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Division of Fisheries and Oceanography

REPORT 39

F.R.V. "DERWENT HUNTER"

SCIENTIFIC REPORTS OF CRUISES 1950 - 56

Marine Laboratory
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1965

C O N T E N T S

1649.

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F.R.V. DERWENT HUNTER

1950-1956

F.R.V. Derwent Hunter commenced operations as a research vessel in September 1950. She is 72 ft long and 18 ft beam. She was built for the crayfish industry in Tasmania and was selected by the Division as a vessel suitable to catch barracouta and school shark for research purposes.

When she was purchased by C.S.I.R.O. in 1950, she had a wet well in which her catch of live crayfish had been carried. She was rigged as a ketch and powered with a 68 h.p. Gardner diesel. In August 1951 she was brought to Sydney for extensive refitting, when all crew accommodation and the wet well were removed.

The wet well seawater circulation system consisted of 170 2 in. holes which were copper lined and plugged with softwood treenails externally protected under bituminised felt and timber sheathing. Internally, many frames were doubled and the space coated with a waterproof composition. The new general arrangement showed six compartments, viz., chain locker and sail store, forward accommodation, mess room and galley, laboratory and scientist's accommodation, general hold (net store and insulated fish room which was later refrigerated), engine room (sited abaft the only transverse watertight bulkhead), and main cabin. Deck access was provided at four places. An auxiliary engine and a 3 kilowatt generator were installed to provide current for lighting and power. At this time her rig was changed to that of a pole masted schooner with 68 ft main and 60 ft fore masts and she was reballasted with lead ingots and concrete. Later a hydraulically operated winch was installed to work oceanographical gear and longlines. Two Kelvin Hughes echosounders, a Type MS24D and a Type MS24E were installed.

From 1950 to 1956 she was under the command of Captain R. Downie, who was previously mate aboard F.R.V. Warreen. He was particularly interested in experimenting with new types of fishing gear and many of the successes of the vessel were the result of his enthusiasm. He left the Derwent Hunter to fish in Tasmanian waters where he was successful until 1962 when he and his boat were lost in very rough weather off southern Tasmania.

This report has been prepared to record the details of the vessel's earlier cruises which have previously been available only from the files of this laboratory. This report indicates, under the heading of each cruise, where data have been published and the scientific papers which have analysed the data.

The references cited in the report of each cruise are listed on pages 139 - 40.

Since September 1956 all cruises have been described in the Division's Report series.

CRUISE 1 1950

Part 1. September 30 - October 24, 1950
A.M. Olsen, D.E. Kurth, J. Dowsett

Part 2. November 3 - December 1, 1950
P.E. Gartner, J. Dowsett

ITINERARY

Hobart, east coast of Tasmania, Furneaux Group, King I. Melbourne, Queenscliff, Port Fairy, King I. Bass Strait, east coast of Tasmania, Hobart. Figure 1 shows the positions of stations.

The objectives of this cruise were to occupy twice each of the five onshore hydrology stations off the Tasmanian coast and off Port Phillip Heads, to collect plankton at each of these stations, taking an N 70 vertical haul from 50 m to the surface and a 15 minute horizontal tow, and to test the ship for catching and tagging barracouta, school shark and gummy shark.

RESULTS

The tagging done on this cruise is summarized in Table 1. Fin tags and internal tags were used for each of the 121 school sharks tagged (Olsen 1953). Opercular tags and Petersen tags were used for barracouta of which 637 were tagged.

PUBLICATIONS

The hydrological data from this cruise appear in C.S.I.R.O. Aust. (1951) and the planktological data are in C.S.I.R.O. Aust. (1955). The school shark tagging data have been used by Olsen (1953, 1954) in a discussion of the migrations and growth rate of this species.

Part 1

TABLE 1

F.R.V. DERWENT HUNTER CRUISE 1, 1950

Station Position	Hydrology No.	Haul No.	No. of Hooks	Temp. °C	FISHING: School Shark Caught	School Shark Tagged	School Shark Tags	Gummy Shark Caught	Barracouta Caught	Barracouta Tagged	Barracouta Tags	Deep Long Lines
Cape Pillar Maria I. (60f)	DH1/50 DH2/50	1/1	300	B 12.4	1	1	Fin tag 6253 Int. " 302	21				
St Helens E.Banks Str(55f)	DH3/50	1/2	300	B 12.6	18	12	Fin B 6263-74 Int. 303-14	1				
Vansittart I. (75f)		1/3	250	S 13.8	14	12	Fin B 6275-86 Int. 313-26	2				
(30f)		1/4	200		1	1	Fin B 6287 Int. 327	-				
Goose I.		1/5	200	S 14.9	2	1	Fin B 6288 Int. 328	12				
Boxen I.		1/6	200	S 13.5	-	-		6				
Low Head Black Pyramid	DH4/50	1/7	300	S 16	-	-		11				
Fitzmaurice Bay		1/8	300		-	-		-	4	2	Opercular 23090-91	
Seal Bay New Bank (40f)		1/9	250	S 14	6	5	Fin 6289-93 Int. 329-33	2	289	21	23092-112	
Continental Shelf(95-250f)		1/10	500	S 14.8	50	40	Fin 6294-6333 Int. 334-73					
Otway Bank		1/11	300	S 14.8	2	2	Fin 6335-6 Int. 374-5	3				
Pt Phillip Heads	DH5/50											

S Surface Temp.
B Bottom "

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TABLE 1

F.R.V. DERWENT HUNTER CRUIE 1, 1950

Station Position	Hydrology No.	Haul No.	No. of Hooks	Temp. °C	FISHING: School Shark Caught	School Shark Tagged	School Shark Tags	Gummy Shark Caught	Barracouta Caught	Barracouta Tagged	Barracouta Tags	Deep Long Lines
Queenscliff	DH6/50								380	276	Petersen 1289-156 1816-20	
Cape Otway									3			
Otway Bank(45f)		1/12	550	B 13.9		38	Fin 6337-75 Int. 376-412					
Port Fairy									335	282	1563-1600 1801-15 1821-2000	
King I.									101	6	Opercular 23168-73	
New Bank K.I.		1/13	350	B 14.4	4	4	Fin 6376-9 Int. 414-17					
W.King I. (deep) (400f)		1/14	300	S 14.4	-	-						15 Deep-sea cod 15 other
W. King I.		1/15	200		6	5	Fin 6380-4 Int. 418-22	1				
Stanley									5	2	23174-5	
Burnie									18	15	23176-91	
Devonport									5	3	23192-4	
Low Head	DH7/50											
Bridport									32	27	23195-322	
Swan I.									1	1	23323	
Friabunna									118*			
St Helens	DH8/50											
Maria I.	DH9/50											
Cape Pillar	DH10/50											

* Almost all females Stage 7 just spawned

S Surface Temp.

B Bottom "

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CRUISE 2 1950

December 11-15, 1950

SCIENTIFIC PERSONNEL

D.E. Kurth

ITINERARY

Figure 1 shows the positions of stations worked. The cruise was planned to occupy shark fishing stations omitted from Cruise 1 Part 2, and to occupy the regular east Tasmanian coastal hydrology stations.

RESULTS

Table 1 summarizes the work done. Four shark hauls were made, 53 sharks were caught and 43 were tagged.

TABLE 1

F.R.V. DERWENT HUNTER CRUISE 2, 1950

Station Position	Hydrology No.	Temp. °C	Haul No.	No.of Hooks	FISHING			
					School Shark			Gummy Shark
					Caught	Tagged	Tags	Caught
Paddys Head(65f)		12.5	2/1	250	8	8	Fin B6385-92 Int. 423 -30	2
Banks Str.(50f)		13.2	2/2	250	7	6	Fin B6893-98 Int. 431-436	2
Boxen I.		16.4	2/3	300	12	10	Fin B6399-409 Int. 437-446	3
Goose I.		16.4	2/4	200	19	19	Fin B6410-28	-
St. Helens	DH11/50							
Maria I.	DH12/50							
Cape Pillar	DH13/50							75

The hydrological and planktological data were published in C.S.I.R.O. Aust. (1951, 1954).

CRUISE 3 1951

Part 1. February 28 - March 14, 1951
P.E. Gartner

Part 2. March 23 - April 24, 1951
W.J. Fletcher

ITINERARY

The cruise was planned to collect data on barracouta in the Bass Strait, Queenscliff and Triabunna areas and to tag school sharks. Figure 2 shows the positions of stations.

RESULTS

Table 1 summarizes the work done on this cruise. One hundred and fifty-six barracouta were caught, 40 were tagged with monel metal strap tags affixed to the second dorsal fin, and 116 were dissected. Barracouta were scarce in all areas. "Milkiness" tests were done before dissected fish were used for bait for shark long lines. Nine long line hauls were made for sharks using 2,200 hooks. Forty-seven sharks were caught and 35 were tagged with fin and internal tags. Forty-eight gummy sharks were dissected. A deep long line shot west of King I. took 20 deep-sea trevally (Hyperoglyphe porosa) (weight 341 lb), and 2 specimens of deep-sea cod (Mora sp.)

PUBLICATIONS

The hydrological and planktological data appear in C.S.I.R.O. Aust. (1951, 1954).

The results of deep long lining and drop lining over the edge of the continental shelf are discussed by Cowper and Downie (1957). Full details of each catch are given in the appendices of that paper.

TABLE 1

F.R.V. DERWENT HUNTER CRUISE 3, 1951

Station Position	Hydrology No.	Haul No.	No. of Hooks	Bot. Temp. °C	FISHING							
					School Shark			Gummy Shark	Barracouta			Deep Long Lines
					Caught	Tagged	Tags	Caught	Caught	Tagged	Tags	
Cape Pillar	DH1/51											
Maria I.	DH2/51											
Triabunna									50	3	B0902-4	
St Helens	DH3/51											
Eddystone Pt									3	-		
Banks Str.E. (100f)		3/1	200	12.5	20	19	Fin 136407-29 Int. 466-84	1				
Furneaux I.									15	1	Opercular 23324	
Bank Str.W. (18f)		3/2	150		-							
Goose I. (15f)		3/3	300		-			5				
Boxen I. (19f)		3/4	150		1	1	Fin B6447	18				
Bridport									30	24	23325-48	
Low Head	DH4/51								20	5	23349-53	
Don Heads		3/5	150					1				
Devonport									6	5	23354-8	
Apollo Bay									10	-		
Queenscliff									18	-		
King I. (250f)		3/6	150	11.8								2 Deep-sea cod 20 Trevally
King I. W. (offshore) (90f)		3/7	200	11.9	1	1	Fin B6448 Int. 486					
King I. W (inshore) (65-30f)		3/8	250	17.2								
Otway Bank (33f)		3/9	600	16.8	15	13	Fin B6453-65 Int. 491-503	7	4	2	23359-60	
Pt Phillip Hds.	DH5/51											

TABLE 1

F.R.V. DERWENT HUNTER CRUISE 3, 1951

Station Position	Hydrology No.	Haul No.	No. of Hooks	Bot. Temp. °C	FISHING							
					School Shark			Gummy Shark	Barracouta			Deep Long Lines
					Caught	Tagged	Tags	Caught	Caught	Tagged	Tags	
Queenscliff									1	-		
King I. W.inshore		3/10	200	17.3	1	-		2	132			
Seal Bay									22			
King I.Brig Rock		3/11	200		14	14		15	16	16		
Brig Rock		3/12	600					11				
Black Pyramid		3/13	400		45	43		9				
Three Hummocks								112				
Stanley								735				
Devonport								12				
Low Head	DH6/51											
Bridport									389			
Ninth I. 20 m		3/14	200	16.6								
W.Banks Str. 23 m		3/15	300	15.5	1	1	6525 565	3				
E. Banks Str. (83f)		3/16	500	14.9	41	38	Fin 6526-609 Int. 566-649	11				
St Helens	DH7/51											
Triabunna									101	7		
Maria I. wide	DH8/51	3/17	300	9.7								

CRUISE 4 1951

Part 1. May 18 - June 4,1951
M. Blackburn

Part 2. June 9 - 21, 1951
P.E. Gartner

Part 3. July 4 - 18, 1951
W.A. Turner

Part 4. July 23 - August 2, 1951
P.E. Gartner

ITINERARY

The cruise was planned to carry out barracouta and shark investigations, to troll for tuna, and to work certain hydrology stations. Figure 2 shows the positions of stations. Part 1 left Hobart went by the east coast to Bass Strait, King I. to Port Fairy. Part 2 left Port Fairy, went by Cape Otway, Wilson's Promontory, Port Welshpool to Melbourne. Part 3 left Melbourne went to King I., through Bass Strait to the Furneaux Group and to Eden. Part 4 went from Eden to Sydney.

RESULTS

Table 1 summarizes the work done on the cruise. Bad weather and absence of barracouta (usually used as bait on shark long lines) prevented a number of the planned shark shots being done. Fifty-four school sharks were caught, 45 were tagged with fin and internal tags. Nineteen gummy sharks were caught and dissected. Four hundred and twenty-two barracouta were caught and 113 were tagged with hydrostatic tags and 110 with safety pin tags. Deep long-lines were used twice but catches included only dogfish and spurdogs. On the New South Wales coast two southern bluefin, eight bonito and 36 striped tuna were caught.

PUBLICATIONS

The hydrological and planktological data appear in C.S.I.R.O. Aust. (1951,1953a,1954).

The food, particularly krill, of barracouta is discussed by Blackburn (1957).

TABLE 1

F.R.V. DERWENT HUNTER CRUISE 4, 1951

Station Position Date	Hydrology No.	Haul No.	No. of Hooks	Bot. Temp. °C	FISHING								
					School Shark			Gummy Shark	Barracouta			Deep Long Lines	Tuna
					Caught	Tagged	Tags	Caught	Caught	Tagged	Tags		
Cape Pillar	DH9/51												
Fortesque Bay									52	39	Safety pin 1-39		1 Bluefin
Maria I.	DH10/51								71	5	40-44		3 Bluefin
21/5/51 Triabunna									35				
22/5/51 Triabunna									35	27	45-71		
23/5/51 St Helens	DH11/51								4	2	72-73		1 Bluefin
24/5/51 Clark I. Cape Baron									6				
25/5/51 Off Banks Str. (140 m)		4/1	200	14.5	16	13	B6564-76 604-616	6					
Off Banks Str (52 m)		4/2	200	14.3				5	1				
26-28/5/51 Bad Weather													
28/5/51 Low Head	DH12/51												
30/5/51 Off Burnie									3	3	74-76		
1/6/51 Black Pyramid (27f)		4/3	300	14.4	19	19	B6588-95 617-635						

TABLE 1

F.R.V. DERWENT HUNTER CRUISE 4, 1951

Date Station Position	Hydrology No.	Haul No.	No. of Hooks	Bot. Temp. °C	FISHING								
					School Shark			Gummy Shark	Barracouta			Deep Long Lines	Tuna
					Caught	Tagged	Tags	Caught	Caught	Tagged	Tags		
2/6/51 Seal Bay W. King I. (273f) Stokes Pt		4/4	250						1	1	Hydrostatic 1	No catch	
2/6/51 36 miles SE Port Fairy (280f)		4/5	250										
9/6/51 Off Port Fairy									34 65	34 65	77-110 Hydrostatic 2-66		
10/6/51 Apollo Bay Otway Bank (90f)		4/6	300		3	3	B6596-8 636-8	4	5	5	67-71		
12/6/51 Wilson's Prom.									4	4	Hydrostatic 72-75		
13/6/51 Wilson's Prom.									41	29	76-104		
17/6/51 Wilson's Prom.									1	1	105		
18/6/51 Wilson's Prom									7	7	106-112		
19/6/51 Cape Schanck									2	1	113		
20/6/51 Port Phillip Heads	DH3/51												

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TABLE 1

F.R.V. DERWENT HUNTER CRUISE 4, 1951

Date Station Position	Hydrology No.	Haul No.	No. of Hooks	Bot. Temp. °C	FISHING								
					School Shark			Gummy Shark	Barracouta			Deep Long Lines	Tuna
					Caught	Tagged	Tags	Caught	Caught	Tagged	Tags		
21/6/51 Queenscliff									4				
5/7/51 Port Phillip Heads	DH14/51						B6999-7005 639-44						
7/7/51 (113f) Phoques Bay		4/8	300		6	6	B7006 645	2					
8/7/51 (25f) S. Black Pyramid		4/9	100		1	1							
10/7/51 Low Head	DH15/51												
16/7/51 30 miles (90f) E. Cape Barren I.		4/10	250	11.5	18	15	B7008-7022 647-661	2					
22/7/51 E. of Eden (66f)		4/11	250		2								
24/7/51 Off Gabo I.													S.B. 28 lb ?
25/7/55 Disaster B.													S.B. 30 lb ?
26/7/51 Off Eden	DH16/51												
27/7/51 Eden to Batemans Bay													5 bonito 8 striped
28/7/51 Batemans B. to Ulladulla													3 bonito 12 striped

TABLE 1

F.R.V. DERWENT HUNTER CRUISE 4, 1951

Date Station Position	Hydrology No.	Haul No.	No. of Hooks	Bot. Temp. °C	FISHING								
					School Shark			Gummy Shark	Barracouta			Deep Long Lines	Tuna
					Caught	Tagged	Tags	Caught	Caught	Tagged	Tags		
30/7/51 Off Ulladulla													4 striped
2/8/51 Jervis Bay to Sydney													12 striped

CRUISE 5 1952

Part 1. August 3 - 14, 1952
M. Blackburn

Part 2. August 21 - September 23, 1952
T.R. Cowper

Part 3A. September 27 - October 27, 1952
P.E. Gartner

Part 3B. December 1 - 8, 1952
T.R. Cowper

ITINERARY

F.R.V. Derwent Hunter was refitted in the period August 3, 1951 to August 3, 1952. On that date the ship left Sydney on the 1st part of Cruise 5 when she went from Sydney to Melbourne. On Part 2 the ship went from Melbourne to Port Fairy to Low Head and back to Melbourne. On Part 3A she went from Melbourne to Welshpool to Whitemark and returned to Melbourne. On Part 3B she went from Melbourne to Hobart through Bass Strait. Station positions are shown in Figure 3.

RESULTS

Table 1 summarizes the work done on this cruise. Forty-nine stations were worked for hydrology, zooplankton and phytoplankton.

The long line was shot twelve times, twice as deep shots, one at 400-280f and one at 450-375f. Twenty school and three gummy sharks were tagged. Bad weather and absence of barracouta, which are used as bait for long lines, prevented shark shots being done. Only 17 barracouta were tagged but by December when the cruise was almost finished about 200 barracouta were caught off Triabunna and in Adventure Bay.

During this cruise particular note was taken of echosounder traces of fish and on several occasions TNT blocks were exploded; dead fish collected after these explosions were jack mackerel (Trachurus novae - zelandiae) off Eden and anchovies in the neighbourhood of Bell Point. The echograms on this occasion were similar to traces obtained by Tacoma off Port Lincoln, and which the Haldane Brothers identified as anchovies. The few barracouta taken in this area were caught on the leaded lines, but food was plentiful so they would not bite.

During this cruise fifteen drift nets were tried out. Twelve of these have $4\frac{3}{4}$ in. mesh cotton and three $4\frac{1}{2}$ in. mesh nylon. They are 18 fm long and 9 fm deep, and were fished with 1 fm, 25 fm, 55 fm buff strops. No catch was taken with the first haul, 1 swell shark with the second and 1 school shark, 2 saw sharks, 1 rock cod, 1 pearl fish with the third. There were apparently no barracouta present in the area.

Regular plankton hauls were made. It was planned to haul closing N 70 nets vertically at each station, doing divided hauls where appropriate, an N 70 horizontal haul at each station, and where weather permiteed, an N 100 haul. Table 5 shows the hauls at each station. The counts of these hauls are recorded in C.S.I.R.O. Aust. (1955). Salp swarms were recorded at Stations DH27/52-DH30/52, although six weeks earlier copepods had been dominant.

During this cruise a photographer from C.S.I.R.O. Film Unit joined the ship to take photographs of mutton birds at sea.

PUBLICATIONS

Hydrological data are recorded in C.S.I.R.O. Aust. (1953b), the planktological results in C.S.I.R.O. Aust. (1955). Cowper and Downie (1957) should be consulted for full details of catches made on deep long lines, only the more important fish are listed in Table 1.

Part 1

TABLE 1

F.R.V. DERWENT HUNTER CRUISE 5, 1952

Date	Station Position	Hydrology No.	Plankton		Haul No.	No. of Hooks	Temp. °C	FISHING
			Zoo. N 70	Phyto.				Long Lining
8/8/52	Eden wide 150°24,37°03'	DH1/52	V2 500-0	V 500-0	5/1			5 deep-sea cod 1 ling 3 deep-sea trevally
	Eden 150°05',37°04'	DH2/52	V3 77-0,H N 100 Obl.					
10/8/52 (81 m)	Gabo I. 150°00',37°37'	DH3/52	V2 80-0,H	V 81-0				
10/8/52 (86 m)	Everard 149°17',37°50'	DH4/52	V2 83-0	V 83-0				
(41 m)	148°43',37°53'	DH5/52	V2 39-0	V 39-0				
11/8/52 (41 m)	Lakes Entrance 148°04',37°55'	DH6/52	V2 39-0,H	V 39-0				
11/8/52 (68 m)	Pt Albert wide 147°45',38°45'	DH7/52	V3 65-0	V 65-0				
12/8/52 (58 m)	Kent Group 147°20',39°26'	DH8/52	V4 55-0,H	V 55-0				
(66 m)	Wilson's Prom. 146°23',39°10'	DH9/52	V3 63-0,H	40-0 V2 63-0				
(55-60 m)	Cape Liptrap 145°54',38°59'	DH10/52	V2 57-0	V2 52-0				
(64 m)	Cape Woolamai 145°21',38°34'	DH11/52	V2 61-0	V2 61-0				
(65 m)	Pt Phillip 144°36',38°22'	DH12/52	V2 62-0	V2 62-0				
14/8/52	Off Dromana				5/2	140		No catch

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TABLE 1

F.R.V. DERWENT HUNTER CRUISE 5, 1952

Date	Station Position	Hydrology No.	Plankton		Haul No.	No. of Hooks	Bot. Temp. °C	FISHING			
			Zoo. N.70	Phyto.				School Shark		Gummy Shark	
								Caught	Tagged	Caught	Tagged
22/8/52 (62 m)	Lorne 38°35',114°05'	DH13/52	V2 62-0	V2 62-0							
	Cape Otway 38°57',143°34'	DH14/52	V2 65-0 N 100 Obl.	V2 65-0							
26/8/52	Otway Bank				5/3	200	12.9	2	2 662-663 B7023-4	3	3 2101-2 54001 B900-3
27/8/52 (62 m)	Peterborough	DH15/52	V2 62-0	V2 62-0							
(730 m)	Port Fairy wide	DH16/52	V5 730-0	V							
28/8/52	Port Fairy		7 divided		5/4	200	11.5	1	664 B7025		
	Port Fairy		N 100 Obl.		5/5	200	12.7	10	9		
29/8/52	Port Fairy				5/6	200	13.3	3	2 674-5 B7035-6		
4/9/52 (40 m)	Port Fairy 38°30',147°16'	DH17/52	V2 H	V2							
	26 miles S.E. Port Fairy				5/7	200 4f	13.2	Line broke, no catch			
8/9/52 (70 m)	40°10',143°46'	DH18/52	V2 70-0,H	V2 70-0	5/8	60 42f	12.6	no catch			
								Deep Long Lining			
11/9/52 (1000 m)	King I. wide 39°40',142°45'	DH19/52	V2 1000-0 divided 7 H, N 100 Obl.	V2	5/9	60 450-375f	8.8 750 m	3 deep-sea cod 1 deep-sea trevally 6 other spp.			

