COMMONWEALTH OF AUSTRALIA

Commonwealth Scientific and Industrial Research Organization

Division of Fisheries and Oceanography

REPORT 48

SCIENTIFIC REPORTS OF CRUISES OF

T.S. FUKUSHIMA MARU

August 31-October 5, 1964
June 8-July 19, 1965

F.V. SURUGA MARU

September 27-December 2, 1965

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Marine Laboratory
Cronulla, Sydney
1970

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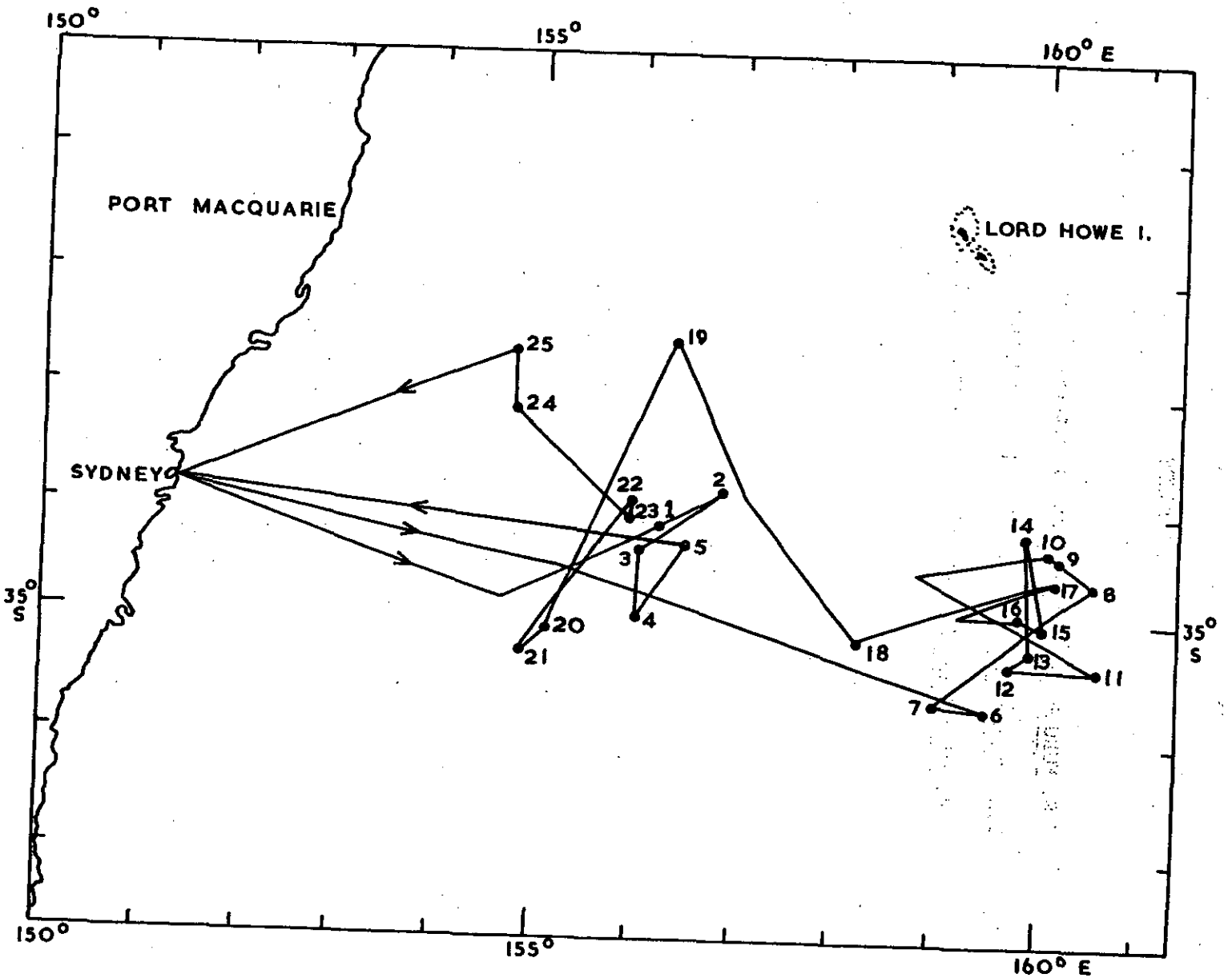

Fig. 1. Track chart T.C. Ethel ..

SCIENTIFIC REPORT OF CRUISE

T.S. Fukushima Maru

August 31-October 5, 1964

I. INTRODUCTION

This report records data collected during a routine training cruise of T.S. Fukushima Maru to the tuna longlining grounds in the Tasman Sea. T.S. Fukushima Maru is a fisheries training vessel operated by the Onahama Fisheries High School of Fukushima Prefecture, Japan. She is a steel tuna longliner of 314 gross tons. Her normal complement consists of 25 officers and crew members, and a similar number of students and an instructor. Through the cooperation of Fukushima Prefecture, Nankai Regional Fisheries Research Laboratory, and Onahama Fisheries High School, accommodation was provided for a CSIRO scientist to sample southern bluefin tuna taken by longline.

Scientific Personnel

M. Isogami	Onahama Fisheries High School
T.R. Cowper	CSIRO Division of Fisheries and Oceanography

Itinerary

The cruise began at Sydney on August 31, and proceeded to the fishing grounds in the Tasman Sea, worked a series of stations, then returned to Sydney on October 5 (Fig. 1).

II. WORK ACCOMPLISHED

Twenty-five longline stations were occupied. Bathythermograph casts were made at 18 stations; surface hydrology samples were collected at 21 stations, and subsurface samples at 15 stations. Lengths of 1512 tunas were measured, and sex determinations made of 1111 tunas. Blood and serum samples were taken from 97 southern bluefin tunas; stomach, with gills, liver, and gonads from 28 southern bluefin tunas; ovaries of 315 southern bluefin tunas were weighed, and ovaries from 35 southern bluefin tunas were preserved (Table 1).

TABLE 1

WORK DONE AT EACH STATION

Stn No.	Long-line Baskets Shot	Hydrology 1	Hydrology 2	BT	Southern Bluefin Caught	Biological Material Collected		
						Blood Samples	Stomachs etc.	Ovaries
1	355	+	+	+	18	5		
2	372	+	+	+	79	4	5	
3	355	+	+	+	98	6		
4	360				54	10	5	5
5	372	+	+	+	34	5		
6	370	+	+	+	54	10		
7	300				32	1		4
8	374	+	+	+	44	10		
9	380	+	+	+	73	8		2
10	400	+	+	+	62	10	5	
11	385	+	+		34	4		
12	404	+		+	48	5		
13	362				56	5		
14	372	+	+	+	46	5		4
15	362	+	+	+	40	5		
16	352	+	+	+	44	4		3
17	357	+	+		29		4	1
18	330	+	+	+	36			2
19	350	+			4			3
20	350	+		+	33		5	
21	350	+		+	28			2
22	310	+		+	53		4	8
23	355	+	+	+	23			1
24	360	+		+	21			
25	240				5			

Hydrology 1 Surface samples
2 Subsurface samples

BT Bathythermogram

III. METHODS AND RESULTS

Gear

Conventional Japanese tuna longline with 5 hooks per basket.

Catches

Details of catches from each haul are given in Table 2. Four common species of tuna, southern bluefin, albacore, yellowfin, and big-eye were taken though the catches were predominantly of southern bluefin.

Size Composition of Southern Bluefin

The length frequencies of southern bluefin tuna (males and females combined) are shown in Figure 2.

Gonad Index and Sex Ratio of Southern Bluefin

Gonad indices were calculated for each of the 316 ovaries weighed at sea (Table 3). ($G.I. = w/L^3 \times 10^8$ where w is the weight of ovary (g) and L is L.C.F. of fish (mm)). G.I. values were low (Table 4) the majority being between 1 and 12. The most advanced ovary encountered was that having a G.I. of 21, the contained ova being clearly visible to the naked eye. This ovary was at an early ripening stage.

In 25 longline shots only on two occasions did females outnumber males. Sex ratios on these two occasions were 0.87 : 1 and 0.91 : 1 (males : females). In the other 23 shots, with one exception when the sexes were taken in equal numbers, males outnumbered females. Sex ratios on these occasions ranged from 1.15 : 1 to 3.00 :1, the mean value for all shots being 1.49 : 1 (males : females).

Hydrology

The surface isotherm pattern (Fig. 3) is derived from observations made by H.M.A.S. Gascoyne from September 18-27, 1964 and by Fukushima Maru from September 23-27, 1964.

TABLE 2

CATCH DATA

Stn No.	Date	Latitude	Longitude	Surf. Temp. °C	No.of Hooks Set	Catch	Tuna Catch/ 100 Hooks
1	2. 9.64	34°08'S.	156°11'E.	18.4	1775	18 Southern bluefin	1.014
						18 Albacore	1.014
						11 Yellowfin tuna	0.619
						1 Big-eye tuna	0.056
						1 Swordfish	
						1 Shark	
2	3. 9.64	33°51'S.	156°48'E.	18.8	1775	79 Southern bluefin	4.451
						11 Albacore	0.620
						1 Shark	
3	4. 9.64	34°20'S.	155°03'E.	18.3	1775	98 Southern bluefin	5.521
						11 Albacore	0.619
						1 Yellowfin tuna	0.056
						1 Big-eye tuna	0.056
						1 Shark	
						2 Marlin	
4	5. 9.64	34°43'S.	155°57'E.	18.4	1800	54 Southern bluefin	3.000
						17 Albacore	0.944
						4 Yellowfin tuna	0.222
						2 Swordfish	
5	6. 9.64	34°19'S.	156°27'E.	20.2	1860	34 Southern bluefin	1.828
						25 Albacore	1.344
						1 Big-eye tuna	0.054
6	11. 9.64	35°41'S.	159°28'E.	17.0	1850	54 Southern bluefin	2.919
						4 Albacore	0.216
7	12. 9.64	35°38'S.	158°57'E.	16.5	1500	32 Southern bluefin	2.133
						10 Albacore	0.667
						1 Northern Pacific bluefin	0.067
						2 Shark	

