchards, and it was in pursuit of these fish that the horse-mackerel got ashore in such numbers. Some caught in November contained shellfish.

Reproduction.—Some of the large fish taken in January contained "ripe" ova.

13. TREVALLY (*Caranx georgianus*).

Number of Fish recorded.—60.

Localities.—Cape Maria van Diemen, Mokohinou, Portland Island, Puysegur Point.

Dates.—All the months except March, May, June, and July.

Weight.—Average, 3lb.; largest recorded, 6lb., at Cape Maria.

Food.—Crustacea (crayfish, crabs, whale-feed, and shrimps), small fish, shellfish (chiefly mussels), and in one instance squids.

Reproduction.—One entry under this head gives "Full of roe" in November. Two others give "No ova" and "Un-ripe" in October and December respectively.

14. KING-FISH, or HAKU (*Seriola lalandii*), sometimes also called YELLOW-TAIL.

Number of Fish recorded.—7.

Localities.—Cape Maria van Diemen, Bean Rock, Ponui Passage, Portland Island, Manukau Heads (where it is reported as occurring very plentifully in the month of January).

Dates.—November, December, January, March, and April.

Weight.—Average, 10½lb.; largest recorded, 30lb., at French Pass.

Food.—Fish and shellfish.

Reproduction.—The only record is in the month of April, "No ova."

15. JOHN-DORY (*Zeus faber*).

Number of Fish recorded.—270.

Localities.—Caswell, George, Bligh, and Milford Sounds.

Dates.—Every month except February and April.

Weight.—Average, 1lb.; largest recorded, 6lb., at Milford Sound.

Food.—Fish, shellfish, and seaweed.

Reproduction.—Several recorded as "ripe" in November and December; others as "unripe" in March, May, June, and July.

16. WAREHOU (*Neptonemus brama*).

Number of Fish recorded.—59.

Locality.—Portland Island.

Dates.—August and September.

Weight.—Average, 6lb.; largest recorded, 8lb.

Food.—Crayfish and small fish.

Reproduction.—28 recorded as "near ripe" in August; 1 as "ripe" in September.

17. MAOMAO (*Ditrema violacea*).

Number of Fish recorded.—85.

Localities.—Mokohinou and Portland Island.

Dates.—August, September, October, November, December, and February.

Weight.—Average, 1½lb.; largest, 2lb.

Food.—Crustacea (chiefly crayfish), small fish, shellfish, seaweed, Medusæ, and squids.

Reproduction.—Several stated to be "unripe" in October, November, and December.

18. ROCK-COD, or BLUE-COD (*Percis colias*).

Number of Fish recorded.—6,286.

Localities.—Reported from all the stations except the following (which are the localities from which the most im-

perfect returns have come in): Tiritiri, Bean Rock, Ponui Passage, Cuvier Island, Pencarrow Head, Manukau Heads, Kaipara.

Dates.—Every month of the year.

Weight.—Average, 1½lb.; largest recorded, 7¼lb., from Puysegur Point.

Food.—Small fish, shellfish, Crustacea, seaweed, worms, octopus, and starfish. Several entries give gravel or mud as the contents of the stomach. The fish seem to graze along the rocks for part of their food, eating seaweed, corallines, &c., along with the molluscs, worms, and Crustacea which take refuge among them.

Reproduction.—The returns in regard to these fish are much more satisfactory than in any other case, for, while the entry "Unripe" occurs under every month of the year, it refers almost always to small fish only in the summer months. The larger fish appear to mature their ova from September to January, but by far the largest number in November, December, and January. In several cases the entry "Spawning" occurs in the two last months of the year, while by February nearly all the female fish are recorded as having no ova.

[NOTE.—From Cape Maria van Diemen a number of fish termed "blue-fish" are recorded. The same returns also record rock-cod. I am quite unable to suggest what fish is meant by "blue-fish," unless, indeed, the observer has used the names indiscriminately. These fish were very numerous, were taken during every month of the year, and fed chiefly on mussel, but occasionally on small fish. They weighed from 1lb. to 2lb. each.]

19. MAORI CHIEF (*Notothenia coriiceps*).

Number of Fish recorded.—8.

Localities.—Taiaroa Head, Cape Saunders.

Dates.—August, September, and October.

Weight.—Average, 3lb.; largest recorded, 4lb.

Food.—Seaweed; in one instance the stomach contained also small fish.

Reproduction.—In six fish the ova were "ripe," or nearly so, in August.

20. GURNARD (*Trigla kumu*).

Number of Fish recorded.—14.

Localities.—Moeraki, Poison Bay, Milford Sound.

Dates.—March, August, and October.

Weight.—Average, 1lb.; largest recorded, 3lb., at Milford Sound.

Food.—Shellfish in every case.

Reproduction.—Not recorded.