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TABLE 1

Part 2 Cont'd...

F.R.V. DERWENT HUNTER CRUISE 5, 1952

Date	Station Position	Hydrology No.	Plankton		Haul No.	No.of Hooks	Depth	Bot Temp. °C	FISHING	
									School Shark	
			Zoo. N 70	Phyto.					Caught	Tagged
12/9/52	King I. wide				5/10	60	200f	13.1	4	4 676-79 B7037-40
					5/11	60	110f	13.1	3	2 7041-42 680-81
13/9/52 (50 m)	Albatross I. 40°20',144°26'	DH20/52	V2 50-0,H	V2 50-0						
14/9/52	Hope Channel				5/12	60	20m	11.1	No catch	
15/9/52 (20 m)	Circular Head 40°43',145°21'	DH21/52	V2 20-0,H	V2 20-0						
15/9/52 (60 m)	Burnie 40°52',146°0'	DH22/52	V2 60-0	V2 60-0						
16/9/52 (55 m)	Low Head 40°55',146°46'	DH23/52	V2 55-0,H N 100 Obl.	V2 55-0						
22/9/52 (70 m)	45 miles NW of Low Head	DH24/52	V2 70-0	V2 70-0						
23/9/52 (70 m)	90 miles N 40° W. of Low Head	DH25/52	V2 70-0	V2 70-0						
23/9/52 (60 m)	135 miles N 40° W. of Low Head	DH26/52	V 60-0	V2 60-0						

Part 3

TABLE 1

F.R.V. DERWENT HUNTER CRUISE 5, 1952

Date	Station Position	Hydrology No.	Plankton		Haul No.	No. of Hooks	Bot. Temp. °C	FISHING	
								Barracouta	
			Zoo. N 70	Phyto.				Caught	Tagged
27/9/52 (62 m)	Port Phillip Heads	DH27/52	V2 62-0	V2 62-0					
28/9/52	Off Phillip I.							6	3 114-116
29/9/52 (58 m)	Cape Woolamai	DH28/52	V2 55-0	V2 55-0				1	1 117
(66 m)	Cape Liftrap	DH29/52	V2 63-0	V2 63-0					
30/9/52	Waratah Bay							14	13 118-121, 123-131
1/10/52 (68 m)	Wilson's Prom.	DH30/52	V2 65-0	V2 65-0					
2/10/52 (50 m)	Kent Group	DH31/52	V2 47-0 N 100 Obl. H	V2 47-0					
20/10/52 (40 m)	Babel I. 39°56',148°34'	DH32/52	V2 50-0 H	V2 50-0					
21/10/52 (440f)	Banks Str. wide	DH33/52	H	V 760-0					
23/10/52 (40 m)	Waterhouse I. 40°46',147°40'	DH34/52	V 35-0	V2 35-0					
25/10/52 (70 m)	Goose I. 40°18',147°48'	DH35/52	V2 40-0	V2 70-0					

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TABLE 1

F.R.V. DERWENT HUNTER CRUISE 5, 1952

Part 3 Continued...

Date	Station Position	Hydrology No.	Plankton		Haul No.	No. of Hooks	Bot. Temp. °C	FISHING	
			Zoo. N 70	Phyto.				Barracouta	
								Caught	Tagged
25/10/52	30 miles SW Deal I. 39°42',146°45'	DH36/52	V2 40-0	V2 70-0					
26/10/52 (60 m)	Wilson's Prom.	DH37/52	V2 40-0 H	V2 60-0					
26/10/52 (60 m)	Cape Liftrap	DH38/52	V2 40-0	V2 60-0					
26/10/52 (60 m)	Cape Woolamai	DH39/52	V2 40-0	V2 53-0					
27/10/52 (60 m)	Port Phillip Heads	DH40/52	V2 40-0 H	V2 60-0					
Part 3B									
1/12/52 (60 m)	Port Phillip Heads	DH41/52	V2 60-0 H N 100 Obl.	V2 60-0					
4/12/52 (60 m)	Banks Strait 40°49',148°30'	DH42/52	V2 60-0 H	V2 60-0					
4/12/52 (600 m)	Banks Strait wide	DH43/52	V2 500-0 500-400 H	V2					
(100 m)	St Helens	DH44/52	V2 100-0 H, N 100	V2 100-0					
5/12/52 (60 m)	Cape Lodi 41°55',148°29'	DH45/52	V2 600-0	V2 600-0					

TABLE 1

Part 3B Continued...

F.R.V. DERWENT HUNTER CRUISE 5, 1952

Date	Station Position	Hydrology No.	Plankton		Haul No.	No. of Hooks	Bot. Temp. °C	FISHING	
								Barracouta	
			Zoo. N 70	Phyto				Caught	Tagged
5/12/52 (550 m)	Maria I. wide 42°31',148°30'	DH46/52	V550-400 400-300 300-200 200-100 100-50 50-0 (2) 500-0 H, N 100	V2					
(85 m)	Maria I. 42°36',148°16'	DH47/52	V2 85-0 H	V2 85-0					
6/12/52	Triabunna							80	
7/12/52	Triabunna							6	
7/12/52 (100 m)	Cape Pillar 43°13',148°07'	DH48/52	V2 100-0 H, N 100	V2 100-0					
7/12/52 (65 m)	Tasman Head 43°31', 147°22'	DH49/52	V2 65-0	V2 65-0					
8/12/52	Adventure Bay							93 50 measured	

CRUISE 6 1953

Part 1. February 10 - March 3, 1953
T.R. Cowper

Part 2. March 4 - 20, 1953
M. Blackburn

March 21 - April 6, 1953
K. Godfrey

April 7 - May 4, 1953
T.R. Cowper

Part 3. May 6 - 14, 1953
T.R. Cowper

May 29 - June 5, 1953
P.E. Gartner

June 6 - 21, 1953
M. Blackburn

ITINERARY

The positions of stations for this cruise are shown in Figure 4. Part 1 of the cruise was from Hobart to Port Fairy and occupied the usual stations in Bass Strait. Part 2 was to South Australian waters to secure biological data on school sharks. Part 3 was the return cruise from Port Fairy to Hobart. Table 1 summarizes the work carried out.

RESULTS

Parts 1 and 3 were the usual cruises of the ship in Tasmanian and Bass Strait waters. During Part 2 of this cruise in South Australian waters 402 school sharks were handled; 203 were tagged and 199 females were dissected to determine the stage of development of embryos carried at this time of the year, in those areas. The work done in all sections is summarized in Table 1.

PUBLICATIONS

The results of this cruise are included in the papers listed in previous cruises and in a paper on the status of the school shark fishery in which Olsen discusses certain of the data collected during Part 2 of this cruise. The hydrological data appear in C.S.I.R.O. Aust. (1954). The work of Cowper and Downie (1957) should be consulted for details of deep longline shots.

TABLE 1
F.R.V. DERWENT HUNTER CRUISE 6, 1953

Part 1

Date Station Position	Hydrology No.	Plankton		Haul No.	No. of Hooks	Bot Temp. °C	FISHING	
		Zoo.	Phyto				Barracouta	Deep Longlines
10/2/53 Tasman Head 43°31', 147°22' (55 m)	DH1/53	N 70 V2 55-0 V2 55-0	V2 55-0					
10/2/53 Cape Pillar 43°13', 148°07' (100 m)	DH2/53	N 70 V2 100-0 H N 100 Obl	V2 100-0					
11/2/53 Maria I. wide 42°32', 148°30' (550 m)	DH3/53	N 70 V2 550-0 6 divided H, N 100						DH1/6 340f 20 hooks 2 deep sea cod DH2/6 330f 25 hooks 1 deep sea cod DH3/6 500f 25 hooks DH4/6 80f 25 hooks
12/2/53 Maria I. 42°36', 148°16' (80 m)	DH4/53	V2 80-0 H, N 100	V2 80-0				107 caught 27 tagged Opercular 23410-39 (23411, 23423, 23426 missing)	DH5/6 180f 25 hooks

TABLE 1

F.R.V. DERWENT HUNTER CRUISE 6, 1953

Part 1 (Cont'd...)

Date Station Position	Hydrology No.	Plankton		Haul No.	No. of Hooks	Bot. Temp. °C	FISHING			
		Zoo.	Phyto				Sharks		Barracouta	Deep Longlines
							School	Gummy		
13/2/53 Schouten Passage				Handline			2 caught 2 tagged Body tag 407-8 Tin B7043-4	1 caught 1 tagged Body tag 4002 Tin B9005	105 caught 95 tagged Petersen B1296-1300, 1301-89, 1391	DH6/6 400f 150 hooks 11 deep sea cod 1 " " trevally 4 other spp.
14/2/53 Off Cape Forestier				7/6		8.8 400 m	1 caught 1 tagged 682 Tin B7045	2 caught 2 tagged Body tag 2103-4 Tin B9006-7	154 caught 140 tagged Petersen B1390, B1392-1533	15 deep sea trevally 6 other spp.
										Tuna
14/2/53 Cape Lodi 41°55', 148°29' (60 m)	DH5/53 Drift cards 1301-25	V2 60-0 H, N 100	V2 60-0							1 T. germo
15/2/53 St Helens 41°18', 148°30' (100 m)	DH6/53	V2 100-0 H, N 100	V 100-0							

TABLE 1

F.R.V. DERWENT HUNTER CRUISE 6, 1953

Part 1 (Cont'd...)

Date Station Position	Hydrology No.	Plankton Zoo.	Plankton Phyto	Haul No.	No. of Hooks	Bot. Temp. °C	FISHING Sharks School	FISHING Sharks Gummy	FISHING Barracouta	FISHING Tuna
15/2/53 Banks Str. 40°49', 148°30' (50 m)	DH7/53	V2 50-0 H	V2 50-0							2 T.germo
15/2/53 Banks Str. wide 40°42',148°55' (750 m)	DH8/53	V2 1 divided but net touched bottom								
16/2/53				8/6	150	28 m 18.1	4 caught 4 tagged B7046-9 683-6	19 caught 19 tagged B9008-9, 9001-4, 9016, 9019-30	4	
				9/6	150	13 f	12 caught 12 tagged B7050-61 687-98	3 caught 3 tagged 2125-7 B9031-3		
17/2/53 Kent Group 39°26',147°20' (50 m)	DH9/53	V2 50-0 H	V2 50-0	10/6	150	13 f 18.3	2 caught 2 tagged B7062-3 699-700	15 caught 15 tagged 2128-42 B9034-48		
				11/6	150	8 f 18.3		10 caught 10 tagged 2143-52 B9049-59		

TABLE 1

F.R.V. DERWENT HUNTER CRUISE 6, 1953

Part 1 (Cont'd...)

Date Station Position	Hydrology No.	Plankton		Haul No.	No. of Hooks	Bot. Temp. °C	FISHING	
		Zoo.	Phyto.				Barracouta	Deep Longlines
18/2/53 Wilson's Promontory 39°10',146°23' (60 m)	DH10/53	V2 60-0 H	V2 60-0					
18/2/53 Cape Liftrap 38°59',145°54' (50 m)	DH11/53	V2 50-0	V2 50-0					
18/2/53 Cape Woolamai 38°34',145°21' (55 m)	DH12/53	V2 55-0	V2 55-0				1	
19/2/53 Port Phillip Heads 38°22',144°36' (60 m)	DH13/53	V2 60-0 H	V2 60-0				1	
28/2/53 Lorne 38°35',144°05' (55 m)	DH14/53	V2 55-0	V2 55-0				6	

TABLE 1

F.R.V. DERWENT HUNTER CRUISE 6, 1953

Part 1 (Cont'd...)

Date Station Position	Hydrology No.	Plankton Zoo.	Plankton Phyto.	Haul No.	No. of Hooks	Bot. Temp. °C	FISHING School Sharks	FISHING Barracouta	FISHING Deep Longlines
1/3/53 Cape Otway 38°57',143°34' (50 m)	DH15/53	V2 50-0 H	V2 50-0					209 3 4	
1/3/53 Peterborough 38°47',142°48' (55 m)	DH16/53	V2 55-0	V2 55-0						
2/3/53 Port Fairy wide 39°01',142°25' (500 m)	DH17/53 25 drift cards released 1326-50	V2 500-0 6 divided H, N 100	V2 500-0						DH12/6 640 m 160 hooks 3 deep sea cod 2 ling 2 other spp.
3/3/53 Port Fairy 38°30',142°16' (40 m)	DH18/53	V2 40-0 H	V2 40-0	13/6	157	40 m 12.6	5 caught 5 tagged B7064-8 701-5		
Part 2									
4/3/53 Lady Julia Percy I. Cape Nelson									
5/3/53 Cape Northumberland Cape Dombey								2 3	

1649.

TABLE 1

F.R.V. DERWENT HUNTER CRUISE 6, 1953

Part 2 (Cont'd...)

Date Station Position	Hydrology No.	Zooplankton	Haul No.	No.of Hooks	Bot. Temp. °C	FISHING		
						Sharks		Barracouta
						School	Gummy	
6/3/53 Margaret Brock Reef 35 miles W. 36°57',139°00' (45 m)	DH19/53	V 45-0 H	14/6	150	45 m 14.4	6 caught		69 9
			15/6	150		3 caught 2 tagged 706-7 B7069-70	4 caught 4 tagged 2153-6 B9059-62	
7/3/53 E.of angaroo I.			16/6	150	18.8 surface	1 caught		15
8/3/53 N.of Kangaroo I. 8-11/3/53 Adelaide			17/6	150	25 m 19.7	45 snapper (C.auratus) etc.		
12/3/53 Investigator Str. to West Bay			18/6	150	40 m 13.6		1 caught 1 tagged Body tag 2159 B9063	
13/3/53 W. of Kangaroo I.			19/6	200	11.0 12.3 180 m	11 caught 11 tagged	1 caught 1 tagged 4003 B9064	
14/3/53 Cape Catastrophe to Port Lincoln			20/6	200	100 m	15 caught 15 tagged 708-733 B7071-96		

1649.

TABLE 1

F.R.V. DERWENT HUNTER CRUISE 6, 1953

Part 2 (Cont'd...)

Date Station Position	Hydrology No.	Zooplankton	Haul No.	No.of Hooks	Bot. Temp. °C	FISHING			
						Sharks		Deep Longlines	Tuna
						School	Gummy		
15/3/53 Port Lincoln to Neptunes									
16/3/53 S. of Cape Carnot			21/6	200	55 f 13.9 100 m	6 caught 1 tagged	1 caught 1 tagged 2158 B9065		
			22/6	200	60 f	2 caught 1 tagged			
			23/6	200	60 f	5 caught 5 tagged 734-40 B7097-103			
17/3/53 S.of Cape Carnot			24/6	200	8.2 700 m				
			25/6	200	10.3 280 m 110-150 f	5 caught 1 tagged 741 B7104		2 deep sea trevally 3 ling 10 other spp.	1 T.germo 1 T.maccoyi
18/3/53 Off Cape Catastrophe 35°02',135°59'	DH20/53	N 70 V 69-0 m N 70 H 0m							2 S.B.

1649.

TABLE 1

F.R.V. DERWENT HUNTER CRUISE 6, 1953

Part 2 (Cont'd...)

Date Station Position	Hydrology No.	Zooplankton	Haul No.	No. of Hooks	Bot. Temp. °C	FISHING Sharks School	FISHING Sharks Gummy	FISHING Tuna
26/3/53 Off Cape Catastrophe								2 S.B.
27/3/53 Off Middle Pearson			26/6	187		5 caught 1 tagged 742 B7105	2 caught 2 tagged B9066-7 2158-9	
28/3/53 Cannan's Reef			27/6	200	17.8 40 m	4 caught		
29/3/53 Off Dog I. Off Bell Pt.			28/6	200	18 20 m	2 caught	2 caught 2 tagged B9068-9 2160-1	
			29/6	200	18.1 33 m	13 caught 11 tagged 743-753 B7106-16		
			30/6	200		4 caught 4 tagged 753-756 B7116-9	1 caught 1 tagged B9070 2062	
30/3/53 SW Fowler's Bay			31/6	200	17.9 66 m	Nil		
			32/6	200	18	1 caught		

1649.

TABLE 1

F.R.V. DERWENT HUNTER CRUISE 6, 1953

Part 2 (Cont'd...)

Date Station Position	Hydrology No.	Zooplankton	Haul No.	No. of Hooks	Bot. Temp. °C	FISHING		
						Sharks		Tuna
						School	Gummy	
31/3/53 Off Fowler's Point			33/6	200		2 caught		
			34/6	200				
1/4/53 Off Fowler's Bay			35/6	200		9 caught 7 tagged 756-64 B7120-6	6 caught 6 tagged B9071-6 2063-8	
2/4/53 Off Goat I.			36/6			1 caught	7 caught 4 tagged B9077-80 2068-72	
4/4/53 Off Franklin I.			37/6	200		No catch		
5/4/53 Smoky Bay			38/6	200		No catch		
			39/6			1 caught 1 tagged		
7/4/53 32°26',133°21'	DH21/53	N 70 V 45-0m N 70 H						
8/4/53 Off Lacy I. 33°38',131°59'	DH22/53	N 70 V 220-0m N 70 H	40/6	200	13.4 220 m	3 caught		2 S.B. 3 Albacore

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TABLE 1

F.R.V. DERWENT HUNTER CRUISE 6, 1953

Part 2 (Cont'd...)

Date Station Position	Hydrology No.	Zooplankton	Haul No.	No. of Hooks	Bot. Temp. °C	FISHING		
						Sharks		Tuna
						School	Gummy	
9/4/53			41/6	200	8.4 200 m			2 striped 2 albacore
10/4/53 Off Westall Pt.			42/6	200	32 f	8 caught 7 tagged B7127-33 764-90		
11/4/53 Off Cape Blanche			43/6	200	28 f 16.6	9 caught 1 tagged B7134 771	1 caught 1 tagged 2175 B9081	6 S.B.
			44/6	200	28 f	6 caught 3 tagged B7135-37 772-4	1 caught 1 tagged B9082 2176	
			45/6	80	10 f	1 caught 1 tagged B7138 775	3 caught 3 tagged B9083-5 2177-9	
			(line left overnight)					
12/4/53 Off Cape Radstock			46/6	200	33 f	7 caught 6 tagged B7139-44 776-81		4 S.B.
			47/6	200	30 f	6 caught 5 tagged B7145-9 782-6		

1649.

TABLE 1

F.R.V. DERWENT HUNTER CRUISE 6, 1953

Part 2 (Cont'd...)

Date Station Position	Hydrology No.	Zooplankton	Haul No.	No. of Hooks	Bot. Temp. °C	FISHING		
						Sharks		Tuna
						School	Gummy	
13/4/53 Off Topgallant I. 15 m E. Pearson I.			48/6	200	30 f 16.3	2 caught 2 tagged B7151-2 787-8		
			49/6	200	43 f 16.2	9 caught 7 tagged B7153-9 789-96 (793 missing)	7 caught 6 tagged B9086-91 2180-5	2 S.B.
14/4/53 S.E. of Pearson I.			50.6	200	46 f 16.1	8 caught 5 tagged B7160-3, 7166 797-801	1 caught 1 tagged B9092 2186	5 S.B. 5 S.B.
			51/6	200	43 f 16.9	5 caught 4 tagged B7167-70 802-5		
15/4/53 7 miles S. of Greenly I.			52/6	200	48 f 16.6	11 caught 7 tagged B7171-7 806-12	4 caught 3 tagged B9093-5 2187-9	

1649.

TABLE 1

F.R.V. DERWENT HUNTER CRUISE 6, 1953

Part 2 (Cont'd...)

Date Station Position	Hydrology No.	Zooplankton	Haul No.	No.of Hooks	Bot. Temp. °C	FISHING		
						Sharks		Tuna
						School	Gummy	
15/4/53 7 miles S. of Greenly I.			53/6	200	48 f	26 caught 19 tagged B7178-96 813-31		1 S.B.
			54/6	200	48 f	39 caught 27 tagged B9197, B7200-23 832-58		
16/4/53 7 miles S. of Greenly I.			55/6	200	48 f	13 caught 6 tagged B7224-9 859-64	2 caught 2 tagged B9096-7 2190-1	
			56/6	200	48 f 16.4	7 caught 3 tagged B7230-2 865-7	1 caught 1 tagged B9098 2192	
			57/6	200	48 f	8 caught 5 tagged B7233-7 868-72	2 caught 2 tagged B9099-100 2193-4	

TABLE 1

F.R.V. DERWENT HUNTER CRUISE 6, 1953

Part 2 (Cont'd...)