TABLE 2 - Cont'd

CATCH DATA

Stn No.	Date	Latitude	Longitude	Surf. Temp. °C	No.of Hooks Set	Catch	Tuna Catch/ 100 Hooks
8	13. 9.64	34°35'S.	160°33'E.	15.9	1870	44 Southern bluefin	2.353
						17 Albacore	0.909
						1 Northern Pacific bluefin	0.053
						2 Shark	
9	14. 9.64	34°22'S.	160°10'E.	16.9	1900	73 Southern bluefin	3.842
						10 Albacore	0.526
						1 Shark	
10	15. 9.64	34°20'S.	160°05'E.	16.6	2000	62 Southern bluefin	3.100
						35 Albacore	1.750
11	17. 9.64	35°19'S.	160°36'E.	15.7	1925	34 Southern bluefin	1.766
						8 Albacore	0.416
						1 Shark	
12	18. 9.64	35°17'S.	159°41'E.	17.5	2020	48 Southern bluefin	2.376
						11 Albacore	0.545
						1 Shark	
13	19. 9.64	35°11'S.	159°54'E.	17.6	1810	56 Southern bluefin	3.094
						15 Albacore	0.829
						1 Shark	
14	20. 9.64	34°11'S.	159°51'E.	18.0	1860	46 Southern bluefin	2.473
						15 Albacore	0.806
						1 Striped marlin	
						1 Shark	
15	21. 9.64	34°58'S.	160°03'E.	16.0	1825	40 Southern bluefin	2.192
						14 Albacore	0.767
						1 Big-eye tuna	0.055
						2 Shark	
16	22. 9.64	34°21'S.	159°47'E.	18.3	1760	44 Southern bluefin	2.500
						34 Albacore	1.932
						2 Big-eye tuna	0.114

TABLE 2 - Cont'd

CATCH DATA

Stn No.	Date	Latitude	Longitude	Surf. Temp. °C	No.of Hooks Set	Catch	Tuna Catch/ 100 Hooks
17	24. 9.64	34°32'S.	160°12'E.	15.4	1785	29 Southern bluefin	1.625
						10 Albacore	0.560
						1 Big-eye tuna	0.056
						3 Shark	
18	25. 9.64	35°09'S.	158°11'E.	17.7	1650	36 Southern bluefin	2.182
						17 Albacore	1.030
						1 Striped marlin	
						2 Shark	
19	27. 9.64	32°33'S.	156°19'E.	17.7	1750	4 Southern bluefin	0.229
						17 Albacore	0.971
						2 Big-eye tuna	0.115
						4 Yellowfin tuna	0.229
						1 Shark	
20	28. 9.64	35°05'S.	155°04'E.	17.5	1750	33 Southern bluefin	1.886
						14 Albacore	0.800
						4 Big-eye tuna	0.229
						2 Shark	
21	29. 9.64	35°14'S.	154°49'E.	18.7	1750	28 Southern bluefin	1.600
						8 Albacore	0.457
						2 Yellowfin tuna	0.114
						2 Shark	
22	30. 9.64	33°57'S.	155°55'E.	17.7	1550	53 Southern bluefin	3.419
						19 Albacore	1.226
						1 Yellowfin tuna	0.064
						1 Shark	
23	1.10.64	34°07'S.	155°53'E.	17.7	1775	23 Southern bluefin	1.296
						6 Albacore	0.338
						1 Big-eye tuna	0.056
						4 Yellowfin tuna	0.225
						1 Striped marlin	
						1 Swordfish	
						1 Shark	

TABLE 2 - Cont'd

CATCH DATA

Stn No.	Date	Latitude	Longitude	Surf. Temp. °C	No.of Hooks Set	Catch	Tuna Catch/ 100 Hooks
24	2.10.64	33°11'S.	154°45'E.	21.6	1750	21 Southern bluefin	1.200
						9 Albacore	0.514
						3 Big-eye tuna	0.171
						35 Yellowfin	2.000
						2 Striped marlin	
25	3.10.64	32°38'S.	154°43'E.	20.3	1200	5 Southern bluefin	0.417
						9 Albacore	0.750
						2 Big-eye tuna	0.167
						18 Yellowfin tuna	1.500
						1 Northern Pacific bluefin	0.083
						4 Striped marlin	

Average catch per 100 hooks -

Yellowfin	0.181
Big-eye	0.043
Albacore	0.822
Southern bluefin	2.367
Total catch/100 hooks	3.420

TABLE 3

GONAD INDEX COMPOSITION

Gonad Index	Frequency
1	
2	15
3	14
4	21
5	21
6	42
7	42
8	38
9	34
10	30
11	25
12	15
13	9
14	5
15	
16	3
17	
18	
19	1
20	
21	
22	1
23	
24	
25	
Total	316

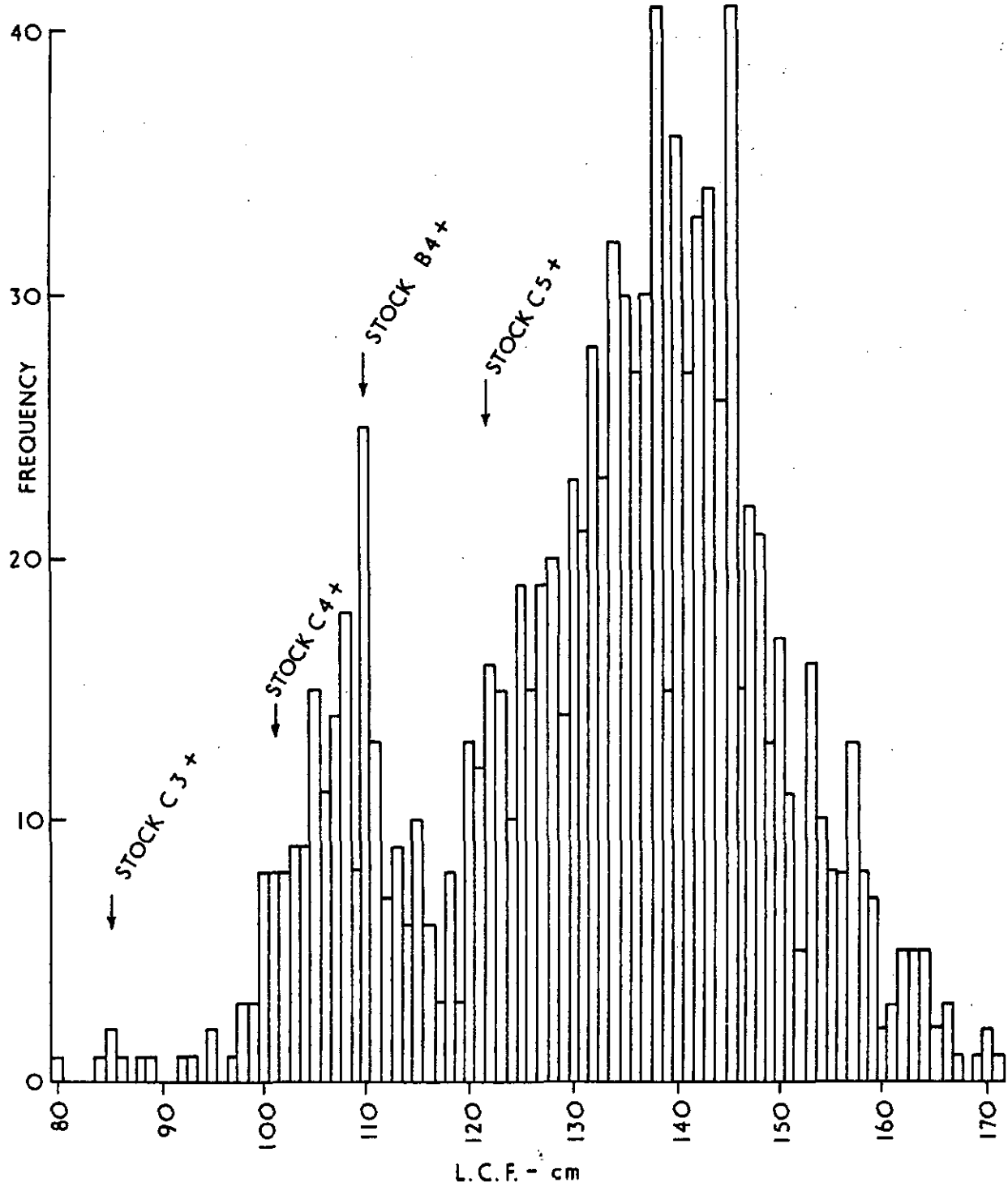

Fig. 2. Length frequencies of southern bluefin tuna (males & females combined), T.S. Fukushima Maru longline operations, August 31 — October 5, 1964.

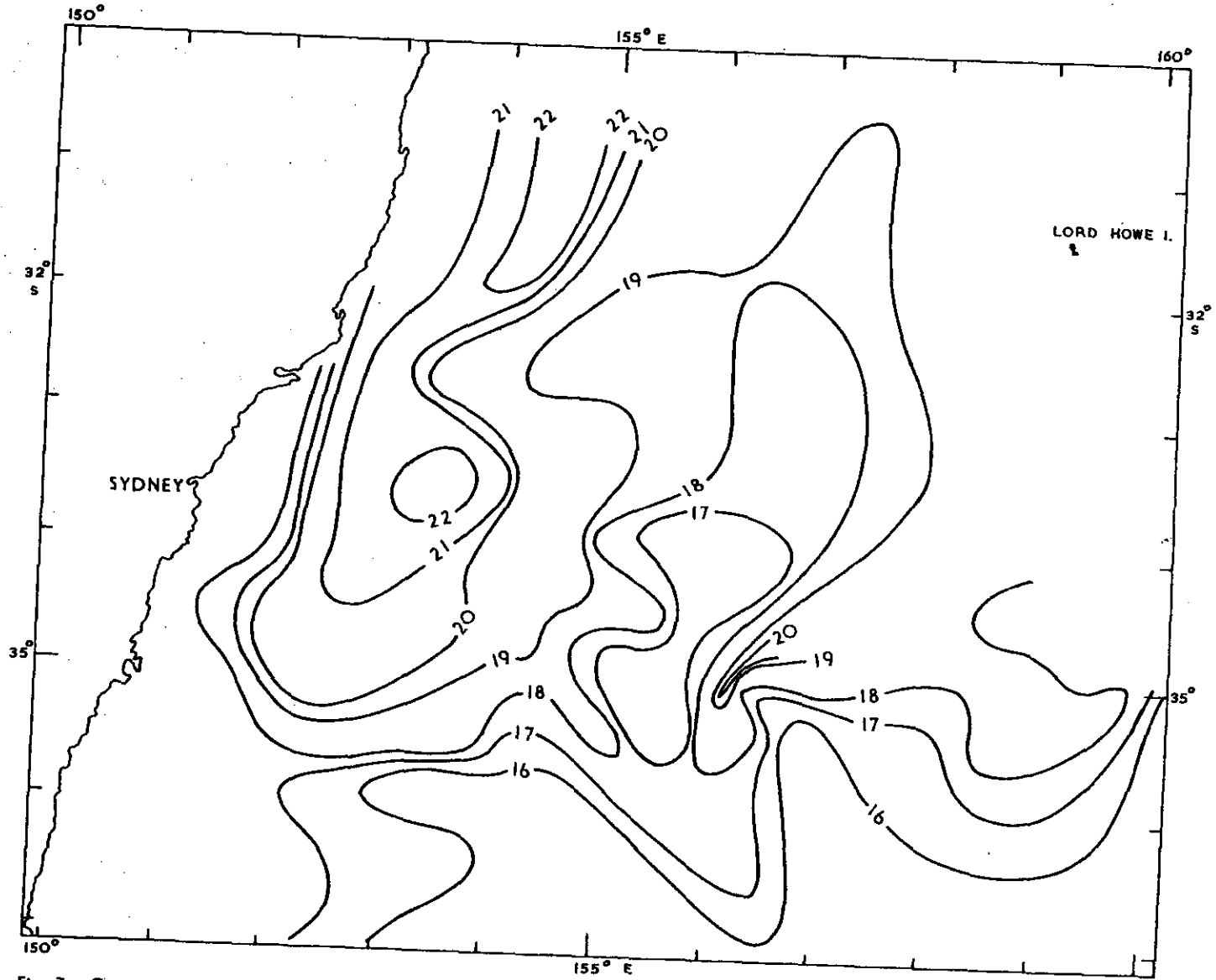

Fig. 3. Composite surface temperatures (°C), H.M.A.S. Gascoyne Cruise 6/64 September 18–27, 1964 & T.S. Fukushima Maru September 23–27, 1964.