21. MULLET, OR KANAE (*Mugil perusii*).

Number of Fish recorded.—93.

Localities.—Ponui Passage, Manukau Heads.

Dates.—June, August, November.

Weight.—Average, 2lb.; largest recorded, 4lb.

Food.—In every case the stomachs contained either “blackish matter” or “slimy sand.”

Reproduction.—Not recorded.

22. SEA-MULLET (*Agonostoma forsteri*).

Such numbers of these fish were taken from time to time by netting that no attempt was in many cases made to state them in figures: they amount to several thousands.

Localities.—Catlin's River, Milford Sound.

Dates.—January, February, March, July, December.

Weight.—Average size, about 9in. long; the largest recorded weighed 1½lb.

Food.—*Reproduction.*—No entries occur under these heads.

23. PERCH (*Labrichthys celidota*).

Only one example of this fish was recorded, from Puysegur Point. It was taken in June, and weighed 3lb. Its stomach contained small fish.

24. WRASSE, OR SPOTTY (*Labrichthys bothryocosmus*).

Number of Fish recorded.—36.

Localities.—Mokohinou, the Brothers, Bligh Sound, Milford Sound.

Dates.—Every month except January, February, April, and December.

Weight.—Average, under 1lb.; largest recorded, 3lb., at Milford Sound.

Food.—Seaweed, fish, shellfish, and Crustacea.

Reproduction.—One record gives “spawning” in September; the others are negative.

25. PARROT-FISH (*Labrichthys psittacula*).

Number of Fish recorded.—12.

Localities.—Mokohinou, Portland Island, Moeraki, Cape Saunders.

Dates.—March, August, September, November, and December.

Weight.—Average, 1lb.

Food.—Crustacea, shellfish (mussels, &c.), and seaweed.

Reproduction.—“Nearly ripe,” September and November.

26. BUTTER-FISH, OR KELP-FISH (*Coridodax pullus*).

Number of Fish recorded.—365.

Localities.—Pencarrow Head, the Brothers, Moeraki, Taiaroa Head, Cape Saunders, Catlin's River, Dog Island, Centre Island, Puysegur Point (where it is almost the only fish recorded), Bligh Sound, Milford Sound.

Dates.—Every month in the year.

Weight.—Average, 2lb.; largest recorded, 7½lb., at Dog Island.

Food.—By far the commonest material found in the stomachs of these fishes was "seaweeds." Occasionally "small shellfish," "small mussels," "small barnacles," fish, small crabs, and "gravel" are recorded.

Reproduction.—The most of the observations give the ova as ripe from August to January. A single record from Dog Island gives May and June for the maturation of the ova, and one from Puysegur Point throws it on to February.

27. *Cymolotus sandageri*.

Only two specimens of this fish are recorded, both taken at Mokohinou, in August, 1887. The stomach of one contained Crustacea; the other was empty.

28. HAKE (*Lotella rhacinus*).

Only one specimen recorded, from Mokohinou, in August, 1887. Its weight was 2lb., and its stomach contained small fish.

29. RED-COD (*Lotella bacchus*).

Number of Fish recorded.—372.

Localities.—The Brothers, Moeraki, Taiaroa Head, Cape Saunders, Nuggets Point, Waipapapa Point, Dog Island, Centre Island, Puysegur Point, Milford Sound.

Dates.—Every month except January, March, and May.

Weight.—Average, 4lb.; largest recorded, 12lb., at Taiaroa Head.

Food.—Small fish, with occasionally crabs or other Crustacea, shellfish, or seaweed.

Reproduction.—The returns are not very definite, but the ova appear to be maturing in August and September, and to be ripe in October or November. Probably the immense shoals of this fish which visit Otago Harbour in November come for the purpose of depositing their ova.

30. LING (*Genypterus blacodes*).

Number of Fish recorded.—6.

Localities.—Taiaroa Head, Milford Sound.

Dates.—January, April, June, July, and October.

Weight.—Average, 17lb. ; largest recorded, 26lb.

Food.—Fish : in one instance a red-cod was found in the stomach.

Reproduction.—No record.

31. *Macrurus australis.*

Five specimens of this fish were washed up on the beach at the head of Milford Sound, and were dried by Mr. Sutherland. The identification was made from the dried examples, and is therefore very doubtful. They were only 2½in. to 3in. long.

32. FLOUNDER OF PATIKI (*Rhombosolea monopus*).

Probably the yellow-belly (*R. leporina*) is included among the returns.

Number of Fish recorded.—1,490.

Localities.—Tairaroa Head, Catlin's River, Waipapapa Point, George Sound, Bligh Sound, Milford Sound.

Dates.—Every month except August and September.

Weight.—Average, 1½lb. ; largest recorded, 4lb., at Waipapapa Point.

Food.—Small fish, Crustacea, shellfish, or seaweed. Frequently the stomachs contained muddy material.