Date Station Position	Hydrology No.	Zooplankton	Haul No.	No. of Hooks	Bot. Temp. °C	FISHING Sharks School	FISHING Sharks Gummy	FISHING Tuna
16/4/53 7 miles S. of Greenly I.			58/6	200	48 f	13 caught 9 tagged B7238-46 873-81	1 caught 1 tagged B9101 2195	
21/4/53 1 mile S.W. West Point			59/6	200	46 f	5 caught 4 tagged B7247-50 882-5		
			60/6	200	46 f	-	-	
			61/6	200	46 f 16.6	5 caught 2 tagged B7251-2 886-7		
			62/6	200	46 f	8 caught 8 tagged B7253-60 888-96 (no 895)	2 caught 2 tagged B9102-3 2196-7	
			63/6	200	46 f	4 caught 4 tagged B7261-4 897-900	1 caught 1 tagged B9104 2198	

1649.

TABLE 1

F.R.V. DERWENT HUNTER CRUISE 6, 1953

Part 2 (Cont'd...)

Date Station Position	Hydrology No.	Zooplankton	Haul No.	No. of Hooks	Bot. Temp. °C	FISHING Sharks School	FISHING Sharks Gummy	FISHING Tuna
22/4/53 15 miles S. Cape Wiles			64/6	200	50 f	3 caught	2 caught 2 tagged B9105-6 2199-200	3 S.B.
			65/6	200	50 f	8 caught	1 caught 1 tagged B9107 2201	
23/4/53 7 miles S. of South Neptune I.			66/6	200	55 f	13 caught		8 S.B.
			67/6	200	55 f 16.1	20 caught	1 caught 1 tagged B9108 2202	
			These lines were left overnight					
24/4/53			68/6	200	55 f		1 caught 1 tagged B9109 2203	
26/4/53 15 miles N.W. of Cape Jervis			69/6	200	21 f 18.8	No catch		
29/4/53 36°18',138°10' (60 m)	DH23/53	N 70 V 60-0 m N 70 H						1 S.B.
30/4/53 20 miles S.W. of Margaret Brock Reef			70/6	200	35 f 17.2	39 caught 6 tagged B7265-70 1302-7	5 caught 5 tagged B9110-4 2204-8	

TABLE 1

F.R.V. DERWENT HUNTER CRUISE 6, 1953

Part 2 (Cont'd...)

Date Station Position	Hydrology No.	Plankton		Haul No.	No.of Hooks	Bot Temp. °C	FISHING		
		Zoo.	Phyto.				School	Gummy	Barracouta
30/4/53 20 miles S.W. of Margaret Brock Reef				71/6	200	35 f	7 caught 2 tagged B7271-2 1308-9	1 caught 1 tagged B9115 2209	23
1/5/53 39°01',142°25' (100 m)	DH24/53 25 drift cards 1351-75	V2 500-0 2 divided H N 100 B	V2 500-0						Deep Longlines
2/5/53 Port Fairy wide				72/6	200	320-290 f 7.3			1 ling 25 other spp.
				73/6	200	420 f			6 deep sea cod 5 deep sea trevally
				74/6	drop line 25	790 m			1 deep sea cod
3/5/53 Off Port Fairy 38°30,142°16' (50 m)	DH25/53 Bathy-thermo-graph DH3/53	N 70 V 2 N 70 H	V2	75/6	200	104-80 f 13.5	42 caught 35 tagged B7273-300 BB2501-7 1310-44		
				76/6	200	50 f		1 caught	

1649.

TABLE 1

F.R.V. DERWENT HUNTER CRUISE 6, 1953

Part 3

Date Station Position	Hydrology No.	Plankton		Haul No	No.of Hooks	Bot. Temp °C	FISHING		
							Sharks		Deep Longlines
		Zoo.	Phyto				School	Gummy	
8/5/53 40 miles W. of Stokes Pt King I. 39°40',142°45'	DH26/53 King I. wide (715 m) Bathy-thermo-graph DH4/53 270 m	N 70 V(2) (7) 715-0m N 70 H N 100 B	V2	77/6 78/6	200 200	715 m 7.7 600-550 f 1100 m (deepest shot made this date) 3.9			11 deep sea cod 1 ling 2 deep sea trevally 2 deep sea cod 8 other spp.
9/5/53 30 miles W. of Stokes Pt King I.				79/6	200	130-240 f 9.8	17 caught 16 tagged B2508-23 1345-60		
12 miles W. of Stokes Pt 40°10',143°46'	DH27/53 50 m Bathy-thermo-graph DH5/53	N 70 V 2 N 70 H	V2	80/6	200	95 m 15.7	4 caught 2 tagged B2524-5 1361-2	1 caught 1 tagged B9116 2210	
10/5/53 E. of Brig Rock				81/6	200	24-19 f 32 m 15.2	3 caught 3 tagged B2526-8 1363-5	12 caught 12 tagged B9117-28 2211-22	
4 miles E. of Brig Rock 40°20',144°26' (65 m)	DH28/53 25 drift cards 1376-1400	N 70 V (2) N 70 H N 100 B	V2	82/6	200	22 f	1 caught 1 tagged B2529 1366	12 caught 12 tagged B9129-40 223-34	

TABLE 1

F.R.V. DERWENT HUNTER CRUISE 6, 1953

Part 3 (Cont'd)

Date Station Position	Hydrology No.	Plankton		FISHING
		Zooplankton	Phytoplankton	Tuna
11/5/53 Circular Head 40°43',145°21' (25 m)	DH29/53	N 70 V2 N 70 H	V2	
12/5/53 Burnie 40°52',146°0' (60 m)	DH30/53	N 70 V2	V2	
13/5/53 Low Head 40°55',146°46' (55 m)	DH31/53	N 70 V2 N 70 H N 100 B	V2	
16/5/53 45 miles N.W. Low Head (70 m)	DH32/53	N 70 V2	V2	
16/5/53 90 miles N.W. Low Head (80 m)	DH33/53	N 70 V2	V2	
17/5/53 135 miles N.W. Low Head (65 m)	DH34/53	N 70 V2	V2	
17/5/53 Port Phillip Heads 38°22',144°36' (65 m)	DH35/53	N 70 V2 N 70 H N 100 B	V2	

1649.

TABLE 1

F.R.V. DERWENT HUNTER CRUISE 6, 1953

Part 3 (Cont'd...)

Date Station Position	Hydrology No.	Plankton		FISHING
		Zooplankton	Phytoplankton	Tuna
29/5/53 Cape Woolamai (60 m)	DH36/53	N 70 V 2		3 S.B.
29/5/53 Cape Liftrap (65 m)	DH37/53	N 70 V 2		
29/5/53 Wilson's Prom. (60 m)	DH38/53	N 70 V 2 N 70 H		
30/5/53 Kent Group (55 m)	DH39/53	N 70 V 2 N 100 B N 70 H		4 S.B.
2/6/53 39°06',148°16' (55 m)	DH40/53	N 70 V 2		
2/6/53 Paddock 38°47',149°10' (2000 m)	DH41/53	N 70 V 2 to 500 m divided 5 N 70 H 2000 m	Winch breakdown	1 S.B.
8/6/53 Port Phillip Heads (65 m)	DH42/53	N 70 V 2		

TABLE 1

F.R.V. DERWENT HUNTER CRUISE 6, 1953

Part 3 (Cont'd...)

Date Station Position	Hydrology No.	Plankton		FISHING
		Zoo.	Phyto.	Tuna
10/6/53 Paddock 38°47',149°10' (1260 m)	DH43/53	N 70 V 2 500-0 m 6 divided N 100 B N 70 H		
10/6/53 Babel I. wide 39°21',148°45' (500 m)	DH44/53 Bathythermo-graph DH6/53	N 70 V 2		
11/6/53 Babel I. 39°56',148°34' (45 m)	DH45/53	N 70 V 2 N 70 H		3 S.B.
11/6/53 Banks Strait wide 40°42',148°55' (675 m)	DH46/53	N 70 V 2 7 divided N 70 H N 100 B		
11/6/53 Banks Strait 40°49',148°30' (60 m)	DH47/53	N 70 V 2 N 70 H	No bait for longline	2 S.B.

TABLE 1

F.R.V. DERWENT HUNTER CRUISE 6, 1953

Part 3 (Cont'd...)

Date Station Position	Hydrology No.	Zooplankton	Haul No.	No.of Hooks	Bot. Temp. °C	FISHING		
						Sharks		Tuna
						School	Gummy	
12/6/53 St Helens (100 m)	DH48/53	N 70 V 2 N 70 H N 100 B						
12/6/53 Cape Lodi (50 m)	DH49/53	N 70 V 2						4 S.B.
15/6/53 Off Spring Bay			83/6	200	80 f 125 m 12.9	14 caught 5 tagged B1367-71 2530-34	2 caught 2 tagged B9141-2 2235-6	
15/6/53 Maria I. wide	DH50/53 Bathythermo-graph DH7/53	N 70 V 2 6 divided N 70 H N 100 B						
								Deep Longlines
15/6/53 Maria I. (85 m)	DH51/53 Drift cards 2201-50 Drift bottles 50	N 70 V 2 N 70 H N 100 B						
16/6/53 Off Triabunna			84/6	200	460-370 f 820 m 7.4			17 deep sea cod 4 ling 20 other spp.

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TABLE 1

F.R.V. DERWENT HUNTER CRUISE 6, 1953

Part 3 (Cont'd...)

Date Station Position	Hydrology No.	Zooplankton	FISHING Tuna
17/6/53 Cape Pillar (100 m)	DH52/53	N 70 V 2 N 70 H N 100 B	7 S.B.
19/6/53 Tasman Head (60 m)	DH53/53	N 70 V 2	
21/6/53 End of Cruise			

CRUISE 7 1953

Part 1. August 4 - 21, 1953
T.R. Cowper

Part 2. August 22 - September 12, 1953
M. Blackburn

Part 3. September 22 - October 7, 1953
T.R. Cowper

ITINERARY

Positions of stations are shown on Figure 4.

Part 1. The main purpose of this part of the cruise was to search for barracouta in eastern South Australian waters and to find out whether they were spawning.

Part 2. Drift netting was undertaken during this part of the cruise to search for the winter quarters of the Bass Strait barracouta population.

Part 3. was one of the routine Bass Strait-east coast of Tasmania cruises.

RESULTS

Part 1. Trolling for barracouta between Cape Nelson and Margaret Brock Reef and Lacepede Bay yielded no catch. Off Victor Harbour, echosounder traces indicated that anchovies might be in the area, so a TNT charge was dropped; immediately barracouta were taken on surface lines; 15 were caught, mostly on lead lines. Two of these were males running ripe, the remainder were females and most of them were spent.

Part 2. Ten drift nets with 30 fm strops, shot in about 40 fm near the Babel I. wide station, caught no barracouta, only 1 skate. Ten drift nets with strops ranging from 2 to 10 fm were fished in 57 fm 18 miles south-west of Babel I. in the area where the Red Funnel trawler Korowa had been working two days previously. No catch was taken. The weather was bad during the whole cruise so that it was almost impossible to use the drift nets. Such weather may always be expected at this time of the year. Throughout the cruise surface and lead lines were trolled and a longline of 120 m with a trolling line attached at every 12 m was used from the ship steaming at 2 knots. No catch was taken. The only indication of barracouta in the area was furnished by S.T. Korowa. She took 6 barracouta in a trawl 18 miles south-west of Babel I: five of these appeared to have

been taken on the bottom and were much fatter than is usual for their size; two or three of them might have passed for South African barracouta. Their gonads were inactive and they had been feeding heavily on krill. These fish may represent the stage of the annual cycle of barracouta not so far found in the investigation in Bass Strait.

Part 3. was a routine cruise when hydrology, plankton, and longlining stations were worked.

PUBLICATIONS

The results of this cruise are included in the papers listed in previous cruises. References are listed at the end of this report.

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Part 1

TABLE 1

F.R.V. DERWENT HUNTER CRUISE 7, 1953

Date Station Position	Hydrology No.	Plankton		Haul No.	No. of Hooks	Bot. Temp. °C	FISHING					
							School Shark		Gummy Shark		Barracouta	
		Zoo.	Phyto.				Caught	Tagged	Caught	Tagged	Caught	Tagged
4-9/8/53 Hobart to Victor Harbour											No fish	
10/8/53 Victor Harbour											15	
13/8/53 25 miles S. x 15°E. Margaret Brock Reef (290 m)				7/1	250	14.3	12	3 B2535-7 1372, 1374-5	1	1 2237 B1531		
14/8/53 Port Fairy wide 39°01',142°25' (900 m)	DH54/53 Drift Cards 1401-25	V2 N 100 B										
14/8/53 Port Fairy 38°30',142°16'	DH55/53											
15/8/53 Pt Phillip Heads 38°22',144°36' (58 m)	DH57/53	V2 H										
Lorne 38°35',144°36' (60 m)	DH56/53											

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TABLE 1

Part 2

F.R.V. DERWENT HUNTER CRUISE 7, 1953

Date Station Position	Hydrology No.	Plankton		Haul No.	No. of Hooks	Bot Temp. °C	FISHING	
		Zoo.	Phyto.				Barracouta	Tuna
22/8/55 Cape Woolamai (63 m)	DH58/53	V2						
23/8/53 Cape Liftrap (70 m)	DH59/53	V2						
Wilson's Prom. (63 m)	DH60/53	V2 H						
Kent Group	DH61/53	V2 H N 100 B						
27/8/53 Off Sisters Passage								1 S.B.
28/8/53 18 miles N.E. Babel I.		N 70					5 drift nets in 80-100 f with 55 f strops. Catch nil. Secured 6 barracouta from Korowa. Red Funnel trawler, these were fat	
Babel I. wide 39°21',148°45'	DH62/53 BT 9/53	V 650-0 500-0						
29/8/53 Babel I. wide							10 drift nets in 40 f. No catch of barracouta	
Paddock Station (1700 m)	DH63/53	V 500-0(2) V divided 7					No fish	
30/8/53							No fish	
1649.								

TABLE 1

F.R.V. DERWENT HUNTER CRUISE 7, 1953

Part 2 Cont'd...

Date Station Position	Hydrology No.	Plankton		Haul No.	No.of Hooks	Bot. Temp. °C.	FISHING	
		Zoo.	Phyto.				Barracouta	Tuna
31/8/53							10 drift nets strops 2 - 10 f	
1/9/53-5/9/53							No catch Bad weather No fish	
6/9/53 Babel I. Station (50 m)	DH64/53	V (2) H					No fish	
7/9/53-11/9/53 Bad weather								
12/9/53 Port Phillip Heads (60 m)	DH65/53	V (2) H						
Part 3								
22/9/53 Lorne 38°35',144°05' (55 m)	DH66/53	V 2 V 3 divided						
Cape Otway 38°57',143°34' (70 m)	DH67/53	V (2) V 3 divided H						
23/9/53 King I. wide 39°40',142°45' (900 m)	DH68/53 BT 10/53 275 m	V (2) V 7 divided N 100 B H						

TABLE 1

F.R.V. DERWENT HUNTER CRUISE 7, 1953

Part 3 Cont'd...

Date Station Position	Hydrology No.	Plankton		FISHING	
		Zoo.	Phyto.		Deep Long Lines
24/9/53 King I. west of Stokes Pt 40°10', 143°46'	DH69/53 70 m BT 11/53 60 m	V (2) divided V3 H		DH7/2	207 hooks 10.8°C 500 m 1 deep-sea trevally 1 king barracouta 14 other spp.
Albatross I. 40°20', 144°26'	DH70/53 50 m Drift cards 1426-50				
25/9/53 Circular Head 40°43', 145°21'	DH71/53 25 m	V (2) H			
Burnie 40°52', 146°46'	DH72/53 60 m	V (2) divided 3			
26/9/53 Low Head 40°55', 146°46'	DH73/53 50 m	V (2) H divided 3			
27/9/53 Waterhouse I. 40°46', 147°40'	DH74/53 25 m	V (2)			
28/9/53 Banks Strait 40°49', 148°30'	DH75/53 60 m	V (2) divided 3			
Banks Strait wide 40°42', 148°30'	DH76/53 750 m	V (2) H divided 7 N 100 B		DH7/3	200 hooks Line lost
St Helens	DH77/53 Drift cards 1451-75	V (2) H divided 3 N 100 B			

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TABLE 1

F.R.V. DERWENT HUNTER CRUISE 7, 1953

Date Station Position	Hydrology No.	Plankton		FISHING
		Zoo.	Phyto.	Deep Long Lines
29/9/53 Cape Lodi 41°55', 148°29'	DH78/53 75 m	V (2) H divided 3		
1/10/53 Maria I. 42°32', 148°30'	DH79/53	V (2) H divided 3		
2/10/53 Maria I.				DH7/4 200 hooks 300-370 f 680 m 8.0°C 560 m 8.1°C 455 m 8.8°C 12 deep-sea trevally 6 deep-sea cod 10 ling
Maria I. wide	DH80/53 680 m BT 12/53 270 m	V (2) 500-0 m divided 7 H		DH7/5 200 hooks 295-240f 364 m 9.3°C 182 m 11.4°C 2 deep-sea trevally 10 other spp.
3/10/53 Cape Pillar 43°13', 148°07'	DH81/53 100 m	V (2) 100-0 m divided 3 H		
4/10/53 Tasman Head 43°31', 147°22'	DH82/53 60 m	V (2) 60-0 m divided 3		
7/10/53	End of Cruise 7			

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CRUISE 8 1953

November 11 - December 7, 1953. West coast of Tasmania.
P.E. Gartner

ITINERARY

Positions of stations are shown in Figure 4. The main object of the cruise was to locate barracouta on the west coast of Tasmania, and to determine whether they were spawning.

RESULTS

Table 1 shows detail of all work done on this cruise. Only 15 barracouta were caught 10 miles north-west of Sandy Cape.

PUBLICATIONS

Hydrological, planktological data are published in C.S.I.R.O. Aust. (1954, 1955).

TABLE 1

F.R.V. DERWENT HUNTER CRUISE 8, 1953

Date	Station	Position	Hydrology No.	Zooplankton	FISHING Deep Longlining
20/11/53 (90 m)	W. Low Rocky Cape	43°0', 145°30'	DH83/53	N 70 V (2) 90-0 45-0 70-25 N 70 H Om	
(580 m)	18 miles W. Low Rocky Cape	43°0', 145°12'	DH84/53	N 70 V (2) 650-0 350-0 N 70 H Om	
21/11/53 (200 m)	As for DH84/53		DH85/53	N 70 V (2) 200-0	
24/11/53 (50 m)	6 miles W. Sandy Cape	41°26', 144°39'	DH86/53	N 70 V (2) 50-0 25-0 N 70 H Om	
(600 m)	20 miles W. Sandy Cape	41°26', 144°25'	DH87/53	N 70 V (2) 500-0 N 70 H Om	
	Sandy Cape	41°26', 144°45'	DH88/53	N 70 V (2) 200-0 100-0 N 70 H Om	
(600 m)	50 miles W. Cape Grim	40°41', 143°51'	DH89/53	N 70 V (2) 500-0	
25/11/53 (190 m)	48 miles W. Cape Grim	40°41', 143°53'	DH90/53	N 70 V (2) 185-0 100-0 N 70 H Om	

TABLE 1

F.R.V. DERWENT HUNTER CRUISE 8, 1953

Cont'd...

Date	Station	Position	Hydrology No.	Zooplankton	FISHING Deep Longlining
(65 m)	8 miles W. Cape Grim	40°41', 143°35'	DH91/53	N 70 V (2) 60-0 30-0	
		41°10', 144°10'	Drift Cards 1476-1500	N 70 H Om	
29/11/53	Macquarie Harbour (off Phillip I.)				
2/12/53	N.W. Sandy Cape				
4/12/53 (650 m)	16 miles W. Maatsuyker I.		DH92/53 Drift Cards 9801-9825	N 70 V (2) 500-0 N 70 H Om	DH8/1 360f 88 ling 5 deep-sea trevally 6 deep-sea cod 7 other spp.
	14 miles W. Maatsuyker I.	43°40', 146°19'	DH93/53	N 70 V (2) 50-0 25-0 N 70 H Om	
	4 miles W. Maatsuyker I.		DH94/53	N 70 V (2) 50-0 25-0 N 70 H Om	
7/12/53	End				

Scallop hydrology done at beginning and end of cruise.

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CRUISE 9 1953-54

Part 1. December 29 - January 22, 1954
T.R. Cowper

Part 2. January 30 - February 21, 1954
J.P. Robins

Part 3. March 4 - March 28, 1954
P.E. Gartner, M. Blackburn.

Part 4. April 16 - June 3, 1954
T.R. Cowper

ITINERARY

Part 1. Positions of stations are shown in Figure 5. The ship left Hobart, worked hydrology and plankton stations, did four deep long line shots, and trolled for tuna on its way to Sydney. In Sydney pilchard drift nets were loaded to carry out the main object of the cruise, to check the occurrence of pilchards in New South Wales waters in summer when they appear to be in better condition but scarcer in surface waters.

Part 2. This was the first of a series of oceanic cruises in the west Tasman Sea to investigate the distribution and abundance of tuna, in conjunction with hydrological and planktological observations. The ship left Sydney on January 30, proceeded to Eden, went 300 miles eastwards, then 320 miles southwards to 42°30'S. then 360 miles westward to Triabunna. After refuelling she returned to the position 300 miles east of Eden, worked northwards to 33°55'S., then 240 miles westward to Sydney.

Part 3. This portion of the cruise was spent working a grid of hydrology and plankton stations in Bass Strait and its approaches.

Part 4. During the first portion of this cruise the routine hydrology and plankton stations were worked in Bass Strait. The object of the second portion of this cruise was to show how much fish could be taken in a commercial test by a ship of the type of Derwent Hunter by deep longlining. She worked off South West Cape, Port Davey and Pedra Blanca.

RESULTS

Part 1. Pilchard drift netting in the Port Stephens (N.S.W.) area was successful. The drift nets used were of $1\frac{1}{4}$ in. mesh, each 18 fathoms long by 9 fathoms deep. Table 1 shows between January 14 and 19 the details of the shots made and the pilchards caught. This experiment is discussed by Blackburn and Downie (1955) who show that the shoals, although not seen at the surface, were readily detected in abundance by the echosounder.