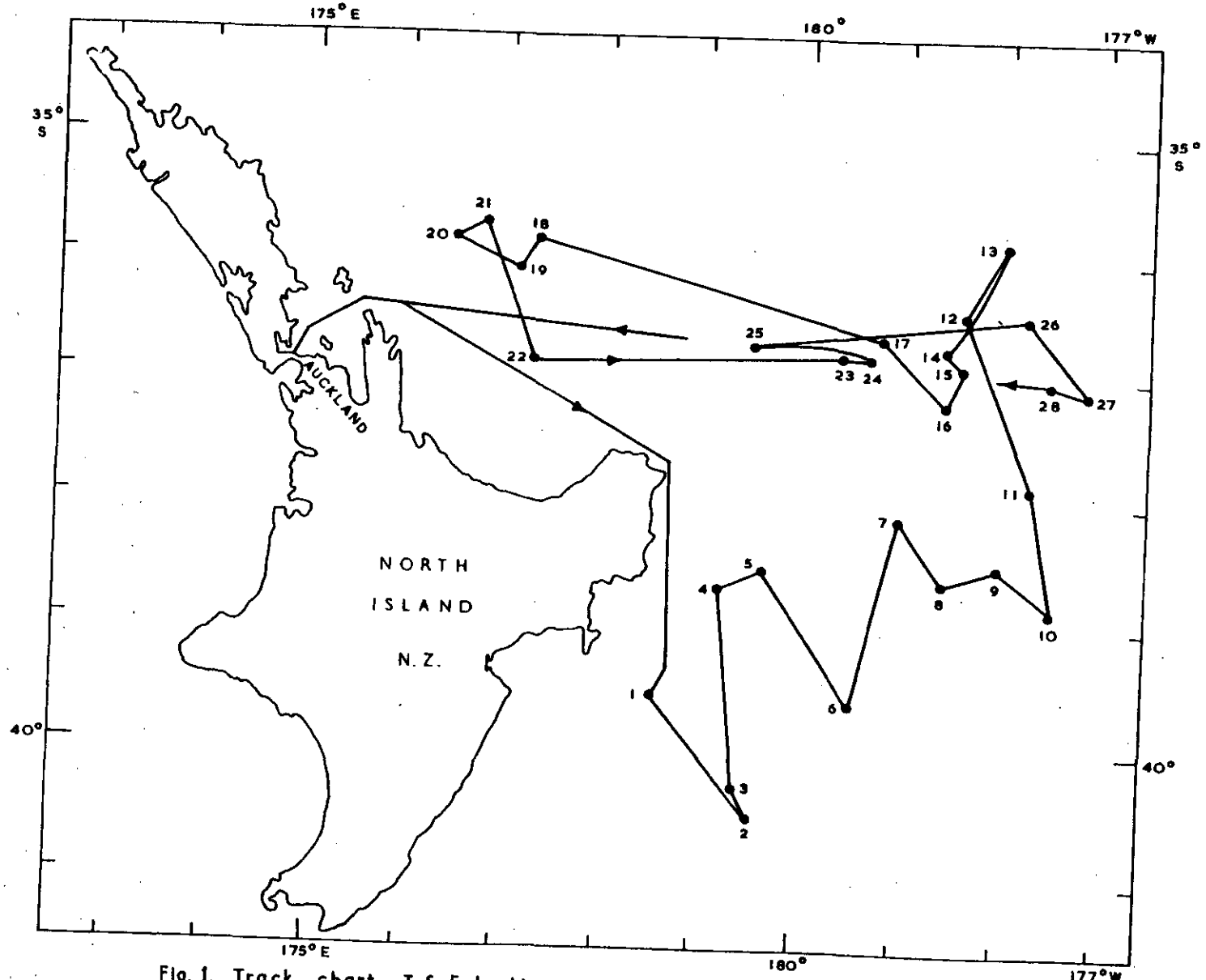

Fig. 1. Track chart, T.S. Fukushima Maru June 8 – July 19, 1965.

SCIENTIFIC REPORT OF CRUISE

T.S. Fukushima Maru

June 8-July 19, 1965

I. INTRODUCTION

This report records data collected during a routine training cruise of T.S. Fukushima Maru to the tuna longlining grounds east of New Zealand. Through the co-operation of Fukushima Prefecture, Nankai Regional Fisheries Research Laboratory, and Onahama Fisheries High School, accommodation was provided for a CSIRO scientist to sample southern bluefin tuna taken by longline.

Scientific Personnel

A. Shirakuma	Onahama Fisheries High School
T.R. Cowper	CSIRO Division of Fisheries and Oceanography

Itinerary

The cruise began at Auckland on June 8 and proceeded to the fishing grounds in the south-west Pacific, worked a series of stations there, then returned to Auckland on July 19 (Fig. 1).

II. WORK ACCOMPLISHED

Twenty-eight longline stations were occupied. Bathythermograph casts were made at 14 stations. Lengths of 1373 tunas were measured, and sex determinations made of 1299 tunas. Blood samples were taken from 117 southern bluefin tunas; stomach, gills, liver, and gonad samples from 23 southern bluefin tunas; ovaries were weighed from 359 southern bluefin tunas, and ovaries from 26 southern bluefin tunas were preserved (Table 1).

TABLE 1

WORK DONE AT EACH STATION

Stn No.	Long line Baskets Shot	Surface Hydrology	BT	Southern Bluefin Caught	Biological Material Collected		
					Blood Samples	Stomachs etc.	Ovaries
1	386	+		52	5		
2	380	+	+	50	5	5	
3	300	+		19	2		

TABLE 1 - Cont'd

WORK DONE AT EACH STATION

Stn No.	Long-line Baskets Shot	Surface Hydrology	BT	Southern Bluefin Caught	Biological Material Collected		
					Blood Samples	Stomachs etc.	Ovaries
4	400	+	+	46	4		
5	400	+	+	26			
6	380	+	+	27	4		5
7	400	+	+	41	9	2	
8	400	+		58	11	5	
9	400	+	+	72	10		1
10	400	+		73	10		
11	350	+		53	10		
12	398	+	+	78	10	4	
13	399	+		64	10	3	
14	400	+	+	44	9		
15	400	+		49	10		
16	400	+	+	63	8		
17	300	+		36			
18	400	+		29		4	
19	400	+	+	51			4
20	400	+	+	67			7
21	400	+		47			2
22	370	+		23			
23	400	+	+	90			7
24	400	+	+	70			
25	371	+		56			
26	357	+	+	23			
27	352	+		37			
28	357	+		32			

BT Bathythermogram

III. METHODS AND RESULTS

Gear

Conventional Japanese tuna longline with 5 hooks per basket.

Catches

Details of catches from each haul are given in Table 2. Southern bluefin and albacore were taken at every station.

Size Composition of Southern Bluefin

The length frequencies of southern bluefin tuna (males and females combined) are shown in Figure 2.

Gonad Index and Sex Ratio of Southern Bluefin

Gonad indices were calculated for each of the 359 ovaries weighed at sea (G.I. = $w/L^3 \times 10^8$ where w is the weight of ovary (g) and L is L.C.F. of fish (mm)). G.I. values were low (Table 3) and similar to those obtained during a previous cruise in the Tasman Sea. No ripening gonads were observed. The higher values of G.I. were obtained from ovaries that had already spawned.

In 23 out of 28 longline shots males outnumbered females. Sex ratios for these shots ranged from 1.023 : 1 to 2.000 : 1. For the shots in which females outnumbered males sex ratios ranged from 0.600 : 1 to 0.937 : 1. The mean sex ratio for all shots was 1.220 : 1 (males : females).

TABLE 2

CATCH DATA

Stn No.	Date	Latitude	Longitude	Surf. Temp. °C	No.of Hooks Set	Catch		Tuna Catch/ 100 Hooks
1	10.6.65	39°36'S.	178°35'E.	15.5	1930	52	Southern bluefin	2.694
						11	Albacore	0.570
						5	Shark	
2	12.6.65	40°27'S.	179°36'E.	15.3	1900	50	Southern bluefin	2.632
						16	Albacore	0.842
						1	Swordfish	
						8	Shark	
3	13.6.65	40°14'S.	179°28'E.	14.9	1500	19	Southern bluefin	1.267
						10	Albacore	0.667
						2	Shark	
4	14.6.65	38°43'S.	179°11'E.	16.3	2000	46	Southern bluefin	2.300
						15	Albacore	0.750
						14	Shark	
5	15.6.65	38°35'S.	179°37'E.	14.7	2000	26	Southern bluefin	1.300
						14	Albacore	0.700
						1	Marlin	
						17	Shark	
6	19.6.65	39°34'S.	179°26'W.	13.9	1900	27	Southern bluefin	1.421
						30	Albacore	1.579
						4	Shark	
7	20.6.65	38°06'S.	179°03'W.	14.9	2000	41	Southern bluefin	2.050
						20	Albacore	1.000
						6	Shark	
8	21.6.65	38°43'S.	178°34'W.	14.3	2000	58	Southern bluefin	2.900
						30	Albacore	1.500
						3	Shark	