Reproduction.—From the few observations recorded, the ova seem to mature in January and February, and the fish to spawn in March.

33. SOLE (*Peltorhamphus novæ-zealandiæ*).

Number of Fish recorded.—77.

Localities.—Catlin's River, Waipapapa Point.

Dates.—December, January, February, March, and May.

Weight.—Average, 1½lb. ; largest, 2lb.

Food.—Crustacea or "muddy material."

Reproduction.—Only one definite observation occurs under this head; a number of fish taken in March being either "spawned" or containing ripe ova.

34. FLYING-FISH (*Exocætus speculiger* ?).

A single specimen, weighing 2lb., was picked up on the beach at Portland Island in December, 1887.

35. PILCHARD, OR SARDINE (*Clupea sagax*).

36. SPRAT (*Clupea sprattus*).

The recorders were mostly unable to distinguish between these species. They are only noted from Moeraki, Catlin's River, Waipapapa Point, and Milford Sound, but at these

localities they occurred at certain seasons in enormous quantities. From Moeraki they are only reported as occurring in March "in enormous abundance." In Catlin's River estuary they were found in numbers in the rock-pools in June, the larger ones with the ova well advanced. From Waipapapa Point they are recorded by Mr. Erecson as passing continuously through Foveaux Strait from November to April, usually pursued and driven ashore in great numbers by the mutton-birds. In January the ova were nearly ripe in many of the fish; while of those taken in April some were ripe and some spawned. In Milford Sound these fish are reported as occurring all the year round, being frequently driven ashore by cow-fish and other enemies. Their abundance is testified by entries like the following: "December, 1885: Tons of pilchards thrown up on the beaches at the end of this month." Fish taken in October had the ova nearly ripe, while for two years in succession they were found to be spawning during November and December.

37. CONGER-EEL (*Conger vulgaris*).

Number of Fish recorded.—23.

Localities.—Bean Rock, the Brothers, Moeraki, Waipapapa, Dog Island, Centre Island, Milford Sound.

Dates.—All the year round.

Weight.—Average, 19lb.; largest recorded, 37lb., from Waipapapa Point.

Food.—Fish, Crustacea, shellfish, octopus, and seaweeds.

Reproduction.—All observations under this head were negative.

38. LEATHER-JACKET (*Monacanthus convexirostris*).

Only recorded from Mokohinou, where seven specimens were obtained during the month of September in two successive years. In every case they contained ripe ova, and seem to have approached the coast to spawn. The average weight was 1½lb., and the food consisted of Crustacea and corallines.

39. SKATE (*Raja nasuta*).

Number of Fish recorded.—19.

Localities.—Cape Saunders, the Nuggets, Waipapapa Point, Dog Island.

Dates.—February, March, April, and May.

Weights.—Average, 14lb.; largest recorded, 20lb.

Food.—Crayfish, crabs, shellfish, and young cod.

Reproduction.—The ova were ripe in several fish from February to May. It would seem that the fish come into shallow water to spawn during those months.

40. STINGAREE (*Trygon thalassia?*).

Only one specimen recorded, from Ponui Passage, in July. It was a mature female, full of ova, and weighed 20lb. The stomach was empty.

In addition to the above-named forty species of fish, the returns give the capture of numerous sharks, dog-fishes, and smooth-hounds from Puysegur Point, Portland Island, and Ponui Passage, but the identification of the species is not always possible. Well-developed embryos were found in fish taken in all the months from August to December. The fish varied in weight from 18lb. to 90lb. each.

From Portland Island a fish called "soldier-fish" is recorded, fourteen specimens having been taken in the months of May, June, August, and October. They weighed from 1lb. to 1½lb. each, and their stomachs contained fish or shellfish. No ova were found in any of them. I do not know what species is referred to under this name.*

Again, from Mokohinou Mr. Sandager records, in September, 1888, the capture of a fish which he calls "korokoropounamou." The specimen weighed 6lb., and contained Medusæ in the stomach. I do not know what fish is referred to.

I have made no attempt to draw any conclusions from the facts summarised in this paper. It seems to me sufficient in such a preliminary notice merely to state them. Several species will be found to have their range extended along the coast. The food of many kinds is here recorded for the first time, and one or two notes on the time of reproduction are worthy of attention. I think that the examination and comparison of the results obtained at the different recording stations will prove of interest to all who have in the past kept such records, and may be the means of stimulating others to habits of observation.

* In Dieffenbach's "New Zealand," vol. ii., p. 218, a fish is mentioned under the name *Julis miles* (*Labrus coccineus*, J. R. Forster, apud Schn.; *Labrus miles*, Bl. Schn., p. 264), "named the 'soldier' by the seamen who accompanied Cook on his second voyage." Perhaps this is the fish referred to.