Part 2. During this part of the cruise 24 tuna were trolled: of these 19 were albacore (Thunnus germo) and 5 were striped tuna (Katsuwonus pelamis); full biometrics were taken for 15 albacore and stomach contents were preserved. Table 1 gives a summary of all work done. Hydrology samples were taken at 0, 25, 50, 75, 100, 150, 200, 250, 300, 400, 500 m depths. At stations DH9/12/54 and DH9/39-45/54 temperatures only were taken at the above depths and one salinity and one oxygen sample from each depth. Bathythermograph casts to 270 m were made at each station and at certain intermediate stations noted in Table 1.

Zooplankton

Notes on Euphausians - by M. Blackburn (See pages 54a - 54d)

Part 3. The data from this cruise are used by Rochford (1957) in his identification of the surface water masses in the Tasman Sea.

Part 4. During the second portion of this cruise the Derwent Hunter, using at first tuna and later ling as bait, caught good catches of deep-sea trevally, ling, deep-sea cod and other species on deep longlines.

PUBLICATIONS

Pilchard drift netting results are discussed by Blackburn and Downie (1955). The hydrological data appear in C.S.I.R.O. Aust. (1956) and the planktological data in C.S.I.R.O. Aust. (1955b), Rochford (1958) discusses certain of the hydrological data in his examination of the seasonal circulation of the surface water masses of the Tasman and Coral Seas, and in his paper (1957) on the identification of surface water masses in the Tasman Sea. Cowper and Downie (1957) document in detail the deep longlining catches taken during Part 4 of this cruise.

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NOTES ON EUPHAUSIANS

By M. Blackburn

Table 2 shows the species taken on this cruise, the range of depth of each as established from the "Derwent Hunter's" work in south-eastern waters since August 1952, and the maximum range of depth as found at any one and the same station in those waters.

TABLE 2

EUPHAUSIANS TAKEN IN PLANKTON HAULS

Species	Depth range (different stations)	Depth range (same station)
*Nyctiphanes australis	(200-100) —— 0	(200-100) —— (50-0)
*Pseudeuphausia latifrons	> (50-0)	
Thysanoessa gregaria	500 —— 0	> 500 —— (50-0)
Euphausia recurva	(500-400) —— 0	(500-300) —— (50-0)
Euphausia lucens	> 500 —— 0	> 500 —— (50-0)
Euphausia spinifera	(500-400) —— 0	(300-100) —— (50-0)
Euphausia similis similis	> 500 —— 0	(550-400) —— (400-300)
Euphausia similis armata	> 500 —— 0	> 500 —— (50-0)
Nematoscelis sp.	> 500 —— 0	(500-300) —— (50-0)

(* Mainly neritic sp.)

The occurrence of the abovementioned species of Euphausia, Thysanoessa, and Nematoscelis over a wide range of depths at one and the same time and place (although not necessarily all species together) is probably quite common. It would be so if these species made diurnal migrations over this range, and this they seem to do: in one and the same general region and season they are almost always more abundant in the upper waters by night than by day, as shown for example by data for this cruise in Table 3.

The ocean waters traversed on this cruise can be divided into two areas on the basis of the occurrence of species of Euphausia: a southern area with E. lucens, E. similis armata, and E. spinifera the dominant species of this genus, and a northern area with E. recurva the dominant species, as revealed by vertical net hauls, surface horizontal net tows, and surface horizontal tows with the Hardy indicator. The boundary is not easy to define because the absence of any species in daytime hauls or tows cannot be taken to indicate its absence from the areas so examined. But on the southern traverse (stations 28-32) it can be located between Lat. 39°45' and Lat. 40°05', and on the north-eastern traverse

(stations 39-45) between Lat. 38°30' and Lat. 39°30'.

Euphausia spinifera did not occur north of this boundary; E.lucens occurred sparsely at two stations to the north of it, 26 and 45, only from 100 m to the surface; and E. similis armata occurred sparsely at stations 24 and 45, only from 500 to 300 m. E. recurva was represented to the south of the boundary only by a few specimens at the shelf station 37.

Nematoscelis occurred in both areas but more commonly in the southern. So did Euphausia similis similis although this form was rare everywhere. Thysanoessa was cosmopolitan; it occurred at every night station and at many day stations and was not obviously more common in one area than in the other.

Nyctiphanes was found on the continental shelf in the vicinity of Maria and Schouten Islands; and also in small numbers at station 26, about 140 miles east of Eden, much further off the shelf than ever previously recorded. Pseudeuphausia latifrons(?) was represented by a single specimen from the shelf waters off Eden.

The southern oceanic area was more productive of euphausians than the northern. There was a much higher proportion of positive Hardy indicator discs, both for day and night tows, and average catches were higher. In the northern area the highest rate of capture was 2.7 euphausians per hour (night tow) but in the south this rate was frequently exceeded; there it reached 11.0 per hour (night tow). The principal species taken by the indicator were Euphausia lucens and E. spinifera in the southern area and E. recurva in the northern area. (On the continental shelf off Schouten Island the indicator took only Nyctiphanes, in one instance at the high rate of 21.0 per hour for a daytime tow).

The productivity of euphausians (all species) in the two areas can also be compared from the results of vertical net hauls, as shown in Table 4. The shelf stations 21, 22, 37, and 38 have been neglected; likewise station 46 at which the plankton work was not completed; also stations 26 and 47 which were occupied at dusk and cannot conveniently be classified as night or day stations. This leaves 10 stations (31-36 and 39-42) in the southern area and the remaining 13 stations in the northern area.

TABLE 3

PRODUCTIVITY OF EUPHAUSIANS

	Northern area		Southern area	
	Day	Night	Day	Night
No. of stations	11	2	5	5
No. of spp. (range)*	0-3	3-6	1-5	4-6)
" (mean)*	1.0	4.5	2.8	5.2)
No. indivs. 500-0m(range)	0-26	4-16	0-27	13-158)
" (mean)	3.6	10.0	13.8	53.6)
No. indivs. 50-0 m(range)	0-3	1	0-9	2-33)
(mean)	0.5	1.0	2.4	16.0)

(* including surface horizontal hauls)

Night hauls were more productive than day hauls in both areas but day hauls in the southern area yielded more euphausians than night hauls in the northern area. The order ——— northern day hauls < northern night hauls < southern day hauls < southern night hauls ——— is the same for 500-0 m as for 50-0 m of depth.

The "Derwent Hunter" had previously traversed these latitudes early in January, not far outside the shelf; and she traversed them again in early March, further east than in January but well to the west of any of the February operations. An attempt has been made to locate the approximate boundary of the two areas recognized above from the distribution of Euphausia recurva, lucens, spinifera, and similis armata in plankton net and indicator catches on those traverses. It was found that E. recurva and one or more of the other three species occurred together much more frequently than in the February operations, which has also been noted at other slope stations and may indicate a greater homogeneity of euphausian plankton in slope waters than in ocean waters at these latitudes in the west Tasman Sea. However, it was possible to distinguish a northern area with E. recurva dominant and a southern area with E. lucens and E. similis armata dominant, with a boundary probably between Lat. 40°00' and Lat. 41°30', in the region traversed in early March. No definite boundary could be detected in the region traversed in early January, but the species of Euphausia taken as far north as Lat. 38°10' were predominantly of the southern type.

All but one of the 23 tuna (18 albacore and 5 striped tuna) taken on the February cruise were captured in the richer southern

area. The stomach contents of 12 albacore have been examined; they consisted of squid, euphausians, fish, and other crustaceans (amphipods, squillids, decapods) with Euphausia spinifera generally the most important single species in numbers or in bulk. Other euphausians noted were Nematoscelis and Thysanoessa; other species might have been present in an unrecognizable condition.

The richest part, as far as euphausians were concerned, of the whole region traversed on Cruise 9, Part 2, appeared to be that adjacent to the Tasmanian coast. The stations with the greatest number of euphausians at comparable ranges of depth were 37 (on the outer part of the shelf off Maria Island) and 39 (on the slope off Schouten Island); the best plankton indicator haul was made on the shelf in the same region. It is noteworthy that this region was the only one in which shoals of pelagic fish were seen, and that eight out of the total of 23 tuna were taken between stations 39 and 40.

TABLE 1

F.R.V. DERWENT HUNTER CRUISE 9, 1953-54

Part 1

Date	Station Position	Hydrology No.	Zooplankton	FISHING	
				Deep Longlining	Tuna
29/12/53 (60 m)	Tasman Head 43°31', 147°22'	DH95/53	N 70 V (2) 60-0 N 70 V (3) divided		
29/12/53 (100 m)	Cape Pillar 43°13', 148°07'	DH96/53	N 70 V (2) 100-0 (3) divided N 100 B N 70 H Om		
30/12/53 (85 m)	Maria I. 42°46', 148°16'	DH97/53	N 70 V (2) 85-0 N 70 V (3) divided N 100 B N 70 H Om		1 southern bluefin
30/12/53 (900 m)	Maria I. 43°32', 148°30'	DH98/53 BT 14/53 to 270 m	N 70 V (2) 500-0 N 70 V (7) divided 900-0 N 100 B N 70 H Om	DH9/1 330 f 200 hooks 16 deep-sea cod 10 ling 5 other spp.	
31/12/53 (60 m)	Cape Lodi 41°55', 148°29'	DH99/53	N 70 V (2) 60-0 (3) divided	DH9/2 304 f 200 hooks 5 ling 14 other spp.	2 southern bluefin
(100 m)	St Helens 41°18', 148°30'	DH100/53	N 70 V (2) 100-0 N 70 V (3) divided N 100 B		

Part 1 Cont'd....

Date	Station Position	Hydrology No.	Zooplankton	FISHING	
				Deep Longlining	Tuna
1/1/54 (60 m)	Bank Strait 40°49', 148°30'	DH1/54	N 70 V (2) 60-0 N 70 V (3) divided N 70 H Om		
	Bank Strait wide 40°42', 148°55'	DH2/54	N 70 V (2) 500-0 N 70 V (7) divided N 100 B N 70 H Om	9/3 350 f 200 hooks 12 ling 12 deep-sea cod 2 deep-sea trevally 7 other spp. 9/4 350 f 200 hooks 10 deep-sea trevally 11 other spp.	
2/1/54 (40 m)	Babel I. 39°56', 148°34'	DH3/54	N 70 V (2) 40-0 N 70 H Om		1 albacore
(1000 m)	Babel I. wide 39°21', 148°45'	DH4/54 BT DH1/54	N 70 V (2) 500-0		
	Paddock 38°47', 149°10'	DH5/54	N 70 V (2) 500-0 N 70 V (7) divided N 100 B N 70 H Om		
3/1/54 (400 m)	Cape Everard wide 38°12', 149°30'	DH6/54 BT DH2/54	N 70 V (2) 400-0		1 southern bluefin
(85 m)	Gabo I. 37°37', 150°0'	DH7/54	N 70 V (2) 85-0 N 70 V (3) divided N 70 H Om		6 southern bluefin 61 striped 1 bonito

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Part 1 Cont'd...

TABLE 1

F.R.V. DERWENT HUNTER CRUISE 9, 1953-54

Date	Station Position	Hydrology No.	Zooplankton	FISHING	
				Deep Longlining	Tuna
3/1/54 (60 m)	Eden 37°04', 150°05'	DH8/54	N 70 V (2) 60-0 N 70 V (3) divided 60-0 N 70 H		46 striped 2 southern bluefin 1 albacore
		Drift Cards 9876-9900			
(500 m)	Eden wide 37°03', 150°23'	DH9/54	N 70 V (2) 500-0 N 70 V (6) divided 500-0 N 70 H		
5/1/54 (60 m)	Ulladulla	DH10/54	N 70 V (2) 60-0 N 70 divided (3) 60-0 N 70 H		6 striped
6/1/54	Left Cronulla for Sydney				7 striped
10/1/54 (50 m)	Left Sydney Barrenjoey Hd 33°37', 151°31'	DH11/54	N 70 V (2) 50-0 N 70 H		
(200 m)	Edge/Barrenjoey Hd 33°31', 151°53'	DH12/54	N 70 V (2) 200-0 N 70 H		
(500 m)	Barrenjoey Hd wide 33°3', 152°00'	DH13/54	N 70 V (2) 500-0 N 70 V (6) divided N 70 H		

1649.

TABLE 1

F.R.V. DERWENT HUNTER CRUISE 9, 1953-54

Date	Station Position	Hydrology No.	Zooplankton	FISHING	
				Deep Longlining	Tuna
11/1/54 (600 m)	Norah Hd wide 33°18', 152°17'	DH14/54	N 70 V (2) 500-0 N 70 V (7) divided N 70 H		
(200 m)	Norah Hd edge 33°18', 152°10'	DH15/54	N 70 V (2) 200-0 N 70 H		
(50 m)	Norah Hd 33°18',151°41'	DH16/54	N 70 V (2) 50-0 N 70 H		
(50 m)	Nobley's Hd 33°55',151°58'	DH17/54	N 70 V (2) 50-0 N 70 H		7 striped
12/1/54 (200 m)	Nobley's Hd edge 33°05', 152°39'	DH18/54	N 70 V (2) 200-0 N 70 H		
(500 m)	Nobley's Hd wide 32°54', 152°43'	DH19/54	N 70 V 500-400 N 70 V 400-300 300-200 200-100 100-50 50-0 N 70 H		
(50 m)	Port Stephens 32°43', 152°18'	DH20/54	N 70 V (2) 50-0 N 70 H		

Part 1 Cont'd...

Date	Station Position	Hydrology No.	Zooplankton	FISHING		
				Drift Nets	Deep Longlining	Tuna
14/1/54	4½ miles S. Broughton I.			Sardinops neopilchardus 1 ton 0210-0445		
16/1/54	S. of Fingal Bay			0020 - shot 5 nets Sardinops neopilchardus 200 specimens		
16/1/54	2 miles E. of Port Stephens			2115 - shot 1 net 2145 Sardinops neopilchardus 10 specimens		
17/1/54	Off Fingal Bay			0235 - shot 1 net 0245 - Sardinops neopilchardus 36 specimens		
	S.E. Stephens Pt			2030 - shot 1 net 2200 Sardinops neopilchardus 6 specimens		
18/1/54	In Newcastle Bight			0225 - shot 1 net caught 1 mackerel	DH9/5 405 f 200 hooks mackerel bait 15 other spp.	
19/1/54	32 miles E. of Port Stephens					
19/1/54	30 miles E. Port Stephens				DH9/6 200 f 200 hooks 7 other spp.	
	7 miles N.E. Port Stephens			2000 - shot 1 net 2100 Sardinops neopilchardus 33 specimens 2130 - shot 1 net 2230 Sardinops neopilchardus 83 specimens		
22/1/54	10 miles E. Sydney Hds				1 yellowfin	

TABLE 1

F.R.V. DERWENT HUNTER CRUISE 9, 1953-54

Date	Position	Hydrology No.	Zooplankton	FISHING Tuna
31/1/54	37°05', 150°13'	DH21/54 BT1	N 70 V N 70 H	
1/2/54	37°08', 150°25'	DH22/54 BT2	N 70 V divided N 70 H	
	37°10', 150°35'	DH23/54 BT3	N 70 V divided N 70 H	
	37°12', 150°45'	DH24/54 BT4	N 70 V divided N 70 H	
	37°08', 151°22'	DH25/54 BT5	N 70 V divided N 70 H	
2/2/54	37°07', 151°54'	BT6		
	37°05', 152°25'	BT7		
	37°05', 153°02'	DH26/54 BT8	No plankton	
3/2/54	36°25', 154°06'	BT9		
	36°37', 154°30'	BT10		
4/2/54	36°56', 155°10'	DH27/54 BT11	N 70 V divided N 70 H	
	37°10',156°15'	BT12		
	37°08',156°15'	DH28/54 BT13		

TABLE 1

F.R.V. DERWENT HUNTER CRUISE 9, 1953-54

Part 2 Cont'd....

Date	Position	Hydrology No.	Zooplankton	FISHING Tuna
5/2/54	37°36', 156°15'	BT14	N 70 V divided N 70 V	
	38°04', 156°18'	BT15	N 70 V divided N 70 V	
	38°35', 156°20'	DH29/54 BT16	N 70 V divided N 70 V	1 albacore
6/2/54	39°05', 156°16'	BT17		
	39°35', 156°16'	BT18		
	40°05', 156°14'	DH30/54 BT19		
	40°35', 156°14'	BT20		
	40°55', 156°14'	BT21		2 albacore 1 striped
7/2/54	41°15', 156°14'	DH31/54 BT22		1 albacore
	42°22', 155°40'	BT23		1 albacore
	42°15', 155°10'	BT24		
	42°33', 156°15'	DH32/54 BT25		1 albacore
8/2/54	42°22', 153°56'	BT26		1 albacore
	42°25', 153°21'	BT27		1 albacore
	42°17', 154°30'	DH33/54 BT28		

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TABLE 1

F.R.V. DERWENT HUNTER CRUISE 9, 1953-54

Part 2 Cont'd....

Date	Position	Hydrology No.	Zooplankton	FISHING
				Tuna
9/2/54	42°22', 153°56'	BT29		
	42°25', 153°21'	BT30		
	42°28', 152°45'	DH34/54 BT31		
	42°27', 152°10'	BT32		
	42°25', 151°36'	BT33		
10/2/54	42°24', 151°00'	DH35/54 BT34		
	42°22', 150°25'	BT35		
	42°20', 149°98'	BT36		
	42°20', 149°17'	DH36/54 BT37		
		BT38		
		BT39		
	42°26', 148°42'	DH37/54 BT40		
11/2/54	42°30', 148°15'	DH38/54 BT41		
13/2/54	Triabunna 42°06', 148°39'	DH39/54 Drift Cards 9501-9550 Drift bottles 2601-2650 1 mile E. Schouten I. BT42		

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F.R.V. DERWENT HUNTER CRUISE 9, 1953-54

TABLE 1

Date	Position	Hydrology No.	Zooplankton	FISHING Tuna
14/2/54	41°49', 149°00'	BT43		7 albacore (4 lost)
	41°33', 149°25'	DH40/54 BT44		1 albacore
	41°15', 149°50'	BT45		
	40°56', 150°14'	BT46		
15/2/54	40°37', 150°40'	DH41/54 BT47		1 albacore 2 albacore
	40°16', 151°08'	BT48		
	40°00', 151°32'	BT49		
	39°43', 151°55'	DH42/54 BT50 28 m, 75 m, 100 m. (150 m not sampled)	N 70 V (2)	
16/2/54	39°22', 152°20'	BT51		
	39°05', 152°46'	BT52		
	38°45', 153°11'	DH43/54 BT53		
	38°25', 153°35'	BT54		
17/2/54	38°05', 154°04'	BT55		
	37°47', 154°25'	DH44/54		
	37°27', 154°54'	BT56		
	37°15', 155°36'	BT57		

TABLE 1

F.R.V.DERWENT HUNTER CRUISE 9, 1953-54

Part 2 Cont'd....

Date	Position	Hydrology No.	Zooplankton	FISHING Tuna
18/2/54	37°04', 156°01'	DH45/54 BT58		
	37°39', 156°00'	BT59		
	36°12', 156°00'	BT60		
	35°48', 156°00'	BT61		
	35°27', 156°00'	DH46/54 BT62		
	35°03', 156°00'	BT64		
	34°37', 156°00'	BT65		
	34°14', 156°00'	BT66		
	33°50', 156°00'	DH47/54 BT67		
	33°50', 155°34'	BT68		
	33°50', 155°00'	BT69		
	33°50', 154°30'	DH48/54 BT70		
	33°50', 154°05'	BT71		
	33°50', 153°30'	BT72		
	33°50', 153°00'	DH49/54 BT73		
	33°50', 152°27'	DH50/54 BT74		

TABLE 1

F.R.V. DERWENT HUNTER CRUISE 9, 1953-54

Date	Station Position	Hydrology No.	Zooplankton	FISHING	
				Barracouta	Tuna
7/3/54 (200-0 m)	Gabo I. wide 37°40', 150°30'	DH51/54	N 70 V divided (7) 500-0 N 70 H Om		
8/3/54	Cape Everard wide	DH52/54	N 70 V divided (8) 800-0		
(200-0 m)	Paddock wide 39°30', 150°00'	DH53/54	N 70 V (7) 800-0		
9/3/54 (200-0 m)	Cape Barren I. wide 40°25', 149°12'	DH54/54	N 70 V divided (2) 100-0		
(200-0 m)	St Patricks Head wide 41°32', 148°24'	DH55/54 BT DH9/75 270 m	N 70 V divided (7) 600-0 N 70 H Om		
		DH56/54			
	Not occupied owing to bad weather				
(100-0 m)	St Helens close	DH57/54	N 70 V (2) 100-0 N 70 H Om		
10/3/54 (50-0 m)	Banks Strait	DH58/54	N 70 V (2) 50-0 N 70 H Om		
(60-0 m)	Banks Strait 40°36', 148°00'	DH59/54	N 70 V (2) 50-0 N 70 H Om		

TABLE 1

F.R.V. DERWENT HUNTER CRUISE 9, 1953-54

Part 3 Cont'd...