TABLE 2 - Cont'd

CATCH DATA

Stn No.	Date	Latitude	Longitude	Surf. Temp. °C	No.of Hooks Set	Catch	Tuna Catch/ 100 Hooks
9	22.6.65	38°37'S.	178°05'W.	14.0	2000	72 Southern bluefin	3.600
						9 Albacore	0.450
						3 Swordfish	
						3 Shark	
						1 Butterfly mackerel	
10	23.6.65	38°55'S.	177°34'W.	14.1	2000	73 Southern bluefin	3.650
						18 Albacore	0.900
						1 Swordfish	
						1 Shark	
11	25.6.65	37°49'S.	177°41'W.	14.0	1750	53 Southern bluefin	3.029
						30 Albacore	1.714
						3 Shark	
12	26.6.65	36°25'S.	178°22'W.	15.2	1990	78 Southern bluefin	3.920
						80 Albacore	4.020
						1 Northern Pacific bluefin	0.050
						1 Swordfish	
						4 Shark	
13	27.6.65	35°55'S.	177°59'W.	15.3	1995	64 Southern bluefin	3.208
						76 Albacore	3.809
						4 Shark	
14	28.6.65	36°43'S.	178°28'W.	16.2	2000	44 Southern bluefin	2.200
						64 Albacore	3.200
						3 Shark	
15	29.6.65	36°59'S.	178°24'W.	16.1	2000	49 Southern bluefin	2.450
						77 Albacore	3.850
						2 Swordfish	
						5 Shark	
16	30.6.65	37°17'S.	178°34'W.	16.5	2000	63 Southern bluefin	2.650
						53 Albacore	

TABLE 2 - Cont'd

CATCH DATA

Stn No.	Date	Latitude	Longitude	Surf. Temp. °C	No.of Hooks Set	Catch	Tuna Catch/ 100 Hooks
17	1.7.65	36°40'S.	179°10'W.	16.8	1500	36 Southern bluefin	2.400
						56 Albacore	3.733
18	3.7.65	35°48'S.	177°23'E.	16.4	2000	29 Southern bluefin	1.450
						25 Albacore	1.250
						10 Shark	
19	4.7.65	36°07'S.	177°04'E.	16.7	2000	51 Southern bluefin	2.550
						46 Albacore	2.300
						1 Swordfish	
						3 Shark	
20	5.7.65	35°48'S.	176°32'E.	17.0	2000	67 Southern bluefin	3.350
						65 Albacore	3.250
						5 Shark	
21	6.7.65	35°44'S.	176°48'E.	17.2	2000	47 Southern bluefin	2.350
						75 Albacore	3.750
						9 Shark	
22	7.7.65	36°51'S.	177°16'E.	16.4	1850	23 Southern bluefin	1.243
						41 Albacore	2.216
						2 Big-eye tuna	0.108
						3 Shark	
23	9.7.65	36°47'S.	179°33'W.	16.3	2000	90 Southern bluefin	4.500
						66 Albacore	3.300
						1 Striped tuna	0.050
						1 Swordfish	
						9 Shark	
24	10.7.65	36°47'S.	179°13'W.	16.3	2000	70 Southern bluefin	3.500
						47 Albacore	2.350
						2 Shark	
25	11.7.65	36°46'S.	171°31'E.	16.2	1855	56 Southern bluefin	3.019
						15 Albacore	0.809
						3 Swordfish	
						3 Shark	

TABLE 2 - Cont'd

CATCH DATA

Stn No.	Date	Latitude	Longitude	Surf. Temp. °C	No.of Hooks Set	Catch	Tuna Catch/ 100 Hooks
26	14.7.65	36°23'S.	177°51'W.	14.7	1785	23 Southern bluefin	1.288
						50 Albacore	2.801
						1 Swordfish	
						2 Shark	
27	15.7.65	37°09'S.	177°05'W.	14.8	1760	37 Southern bluefin	2.102
						46 Albacore	2.614
						5 Swordfish	
						1 Shark	
28	17.7.65	37°02'S.	177°33'W.	15.1	1785	32 Southern bluefin	1.793
						25 Albacore	1.401
						1 Shark	

TABLE 3

GONAD INDEX COMPOSITION

Gonad Index	Frequency
1	5
2	13
3	30
4	35
5	45
6	50
7	37
8	39
9	35
10	24
11	16
12	15
13	2
14	1
15	4
16	4
17	1
18	
19	
20	1
21	
22	
23	
24	
25	1
26	1
Total	359

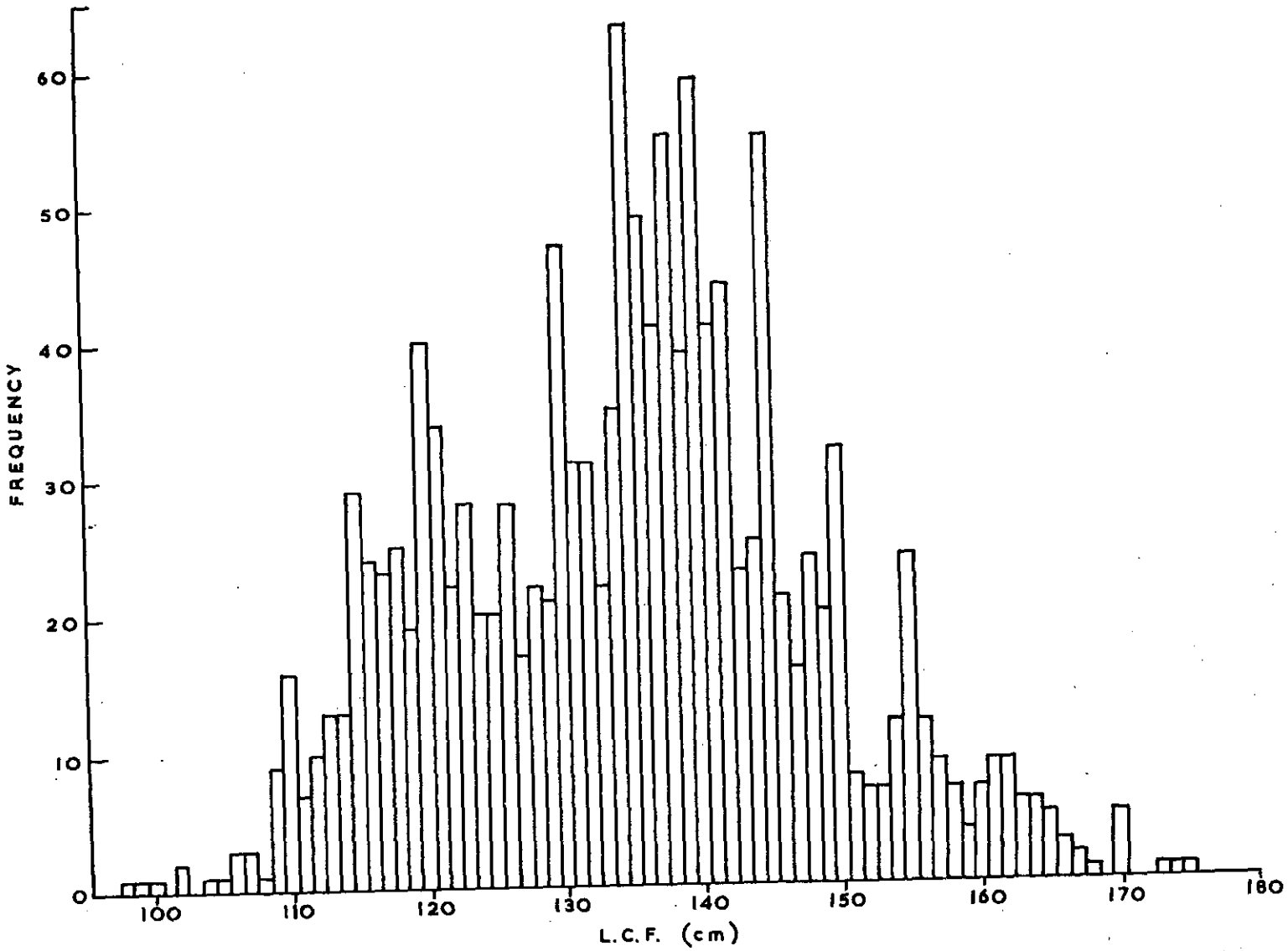

Fig. 2. Length frequencies of southern bluefin tuna (males & females combined), T.S. Fukushima Maru longline operations, June 8 – July 19, 1965.