Date	Station Position	Hydrology No.	Zooplankton	FISHING	
				Barracouta	Tuna
10/3/54 (75 m)	Bass Strait 40°15', 146°40'	DH60/54	N 70 V (2) 80-0 N 70 H Om		
11/3/54 (75 m)	Bass Strait 39°37', 146°15'	DH61/54	N 70 V (2) 80-0 N 70 H Om		
(50 m)	Bass Strait 39°10', 145°30'	DH62/54	N 70 V (2) 50-0 N 70 H Om		
	Cape Liftrap	DH63/54 BT DH9/77	N 70 V (2) 50-0 N 70 H Om		
	Cape Woolamai	DH64/54 BT DH9/78	N 70 V (2) 60-0 N 70 H Om		
12/3/54 (75 m)	Port Phillip Hds wide 38°45', 144°30'	DH66/54	N 70 V (2) 60-0 N 70 H Om	2 lines for 7¼ hrs 25 fish caught	
	Lorne	DH67/54 BT DH9/79	N 70 V (2) 60-0 N 70 H Om		
13/3/54 (60 m)	Port Phillip Hds	DH65/54	N 70 V (2) 60-0 N 70 H Om		

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TABLE 1

F.R.V. DERWENT HUNTER CRUISE 9, 1953-54

Date	Station Position	Hydrology No.	Zooplankton	FISHING	
				Barracouta	Tuna
17/3/54	Left Melbourne				
18/3/54 (65 m)	Cape Otway	DH68/54 BT DH9(3)/81	N 70 V (2) 65-0 N 70 H Om		
(100 m)	39°20', 143°25'	DH69/54	N 70 V (2) 100-0 N 70 H Om	11	
19/3/54 (50 m)	Peterborough	DH70/54 BT DH9(3)/82	N 70 V (2) 50-0 N 70 H Om		
(50 m)	Port Fairy	DH71/54	N 70 V (2) 50-0 N 70 H Om		
20/3/54 (200 m)	39°45', 142°20'	DH72/54	N 70 V (6) divided 500-0 N 70 H Om		
(200 m)	40°50', 143°10'	DH73/54	N 70 V (7) divided 1000-0 N 70 H Om		
	41°25', 144°15'	DH74/54	N 70 V (6) divided 500-0 N 70 H Om		

TABLE 1

F.R.V. DERWENT HUNTER CRUISE 9, 1953-54

Date	Station Position	Hydrology No.	Zooplankton	FISHING	
				Barracouta	Tuna
22/3/54 (50 m)	Albatross I.	DH75/54	N 70 V (2) 60-0		
	39°30', 144°30'	DH76/54 BT DH9(3)/83	N 70 V (2) 50-0 N 70 H Om		
23/3/54	40°18', 145°15'	DH77/54	N 70 V (2) 45-0 N 70 H Om		
	Circular Head 40°48', 145°35'	DH78/54 BT DH9(3)/85	N 70 V (2) 45-0 N 70 H Om		
	Burnie	DH79/54 BT DH9(3)/86	N 70 V (2) 75-0 N 70 H Om		
	Low Head	DH80/54 BT DH9(3)/87	N 70 V (2) 50-0 N 70 H		
		DH81,82/54	N 70 H Om		
	Done on 1st half of this part of cruise				
24/3/54 (75 m)	Same Pos. as 61/54	DH83/54	N 70 V (2) 75-0 N 70 H Om		
25/3/54 (75 m)	Same Pos. as 62/54	DH83A/54	N 70 V (2) 75-0 N 70 H Om		

TABLE 1

F.R.V. DERWENT HUNTER CRUISE 9, 1953-54

Date	Station Position	Hydrology No.	Zooplankton	FISHING	
				Barracouta	Tuna
25/3/54	Wilson's Prom.	DH84/54 BT DH9(3)/88	N 70 V (2) 75-0 N 70 H Om		
(75 m)	39°05', 146°41'	DH85/54	N 70 V (2) 75-0 N 70 H Om		
	Kent Group	DH86/54 BT DH9(3)/88	N 70 V (2) 50-0 N 70 H Om		
26/3/54 (50m)	Port Albert wide	DH87/54	N 70 V (2) 70-0 N 70 H Om		
(200 m)	Paddock	DH88/54	N 70 V (7) divided 1600-0 N 70 H Om		1 striped
	Lakes Entrance	DH89/54 BT DH9(3)/90	N 70 V (2) 33-0 N 70 H Om		
Part 4					
16/4/54	Left Paynesville				
19/4/54 (35 m)	Lakes Entrance	DH90/54 BT DH9(4)/91	N 70 V (2) 35-0 N 70 H Om		
1649.					

TABLE 1

F.R.V. DERWENT HUNTER CRUISE 9, 1953-54

Date	Station Position	Hydrology No.	Zooplankton	FISHING	
				Barracouta	Tuna
20/4/54 (60 m)	Wilson's Prom.	DH91/54 BT DH9(4)/92 Drift Cards 9101-9125	N 70 V (2) 50-0 N 70 H Om		
(50 m)	Cape Liftrap	DH92/54 BT DH9(4)/93	N 70 V (2) 50-0 N 70 H Om	26	
(50 m)	Cape Woolamai	DH93/54 BT DH9(4)/94	N 70 V (2) 50-0 N 70 H Om		
(50 m)	Port Phillip Hds	DH94/54	N 70 V (2) 50-0 N 70 H Om		
21/4/54	Arrived Melbourne				
14/5/54	Left Melbourne				
(60 m)	Port Phillip Hds 38°22', 144°36'	DH95/54	N 70 V (2) 60-0 N 70 V (3) divided N 70 H Om		
(70 m)	Lorne 38°35', 144°05'	DH96/54	N 70 V (2) 70 N 70 V (3) divided N 70 H Om		

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TABLE 1

F.R.V. DERWENT HUNTER CRUISE 9, 1953-54

Part 4 Cont'd....

Date	Station Position	Hydrology No.	Zooplankton	FISHING	
				Deep Longlining	Tuna
15/5/54 (60 m)	Peterborough 38°47', 142°48'	DH98/54	N 70 V (3) divided N 70 V (2) 60-0 N 70 H Om		
17/5/54 (40 m)	Port Fairy 38°30', 142°16'	DH99/54 BT DH95/54	N 70 V (2) 40-0 N 70 H Om		
	Port Fairy wide 39°01', 142°25'	DH100/54 Drift Cards 9126-9150	N 70 V (7) divided N 70 V 650-0 N 70 H Om		
(100 m)	King I. wide 39°40', 142°45'	DH101/54 BT DH96/54 (270 m)	N 70 V (7) divided N 70 V (2)1000-0 N 70 H Om		
(70 m)	Stokes Pt 40°10', 143°46'	DH102/54 BT DH97/54 (70 m)	N 70 V (3) divided N 70 V (2) N 70 H Om		
(50 m)	Albatross I. 40°20', 144°26'	DH103/54 Drift Cards 9151-9175	N 70 V (3) divided N 70 V (2) N 70 H Om		5 S.B.

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Part 4 Cont'd...

Date	Station	FISHING			
		Deep Longlining			
		No.	Hooks	Depth	Catch
17/5/54	8 miles off S.W. Cape	DH9/7	200	248 f	6 deep-sea trevally 2 ling 3 deep-sea cod 15 other spp.
	9 miles W. off S.W. Cape	DH9/8	200	364 f	2 deep-sea trevally 8 ling 3 school shark 4 spur dogfish
28/5/54	Catching bait				
29/5/54	12 miles S.W. of Port Davey	DH9/9	200	394 f	43 deep-sea trevally 4 ling 12 deep-sea cod 4 other spp.
		DH9/10	200	426 f	12 deep-sea trevally 3 ling 12 deep-sea cod 1 other sp.
30/5/54		DH9/11	200	402 f	5 deep-sea trevally 5 deep-sea cod 5 other spp.
31/5/54 1/6/54	16 miles S. of Pedra Blanca	DH9/12	200	396 f	5 deep-sea trevally 5 ling 22 deep-sea cod 4 other spp.
		DH9/13	200	390 f	4 deep-sea trevally 2 ling 5 deep-sea cod 6 other spp.
3/6/54	Hobart	DH9/14	200	380 f	14 deep-sea trevally 6 ling 2 other spp.

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CRUISE 10 1954

June 11 - 30,1954
T.R. Cowper

ITINERARY

The positions of stations are shown in Figure 6. On this cruise the ship carried out deep longlining off the east coast of Tasmania, thus continuing the coverage of the Tasmanian coast started on Cruise 9, Part 4.

RESULTS

The ship trolled 17 tuna which were used as bait on the longline. The longlines were shot three times 13 miles east of Cape Forestier and three times east of Cape Lodi. One line was lost and the other five shots took 1800 lb of fish. During the second part of the cruise droplining was tried out. For this a single weighted wire line carrying usually 30 hooks was lowered to the sea bed. After fishing for from 5 to 10 minutes the line, which had not been cast off from the vessel, was hauled.

PUBLICATIONS

Cowper and Downie (1957) give full detail of the catches and describe the gear used for the longline and droplining shots.

TABLE 1

F.R.V. DERWENT HUNTER CRUISE 10, 1954

Part 1

Date	Station	Hydrology No.	Zooplankton	FISHING				
				Deep Longlining				Tuna
				No.	Hooks	Depth	Catch	
11/6/54	Left Hobart							4 S.B.
12/6/54	Pirates Bay							4 S.B.
13/6/54	Fortescue Bay							5 S.B.
14/6/54	Spring Bay							3 S.B.
15/6/54	Wineglass Bay							1 S.B.
16/6/54	14 miles E. of Cape Forestier			DH10/1	200	370 f	1 deep-sea trevally 14 ling 7 deep-sea cod 1 other spp.	
17/6/54	13 miles E. of Cape Forestier			DH10/2	200	320-400 f	4 deep-sea trevally 8 ling 22 deep-sea cod 13 other spp.	
				DH10/3	200	260-420 f	4 deep-sea trevally 11 ling 3 deep-sea cod 2 other spp.	
18/6/54	11 miles E. of Cape Lodi			DH10/4	200	360 f	25 ling 22 deep-sea cod 17 other spp.	

1649.

TABLE 1

F.R.V. DERWENT HUNTER CRUISE 10, 1954

Part 1 Cont'd...

Date	Station Position	Hydrology No.	Zooplankton	FISHING				
				Deep Longlining				Tuna
				No.	Hooks	Depth	Catch	
18/6/54	E. of Cape Lodi			DH10/5 DH10/6	Line lost 200	410 f	30 deep-sea trevally 26 ling 4 deep-sea cod 17 other spp. 5 shots 1800 lb	
(60 m)	Cape Lodi 41°53',148°29'	DH104/54	N 70 V (3) divided N 70 V (2)					
Part 2 21/6/54 (100 m)	Maria I. 42°46',148°16'	DH105/54 Drift Cards 9751-9800 Drift bottles 2751-2800	N 70 V (3) divided N 70 V (2) 100-0 N 70 H					2 S.B.
	14 miles E. of Ragged Head			DH10/7	200	350 f	1 deep-sea trevally 2 ling 1 school shark 18 other spp.	
				DH10/8	200	360 f	1 deep-sea trevally 5 ling 6 school sharks 7 other spp.	
				DH10/9	200	360 f	2 king barracouta 5 ling 1 school shark 13 other spp.	

Date	Station Position	Hydrology	Zooplankton	FISHING				
				Deep Longlining				Tuna
				No.	Hooks	Depth	Catch	
21/6/54 (750 m)	Maria I. wide 42°32',148°30'	DH106/54 BT DH98	N 70 V (7) divided N 70 V (2) 750-0					
23/6/54	Maria I. Fortescue Bay							1 S.B.
24/6/54	10 miles E. Cape Pillar			DH10/10	200	410 f	No catch part of line lost	
(100 m)	Cape Pillar 43°13',148°07'	DH107/54	N 70 V (3) divided N 70 V (2) 100-0 N 70 H					1 S.B.
						Drop Lining		
25/6/54	Port Arthur (bad weather)							
26/6/54	10 miles E. of Tasman I.			DL/1	30	315 f	1 deep-sea trevally	
				DL/2		350 f	1 deep-sea trevally 2 ling	
				DL/3		380 f	No catch	
				DL/4		390 f	No catch	
				DL/5		300 f	6 deep-sea trevally	
				DL/6		300 f	No catch	
				DL/7		294 f	2 deep-sea trevally	
				DL/8		280-300 f	15 deep-sea trevally	
				DL/9		300 f	21 deep-sea trevally	
				DL/10		300 f	4 deep-sea trevally	
				DL/11		290 f	1 deep-sea trevally 1 king barracouta	
						Total Weight	51 deep-sea trevally 696 lb	

TABLE 1

F.R.V. DERWENT HUNTER CRUISE 10, 1954

Part 2 cont'd...

Date	Station Position	Hydrology No.	Zooplankton	FISHING				
				Drop Lining				Tuna
				No.	Hooks	Depth	Catch	
27/6/54	10 miles E. of Tasman I.			DL/12		284 f	5 deep-sea trevally	
				DL/13		300 f	1 deep-sea trevally	
				DL/14		300 f	2 deep-sea trevally	
				DL/15		290 f	14 deep-sea trevally	
				DL/16		273 f	4 deep-sea trevally	
				DL/17		292 f	9 deep-sea trevally	
				DL/18		286 f	2 deep-sea trevally	
				DL/19		300 f	1 king barracouta	
				DL/20		292 f	5 deep-sea trevally	
				DL/21		276 f	No catch	
				DL/22		300 f	No catch	
				DL/23		280 f	14 deep-sea trevally	
						Total Weight	56 deep-sea trevally 839 lb	
28/6/54	12 miles NE from Fortescue Bay off Hippolyte Rock			DL/24	3	293-303 f	1 one finned shark	
				DL/25		270 f	7 deep-sea trevally	
				DL/26		260-270 f	17 deep-sea trevally	
				DL/27		268 f	5 deep-sea trevally	
				DL/28		260 f	No catch	
				DL/29		260 f	5 deep-sea trevally	
				DL/30		260 f	5 deep-sea trevally	
				DL/31		260 f	No catch	
						Total Weight	39 deep-sea trevally 588 lb	
29/6/54 (65 m)	Tasman Head 43°31',147°22'	DH108/54	N 70 V (3) divided N 70 V (2)					
30/6/54	Hobart							

CRUISE 11, 1954

July 8 - 22,1954
T.R. Cowper

ITINERARY

The positions of stations are shown in Figure 6. During this cruise the shark longline was shot 28 times and the gummy sharks taken were tagged and released. The droplining gear was used 19 times. Five hydrology and plankton stations were worked along the east coast of Tasmania.

RESULTS

The droplining gear was used to catch fish to be used as bait on the shark longline; more than 500 lb of deep-sea trevally were caught and used for this purpose. Three hundred and eight gummy sharks (*Mustelus antarctica*) were caught; of these six were dissected and 302 were tagged and released.

PUBLICATIONS

The hydrology and plankton data are recorded in C.S.I.R.O. Aust. (1956, 1955).

Date	Station Position	FISHING									
		Gummy Sharks									
		Deep Longlining						Drop Lining			
		No.	Hooks	Depth Temp.	Caught	Tagged	Tags	No.	Hooks	Depth	Catch
8/7/54	Left Hobart										
9/7/54								DL/32	30	280 f	Nil
								DL/33		312 f	2 deep-sea trevally
								DL/34		312 f	9 deep-sea trevally
								DL/35		322 f	2 deep-sea trevally
								DL/36		306 f	6 deep-sea trevally
								DL/37-39			No catch
								DL/40		290 f	King barracouta
								DL/41		300-330 f	9 deep-sea trevally
								DL/42-44			No catch
10/7/54	Between Goose and Badger Is.	11/1	250	15 f 11.6°	47	47	Body tags 2238-84 Fin tags B1532-5, 1538-67, 1569-78, 1581-3				
		11/2	250		68	63	Body tags 2285-347 Fin tags B1584-646				
		11/3	250	20 f 11.5°	14	14	Body tags 2348-61				
		11/4	250		6	6	Body tags 2362-7				
		11/5	250		10	10	Body tags 2368-77				

Date	Station Position	FISHING									
		Gummy Sharks						Drop Lining			
		Deep Longlining									
		Haul No.	No. of Hooks	Depth Temp.	Caught	Tagged	Tags	No.	Hooks	Depth	Catch
11/7/54	Badger and Boxen I.	11/6	250		9	9	Body tags 2378-86				
12/7/54	Goose I. - Hummock I.	11/7	200	20 f 11.6	2	2	2387-8				
	Goose and Badger	11/8		15 f 11.6	12	12	2389-400				
	S.E. Hummock I.	11/9	200	18 f	14	14	2401-14				
13/7/54	Hunter I. - Passage I.	11/10	200		5	5	2415-19				
	North end Marshall Bay	11/11	200	20 f 11.6	1	1	2420				
		11/12	200	10 f	No catch						
		11/13	200		No catch						
14/7/54	Franklin Sound	11/14	200	15 f 11.3	7	7	2421-5 2456-7 2426-55 lost				
		11/15			8	8	2458-65				
		11/16		16 f	3	3	2466-8				
15/7/54	Boxen I.	11/17			4	4	2460-72				
		11/18	200	10 f	12	12	2473-84				
		11/19	200	16 f	13	12	2485-96				
16/7/54	Franklin Sound	11/20	200	14 f	3	3	2497-9				
		11/21	200	13 f 11.1	4	4	2500-3				

TABLE 1

F.R.V. DERWENT HUNTER CRUISE 11, 1954

(Cont'd...)

Date	Station Position	FISHING									
		Gummy Sharks						Drop Lining			
		Deep Longlining									
		Haul No.	No. of Hooks	Depth Temp.	Caught	Tagged	Tags	No.	Hooks	Depth	Catch
17/7/54	Lady Barron-Foster Inlet							DL/45	30	330 f	5 deep-sea trevally
								DL/46	25	320 f	No catch
18/7/54	20 miles NE Eddystone Pt							DL/47	25	320 f	No catch
								DL/48		318 f	5 deep-sea trevally
								DL/49		310 f	2 deep-sea trevally
19/7/54	20 miles E. Eddystone Pt							DL/50		300 f	12 deep-sea trevally
20/7/54	2 miles N. Mussel Roe Pt	11/22	200	14	26	26	2504-29				
		11/23	200	15 11.0°	14	14	2530-43				
	8 miles SE Swan I.	11/24	200	14	7	7	2544-50				
21/7/54	Off Boulder Pt	11/25	200	12	7	7	2551-7				
		11/26	200	12	No catch						
		11/27	200	10	4	4	2558-61				
		11/28	200	16	8	8	2562-9				
		Hydrology		Zooplankton							
	Banks Strait 40°49',148°31'	DH109/54		N 70 V (3) divided N 70 V (2) N 70 H Om							
	St Helens 41°18',148°30'	DH110/54 Drift cards 9176-200		N 70 V (3) divided N 70 V N 70 H Om							

TABLE 1

F.R.V. DERWENT HUNTER CRUISE 11, 1954

(Cont'd....)

Date	Station Position	Hydrology	Zooplankton
22/7/54 (60 m)	Cape Lodi 41°55', 148°29'	DH111/54	N 70 V (3) divided N 70 V (2) N 70 H Om
(100 m)	Maria I. 42°46',148°16'	DH112/54	N 70 V (3) divided N 70 V (2) N 70 H Om
(100 m)	Cape Pillar 43°13',148°07'	DH113/54	N 70 V (3) divided N 70 V (2) N 70 H Om
	End of Cruise		

CRUISE 12 1954

September 26 - October 9, 1954
T.R. Cowper

ITINERARY

The positions of stations and areas of fishing are shown in Figure 6. Droplining was carried out on the east coast of Tasmania.

RESULTS

At a position 15 miles east of Cape Lodi 10 droplining shots in one day yielded 80 deep-sea trevally which weighed 1105 lb. In the following day in the same position 13 shots yielded 78 deep-sea trevally weighing 1100 lb. On the next day 12 miles east of Schouten Passage 8 deep-sea trevally were taken weighing 117 lb. During the remainder of the cruise in almost the same positions 43 deep-sea trevally, weighing 484 lb, were taken.

PUBLICATIONS

Full details of these catches are given by Cowper and Downie (1957).

TABLE 1

F.R.V. DERWENT HUNTER CRUISE 12, 1954

Date	Station Position	Hydrology	Zooplankton	FISHING			
				Droplining			
				No.	Hooks	Depth	Catch
26/9/54	Left Hobart						
(100 m)	Cape Pillar 43°13', 148°07'	DH114/54	N 70 V 100-0 N 70 H				
27/9/54	15 miles E. of Cape Lodi			DL/51	25	312f	2 deep-sea trevally 1 deep-sea cod
				DL/52		294f	2 deep-sea trevally
				DL/53		264f	13 deep-sea trevally
				DL/54		280f	18 deep-sea trevally
				DL/55		315f	1 dogfish
				DL/56		410f	No catch
				DL/57		500f	No catch
				DL/58		240-260f	10 deep-sea trevally
				DL/59		240-260f	14 deep-sea trevally
				DL/60		240-300f	12 deep-sea trevally
				DL/61		200-280f	8 deep-sea trevally
				DL/62		270-300f	4 deep-sea trevally 1 deep-sea cod
				DL/63		260f	1 deep-sea trevally
							Total 80 deep-sea trevally Weight 1105 lb

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Date	Station Position	Hydrology	Zooplankton	FISHING			
				Droplining			
				No.	Hooks	Depth	Catch
28/9/54	15 miles ENE of Cape Lodi			DL/64		300f	1 deep-sea trevally
				DL/65		260f	11 deep-sea trevally 1 king barracouta
				DL/66		260f	10 deep-sea trevally
				DL/67		260f	5 deep-sea trevally
				DL/68		260f	10 deep-sea trevally
				DL/69		230-220f	4 deep-sea trevally
				DL/70		190f	No catch
				DL/71		255f	11 deep-sea trevally
				DL/72		240-250f	3 deep-sea trevally
				DL/73		240-250f	4 deep-sea trevally
				DL/74		260-270f	8 deep-sea trevally
				DL/75		270f	4 deep-sea trevally
				DL/76		254-270f	2 deep-sea trevally
				DL/77		270-290f	5 deep-sea trevally
							Total 78 deep-sea trevally weight 1105 lb
(60 m)	Cape Lodi 41°55',148°29'	DH115/54	N 70 V (2) 60-0				
29/9/54	12 miles off Schouten Passage			DL/78		270-303f	1 deep-sea trevally
				DL/79		293f	3 deep-sea trevally
				DL/80		287f	1 deep-sea cod
				DL/81		270-5f	No catch
				DL/82		260-70f	3 deep-sea trevally
				DL/83		270-300f	1 deep-sea trevally
				DL/84		380-420f	No catch
				DL/85		260f	No catch
							Total 8 deep-sea trevally Weight 117 lb

TABLE 1

(Cont'd...) F.R.V. DERWENT HUNTER CRUISE 12, 1954

Date	Station Position	Hydrology	Zooplankton	FISHING			
				Droplining			
				No.	Hooks	Depth	Catch
30/9/54 (500 m)	Maria I. wide 42°32',148°30'	DH116/54	N 70 V (2) 500-0				
		BT DH99/54	N 70 V (2) 100-0 N 70 H Om				
(100 m)	Maria I. 42°46',148°16'	DH117/54 Drift cards 14651-700 Drift bottles 2951-3000	N 70 V (2) 100-0 N 70 H Om				
1/10/54 - 2/10/54	Bad weather anchored in Pirate's Bay						
3/10/54	E. of Pirate's Bay			DL/87-DL/90			No catch
	E. of Fortescue Bay			DL/91		265-315f	2 ling 4 spur dogfish
				DL/92 DL/93			No catch
4/10/54	12 miles SE of Cape Pillar			DL/94		290f	2 deep-sea trevally
				DL/95-DL/97			No catch
				DL/98		296f	1 deep-sea trevally
				DL/99		272-84f	1 deep-sea trevally
				DL/100		254-60f	1 deep-sea trevally
5/10/54	12 miles E. of Tasman I.			DL/101		265f	1 deep-sea trevally
				DL/102-DL/105			No catch
6/10/54	Off Cape Lodi			DL/106-DL/109			No catch
				DL/110		270f	3 deep-sea trevally

1649.