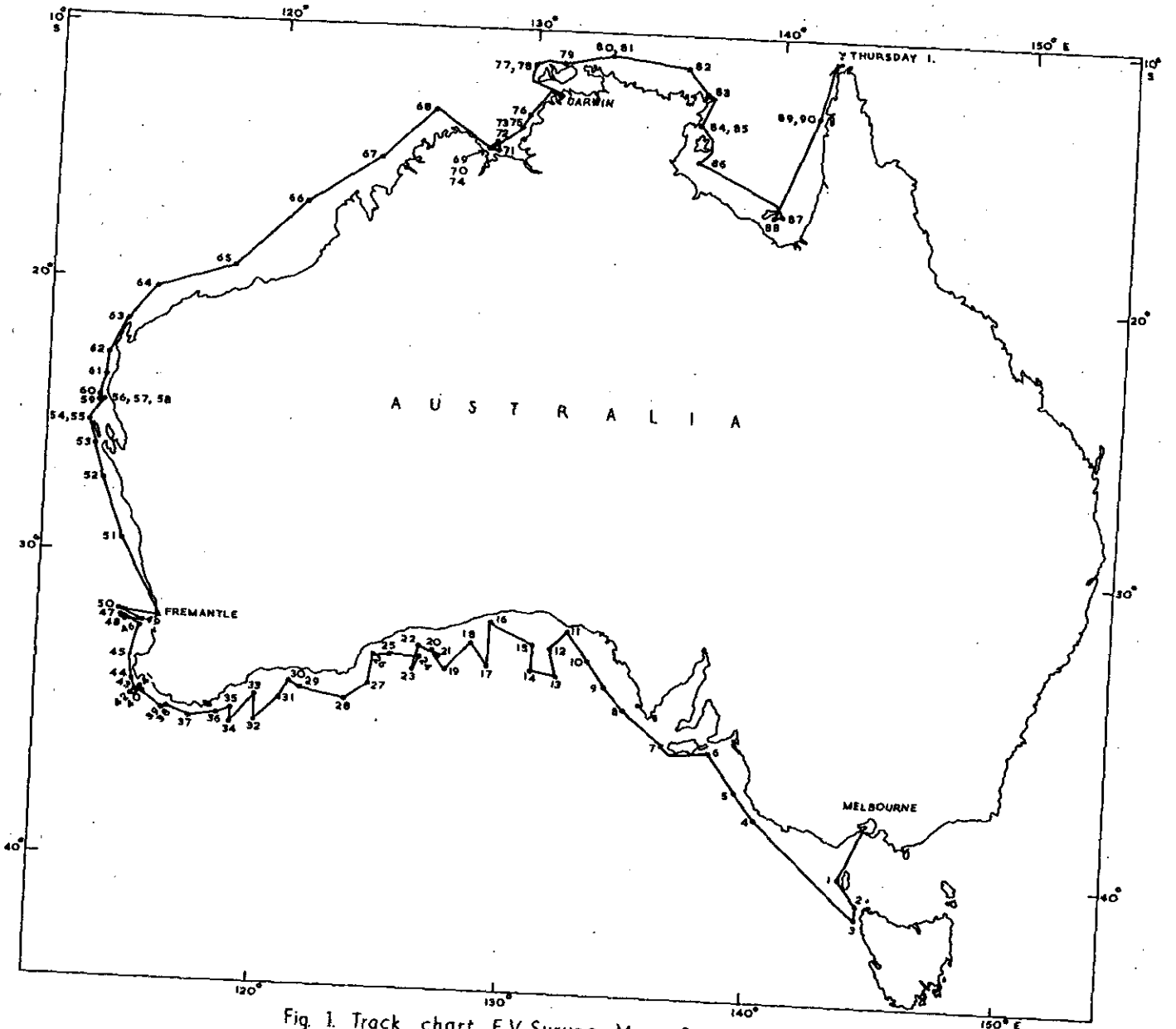

Fig. 1. Track chart, F.V. Suruga Maru, September 27 – December 2, 1965

SCIENTIFIC REPORT OF CRUISE

F.V. Suruga Maru

September 27-December 2, 1965

I. INTRODUCTION

This report records data collected by F.V. Suruga Maru, a 340 ton general purpose fishing vessel, chartered by the Japanese Fisheries Agency for exploratory fishing operations off the Australian coast. She was equipped with a comprehensive array of fishing gear including demersal longlines, drift nets, traps, dredge and troll lines. Accommodation was provided for personnel from the CSIRO Division of Fisheries and Oceanography and the Western Australian Department of Fisheries and Fauna to sail as scientific observers.

Scientific Personnel

K. Yoshizaki	Fisheries Agency of Japan
M. Kato	Fisheries Agency of Japan
K.F.C. Godfrey	CSIRO Division of Fisheries and Oceanography (27.9.65-4.11.65)
E.H. Barker	Fisheries and Fauna Department, Western Australia (8.11.65-20.11.65)
D.J. Tuma	CSIRO Division of Fisheries and Oceanography (23.11.65-2.12.65)

Itinerary

The cruise began at Melbourne on September 27, and continued via the Great Australian Bight to Fremantle, then to Darwin and Thursday Island (Fig. 1).

II. WORK ACCOMPLISHED

Ninety stations were occupied. Operations carried out were: demersal longlining at 67 stations, gill netting at 7 stations, trammel netting at 6 stations, trapping at 3 stations, bottom dredging at 11 stations, zooplankton hauls at 25 stations, surface hydrology sampling at 89 stations, and subsurface hydrology sampling at 69 stations (Table 1).

III. METHODS AND RESULTS

Gear

Longline type A fitted with long shank snapper hooks.

Longline type B fitted with short shank snapper hooks.

Gill net unit 50 m long, 7 m deep, and 13 cm mesh.

Trammel net 30 m long, 1.5 m deep, outside mesh 21 cm, inside mesh 5 cm.

Trap (standard Japanese pattern King crab pot) 1.5 m in diameter, 0.7 m in height, with 0.45 m opening.

Dredge made from two scallop dredges and fitted with a net of 4.7 cm mesh.

N.70 net for zooplankton haul.

Catches

Details of catches from longlining, gill-netting, trammel netting, and dredging operations are given in Tables 2, 3, 4, and 5 respectively. Individual species taken are listed in Table 6.

TABLE 1

WORK DONE AT EACH STATION

Stn No.	Depth m	Long-line A No.of Hooks	Long-line B No.of Hooks	Gill Net No. Units	Trammel Net No. Units	Trap No.	Dredge	Surface Temp. °C	Depth of Bottom Thermo-meter m	Bottom Temp. °C	Zoo-plankton Haul
1	88		1200					13.2	88	13.0	+
2	110	300						12.6	110	12.2	+
3	57		1200			5		12.5	57	12.4	+
4	140	1500						14.6	140	14.3	+
5	50		720	20				14.4	50	14.0	+
6	50		1800			5		14.9	50	14.2	
7	100		1800					15.3	100	16.2	+
8	85		1560			5		15.2			
9	80		2400					15.4	80	15.4	+
10	75		1200					16.3	75	15.3	+
11	38		600					16.4	38	16.4	+
12	80		1200					16.1	80	15.6	+
13	180-230	1500						15.6	180	15.0	+
14	310-430	1500						15.7	200	14.6	+
15	60		1800					15.8	60	15.7	+
16	40		1200					16.3	40	16.1	+
17	570-650	1500						15.1	200	14.1	+
18	65		1200					16.1	65	15.9	
19	680-700	1500						15.8	200	14.3	+
20	65		1800					16.3	65	16.1	
21	60	300						16.3	60	16.1	
22	58		3000					16.3	55	16.1	+

TABLE 1 - Cont'd

WORK DONE AT EACH STATION

Stn No.	Depth m	Long-line A No.of Hooks	Long-line B No.of Hooks	Gill Net No. Units	Trammel Net No. Units	Trap No.	Dredge	Surface Temp. °C	Depth of Bottom Thermo-meter m	Bottom Temp. °C	Zoo-plankton Haul
23	530-740	1500						16.3			
24	50		1200					16.7	50	16.0	
25	60	750						16.5	60	16.0	
26	45		2400					16.6	45	17.0	
27	72	900						16.8	70	16.2	+
28	120-170	900						16.3	120	15.2	+
29	85		900					16.9	85	16.5	+
30	70		1200					17.6	70	17.0	
31	120-170	900						17.0	120	16.2	
32	730-780	900						17.1	170	16.2	
33	65	750						17.3	65	16.9	+
34	208-293	900						17.8	200	16.4	
35	85-115	900						17.8	100	17.5	+
36	95-115		1800					18.0	100	17.3	
37	170-240	1200						18.2	165	18.2	+
38	45-75	3000						18.7	40	17.8	
39	65-70	2100						18.7	60	18.1	+
40	50	2100						18.2	50	17.7	
41	30-40	2700						18.6	40	18.3	
42	165-195	1800						18.4	150	17.1	
43	85-90	1800						18.8	85	18.1	
44	60		1200					19.0	50	18.4	

TABLE 1 - Cont'd

WORK DONE AT EACH STATION

Stn No.	Depth m	Long-line A No.of Hooks	Long-line B No.of Hooks	Gill Net No. Units	Trammel Net No. Units	Trap No.	Dredge	Surface Temp. °C	Depth of Bottom Thermo-meter m	Bottom Temp. °C	Zoo-plankton Haul
								18.7	40	18.5	
45	40-45	3000						19.0	65	18.8	+
46	50-65	3600						18.8	40	18.5	
47	40		1200					18.7	50	18.5	
48	50				5				55	18.8	
49	35-55	4050						19.3			
50	140-150	1500						19.7			
51	50-75	1500						20.2			
52	90	900						20.8			
53	80	1800						20.7	85	20.5	
54	82-85				10			21.0	85	20.5	
55	82-85	2250						22.0	45	20.7	
56	45						+	22.0	45	20.7	
57	45						+	22.0	45	20.7	
58	45						+	22.0	50	20.7	
59	46-50		125					21.7			
60	58-62	2100						22.5			
61	97-105	1500						22.5			
62	57-60	2100						23.4			
63	157-160	600						23.7	45	23.6	
64	40-45	900									

TABLE 1 - Cont'd

WORK DONE AT EACH STATION

Stn No.	Depth m	Long-line A No.of Hooks	Long-line B No.of Hooks	Gill Net No. Units	Trammel Net No. Units	Trap No.	Dredge	Surface Temp. °C	Depth of Bottom Thermo-meter m	Bottom Temp. °C	Zoo-plankton Haul
65	71-74	1500						25.7	74	24.5	
66	43-45	2100						27.0	45	26.8	
67	34-60	1500						28.0	60	28.0	
68	55-105	1500						28.1	105	27.4	
69	25-35						+	29.2			
70	26-31						+	29.2			
71	22-30						+	29.8			
72	45						+	29.3			
73	45-60						+	29.3			
74	30						+	29.1			
75	40						+	30.2			
76	35						+	30.4			
77	50-62	900						29.1	62	28.6	
78	25	600						29.1	25	28.6	
79	18-19							29.6	19	29.5	
80	50-55			12				28.7	55	28.5	
81	50-55	1500		12				28.7	55	28.5	
82	43-45	1500						28.1	45	28.1	
83	40							28.4	40	26.3	
84	32			12				27.7	32	25.7	
85	32			12				27.7	32	25.7	
					14						

TABLE 1 - Cont'd

WORK DONE AT EACH STATION

Stn No.	Depth m	Long-line A No.of Hooks	Long-line B No.of Hooks	Gill Net No. Units	Trammel Net No. Units	Trap No.	Dredge	Surface Temp. °C	Depth of Bottom Thermo-meter m	Bottom Temp. °C	Zoo-plankton Haul
86	31				14			28.4	31	28.9	
87	25-30			24				28.7			
88	18				14			28.4			
89	17			12				28.7	17	28.0	
90	17				14			28.7			

TABLE 2

LONGLINING

Stn No.	Date	Latitude	Longitude	Depth m	No.of Hooks	Catch
1	7.10.65	39°52'S.	143°43'E.	88	1200	16 Jackass fish 2 Red cod 21 Red gurnard perch 2 Australian tusk 1 School shark 1 White spotted gummy shark 5 Spiny dogfish
2	8.10.65	40°39'S.	144°28'E.	110-170	300	4 Red cod 4 Red gurnard perch
3	8.10.65	41°05'S.	144°27'E.	70	1200	6 Red cod 2 Tiger flathead 16 Jackass fish 30 Red gurnard perch 1 Knifejaw 4 Spiny dogfish 1 Port Jackson shark 1 White spotted gummy shark 1 School shark 2 Elephant fish
4	10.10.65	38°05'S.	140°13'E.	140	1500	1 Snapper 2 Knifejaw 18 School shark 2 Saw shark 5 White spotted gummy shark 200 Spiny dogfish
5	10.10.65	37°14'S.	139°28'E.	50	720	2 Snapper 3 Red gurnard 2 Red cod 4 School shark 3 Cat shark 1 Leopard shark

TABLE 2 - Cont'd

LONGLINING

Stn No.	Date	Latitude	Longitude	Depth m	No.of Hooks	Catch
6	11.10.65	35°58'S.	138°24'E.	50	1800	6 Red cod
7	12.10.65	35°47'S.	136°25'E.	100	1800	2 Snapper 3 Swallowtail 4 Knifejaw 1 Red gurnard 1 Latchet 1 Cat shark 1 Port Jackson shark 1 School shark 1 Spiny dogfish
8	13.10.65	34°40'S.	134°49'E.	85	1560	1 Latchet 2 Leatherjacket 1 School shark
9	14.10.65	33°53'S.	133°59'E.	80	2400	Nil
10	14.10.65	33°05'S.	133°10'E.	75	1200	6 Leatherjacket 3 White spotted gummy shark 1 School shark
11	15.10.65	32°12'S.	132°19'E.	38	600	Nil
12	15.10.65	32°45'S.	131°34'E.	80	1200	2 Leatherjacket
13	16.10.65	33°35'S.	131°45'E.	180-230	1500	15 Knifejaw 20 School shark 45 Spiny dogfish
14	16.10.65	33°27'S.	130°54'E.	310-430	1500	3 Australian tusk 3 Ghost shark 3 Bight ghost shark 1 Cat shark 110 Spiny dogfish
15	17.10.65	32°39'S.	130°58'E.	60	1800	2 Leatherjacket

TABLE 2 - Cont'd

LONGLINING

Stn No.	Date	Latitude	Longitude	Depth m	No.of Hooks	Catch
16	17.10.65	31°56'S.	129°08'E.	40	1200	1 Sand flathead 1 Yellow leather-jacket 1 Western stringray 2 Fiddler ray 1 Port Jackson shark
17	18.10.65	33°20'S.	129°10'E.	570-650	1500	17 Deep-sea cod 7 Australian tusk 1 Silverside 2 Gurnard perch 1 Long-snouted dogfish 2 Bight skate 3 Mollers deep-sea shark 1 Bight ghost shark 1 Ghost shark 173 Spiny dogfish
18	18.10.65	32°36'S.	128°27'E.	65	1200	2 Leatherjacket 1 White-spotted gummy shark
19	19.10.65	33°30'S.	127°27'E.	680-700	1500	45 Deep-sea cod 1 King barracouta 8 Eel 12 Mollers deep-sea shark 1 Ghost shark 14 Long-snouted dogfish 92 Spiny dogfish
20	20.10.65	32°59'S.	126°56'E.	65	1800	Nil
21	20.10.65	33°02'S.	127°06'E.	60	300	2 Leatherjacket 1 Blue morwong 1 White-spotted dogfish

TABLE 2 - Cont'd

LONGLINING

Stn No.	Date	Latitude	Longitude	Depth m	No.of Hooks	Catch
22	20.10.65	32°45'S.	126°25'E.	58	3000	3 Knifejaw 4 Latchet 8 Yellow leather-jacket 1 Gummy shark 6 Port Jackson shark 5 Fiddler ray 5 Shovel-nosed ray 1 Saw shark
23	21.10.65	33°35'S.	126°04'E.	530-740	1500	57 Deep-sea cod 2 Australian tusk 1 King barracouta 6 Red gurnet 1 Conger eel 5 Black shark 1 Mollers deep-sea shark 1 Long-snouted dogfish 1 Ghost shark 48 Spiny dogfish
24	21.10.65	33°13'S.	126°23'E.	50	1200	Nil : gear lost
25	21.10.65	33°07'S.	125°06'E.	60	750	1 Latchet 3 Gummy shark 2 Port Jackson shark 1 Saw shark 1 Shovel-nosed ray
26	22.10.65	33°11'S.	124°29'E.	45	2400	4 Port Jackson shark 8 Saw shark 1 Fiddler ray 1 Shovel-nosed ray 2 Eagle ray
27	22.10.65	34°03'S.	124°20'E.	72	900	1 Butterfly perch 7 Leatherjacket 1 Whiskery shark

TABLE 2 - Cont'd

LONGLINING

Stn No.	Date	Latitude	Longitude	Depth m	No. of Hooks	Catch
28	23.10.65	34°38'S.	123°26'E.	120-170	900	Nil
29	24.10.65	34°17'S.	121°33'E.	85	900	1 Knifejaw 1 Sharp-beaked gurnard 2 School shark 1 Whiskery shark 2 Saw shark 1 Eagle ray
30	24.10.65	34°06'S.	121°05'E.	70	1200	4 Sand flathead 2 Porcupine fish 1 School shark 1 Port Jackson shark 1 Stingray
31	25.10.65	34°39'S.	120°48'E.	120-170	900	1 Leatherjacket 2 Cat shark 1 School shark
32	25.10.65	35°26'S.	119°50'E.	730-780	900	38 Deep-sea cod 5 Gurnard perch 3 Long-snouted dogfish
33	25.10.65	34°36'S.	119°55'E.	65	750	3 Leatherjacket 1 Porcupine fish 1 Port Jackson shark 1 Gummy shark
34	26.10.65	35°36'S.	118°55'E.	208-293	900	7 Knifejaw 1 Tawny shark 107 Spiny dogfish 1 Giant deep-sea crab

TABLE 2 - Cont'd

LONGLINING

Stn No.	Date	Latitude	Longitude	Depth m	No.of Hooks	Catch
35	26.10.65	35°01'S.	118°57'E.	85-115	900	7 Knifejaw 3 Blue morwong 1 Skipjack trevally 1 Red morwong 1 Leatherjacket 1 Redfish 2 Gummy shark 2 Whiskery shark 1 Port Jackson shark 3 Cat shark
36	26.10.65	35°14'S.	118°25'E.	95-115	1800	29 Yellow leather-jacket 1 Cat shark
37	27.10.65	35°22'S.	117°18'E.	170-240	1200	13 Knifejaw 1 Tawny shark 135 Spiny dogfish
38	28.10.65	35°07'S.	116°23'E.	45-75	3000	77 Snapper 18 Blue morwong 20 Gurnard perch 2 Sergeant baker 1 Blue devil 5 Butterfly perch 1 Nannygai 1 Moonlighter 3 Parrot fish 1 Green groper 1 Blue groper 1 Reef eel 4 Sweep 9 Port Jackson shark 2 School shark 2 Fiddler ray 2 Eagle ray 5 Whaler shark 5 Whiskery shark 2 Gummy shark 4 Shovel-nosed ray 3 Stingray

TABLE 2 - Cont'd

LONGLINING

Stn No.	Date	Latitude	Longitude	Depth m	No. of Hooks	Catch
39	28.10.65	35°08'S.	116°11'E.	65-70	2100	11 Snapper 1 Blue morwong 2 Butterfly perch 9 Whaler shark 4 School shark 2 Shovel-nosed ray 1 Numbfish 2 Port Jackson shark 1 Whiskery shark 3 Stingray 1 Eagle ray
40	29.10.65	34°38'S.	115°22'E.	50	2100	5 Snapper 3 Jewfish 1 Parrot fish 1 Sharp-beaked gurnard 2 Green groper 9 Blue morwong 2 Cat shark 1 Wobbegong 3 Shovel-nosed ray 21 Whiskery shark 3 Numbfish 3 Eagle ray 1 Eel 19 Port Jackson shark
41	29.10.65	34°31'S.	115°17'E.	30-40	2700	2 Snapper 1 Jewfish 3 Reef eel 2 Parrot fish 1 Strong fish 1 Knifejaw 1 Gurnard perch 1 Chinaman rock cod 1 Breaksea cod 1 Whaler shark 19 Port Jackson shark

TABLE 2 - Cont'd

LONGLINING

Stn No.	Date	Latitude	Longitude	Depth m	No.of Hooks	Catch
41 (Cont'd)	29.10.65	34°31'S.	115°17'E.	30-40	2700	5 Fiddler ray 8 Numbfish 6 Eagle ray 1 School shark
42	30.10.65	34°46'S.	114°50'E.	165-195	1800	1 Spiny dogfish
43	30.10.65	34°36'S.	115°05'E.	85-90	1800	13 Knifejaw 6 Leatherjacket 2 Butterfly perch 2 Gummy shark 2 Port Jackson shark 8 Slender Whaler shark 1 Fiddler ray
44	30.10.65	34°20'S.	114°48'E.	60	1200	12 Knifejaw 3 Skipjack trevally 1 Butterfly perch 1 Parrot fish 3 Port Jackson shark
45	31.10.65	33°25'S.	114°47'E.	40-45	3000	4 Jewfish 1 Sharp-beaked gurnard 3 Parrot fish 4 Blue morwong 1 Gurnard perch 27 Port Jackson shark 10 Mottled Whiskery shark
46	2.11.65	32°24'S.	115°04'E.	50-65	3600	1 Snapper 8 Knifejaw 3 Breaksea cod 3 Jewfish 1 Sand flathead 1 Tiger flathead 1 Parrot fish

TABLE 2 - Cont'd

LONGLINING

Stn No.	Date	Latitude	Longitude	Depth m	No.of Hooks	Catch
46 (Cont'd)	2.11.65	32°24'S.	115°04'E.	50-65	3600	1 Dusky flathead 1 Small-toothed flounder 2 Butterfly perch 1 Sergeant Baker 1 Butterfish 3 Skipjack trevally 9 Port Jackson shark 18 Slender Whaler shark 3 Western stingaree 5 Whiskery shark 1 Cat shark (black) 3 Shovel-nosed ray 3 Eagle ray
47	2.11.65	32°06'S.	114°26'E.	40	1200	1 Sergeant Baker 1 Sand flathead 1 Port Jackson shark 1 Stingaree
49	3.11.65	32°18'S.	115°08'E.	35-55	4050	3 Jewfish 1 Breaksea cod 1 Sand flathead 2 Latchet 2 Reef eel 1 Gurnard perch 1 Parrot fish 1 Snapper 1 Sergeant Baker 1 Blue morwong 6 Slender Whaler shark 3 Fiddler ray 2 Mottled Whiskery shark 1 Whiskery shark 4 Spotted stingaree 4 Numbfish 6 Port Jackson shark 1 School shark 11 Shovel-nosed ray

TABLE 2 - Cont'd

LONGLINING

Stn No.	Date	Latitude	Longitude	Depth m	No.of Hooks	Catch
50	3.11.65	31°55'S.	114°15'E.	140-150	1500	9 Knifejaw 4 Leatherjacket 2 Silver toado 1 Box fish 1 Saw shark 109 Spiny dogfish 5 White-spotted gummy shark 1 Whaler shark 1 Whiskery shark
51	9.11.65	29°28'S.	114°13'E.	50-75	1500	23 Snapper 5 Eagle ray 2 Port Jackson shark 1 Fiddler ray 1 Gummy shark 3 Whaler shark
52	10.11.65	27°17'S.	113°23'E.	90	900	21 Snapper 6 Gummy shark 2 Whaler shark 1 Nor-west blowfish (green) 1 Nor-west blowfish (silver)
53	10.11.65	26°07'S.	113°01'E.	80	1800	33 Snapper 1 Nor-west snapper 4 Giant salmon catfish 8 Large-scaled saury 5 Nor-west blowfish (silver) 28 Whaler shark 1 Black-tip shark
55	11.11.65	25°17'S.	112°47'E.	82-85	2250	67 Snapper 2 Emperor bream 1 Nor-west snapper 2 Nor-west blowfish (silver)