TABLE 1

F.R.V. DERWENT HUNTER CRUISE 12, 1954

(Cont'd...)

Date	Station Position	Hydrology	Zooplankton	FISHING			
				Droplining			
				No.	Hooks	Depth	Catch
6/10/54	Off Cape Lodi (continued...)			DL/111			No catch
				DL/112			
				DL/113		290f	1 deep-sea trevally
				DL/114-DL/116			No catch
				DL/117		270f	8 deep-sea trevally
				DL/118		260f	2 deep-sea trevally
							1 ling
7/10/54	15 miles E. of Cape Lodi			DL/119		260-5f	1 deep-sea trevally
				DL/120		265f	3 deep-sea trevally
				DL/121			No catch
				DL/122		260-80f	1 deep-sea trevally
							1 king barracouta
				DL/123		260f	1 deep-sea trevally
				DL/124		220-60f	3 deep-sea trevally
				DL/125		240-95f	19 deep-sea trevally
							Total 43 deep-sea trevally
							Weight 484 lb
9/10/54 (65 m)	Tasman Head 43°31',147°22'	DH118/54	N 70 V (2) 65-0				
	End of Cruise						

1649.

CRUISE 13 1954

Part 1 October 13 - 16, 1954
D.E. Kurth
Part 2 November 6 - 21, 1954
A.B. Jack
Part 3 November 22-December 14, 1954
H.R. Jitts

ITINERARY

Part 1 The ship travelled from Hobart to Melbourne. Figure 6 gives the positions of stations, and Table 1 gives details of operations. Refrigeration was installed at the end of this part of the cruise.

Part 2 The grid of stations in Bass Strait and its approaches worked on Cruise 9 Part 3 in March 1954 was repeated. The cruise started from Melbourne and finished at Eden (Fig. 6).

Part 3 Figure 6 shows the positions worked on this part of the cruise; it was the second of the Tasman Sea cruises. The first was Cruise 9 Part 2 in February 1954.

RESULTS

Part 1 Several successful droplining shots were made.

Part 2 During Part 2 of the cruise, at hydrology stations 2 salinity samples and 1 oxygen sample and temperatures down to 200 m were taken. At plankton stations on the shelf 2 bottom to surface hauls were made; and at slope stations 2 vertical hauls were made from 500 m to the surface and 2 from 100 m, and a 15 minute surface horizontal tow at each alternate station. Trolling for tuna and barracouta was carried out throughout the cruise.

Part 3 One striped tuna, 1 southern bluefin and 6 albacore were caught during this cruise. Table 1 shows the hydrology and plankton stations worked during the cruise. At deep hydrology stations samples were taken at 0, 50, 100, 200, 300, 500, 750, and 1000 m; temperatures only were taken at 25, 75, 150 and 250 m. Between 1655 on 11/12/54 and 0825 on 12/12/54 the ship investigated a sea mount marked on the chart 25 miles north of 33°47'S., 156°14'E. Stations DH189-191/54 were worked in this area. Droplining shots were made, but no catch was taken.

PUBLICATIONS

The hydrological data for Parts 2 and 3 are recorded in C.S.I.R.O. Aust. (1956), the planktological data in C.S.I.R.O. Aust. (1955b). Rochford (1958, 1959, 1960a, 1960b) discusses the hydrological data in his investigation of the season occurrences of intermediate depth waters in the Tasman and Coral Seas.

1649.

TABLE 1

F.R.V. DERWENT HUNTER CRUISE 13, 1954

Date	Station Position	Hydrology	Zooplankton	FISHING			
				Droplining			
				No.	Hooks	Depth	Catch
13/10/54	Left Hobart						
(100 m)	Maria I.	DH119/54 Drift Cards 14701-50 Drift bottles 50	N 70 V 100-0 N 70 H Om				
14/10/54	16 miles E. Cape Lodi			DL126/54		460m	No catch
				DL127/54		520m	No catch
				DL128/54		520m	1 deep-sea trevally
				DL129/54		540m	1 king barracouta
				DL130/54		800m	No catch
				DL131/54		520m	No catch
				DL132/54		520m	No catch
				DL133/54		480m	2 deep-sea trevally
				DL134/54		520m	10 deep-sea trevally
				DL135/54		520m	No catch
				DL136/54		480m	No catch
(100 m)	St Helens	DH120/54	N 70 V N 70 H Om				
16/10/54 (50 m)	Port Phillip Heads	DH121/54	N 70 V (2) N 70 H Om				

TABLE 1

Part 2

F.R.V. DERWENT HUNTER CRUISE 13, 1954

Date	Station Position	Hydrology	Zooplankton	FISHING Tuna
6/11/54	Left Melbourne			
(50 m)	Port Phillip Heads	DH122/54 BT	N 70 V (2) 50-0 N 70 H Om	
(68 m)	38°30',144°30'	DH123/54	N 70 V (2) 50-0 N 70 H Om	
(50 m)	Lorne	DH124/54	N 70 V (2) 50-0 N 70 H Om	
7/11/54 (55 m)	Cape Otway	DH125/54 BT	N 70 V (2) 55-0	
	39°20',143°20'	DH126/54	N 70 V (2) 75-0 N 70 H Om	
	Peterborough	DH127/54 BT	N 70 V (2) 55-0 N 70 H Om	
8/11/54	Port Fairy close	DH128/54	N 70 V (2) 45-0 N 70 H Om	
(500 m)	Port Fairy wide	DH129/54	No V hauls N 70 H Om	
9/11/54 (500 m)	39°45',142°20'	DH130/54	N 70 V (2) 500-0 N 70 H Om	

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TABLE 1

F.R.V. DERWENT HUNTER CRUISE 13, 1954

Part 2 Cont'd...

Date	Station Position	Hydrology	Zooplankton	FISHING Tuna
10/11/54 (500 m)	40°50',143°10'	DH131/54	N 70 V (2) 500-0 N 50 V (2) 100-0 N 70 H Om	
(500 m)	20 miles W. Sandy Cape Tas. 41°25',144°15'	DH132/54	N 70 V (2) 500-0 N 70 V (2) 100-0 N 70 H Om	
(50 m)	Albatross I.	DH133/54	N 70 V (2) 60-0 N 70 H Om	
11/11/54	40°10',144°50'	DH134/54 BT	N 70 V (2) 55-0 N 70 H Om	
	39°30',144°30'	DH135/54 BT	N 70 V (2) 55-0 N 70 H Om	
	39°55',145°30'	DH136/54	N 70 V (2) 55-0 N 70 H Om	
	40°20',146°05'	DH137/54 BT to 75 m	N 70 V (2) 75-0 N 70 H Om	
12/11/54	Circular Head	DH138/54 BT to 30 m	N 70 V (2) 75-0 N 70 H Om	

1649.

Part 2 Cont'd....

TABLE 1

F.R.V. DERWENT HUNTER CRUISE 13, 1954

Date	Station Position	Hydrology	Zooplankton	FISHING Tuna
	Burnie	DH139/54 BT to 60 m	N 70 V (2) 60-0 N 70 H Om	
	Low Head	DH140/54 BT to 55 m	N 70 V (2) 55-0 N 70 H Om	
13/11/54 (35 m)	40°35',147°35'	DH141/54	N 70 V (2) 35-0 N 70 H Om	
(50 m)	Banks Strait close	DH142/54	N 70 V (2) 50-0 N 70 H Om	
(100 m)	St Helens	DH143/54	N 50 V (2) 100-0 N 70 H Om	
(500 m)	41°25',148°40'	DH144/54	N 70 V (2) 500-0 N 70 V (2) 100-0 N 70 H Om	
14/11/54 (500 m)	40°25',149°10'	DH145/54 BT to 275 m	N 70 V (2) 500-0 N 70 V (2) 100-0	

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TABLE 1

F.R.V. DERWENT HUNTER CRUISE 13, 1954

Date	Station Position	Hydrology	Zooplankton	FISHING Tuna
14-15/11/54	Anchored Badger I. Bad weather			
17/11/54 (80 m)	40°15',146°40'	DH146/54	N 70 V (2) 75-0	
(80 m)	39°30',144°30'	DH147/54	N 70 V (2) 80-0 N 70 H Om	
	Cape Woolamai	DH148/54 BT 39f	N 70 V (2) 75-0 N 70 H Om	
(75 m)	39°10',145°30'	DH149/54	N 70 V (2) 70-0 N 70 H Om	
	Cape Liftrap	DH150/54 BT to 50 m	N 70 V (2) 500-0 N 70 H Om	
	Wilson's Prom.	DH151/54 BT to 70 m	N 70 V (2) 70-0 N 70 H Om	
(75 m)	39°25',146°40'	DH152/54	N 70 V (2) 75-0 N 70 H Om	
	Kent Group	DH153/54 BT to 60 m	N 70 V (2) 60-0	
	Port Albert wide 38°45',147°45'	DH154/54	N 70 V (2) 65-0 N 70 H Om	

TABLE 1

F.R.V. DERWENT HUNTER CRUISE 13, 1954

Date	Station Position	Hydrology	Zooplankton	FISHING Tuna
(500 m)	Paddock	DH155/54	N 70 V (2) 500-0 N 70 V (2) 100-0 N 70 H Om	1 albacore
	38°35',150°10'	DH156/54 BT to 270 m	N 70 V (2) 500-0 N 70 V (2) 100-0 No horizontal haul	
20/11/54 (500 m)	37°40',150°30'	DH157/54	N 70 V (2) 100-0 N 70 H Om	
21/11/54	Arrived Eden			
Part 3 22/11/54	Prefacing for cruise			
23/11/54	Left Eden			
(50 m)	Eden 50 m Onshore station	DH158/54		
(100 m)	37°05',150°13'	DH159/54 BT	N 70 V (2) 100-0	
(1000 m)	37°04',150°19'	DH160/54 BT to 300 m	N 70 V (2) 500-0 N 70 V (2) 100-0	

TABLE 1

F.R.V. DERWENT HUNTER CRUISE 13, 1954

Date	Station Position	Hydrology	Zooplankton	FISHING Tuna
(1000 m)	37°03',150°26'	DH161/54		
(1000 m)	37°08',150°59'	DH162/54	N 70 V (2) 500-0 N 70 V (2) 100-0	
24/11/54 (1000 m)	37°14',151°30'	DH163/54		1 albacore
(1000 m)	37°24',152°49'	DH164/54	N 70 V (2) 500-0 V 100-0	1 albacore
25/11/54 (1000 m)	37°05',154°55'	DH165/54	N 70 V (2) 500-0 N 70 V (2) 100-0	
	37°22',155°55'			
	37°51',155°48'	DH166/54 BT 1000 m		1 albacore
	38°,155°50'			
	38°04.4',155°50'			
(1000 m)	38°28',155°40'	DH167/54		1 albacore
17/11/54 (1000 m)	39°15',155°32'	DH168/54		
	39°42.6',155°47'			2 albacore

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Part 3 Cont'd...

TABLE 1

F.R.V. DERWENT HUNTER CRUISE 13, 1954

Date	Station Position	Hydrology	Zooplankton	FISHING Tuna
(1000 m)	40°20',155°47'	DH169/54	N 70 V (2) 500-0 N 70 V (2) 100-0	
28/11/54 (1000 m)	41°28',156°17'	DH170/54		
	41°47',156°15'			
(1000 m)	42°02',156°00'	DH171/54	Plankton net lost	
29/11/54 (1000 m)	42°18',155°01'	DH172/54		
	42°30.6,153°52'			
(1000 m)	42°48',152°24'	DH173/54		
30/11/54	42°55.7',152°00'			
1/12/54 (1000 m)	42°35',150°28'	DH174/54		
	42°36',149°40'			
(1000 m)	42°24',149°40'	DH175/54	N 70 V (2) 500-0 N 70 V (2) 100-0	
	42°24',149°30'			
(1000 m)	42°31',149°10'	DH176/54	N 70 V (2) 500-0 N 70 V (2) 100-0	

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TABLE 1

F.R.V. DERWENT HUNTER CRUISE 13, 1954

Part 3 Cont'd...

Date	Station Position	Hydrology	Zooplankton	FISHING Tuna
(1000 m)	42°25',148°52'	DH177/54		
(1000 m)	42°25',148°30'	DH178/54	No plankton hauls	
(120 m)	42°30',143°16'	DH179/54	N 70 V (2) 100-0	
2/12/54	Arrived Triabunna			
6/12/54	Left Triabunna			
(100 m)	Maria I.	DH180/54 Drift cards 14326-75 Bottles 3101-50	No plankton	1 S.B.
7/12/54 (1000 m)	41°48',149°27'	DH181/54	No plankton	
	41°41',149°30'			
(1000 m)	40°03',151°20'	DH182/54	N 70 V (2) 500-0 N 70 V (2) 100-0	
	39°43',152°18.5'			
(1000 m)	39°20',153°04'	DH183/54	No plankton	
9/12/54 (1000 m)	38°35.6',154°50'	DH184/54	N 70 V (2) 500-0 N 70 V (2) 100-0	

1649.

TABLE 1

F.R.V. DERWENT HUNTER CRUISE 13, 1954

Date	Station Position	Hydrology	Zooplankton	FISHING Tuna
	38°16.5',154°50'			
(1000 m)	37°10',156°10'	DH185/54	N 70 V (2) 500-0 N 70 V (2) 100-0	
10/12/54 (1000 m)	36°35',156°04'	DH186/54	N 70 V (2) 500-0 N 70 V (2) 100-0	
	36°38.5',156°05'			1 striped
(1000 m)	35°08',156°15'	DH187/54	N 70 V (2) 500-0 N 70 V (2) 100-0	
11/12/54 (1000 m)	34°12',156°12'	DH188/54		
	34°07',156°12'			
(1000 m)	33°47',156°14'	DH189/54	N 70 V (2) 500-0 N 70 V (2) 100-0	
(120 m)	(on sea mount)	DH190/54	N 70 V (2) 120-0	
12/12/54 (480f)	(on sea mount) 33°10',156°15'	DH191/54		
	33°27.6',155°48'			

1649.

Part 3 Cont'd...

TABLE 1

F.R.V. DERWENT HUNTER CRUISE 13, 1954

Date	Station Position	Hydrology	Zooplankton	FISHING
				Tuna
(1000 m)	34°00',154°30'	DH192/54	N 70 V (2) 500-0 (2) 100-0	
13/12/54	34°00',153°19.2'	DH193/54	N 70 V (2) 500-0 (2) 100-0	
	33°49',152°49'			
(1000 m)	33°51',152°30'	DH194/54		
(1000 m)	33°55',152°00'	DH195/54		
(720 m)	34°25',151°45'	DH196/54	N 70 V (2) 500-0 (2) 100-0	
(200 m)	34°02',151°25'	DH197/54	N 70 V (2) 200-0	
	Arrived Port Hacking			
End of Cruise 13				

1649.

CRUISE 14 1955

January 5 - 18, 1955
T.R. Cowper

ITINERARY

Figure 7 shows the areas fished during this cruise, when droplining and deep longlining were carried out on the continental slope off the south-east coast of Tasmania.

RESULTS

The deep longline was shot three times and the dropline 80 times during the cruise. Table 1 shows the results of these and fuller details are given in Cowper and Downie (1957).

Date	Station	FISHING			
		Droplining			
		No.	Hooks	Depth	Catch
5/1/55	Left Hobart 10 miles E. Cape Pillar	DL1/55	25	284f	No catch
		DL2/55		250-60f	No catch
		DL3/55		290-300f	No catch
6/1/55	12 miles E. Fortescue Bay	DL4/55	25	320f	No catch
		DL5/55		284f	No catch
		DL6/55		240-60f	6 deep-sea trevally
		DL7/55		270f	No catch
		DL8/55		240-60f	5 deep-sea trevally
		DL9/55		260f	2 ling
		DL10/55		260f	No catch
		DL11/55		240-60f	11 deep-sea trevally
		DL12/55		240-60f	7 deep-sea trevally
		DL13/55		240-60f	9 deep-sea trevally
		DL14/55		248f	3 deep-sea trevally
		DL15/55		240f	8 deep-sea trevally
6/1/55	12 miles E. Fortescue Bay	DL16/55		240f	6 deep-sea trevally
		DL17/55		240f	1 ling
					Total 55 deep-sea trevally
					Weight 936 lb
7/1/55	12 miles NE. Fortescue Bay	DL18/55	25	240-80f	1 deep-sea trevally 1 ling
		DL19/55		240-74f	No catch
		DL20/55		240f	15 deep-sea trevally
		DL21/55		230f	18 deep-sea trevally
		DL22/55		230-40f	22 deep-sea trevally
		DL23/55		240f	No catch
		DL24/55		230f	22 deep-sea trevally
		DL25/55		220f	19 deep-sea trevally
		DL26/55		230f	No catch
		DL27/55		240f	19 deep-sea trevally
		DL28/55		240f	5 deep-sea trevally
		DL29/55		230f	17 deep-sea trevally
1649.		DL30/55		240f	No catch

TABLE 1
F.R.V. DERWENT HUNTER CRUISE 14, 1955

(Cont'd...)

Date	Station	FISHING		
		Deep Longline	Barracouta	Drop Lining
7/1/55	12 miles ENE Yellow Bluff			DL31/55 220f 4 deep-sea trevally DL32/55 220f 3 deep-sea trevally 1 king barracouta Total 145 deep-sea trevally Weight 2222 lb
8/1/55	Triabunna unloading fish			
9/1/55	To Bryant's Beach		11	DL33/55 260f 25 hooks No catch
10/1/55	E. of Schouten Passage E. of Cape Forestier			DL34/55 222f 6 deep-sea trevally 1 king barracouta DL35/55 180-215f 2 deep-sea trevally 1 king barracouta DL36/55 212f 7 deep-sea trevally DL37/55 220-200f 5 deep-sea trevally DL38/55 238f 3 king barracouta DL39/55 206-212f 1 deep-sea trevally DL40/55 246-208f 12 deep-sea trevally

1649.

Date	Station	FISHING		
		Deep Longline	Barracouta	Drop Lining
10/1/55 Cont'd...	E. of Cape Forestier			DL41/55 220-240f No catch DL42/55 240-230f 6 deep-sea trevally DL43/55 220-230f 8 deep-sea trevally Total 47 deep-sea trevally Weight 539 lb
11/1/55	Oyster Bay		118	
12/1/55	11 miles E. Cape Forestier	DH14/1 380f 200 hooks 3 deep-sea trevally 16 ling 26 deep-sea cod 3 spur dogfish 3 swell shark 1 deep-sea whiptail 1 long-nosed skate		DL44/55 240-220f 25 hooks 4 deep-sea trevally DL45/55 240-260f 3 deep-sea trevally DL46/55 230-252f 5 deep-sea trevally DL47/55 260-280f 9 deep-sea trevally DL48/55 250-230f 4 deep-sea trevally DL49/55 224-240f 2 deep-sea trevally DL50/55 230-240f 9 deep-sea trevally DL51/55 220-226f No catch DL52/55 240-260f 7 deep-sea trevally 2 ling DL53/55 260-256f No catch Total 43 deep-sea trevally Weight 448 lb.

1649.

(Cont'd...)

T.R.V. DERWENT HUNTER CRUISE 14, 1955 TABLE 1

Date	Station	Hydrology	FISHING	
			Deep Longline	Drop Lining
13/1/55	To Pirates Bay			
14/1/55	15 miles E. of Yellow Bluff		DH14/2 420-280f 200 hooks 29 deep-sea trevally 11 ling 13 deep-sea cod 1 red gurnet perch 1 swell shark 1 spur dogfish	DL54/55 240-230f 25 hooks 19 deep-sea trevally DL55/55 235-230f 18 deep-sea trevally DL56/55 220f No catch DL57/55 255f No catch DL58/55 250f 7 deepsea trevally DL59/55 324-320f 8 deep-sea trevally DL60/55 380-350f 2 deep-sea cod DL61/55 440-450f No catch DL62/55 232-240f 10 deep-sea trevally DL63/55 250-243 f 8 deep-sea trevally DL64/55 238-240f 14 deep-sea trevally DL65/55 330-240f 5 deep-sea trevally 1 deep-sea cod Total 89 deep-sea trevally Weight 1484 lb
15/1/55 (100 m)	Maria I.	DH1/55 Drift cards 13376-13425 Bottles 3151-3200		
1649.				

(Cont'd...)

TABLE 1

F.R.V. DERWENT HUNTER CRUISE 14, 1955

Date	Station	Hydrology	FISHING	
			Deep Longline	Drop Lining
15/1/55 Cont'd.. (500 m)	Maria I. wide	DH2/55		
16/1/55	12 miles ESE Ragged Head		DH14/3 430f 200 hooks 7 ling 5 deep-sea cod 1 spur dogfish (line broken, half lost)	DL66/55 300-280f 2 deep-sea cod 1 spur dogfish DL67/55 246-240f No catch
	S.E. Ragged Head E. Pirates Bay or (Monge Bay)			DL68/55 250f No catch DL69/55 234-230f No catch DL70/55 225f 15 deep-sea trevally DL71/55 222f No catch DL72/55 252f No catch Total 15 deep-sea trevally Weight 233 lb
17/1/55	15 miles E. of Pirates Bay			DL73/55 238-255f 7 deep-sea trevally DL74/55 250-255f No catch DL75/55 260f 3 deep-sea trevally DL76/55 240f No catch

(Cont'd...)