TABLE 2 - Cont'd

LONGLINING

Stn No.	Date	Latitude	Longitude	Depth m	No.of Hooks	Catch
55 (Cont'd)	11.11.65	25°17'S.	112°47'E.	82-85	2250	2 Inky-tail shark 60 Sharks Bay whaler shark 58 Giant salmon cat-fish
59	11.11.65	24°36'S.	113°11'E.	46-50	125	26 Lined silver grunter 4 Giant salmon catfish 5 Golden trevally 1 Nor-west blowfish (silver) 1 Black snapper 2 Cat shark (sp. ?)
60	12.11.65	24°27'S.	113°04'E.	58-62	2100	1 Snapper 2 Black snapper 1 Giant salmon catfish 1 Lined silver grunter 20 Nor-west blowfish 2 Gummy shark 126 Whaler shark 10 Inky tail shark
61	12.11.65	23°33'S.	113°23'E.	97-105	1500	2 Snapper 12 Large-scaled saury 1 Long-spined red bream 4 Plectorhynchus sp. 1 Remora 16 Nor-west blowfish 13 Giant salmon cat-fish 30 Gummy shark 16 Whaler shark 2 White-spotted gummy shark

TABLE 2 - Cont'd

LONGLINING

Stn No.	Date	Latitude	Longitude	Depth m	No. of Hooks	Catch
62	13.11.65	22°46'S.	113°30'E.	57-60	2100	3 Golden trevally 1 Large-scaled saury 74 Nor-west blowfish (silver) 1 Giant salmon catfish 12 Whaler shark
63	13.11.65	21°37'S.	114°05'E.	157-160	600	4 Sharks Bay whaler shark 1 Hammerhead shark
64	14.11.65	20°22'S.	115°16'E.	40-45	900	3 Saddle-tailed sea perch 3 Nor-west snapper 1 Coral cod 1 Rankins rock cod 1 Black-banded kingfish 1 Nor-west blowfish (silver) 1 Plectorhynchus sp. 1 Whaler shark (sp. ?)
65	15.11.65	19°20'S.	118°22'E.	71-74	1500	5 Emperor bream 5 Chinaman rock cod 4 Plectorhynchus sp. 1 Black kingfish 2 Nor-west blowfish 55 Whaler shark (sp. ?)
66	16.11.65	16°40'S.	121°02'E.	43-45	2100	13 Nor-west snapper 1 Emperor bream 1 Starry pigfaced bream 1 Butterfish 1 Slimy cod 4 Rankins rock cod 8 Bird wire rock cod 5 Coates shark 2 Weasel shark

TABLE 2 - Cont'd

LONGLINING

Stn No.	Date	Latitude	Longitude	Depth m	No.of Hooks	Catch
67	17.11.65	14°56'S.	123°53'E.	34-60	1500	6 Gold-spotted trevally 2 Golden trevally 2 Great trevally 2 Greasy cod 3 Nor-west snapper 1 Blunt-headed rock cod 1 Smiler 1 Brown-spotted cat-shark 5 Whaler shark (sp. ?) 5 Coates shark
68	18.11.65	13°02'S.	126°00'E.	55-105	1500	2 Greasy cod 1 Coral cod 1 Nor-west blowfish 2 Nor-west snapper (?) 4 Crescent snapper (?) 1 Gnathypots inornatus 9 West Australian whaler shark 15 Sharks Bay whaler shark 16 Coates shark
77	24.11.65	11°12'S.	130°00'E.	50-62	900	11 White-eye shark 8 Coates shark 2 Black-tip shark
78	24.11.65	11°12'S.	130°00'E.	25	600	41 White-eye shark 6 Black-tip shark
81	26.11.65	10°42'S.	133°04'E.	50-55	1500	1 Grey snapper (sp. ?) 1 Eel (sp. ?) 56 Coates shark 7 Black-tip shark 1 White-eye shark

TABLE 2 - Cont'd

LONGLINING

Stn No.	Date	Latitude	Longitude	Depth m	No.of Hooks	Catch
82	27.11.65	11°04'S.	136°08'E.	43-45	1500	1 Slender sucker fish 1 Salmon catfish 3 Eel (sp. ?) 113 Black-tip shark 1 Hammerhead shark

TABLE 3

GILL NETTING

Stn No.	Date	Latitude	Longitude	Depth m	No.of Net Units	Catch
5	10.10.65	37°14'S.	139°28'E.	50	20	Nil
79	24.11.65	11°08'S.	131°10'E.	18-19	12	1 Ox-eye herring 1 Zabidius novemaculeatus 2 Narrow-barred Spanish mackerel 3 Broad-barred Spanish mackerel 7 Black pomfret 8 Giant threadfin 1 Coates shark 37 Black-tip shark 48 White-eye shark 4 Hammerhead shark
80	26.11.65	10°42'S.	133°04'E.	50-55	12	1 Narrow-barred Spanish mackerel 31 Black-tip shark
83	27.11.65	12°05'S.	137°00'E.	40	12	3 Rake-gilled mackerel 1 Black marlin 3 Frigate mackerel 2 Broad-barred Spanish mackerel 11 Black-tip shark
84	28.11.65	13°15'S.	136°46'E.	32	12	14 Black-tip shark
87	30.11.65	16°39'S.	140°07'E.	25-30	24	6 Broad-barred Spanish mackerel 1 Rake-gilled mackerel 3 Black pomfret 1 Black marlin 7 Black-tip shark ? Whaler shark 1 Hammerhead shark

TABLE 3 - Cont'd

GILL NETTING

Stn No.	Date	Latitude	Longitude	Depth m	No.of Net Units	Catch
89	1.12.65	12°42'S.	141°35'E.	17	12	10 Razor trevally 1 Broad-barred Spanish mackerel 1 Queensland sawfish 47 White-eye shark

TABLE 4

TRAMMEL NETTING

Stn No.	Date	Latitude	Longitude	Depth m	No.of Net Units	Catch
48	3.11.65	32°09'S.	114°27'E.	50	5	3 Porcupine fish 9 Parrot fish 4 King George whiting 3 Red mullet 1 Breaksea cod 1 Sand flathead 4 Moonlighter 1 Blue devil 1 Leatherjacket 3 Butterfish 1 Old Wife 1 Catfish (sp. ?) 1 Silver toado 10 Bullseye 4 Hatchet fish 2 Woods siphon fish 2 Western stingaree 2 Grey stingray 1 Whaler shark 1 Whiskery shark 1 Port Jackson shark 2 Numbfish
54	11.11.65	25°17'S.	112°47'E.	82-85	10	6 Giant salmon catfish 7 Snapper 1 Tailor 1 Large-scaled saury 3 Marbled cat shark 9 Whaler shark (sp. ?) 2 King prawns
85	28.11.65	13°15'S.	136°46'E.	32	14	Butterfly bream Large-scaled saury Banded grunter Naked-headed catfish Dwarf flathead Tufted sole Queensland halibut Slender sucker fish

TABLE 4 - Cont'd

TRAMMEL NETTING

Stn No.	Date	Latitude	Longitude	Depth m	No.of Net Units	Catch
85 (Cont'd)	28.11.65	13°15'S.	136°46'E.	32	14	Smooth-tailed trevally Leatherjacket Dappled dragonet One-spot flounder Spot-tail flathead Salmon catfish Squirrel fish Scorpaenid (sp. ?) Uranoscopid (sp. ?) Blue-spotted stingray Black-tip shark
86	28.11.65	14°38'S.	136°42'E.	31	14	Banded grunter Large-scaled saury Leatherjacket Rake-gilled mackerel Salmon catfish Black-tip shark 4 Common tiger prawn
88	30.11.65	16°47'S.	139°54'E.	18	14	Koningsberger's herring Banded grunter Leatherjacket Spiny flounder Queensland halibut Smooth-tailed trevally Pilgrim fish Mottled sole Dragon fish Giant threadfin Flathead (sp. ?) Dappled dragonet One-spot flounder Silver whiting Scorpaenid (sp. ?) Shovelnose ray 2 Western king prawn

TABLE 4 - Cont'd

TRAMMEL NETTING

Stn No.	Date	Latitude	Longitude	Depth m	No.of Net Units	Catch
90	1.12.65	12°42'S.	141°35'E.	17	14	Common ponyfish
						Ditchelee
						Black kingfish
						Hairback herring
						Coach-whip trevally
						Banded grunter
						Giant threadfin
						Amblygaster (sp. ?)
						Fluviolosa (sp. ?)
						Salmon catfish
						Black-tip shark
						White-eye shark
						Hammerhead shark
					1	Common tiger prawn
					3	Endeavour prawn

TABLE 5

DREDGING

Stn No.	Date	Latitude	Longitude	Depth m	Duration mins	Catch
56	11.11.65	24°31'S.	113°21'E.	45	46	4 Tiger prawns
57	11.11.65	24°31'S.	113°21'E.	45	50	1 Tiger prawn
58	11.11.65	24°31'S.	113°21'E.	45	47	Nil
69	19.11.65	14°27'S.	128°18'E.	25-35	28	3 Unidentified prawns
70	19.11.65	14°27'S.	128°18'E.	26-31	52	1 Hardback prawn 1 Unidentified prawn
71	19.11.65	14°30'S.	128°39'E.	22-30	45	4 Unidentified prawns
72	19.11.65	14°09'S.	128°33'E.	45	35	Nil
73	19.11.65	14°09'S.	128°33'E.	45-60	80	3 Hardback prawns
74	19.11.65	14°27'S.	128°18'E.	30	50	Nil
75	20.11.65	13°35'S.	129°34'E.	40	35	1 King prawn 4 Hardback prawns
76	20.11.65	13°08'S.	129°51'E.	35	30	Nil