TABLE 1
F.R.V. DERWENT HUNTER CRUISE 14, 1955

Date	Station	Hydrology	FISHING		
			Deep Longline	Drop Lining	Tuna
18/1/55	11 miles E. Fortescue Bay			DL77/55 254f No catch DL78/55 260f No catch DL97/55 280f 1 spur dogfish DL98/55 244-250f No catch	1 S.B.
(50 m)	Cape Pillar	DH3/55			
	Hobart End of Cruise 14				

CRUISE 15, 1955

March 21 - April 3, 1955
T.R. Cowper

ITINERARY

Figure 7 shows the areas fished during this cruise when droplining and deep longlining were done on the continental slope off the east coast of Tasmania.

RESULTS

Except for the first day of the cruise much smaller catches were taken by the dropline. The full detail of the catches are discussed by Cowper and Downie (1957).

F.R.V. DERWENT HUNTER CRUISE 15, 1955 TABLE 1

Date	Station	Hydrology	Zooplankton	FISHING		
				Deep Longline	Drop Lining	Tuna
21/3/55	Left Hobart Arrived Pirates Bay					7 S.B. 6 striped
22/3/55	15 miles N.x60°B. Pirates Bay				DL81/55 246-240f 25 hooks 8 deep-sea trevally DL82/55 220f No catch DL83/55 304-260f No catch DL84/55 240f No catch DL85/55 290f 12 deep-sea trevally DL86/55 280-270f 16 deep-sea trevally DL87/55 280f No catch DL88/55 290-300f No catch DL89/55 330-340f No catch DL90/55 400-410f No catch Total 36 deep-sea trevally Weight 376 lb	8 striped 6 albacore
23/3/55	Fortescue Bay to Triabunna					
24/3/55	11 miles E. Cape Forestier				DL91/55 260f 25 hooks No catch DL92/55 288-275f 1 deep-sea cod DL93/55 188-177f No catch	2 striped

TABLE 1

F.R.V. DERWENT HUNTER CRUISE 15, 1955

(Cont'd...)

Date	Station	Hydrology	Zooplankton	FISHING		
				Deep Longlines	Drop Lining	Tuna
24/3/55					DL94/55 240-220f No catch DL95/55 276-270f No catch	
25/3/55	12 miles E. of Cape Lodi			DH15/1 380f 200 hooks 12 deep-sea trevally 12 deep-sea ling 7 deep-sea cod 3 spur dogfish 1 gurnet perch	DL96/55 300-280f No catch DL97/55 270-278f No catch DL98/55 268-272f 1 king barracouta	2 S.B. 4 albacore
26/3/55	12 miles E. of Cape Lodi			DH15/2 320f 200 hooks 7 deep-sea trevally 1 ling 23 spur dogfish 1 swell shark 1 gurnet perch 2 king barracouta	DL99/55 240f 10 deep-sea trevally DL100/55 225f 4 king barracouta DL101/55 176f No catch DL102/55 292-200f 1 gurnet perch	14 striped 2 albacore
27/3/55	Bryant's Beach to Maria I.					3 striped 2 albacore
28/3/55	E. Ragged Head			DH15/3 332f 200 hooks 6 deep-sea ling 8 deep-sea cod 1 gurnet perch 4 swell shark 1 finned shark 19 spur dogfish	DL103/55 340-330f 1 deep-sea trevally DL104/55 300f 1 deep-sea cod	

1649.

(Cont'd...)

TABLE 1

F.R.V. DERWENT HUNTER CRUISE 15, 1955

Date	Station Position	Hydrology	Zooplankton	FISHING		
				Deep Longline	Drop Lining	Tuna
28/3/55 Cont'd.. (100 m)	Maria I. 42°46',148°16'E.	DH4/55	N 70 V (2) 100-0		DL105/55 335f No catch DL106/55 210-200f No catch DL107/55 248-270f No catch	7 striped 1 albacore 1 S.B.
29/3/55	Triabunna - Pirates Bay					
30/3/55	N. x 60° E. of Pirates Bay 15 miles E. of Yellow Bluff			DH15/4 392f 200 hooks 10 deep-sea trevally 25 swell shark 8 spur dogfish 1 deep-sea trevally 2 gurnet perch	DL108/55 276f No catch DL109/55 230-270f No catch DL110/55 230-247f No catch DL111/55 240-212f No catch DL112/55 390f 4 deep-sea cod	15 striped 5 albacore
30/3/55	15 miles E. of Pirates Bay			DH15/4 320f 200 hooks 11 ling 18 spur dogfish 3 swell shark 1 gurnet perch	DL113/55 240f No catch DL114/55 254-250f 2 deep-sea trevally DL115/55 254-250f 1 deep-sea trevally DL116/55 270-260f No catch DL117/55 246-260f 1 gurnet perch DL118/55 280-260f No catch	6 striped 3 albacore

(Cont'd...)

TABLE 1

F.R.V. DERWENT HUNTER CRUISE 15, 1955

Date	Station Position	Hydrology	Zooplankton	FISHING		
				Deep Longline	Drop Lining	Tuna
1/4/55	Cape Pillar 43°13'S.,148°07'E.	DH5/55 BT to 50 m	N 70 V (2) 50-0			
	10 miles SE. Cape Pillar			DH15/6 280f 200 hooks 3 ling 2 school shark 7 spur dogfish 1 swell shark 1 skate	DL119/55 275f No catch DL120/55 246-240f No catch	
2/4/55	Weatherbound Port Arthur					
3/4/55	Returned Hobart End of Cruise 15					

1649.

TABLE 1

F.R.V. DERWENT HUNTER CRUISE 15, 1955

(Cont'd...)

Date	Station Position	Hydrology	Zooplankton	FISHING		
				Deep Longline	Drop Lining	Tuna
28/3/55 Cont'd.. (100 m)	Maria I. 42°46',148°16'E.	DH4/55	N 70 V (2) 100-0		DL105/55 335f No catch DL106/55 210-200f No catch DL107/55 248-270f No catch	7 striped 1 albacore 1 S.B.
29/3/55	Triabunna - Pirates Bay					
30/3/55	N. x 60° E. of Pirates Bay 15 miles E. of Yellow Bluff			DH15/4 392f 200 hooks 10 deep-sea trevally 25 swell shark 8 spur dogfish 1 deep-sea trevally 2 gurnet perch	DL108/55 276f No catch DL109/55 230-270f No catch DL110/55 230-247f No catch DL111/55 240-212f No catch DL112/55 390f 4 deep-sea cod	15 striped 5 albacore
30/3/55	15 miles E. of Pirates Bay			DH15/4 320f 200 hooks 11 ling 18 spur dogfish 3 swell shark 1 gurnet perch	DL113/55 240f No catch DL114/55 254-250f 2 deep-sea trevally DL115/55 254-250f 1 deep-sea trevally DL116/55 270-260f No catch DL117/55 246-260f 1 gurnet perch DL118/55 280-260f No catch	6 striped 3 albacore

1649.

(Cont'd...)

TABLE 1

F.R.V. DERWENT HUNTER CRUISE 15, 1955

Date	Station Position	Hydrology	Zooplankton	FISHING		
				Deep Longline	Drop Lining	Tuna
1/4/55	Cape Pillar 43°13'S.,148°07'E.	DH5/55 BT to 50 m	N 70 V (2) 50-0			
	10 miles SE. Cape Pillar			DH15/6 280f 200 hooks 3 ling 2 school shark 7 spur dogfish 1 swell shark 1 skate	DL119/55 275f No catch DL120/55 246-240f No catch	
2/4/55	Weatherbound Port Arthur					
3/4/55	Returned Hobart End of Cruise 15					

1649.

CRUISE 16 1955

Part 1. April 6 - 25, 1955
J. Bunt
Part 2 April 30 - May 25, 1955
J.P. Robins
Part 3 May 25 - 31, 1955
Captain R. Downie

ITINERARY

Part 1 The object of this part of the cruise was to gain further information about the distribution of water masses and plankton in Bass Strait and its approaches by repeating, with minor changes, the grid of stations occupied on Cruises 9 and 13 in March and November 1954. Figure 7 shows the positions of stations worked. Station routine was similar to that listed for the two previous cruises in this area.

Part 2 During this part of the cruise a tuna longline was tried out.

Part 3 During the return to Hobart no stations were worked but dropline shots were made (Table 1).

RESULTS

Part 1 All stations requested were occupied despite unfavourable weather.

Part 2 Continuous bad weather prevented the longline being used a number of times and being modified to hold the large southern bluefin of from 132-188 lb., which were found in the area. Difficulty was also found in securing suitable bait for the longline. When supplies were eventually found and the longline baited and shot off Schouten Passage, a portion of the line was lost. This was due not only to weakness of certain components of the line but because it was shot too quickly.

PUBLICATIONS

The hydrological data from Parts 1 and 2 of this cruise are published in C.S.I.R.O. Aust. (1957).

Date	Station Position	Hydrology	Zooplankton	FISHING Tuna
6/4/55	Left Hobart			
7/4/55 (100 m)	St Helens 41°13'S.,148°30'E.	DH6/55	N 70 V (2) 100-0	2 striped
(60 m)	Banks Strait close 40°29'S.,148°30'E.	DH7/55	N 70 V (2) 100-0	
(500 m)	40°25'S.,149°10'E.	DH8/55	N 70 V (2) 500-0 (2) 100-0	
8/4/55 (110 m)	18 miles NE. Babel I. 39°48'S.,148°38'E.	DH9/55	N 70 V (2) 110-0	
(500 m)	39°30'S.,149°00'E.	DH10/55	N 70 V (2) 500-0	2 striped
(50 m)	40°35''S.,147°35'E.	DH11/55	N 70 V (2) 50-0	
9/4/55	Low Head	DH12/55 BT to 50 m	N 70 V (2) 50-0	
(85 m)	40°15'S.,146°40'E.	DH13/55	N 70 V (2) 85-0	
(80 m)	39°45'S.,146°05'E.	DH14/55	N 70 V (2) 80-0	
(80 m)	39°55'S.,145°30'E.	DH15/55	N 70 V (2) 80-0	
10/4/55	40°20'S.,146°05'E.	DH16/55 BT to 50 m	N 70 V (2) 50-0	
	40°52'S.,146°00'E.	DH17/55 BT to 50 m	N 70 V (2) 50-0	

1649.

F.R.V. DERWENT HUNTER CRUISE 16, 1955

TABLE 1

Date	Station Position	Hydrology	Zooplankton	FISHING Tuna
10/4/55	Circular Head 40°43'S.,145°21'E.	DH18/55 BT to 50 m	N 70 V (2) 50-0	
11/4/55	40°10'S.,144°50'E.	DH19/55 BT to 50 m	N 70 V (2) 50-0	
	39°30'S.,144°30'E.	DH20/55 BT to 50 m	N 70 V (2) 50-0	2 S.B.
(50 m)	Albatross I. 40°20'S.,144°26'E.	DH21/55	N 70 V (2) 50-0	
12/4/55 (500 m)	20 miles W. Sandy Cape 41°25'S.,144°40'E.	DH22/55	N 70 V (2) 100-0	
(190 m)	40°50'S.,143°10'E.	DH23/55	N 70 V (2) 190-0	
(475 m)	39°45'S.,142°20'E.	DH24/55	N 70 V (2) 475-0 (2) 100-0	
13/4/55 (40 m)	Port Fairy close 38°30'S.,142°16'E.	DH25/55	N 70 V (2) 40-0	
	Peterborough 38°47'S.,142°48'E.	DH26/55 BT to 50 m	N 70 V (2) 50-0	
(50 m)	Cape Otway 38°57'S.,143°34'E.	DH27/55		
14/4/55 (100 m)	39°20'S.,143°20'E.	DH28/55	N 70 V (2) 100-0	
(80 m)	38°50'S.,144°30'E.	DH29/55	N 70 V (2) 80-0	
	Lorne	DH30/55 BT to 50 m	N 70 V (2) 50-0	
15/4/55	Port Phillip Heads	DH31/55 BT to 50 m	N 70 V (2) 50-0	

F.R.V. DERWENT HUNTER CRUISE 16, 1955

TABLE 1

Date	Station Position	Hydrology	Zooplankton	FISHING Tuna
15/4/55-20/4/55	In Melbourne			
20/4/55	Cape Woolamai	DH32/55 BT to 50 m	N 70 V (2) 50-0	
(70 m)	39°10'S.,145°30'E.	DH33/55	N 70 V (2) 70-0	
21/4/55	Cape Liftrap	DH34/55 BT to 50 m	N 70 V (2) 50-0	
	Wilson's Promontory	DH35/55 BT to 50 m	N 70 V (2) 50-0	
(80 m)	39°25'S.,146°40'E.	DH36/55	N 70 V (2) 80-0	
	Deal I. (Kent Group)	DH37/55 BT to 50 m	N 70 V (2) 50-0	
(60 m)	Port Albert Wide 38°45'S.,147°45'E.	DH38/55	N 70 V (2) 60-0	
22/4/55 (500 m)	38°25'S.,148°40'E.	DH39/55	N 70 V (2) 500-0 (2) 100-0	
(500 m)	Paddock 38°47'S.,149°10'E.	DH40/55	N 70 V (2) 500-0 (2) 100-0	
(500 m)	39°30'S.,150°00'E.	DH41/55	N 70 V (2) 500-0 (2) 100-0	
23/4/55 (500 m)	39°30'S.,151°00'E.	DH42/55	N 70 V (2) 500-0 100-0	

1649.

TABLE 1

F.R.V. DERWENT HUNTER CRUISE 16, 1955

Part 1 Cont'd...

Date	Station Position	Hydrology	Zooplankton	FISHING
				Tuna
23/4/55 (400 m)	38°35'S.,150°10'E.	DH43/55	N 70 V (2) 400-0 (2) 100-0	
(500 m)	38°10'S.,150°00'E.	DH44/55	N 70 V (2) 500-0 (2) 100-0	
24/4/55 (400 m)	38°10'S.,151°00'E.	DH45/55	N 70 V (2) 400-0 (2) 100-0	
(470 m)	37°40'S.,150°30'E.	DH46/55	N 70 V (2) 470-0 (2) 100-0	
25/4/55	Arrived Eden			
Part 2				
2/5/55	Departed Eden			
(100 m)	37°05'S.,150°13'E.	DH47/55	N 70 V (2) 100-0	
(500 m)	37°05'S.,150°54'E.	DH48/55 BT	N 70 V (2) 200-0	
3/5/55 (500 m)	37°08'S.,151°52'E.	DH49/55 BT	N 70 V (2) 200-0	
(500 m)	37°09'S.,152°41'E.	DH50/55		
(500 m)	37°35'S.,152°51'E.	DH51/55 BT u/s	N 70 V (2) 200-0	

1649.

F.R.V. DERWENT HUNTER CRUISE 16, 1955

TABLE 1

Date	Station Position	Hydrology	Zooplankton	FISHING Tuna
4/5/55 (500 m)	38°31'S.,152°00'E.	DH52/55	N 70 V (2) 200-0	
(500 m)	39°30'S.,152°00'E.	DH53/55	No plankton	
5/5/55 (500 m)	40°20'S.,151°40'E.	DH54/55	N 70 V (2) 200-0	
(500 m)	41°30'S.,152°00'E.	DH55/55	N 70 V (2) 200-0	
6/5/55 (200 m)	42°30'S.,152°00'E.	DH56/55	No plankton	
7/5/55 (500 m)	42°20'S.,149°42'E.	DH57/55	N 70 V (2) 200-0	
8/5/55 (500 m)	42°30'S.,149°00'E.	DH58/55	N 70 V (2) 200-0	
(500 m)	42°28'S.,148°25'E.	DH59/55	N 70 V (2) 200-0	1 S.B. (50 lb) 2 S.B. 1 albacore
9/5/55	At Triabunna No bait			
18/5/55	Left Triabunna Maria I.	DH60/55		
10-20/5/55	Schouten Passage Bad weather			
22/5/55 (500 m)	41°48'S.,149°10'E.	DH61/55	N 70 V (2) 200-0	
(500 m)	40°22'S.,149°36'E.	DH62/55	N 70 V (2) 200-0	

TABLE 1

Part 2 Cont'd... F.R.V. DERWENT HUNTER CRUISE 16, 1955

Date	Station Position	Hydrology	Zooplankton	FISHING
				Tuna
22/5/55 (500 m)	39°32'S.,149°40'E.	DH63/55	N 70 V (2) 200-0	
23/5/55 (500 m)	38°20'S.,150°00'E.	DH64/55	N 70 V (2) 200-0	
(50 m)	Eden Station	DH65/55		
	End of Cruise			
Part 3		Drop Lining		
25/5/55	Depart Eden	DL120/55 520 m 25 hooks 1 king barracouta		
30/5/55	E. of Yellow Bluff	DL121/55 520 m no catch DL122/55 500 m 1 deep-sea trevally DL123/44 500 m 8 deep-sea trevally DL124/55 510 m 7 deep-sea trevally DL125/55 500 m 3 deep-sea trevally 2 king barracouta DL126/55 530-510 m 11 deep-sea trevally 1 ling		2 S.B.
31/5/55	Arrived Hobart			
	End of Cruise 16			

1649.

CRUISE 17 1955

July 12 - 24, 1955
T.R. Cowper

ITINERARY

Figure 7 shows the area in which the dropline was operated.

RESULTS

Good catches were taken on the slope east of Pirates Bay. Full details are given by Cowper and Downie (1957).

Date	Station Position	Hydrology	Zooplankton	FISHING		
				Deep Longline	Drop Lining	Tuna
12/7/55	Left Hobart 10 miles E. of Cape Pillar				DL127/55 296 f 1 King barracouta	2 S.B.
13-16/7/55	Bad weather					
17/7/55	N. 70°E. of Pirates B.				DL128/55 275-284 f 1 deep-sea cod DL129/55 216-220 f 11 deep-sea trevally DL130/55 214-220 f 7 deep-sea trevally DL131/55 242-256 f 9 deep-sea trevally 1 king barracouta DL132/55 240-260 f 17 deep-sea trevally DL133/55 250-270 f 17 deep-sea trevally DL134/55 236-270 f 15 deep-sea trevally DL135/55 250 f 12 deep-sea trevally 1 king barracouta DL136/55 238-250 f 18 deep-sea trevally DL137/55 250-268 f 6 deep-sea trevally DL138/55 224-232 f 10 deep-sea trevally DL139/55 270 f no catch DL140/55 220-260 f no catch Total 122 deepsea trevally Weight 1561 lb	

Date	Station Position	Hydrology	Zooplankton	FISHING	
				Deep Longlining	Tuna
18/7/55	15 miles N. 60°E. from Pirates Bay			DL141/55 248-300 f no catch DL142/55 220-234 f 14 deep-sea trevally DL143/55 230-248 f 13 deep-sea trevally DL144/55 226-230 f 12 deep-sea trevally DL145/55 226-234 f 14 deep-sea trevally DL146/55 246-260 f no catch DL147/55 234-240 f 1 deep-sea trevally DL148/55 218-232 f 7 deep-sea trevally Total 61 deep-sea trevally Weight 875 lb	
19/7/55 (100 m)	Maria I. 40°46'S.,148°16'E.	DH66/55 Drift cards 14326-14375	N 70 V (2) 100-0		
20/7/55	12 miles E. Cape Lodi			DL149/55 252-260 f no catch DL150/55 220-236 f 1 deep-sea trevally DL151/55 253-270 f 1 ling DL152/55 240-245 f no catch DL153/55 260-282 f 1 deep-sea trevally	

(Cont'd...)

Date	Station Position	Hydrology	Zooplankton	FISHING	
				Deep Longlining	Tuna
21/7/55	11 miles E. of Cape Forestier			DL154/55 238 f 1 deep-sea trevally DL155/55 324-318 f no catch DL156/55 374 f no catch	
	11 miles E. Schouten Passage			DL157/55 210-236 f no catch	1 S.B.
22/7/55	Weatherbound Triabunna.				
23/7/55	N. x 60°E. of Pirate Bay			DL158/55 232-220 f no catch DL159/55 250-220 f 7 deep-sea trevally DL160/55 222-210 f 6 deep-sea trevally DL161/55 400-240 f no catch DL162/55 222-218 f 20 deep-sea trevally DL163/55 212-209 f 11 deep-sea trevally Total 44 deep-sea trevally Weight 492 lb	
(100 m)	Cape Pillar 43°13'S.,148°07'E.	DH67/55	N 70 V (2) 100-0		
24/7/55	Hobart				
	End of Cruise 17.				

1649.

CRUISE 18 1955

Part 1. Hobart to Sydney. August 1 - 6, 1955
R. Sweeney.
Part 2. Tasman Sea Cruise (1st portion). August 12 - 19 1955
D.J. Rochford.
Part 3. Tasman Sea Cruise (2nd portion). August 19 - September 4, 1955
R. Sweeney
Part 4. Tuna Longlining Cruise. September 8 - 23, 1955
J.P. Robins.
Part 5. Sydney to Melbourne. September 28 - October 2, 1955
R. Sweeney
Part 6. Bass Strait Cruise. November 1 - 13, 1955
W. Dall.
Part 7. Noumea Cruise. November 16 - December 15, 1955
H. Jitts.
Sydney - Brisbane. N. Brown.
Noumea - Sydney. P. Davis.
Part 8. Sydney to Hobart. December 19 - 28, 1955
Captain R. Downie.

ITINERARY

Part 1. The ship left Hobart on July 31, went to 34°00'S., 156°00'E. and thence direct to Port Hacking. Surface water samples were collected at 10 mile intervals along the 34th parallel. The analysis of these were used in the planning of Part 2 of this cruise.

Part 2. Figure 8 shows the positions of stations worked on this, the third Tasman Sea cruise, this part of which finished at Eden.

Part 3. was the second portion of the Tasman Sea Cruise, commenced at Eden.

Part 4. Figure 8 shows the positions of stations and the positions of tuna longline shots made during this cruise.

Part 5. The ship travelled from Sydney to Melbourne. Between Parts 5, 6 the ship was used by officers of the Division of Meteorological Physics in Port Phillip Bay and outside Port Phillip Heads.

Part 6. Figure 8 shows the positions of stations worked on a Bas Strait cruise which finished at Sydney.