TABLE 6

SPECIES TAKEN BY LONGLINING, GILL NETTING, TRAMMEL NETTING AND DREDGING

Port Jackson shark	Heterodontus portusjacksoni (Meyer)
Brown-spotted catshark	Chiloscyllium punctatum Muller and Henle
Wobbegong	Orectolobus maculatus (Bonnaterre)
Leopard shark	Stegostoma fasciatum (Hermann)
Tawny shark	Nebrius concolor Ruppel
Cat shark	Halaelurus sp.
Marbled cat shark	Atelomycterus macleayi Whitley
Whiskery shark	Furgaleus ventralis (Whitley)
Gummy shark	Mustelus antarcticus Gunther
White-spotted gummy shark	Mustelus lenticulatus Phillipps
School shark	Galeorhinus australis (Macleay)
Weasel shark	Negogaleus microstoma (Bleeker)
White-eye shark	Protozygaena longmani (Ogilby)
Black-tip shark	Carcharhinus spallanzani (Le Sueur)
Whaler shark	Carcharhinus greyi greyi (Owen)
Sharks Bay whaler shark	Carcharinus greyi cauta (Whitley)
Coates' shark	Carcharhinus coatesi (Whitley)
Inky-tail shark	Carcharhinus calamaria (Whitley)
West Australian whaler shark	Carcharhinus isobel (Whitley)
Slender whaler shark	Carcharhinus eblis (Whitley)
Hammerhead shark	Sphyrna lewini (Griffith)
Long-snouted dogfish	Deania quadrispinosa (McCulloch)
Moller's deep-sea shark	Etmopterus lucifer Jordan and Snyder
Spiny dogfish	Squalus megalops (Macleay)
White-spotted dogfish	Squalus kirki Phillipps
Black shark	Dalatias phillippsi (Whitley)
Saw shark	Pristiophorus nudipinnis Gunther
Queensland sawfish	Pristis clavata Garman
Shovelnose ray	Rhinobatus batillum Whitley
Fiddler ray	Trygonorhina fasciata Muller and Henle
Bight skate	Raja gudgeri Whitley
Blue-spotted stingray	Amphotistius kuhlii (Muller and Henle)
Smooth stingray	Dasyatis brevicaudata (Hutton)
Common stingaree	Urolophus testaceus (Muller and Henle)
Western stingaree	Urolophus mucosus Whitley
Spotted stingaree	Urolophus gigas Scott
Eagle ray	Myliobatus australis Macleay
Numbfish	Hypnos monopterygium (Shaw and Nodder)
Ghost shark	Hydrolagus waitei Fowler
Bight ghost shark	Hydrolagus lemures (Whitley)
Elephant fish	Callorhynchus milii Bory de St. Vincent
Ox-eye herring	Megalops cyprinoides (Broussonet)

TABLE 6 - Cont'd

SPECIES TAKEN BY LONGLINING, GILL NETTING, TRAMMEL NETTING AND DREDGING

Clupeid	Amblygaster sp.
Koningsberger's herring	Harengula koningsbergeri (Weber and de Beaufort)
Ditchelee	Pellona ditchela Valenciennes
Hair-back herring	Nematalosa come (Richardson)
Silverside	Argentina elongata Hutton
Hatchet fish	Polyipnus tridentifer McCulloch
Sergeant baker	Latropiscis purpurissatus (Richardson)
Large-scaled saury	Saurida undosquamis (Richardson)
Giant salmon catfish	Netuma thalassina (Rüppell)
Naked-headed catfish	Euristhmus nudiceps (Gunther)
Eel	Anguilla sp.
Reef eel	Siderea sp.
Red cod	Physiculus bachus (Bloch and Schneider)
Deep-sea cod	Mora dannevigi Whitley
Queensland halibut	Psettodes erumei (Bloch and Schneider)
One-spot flounder	Bothid sp.
Spiny flounder	Pseudorhombus spinosus McCulloch
Small-toothed flounder	Pseudorhombus jenynsii (Bleeker)
Tufted sole	Dexillichthys muelleri (Steindachner)
Mottled sole	Normanetta poroptera (Bleeker)
Swallow tail	Trachichthodes lineatus (Cuvier)
Red snapper	Trachichthodes gerrardi (Gunther)
Nannygai	Centroberyx affinis (Gunther)
Squirrel fish	Holocentrid sp.
Dragon fish	Parapegasus natans (Linnaeus)
Giant threadfin	Eleutheronema tetradactylum (Shaw)
Rake-gilled mackerel	Rastrelliger canagurta (Cuvier)
Narrow-barred Spanish mackerel	Cybium commersoni (Lacepede)
Broad-barred Spanish mackerel	Indocybium semifasciatum (Macleay)
Frigate mackerel	Auxis thazard (Lacepede)
Black marlin	Istiompax marlina (Jordan and Hill)
King barracouta	Rexea solandri (Cuvier)
Black pomfret	Parastromateus niger (Bloch)
Black-banded kingfish	Zonichthys nigrofasciata (Ruppell)
Skipjack trevally	Usacaranx georgianus (Cuvier)
Great trevally	Caranx sexfasciatus Quoy and Gaimard
Smooth-tailed trevally	Selaroides leptolepis (Cuvier)
Gold-spotted trevally	Carangoides fulvoguttatus (Forskal)
Golden trevally	Gnathodon speciosus (Forskal)
Coach-whip trevally	Carangoides oblongus (Cuvier)
Razor trevally	Mene maculata (Bloch and Schneider)

TABLE 6 - Cont'd

SPECIES TAKEN BY LONGLINING, GILL NETTING, TRAMMEL NETTING AND DREDGING

Black kingfish	Rachycentron canadus (Linnaeus)
Tailor	Pomatomus saltator (Linnaeus)
Common pony fish	Equula equula (Forskal)
Coral cod	Plectropoma maculatum (Bloch)
Rankin's rock cod	Epinephelus rankini Whitley
Bird wire rock cod	Epinephelus chlorostigma (Valenciennes)
Greasy cod	Epinephelus tauvina (Forskal)
Chinaman rock cod	Epinephelus homosinensis Whitley
Blunt-headed rock cod	Epinephelus amblycephalus (Bleeker)
Break-sea cod	Epinephelides armatus (Castelnau)
Butterfly perch	Caesioperca lepidoptera (Bloch and Schneider)
Blue devil	Paraplesiops meleagris (Peters)
Westralian jewfish	Glaucosoma hebraicum Richardson
Emperor bream	Diacope sebae Cuvier
Saddle-tailed sea perch	Loxolutjanus erythropterus annularis (Cuvier and Valenciennes)
Bullseye	Priacanthus velabundus McCulloch
Crescent snapper	Lutjanus lunulatus (Mungo-Park)
Black snapper	Plectorhynchus picta (Thunberg)
No common name	Pomadasys maculatum (Bloch)
Javelin fish	Pomadasys hasta (Bloch)
Banded grunter	Eutherapon theraps (Cuvier)
Starry pigfaced bream	Lethrinus nebulosus (Forskal)
Nor-west snapper	Lethrinus sp.
Butterfish	Pentapodus setosus (Cuvier and Valenciennes)
Snapper	Chrysophrys auratus (Bloch and Schneider)
Butterfly bream	Nemipterus hexodon (Quoy and Gaimard)
Long-spined red bream	Argyrops spinifer (Forskal)
Old wife	Enoplosus armatus (White)
Knife jaw	Oplegnathus woodwardi Waite
Red mullet	Upeneichthys porosus (Cuvier and Valenciennes)
Strongfish	Psilocranium nigricans (Richardson)
King George whiting	Sillaginodes punctata (Cuvier and Valenciennes)
Silver whiting	Sillago sp.
Blue morwong	Nemadactylus valenciennes (Whitley)
Morwong	Nemadactylus macropterus (Bloch and Schneider)
Red morwong	Cheilodactylus fuscus Castelnau

TABLE 6 - Cont'd

SPECIES TAKEN BY LONGLINING, GILL NETTING, TRAMMEL NETTING AND DREDGING

Sweep	Scorpis aequipinnis (Richardson)
No common name	Zabidius novemaculateus (McCulloch)
Butterfish	Selenotoca multifasciata (Richardson)
Moonlighter	Vinculum sexfasciatum (Richardson)
Red gurnard perch	Helicolenus papillosus (Bloch and Schneider)
Sharp-beaked gurnard	Pterygotrigla polyommata (Richardson)
Gurnard perch	Neosebastes pandus (Richardson)
Red gurnard	Chelidonichthys kumu (Lesson and Garnot)
Pilgrim fish	Apistus carinatus McCulloch
Dusky flathead	Planiprora fuscas (Cuvier and Valenciennes)
Tiger flathead	Neoplatycephalus richardsoni (Castelnau)
Sand flathead	Trudis bassensis (Cuvier and Valenciennes)
Spot-tail flathead	Platycephalid sp.
Dwarf flathead	Elates thompsoni Jordan and Seale
Groper	Achoerodus gouldii (Richardson)
Parrot fish	Verreo sp.
Parrot fish	Pseudolabrus sp.
Slender sucker fish	Echeneis naucrates (Linnaeus)
Dappled dragonet	Callionymus sp.
Smiler	Tandya inornata (Ramsay and Ogilby)
Australian tusk	Dannevigia tusca Whitley
Yellow leatherjacket	Nelusetta ayraudi (Quoy and Gaimard)
Leatherjacket	Paramonacanthus oblongus otisensis Whitley
Boxfish	Anoplocapros lenticularis (Richardson)
Nor-west blowfish (green)	Pleuranacanthus inermis (Temminck and Schlegel)
Nor-west blowfish (silver)	Gastrophysus sceleratus (Gmelin)
Porcupine fish	Dicotylichthys punctulatus Kaup
King prawn	Penaeus latisulcatus Kishinouye
Common tiger prawn	Penaeus esculentus Haswell
Endeavour prawn	Metapenaeus endeavouri (Schmitt)
Hardback prawn	Trachypenaeus sp.

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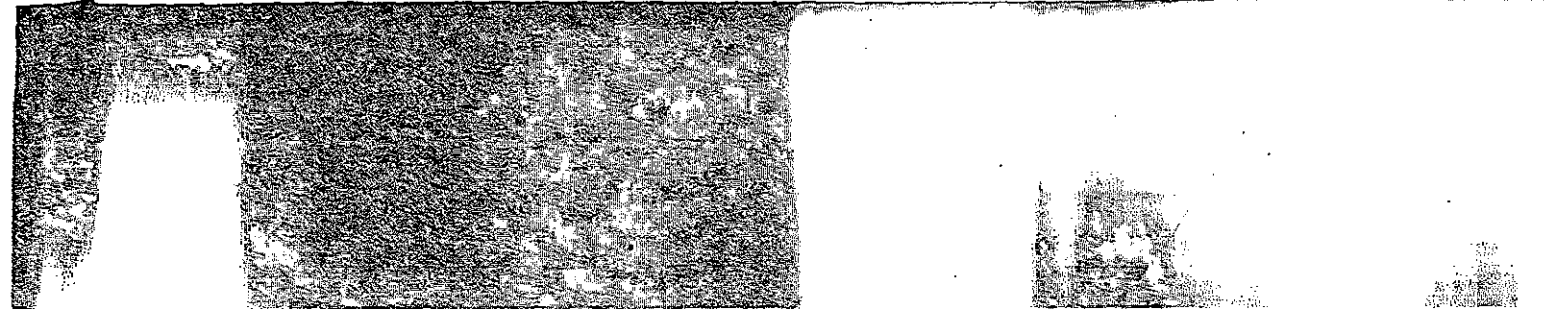

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