Part 7. This was a special cruise to investigate the water masses and circulation of the northern Tasman Sea. The ship left Sydney and proceeded via Lord Howe I. to Brisbane, then went direct to Noumea. On the return to Sydney the planned itinerary via Norfolk I. had to be changed because of a cyclone; she returned directly to Sydney. Figure 9 shows the positions of stations worked.

Part 8. The ship travelled from Sydney to Hobart.

RESULTS

Parts 2 and 3. Data collected on this cruise were used in the naming and description of water masses of the Tasman Sea. Seven sections were planned for this cruise but it was later divided into Parts 2 and 3 of Cruise 18. Part 2 finished at Eden and Part 3 covered a modification of the remainder of the original plan. Figure 8 shows the positions of stations worked.

Part 4. During this cruise the longline was shot 6 times. The first time (TL/1) it was found that rubber floats were inadequate to keep the line buoyant, so 44 gallon drums were substituted. TL/2 took 1530 lb of southern bluefin, TL/4 took 1330 lb and TL/5 took 717 lb.

Part 6. Figure 8 shows the positions of stations worked on this part of the cruise in Bass Strait and its approaches.

Part 7. The data collected on this cruise were used in several papers dealing with the oceanography of the Tasman and Coral Seas.

PUBLICATIONS

The hydrological data from Parts 2, 3, 6 and 7 have been published in C.S.I.R.O. Aust. (1957). These are discussed by Rochford (1958, 1959, 1960a, 1960b) in papers dealing with the waters of the Coral and Tasman Seas.

F.R.V. DERWENT HUNTER CRUISE 18, 1955

TABLE 1

Date	Station Position	Hydrology	Plankton	G.E.K. Towed X	STD Recorder Lowered
12/8/55	Left Sydney				
(150 m)	34°05'S.,151°25'E.	DH68/55	N 70 V (2) 100-0 N 50 H	X	
(100 m)	34°05'S.,151°40'E.	DH69/55	N 70 V (2) 500-0 (2) 100-0 N 50 H		250 m
13/8/55 (100 m)	34°05'S.,152°30'E.	DH70/55	N 70 V (2) 500-0 (2) 100-0 N 50 H		
(1000 m)	34°05'S.,152°30'E.	DH71/55	N 70 V (2) 500-0 (2) 100-0	X	250 m
	34°05'S.,154°14'E.	DH72/55	No plankton	X X	250 m
(1000 m)	34°05'S.,154°45'E.	DH73/55	N 70 V (2) 500-0 (2) 100-0	X	250 m
14/8/55 (1000 m)	34°05'S.,156°04'E.	DH74/55	No plankton	X	250 m Not working
15/8/55				X X X X	
(1000 m)	35°45'S.,156°17'E.	DH75/55	N 70 V 500-0 V 100-0 N 50 H	X X X X X	
1649.					

Part 2 Cont'd...

F.R.V. DERWENT HUNTER CRUISE 18, 1955

TABLE 1

Date	Station Position	Hydrology	Plankton	G.E.K. Towed X	STD Recorder Lowered	Chloro-phyll Sample	Trolling
(1000 m)	37°05'S.,156°15'E.	DH76/55	N 70 V (2) 500-0 (2) 100-0 N 50 H	 X	250 m		
16/8/55 (1000 m)	37°05'S.,155°10'E.	DH77/55	N 70 V 100-0			X	
17/8/55	37°05'S.,153°33'E.	DH78/55	N 70 V 500-0 100-0 N 50 H	 X X			1 albacore
(1000 m)	37°05'S.,152°00'E.	DH79/55	N 70 V (2) 500-0 (2) 100-0	 X	250 m	 X	
18/8/55 (1000 m)	37°05'S.,151°20'E.	DH80/55	N 70 V (2) 500-0 (2) 100-0 N 50 H	 X	250 m	 X	
(1000 m)	37°05'S.,150°40'E.	DH81/55	N 70 V (2) 500-0 (2) 100-0 N 50 H		250 m	 X	
(150 m)	37°05'S.,150°15'E.	DH82/55	N 70 V (2) 100-0 N 50 H				
19/8/55	At Eden						

F.R.V. DERWENT HUNTER CRUISE 18, 1955

TABLE 1

Date	Station Position	Hydrology	Plankton	G.E.K. Towed X	STD Recorder Lowered	Trolling
19/8/55	Left Eden					
(700 m)	37°30'S.,151°30'E.	DH83/55	No plankton	X		1 S.B.
(700 m)	38°15'S.,151°20'E.	DH84/55	No plankton	X		
(745 m)	38°40'S.,150°57'E.	DH85/55	No plankton			
(1000 m)	39°10'S.,150°10'E.	DH86/55	No plankton			
(900 m)	39°30'S.,149°45'E.	DH87/55	No plankton			
(960 m)	39°58'S.,149°10'E.	DH88/55	No plankton			
23/8/55-27/8/55	Triabunna					
27/8/55 (140 m)	40°28'S.,148°58'E.	DH89/55	N 70 V 100-0			
(100 m)	42°36'S.148°16'E.	DH90/55	No plankton			
(150 m)	42°36'S.,148°30'E.	DH91/55	N 70 V 100-0			
(800 m)	42°36'S.,148°55'E.	DH92/55	No plankton			
(750 m)	42°36'S.,149°30'E.	DH93/55	N 70 V 100-0			
(1000 m)	42°50'S.,150°50'E.	DH94/55	N 70 V 100-0			
(900 m)	42°36'S.,152°35'E.	DH95/55	N 70 V 100-0			

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TABLE 1

F.R.V. DERWENT HUNTER CRUISE 18, 1955

Part 3 cont'd...

Date	Station Position	Hydrology	Zooplankton	G.E.K. Towed X	STD Recorder Lowered	Trolling
30/8/55 (900 m)	41°06'S.,152°35'E.	DH96/55	N 70 V 100-0			
(900 m)	39°42'S.,151°42'E.	DH97/55	N 70 V 100-0			1 S.B. (140 lb)
31/8/55 (900 m)	39°05'S.,150°00'E.	DH98/55	N 70 V 100-0			
(900 m)	38°37'S.,149°27'E.	DH99/55	N 70 V 100-0			
(1000 m)	38°28'S.,148°40'E.	DH100/55	N 70 V 100-0			
2/9/55 (50 m)	38°10'S.,148°20'E.	DH101/55	No plankton			
3/9/55 (850 m)	37°00'S.,152°20'E.	DH102/55	No plankton			3 striped 1 S.B.
(380 m)	34°05'S.,151°25'E.	DH103/55	N 70 V 100-0			
4/9/55	End of Cruise					

TABLE 1
F.R.V. DERWENT HUNTER CRUISE 18, 1955

Date	Station Position	Hydrology	Zooplankton	FISHING Tuna Longlining	
9/9/55	25 miles E. Sydney 40 miles E. Sydney 70 miles E. Sydney 34°56'S.,153°52'E.	SS SS SS BT DH104/55	N 70 V 500-0		
10/9/55	117 miles E. Sydney			TL/1 281 hooks Bait - fantail mullet 1 alepisaurus 2 great blue sharks	
11/9/55	34°58'S.,152°28'E.	DH105/55 BT to 900'	N 70 V 500-0	TL/2 295 hooks Bait - fantail mullet Line sank	14 S.B. Weight Range 62-150 lb Total 1530 lb 1 big eye 65 lb
12/9/55- 14/9/55	Jervis Bay reorganizing longline				
15/9/55	Underway for TL3 35°07'S.,151°10'E.	DH106/55 BT to 270 m	N 70 V 500-0	TL/3 21 units 240 hooks Catch: 1 S.B. (44 lb)	
16/9/55	20 miles E. of Montague I. 36°22'S.,150°35'E.	DH107/55 BT to 270 m	N 70 V 500-0	TL/4 21 units Catch: 21 S.B. 1 albacore 2 small great blue sharks	Range 22-135 lb Total 1330 lb
17/9/55	Anchored Bermagui	SS			2 S.B.
18/9/55	Anchored Eden				

1649.

TABLE 1

F.R.V. DERWENT HUNTER CRUISE 18, 1955

Part 4 Cont'd...

Date	Station Position	Hydrology	Zooplankton	FISHING Tuna Longlining	
19/9/55	Bait collected				
20/9/55	36°12'S.,151°55'E.	SS SS SS			1 albacore
21/9/55	35°40'S.,152°22'E.	SS DH108/55 BT to 270 m	N 70 V 500-0	TL/5 227 hooks Catch: 6 S.B. 1 small great blue shark	<u>Weight</u> Range 62-185 lb Total 717 lb 1 striped
22/9/55	35°18'S.,151°25'E.	DH109/55 BT to 270 m	N 70 V 500-0	TL/6 223 hooks Catch: 4 S.B. 2 great blue sharks	
23/9/55	Returning Sydney End of Cruise 18 Pt 4				1 albacore
<u>Part 5</u>					
28/9/55-2/10/55	Sydney to Melbourne No scientific observations.				

Date	Station Position	Hydrology	Zooplankton
2/11/55 (56 m)	Port Phillip Heads	DH110/55	Oblique 50-0
(50 m)	Cape Woolamai 38°34'S.,145°21'E.	DH111/55	Oblique 50-0
(50 m)	39°10'S.,145°30'E.	DH112/55	Oblique 60-0
3/11/55 (50 m)	Cape Liftrap	DH113/55	
(50 m)	Wilson's Promontory	DH114/55	Oblique 70-0
(65 m)	Curtis Group 39°25'S.,146°40'E.	DH115/55	Oblique 65-0
4/11/55 (65 m)	38°50'S.,144°30'E.	DH116/55	Oblique 65-0
(70 m)	Lorne	DH117/55	Oblique 70-0
(60 m)	Cape Otway	DH118/55	Oblique 60-0
(75 m)	39°20'S.,143°21'E.	DH119/55	Oblique 75-0
(50 m)	39°30'S.,144°30'E.	DH120/55	Oblique 50-0
5/11/55 (40 m)	40°18'S.,144°25'E.	DH121/55	Oblique 40-0
(60 m)	40°10'S.,144°50'E.	DH122/55	Oblique 60-0
(50 m)	39°55'S.,145°30'E.	DH123/55	Oblique 50-0
(75 m)	39°45'S.,146°05'E.	DH124/55	Oblique 75-0
(75 m)	40°25'S.,146°05'E.	DH125/55	Oblique 75-0
6/11/55 (50 m)	40°15'S.,146°40'E.	DH126/55	Oblique 50-0
(50 m)	Low Head	DH127/55	Oblique 50-0
(30 m)	Circular Head	DH128/55	Oblique 30-0
7/11/55 (50 m)	Burnie 40°52'S.,146°00'E.	DH129/55	Oblique 50-0

Part 6 cont'd...

TABLE 1

F.R.V. DERWENT HUNTER CRUISE 18, 1955

Date	Station Position	Hydrology	Zooplankton
8/11/55 (50 m)	40°40'S.,147°24'E.	DH130/55	Oblique 50-0
9/11/55 (50 m)	Deal I. Kent Group 39°28'S.,147°20'E.	DH131/55	Oblique 50-0
(500 m)	38°55'S.,148°50'E.	DH132/55	Oblique 200-0
10/11/55 (500 m)	38°25'S.,149°00'E.	DH133/55	Oblique 200-0
(500 m)	Cape Everard wide 38°10'S.,149°50'E.	DH134/55	Oblique 200-0
11/11/55 (500 m)	Eden 37°05'S.,150°10'E.	DH135/55	Oblique 200-0
12/11/55 (250 m)	34°15'S.,152°20'E.	DH136/55	Oblique 200-0
13/11/55	Sydney		
	End of Cruise 18 Part 6		

Part 7

TABLE 1

F.R.V. DERWENT HUNTER CRUISE 18, 1955

TABLE 1

Date	Station Position	Hydrology	Zooplankton	STD Recorder Lowered	G.E.K. Towed X	Chloro-phyll Samples	Deep-Sea Photometer	Trolling
16/11/55	Left Sydney							
		DH137/55 abandoned						
(1000 m)	33°30'S.,152°20'E.	DH138/55	CB obl.200-0					
17/11/55		DH139/55 abandoned						
(1000 m)	33°03'S.,153°28'E.	DH140/55	CB Obl.200-0	250 m	X		X	
	No position given	DH141/55		250 m	X			
(1000 m)	33°00'S.,154°25'E.	DH142/55	CB Obl.200-0	250 m	X			
18/11/55	No position given	DH143/55		250 m	X			
(250 m)	32°30'S.,155°45'E.	DH144/55	CB Obl.200-0 Phyto surface	250 m	-			
	No position given	DH145/55		250 m	-			
19/11/55 (1000 m)	32°10'S.,156°55'E.	DH146/55	CB Obl.200-0 Phyto surface	250 m	X			
	No position given	DH147/55		250 m	X			
(1000 m)	31°20'S.,157°40'E.	DH148/55	CB Obl.200-0 Phyto surface	250 m	X			
		DH149/55 abandoned						
(1000 m)	30°21'S.,157°47'E.	DH150/55	CB Obl.200-0 Phyto surface	250 m	X			
		DH151/55		250 m	X			
(1000 m)	29°45'S.,156°45'E.	DH152/55	CB Obl.200-0 Phyto surface	250 m	X			

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F.R.V. DERWENT HUNTER CRUISE 18, 1955 TABLE 1

Date	Station Position	Hydrology	Zooplankton	STD Recorder Lowered	G.E.K. Towed X	Chloro-phyll Samples	Deep-Sea Photometer
21/11/55		DH153/55		250 m	X		
(1000 m)	28°52'S.,156°10'E.	DH154/55		250 m	X		
		DH155/55		250 m	X		
(1000 m)	28°30'S.,155°10'E.	DH156/55	CB Obl.200-0 Phyto surface	250 m	X		
22/11/55		DH157/55		250 m	X		
(1000 m)	27°50'S.,154°20'E.	DH158/55	CB Obl.200-0 Phyto surface	250 m	X		
		DH159/55 Depth 400 f		250 m	X		
23/11/55-25/11/55	In Brisbane						
26/11/55	Left Brisbane	DH160/55 Depth 400 f		250 m	X		
27/11/55 (1000 m)	27°00'S.,154°35'E.	DH161/55	CB Obl.200-0 Phyto surface	250 m	X		
		DH162/55		250 m	X		
(1000 m)	26°30'S.,155°45'E.	DH163/55	CB Obl.200-0 Phyto surface	250 m	X		
28/11/55		DH164/55		250 m	X		
(1000 m)	26°16'S.,157°11'E.	DH165/55	CB Obl.200-0 Phyto surface	250 m	X		

TABLE 1

F.R.V. DERWENT HUNTER CRUISE 18, 1955

Date	Station Position	Hydrology	Zooplankton	STD Recorder Lowered	G.E.K. Towed X	Chloro-phyll Samples	Deep-Sea Photometer	Trolling
28/11/55		DH166/55		250 m	X			
(1000 m)	25°30'S.,158°05'E.	DH167/55	Phyto surface	250 m	X			
29/11/55		DH168/55		250 m	X			
	25°06'S.,159°18'E.	DH169/55	CB Obl.200-0	250 m	X	X	to 100 m	1 yellowfin
(50 m)	Capel Bank - depth 30 f	DH169/55		60 m				
	Special station 25°20'S.,159°30'E.							1 yellowfin
	25°20'S.,159°30'E. Depth 400 f	DH170/55		250 m	X			
(1000 m)	24°40'S.,160°30'E.	DH171/55	Phyto surface	250 m	X	X		
30/11/55		DH172/55		250 m	X	X		
	24°23'S.,161°29'E.	DH173/55	CB Obl.200-0 Phyto surface	250 m	X			
		DH174/55		250 m				
1/12/55 (1000 m)	23°30'S.,162°47'E.	DH175/55	Phyto surface	250 m	X	X		
		DH176/55		250 m	X			
(1000 m)	23°10'S.,164°05'E.	DH177/55	CB Obl.200-0 Phyto surface	250 m	X	X		
2/12/55		DH178/55		250 m	X			
(1000 m)	22°36.5'S,164°56'E.	DH179/55	Phyto surface	250 m	X	X	to 100 m	1 striped

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F.R.V. DERWENT HUNTER CRUISE 18, 1955 TABLE 1

Date	Station Position	Hydrology	Zooplankton	STD Recorder Lowered	G.E.K. Towed X	Chloro-phyll Samples	Deep-Sea Photometer	Troll-ing
2/12/55		DH180/55		250 m instrument faulty	X instrument faulty			
3/12/55	Arrived Noumea							
6/12/55	Left Noumea							
(1000 m)	23°50'S.,166°10'E.	DH181/55	CB Obl.200-0 Phyto surface					
7/12/55-8/12/55	Cydone							
8/12/55 (150 m)	24°34'S.,164°40'E.	DH182/55	No plankton					
9/12/55	25°45'S.,163°30'E.	DH183/55	CB Obl.200-0 Phyto surface					
	26°50'S.,162°30'E.	DH184/55	Phyto surface					
10/12/55 (1000 m)	27°48'S.,161°20'E.	DH185/55	CB Obl.200-0 Phyto surface					
(1000 m)	28°58'S.,160°50'E.	DH186/55	Phyto surface					
11/12/55 (1000 m)	30°12'S.,160°00'E.	DH187/55	CB Obl.200-0 Phyto surface Phyto V 1000 m-0			X	100 m	
(1000 m)	31°18'S.,159°18'E.	DH188/55	Phyto surface					
12/12/55 (200 m)	31°41'S.,158°30'E.	DH189/55						
(1000 m)	31°52'S.,158°02'E.	DH190/55	CB Obl.200-0 Phyto surface			X	100 m	

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TABLE 1

F.R.V. DERWENT HUNTER CRUISE 18, 1955

(Part 7 Cont'd...)

Date	Station Position	Hydrology	Zooplankton	STD Recorder Lowered	G.E.K. Towed X	Chlorophyll Samples	Deep-sea Photometer
12/12/55 (250 m)	32°58'S.,157°37'E.	DH191/55					
(1000 m)	32°02'S.,157°01'E.	DH192/55	CB Obl.200-0 Phyto surface			X	
13/12/55 (250 m)	32°10'S.,156°22'E.	DH193/55					
(1000 m)	32°18'S.,155°46'E.	DH194/55	CB Obl.200-0 Phyto surface			X	100 m
(250 m)	32°30'S.,155°11'E.	DH195/55					
(1000 m)	32°40'S.,154°38'E.	DH196/55	CB Obl.200-0 Phyto surface			X	
14/12/55 (250 m)	32°40'S.,154°07'E.	DH197/55					
(1000 m)	32°40'S.,153°00'E.	DH198/55					
(250 m)	32°54'S.,153°47'E.	DH199/55					
15/12/55	End of Cruise 18 Part 7						

Part 8

Ship went from Sydney to Hobart

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REFERENCES

BLACKBURN, M. (1957).- The relation between the food of the Australian barracouta, Thyrsites atun (Euphrasen), and recent fluctuations in the fisheries. Aust. J. Mar. Freshw. Res. 8: 29-54.

BLACKBURN, M. and DOWNIE, R. (1955).- The occurrence of oily pilchards in New South Wales waters. C.S.I.R.O. Aust. Div. Fish. Oceanogr. Tech. Pap. No.3

BLACKBURN, M. and GARTNER, P. (1954).- Populations of barracouta, Thyrsites atun (Euphrasen) in Australian waters. Aust. J. Mar. Freshw. Res. 5: 411-468.

COWPER, T.R. and DOWNIE, R.J. (1957).- A line-fishing survey of the fishes of the south-eastern Australian continental slope. C.S.I.R.O. Aust. Div. Fish. Oceanogr. Rep. No.6.

C.S.I.R.O. Aust. (1951).- Onshore hydrological investigations in eastern Australia, 1942-50. C.S.I.R.O. Aust. Div. Fish. Oceanogr. Sta. List 4.

C.S.I.R.O. Aust. (1953a).- Onshore hydrological investigations in eastern and south-western Australia, 1951. C.S.I.R.O. Aust. Div. Fish. Oceanogr. Sta. List 14.

C.S.I.R.O. Aust. (1953b).- Onshore hydrological investigations in eastern and south-western Australia, 1952. C.S.I.R.O. Aust. Div. Fish. Oceanogr. Sta. List 17.

C.S.I.R.O. Aust. (1954).- Onshore hydrological investigations in eastern and south-western Australia, 1953. C.S.I.R.O. Aust. Div. Fish. Oceanogr. Sta. List 18.

C.S.I.R.O. Aust. (1955a).- Further onshore planktological investigations in eastern Australia 1945-54. C.S.I.R.O. Aust. Div. Fish. Oceanogr. Sta. List 22.

C.S.I.R.O. Aust. (1955b).- Planktological investigations made by F.R.V. "Derwent Hunter" in eastern Australian waters, 1952-54. C.S.I.R.O. Aust. Div. Fish. Oceanogr. Sta. List 23.

C.S.I.R.O. Aust. (1956).- Onshore hydrological investigations in eastern and south-western Australia, 1954. C.S.I.R.O. Aust. Div. Fish. Oceanogr. Sta. List 24.

C.S.I.R.O. Aust. (1957).- Onshore and oceanic hydrological investigations in eastern and south-western Australia, 1955. C.S.I.R.O. Aust. Div. Fish. Oceanogr. Sta. List 27.

OLSEN, A.M. (1953).- Tagging of school shark, Galeorbinus australis (Macleay) (Carcharhanidae) in south-eastern Australian waters. Aust. J. Mar. Freshw. Res. 4: 95-104.

OLSEN, A.M. (1954).- The biology, migration and growth rate of the school shark, Galeorbinus australis (Macleay) (Carcharhanidae). Aust. J. Mar. Freshw. Res. 5: 353-410.

OLSEN, A.M. (1959).- The status of the school shark fishery in south-eastern Australian waters. Aust. J. Mar. Freshw. Res. 10: 150-176.

ROCHFORD, D.J. (1957).- Identification and nomenclature of the surface water masses in the Tasman Sea (data to the end of 1954). Aust. J. Mar. Freshw. Res. 8: 369-413.

ROCHFORD, D.J. (1958).- The seasonal circulation of the surface water masses of the Tasman and Coral Seas. C.S.I.R.O. Aust. Div. Fish. Oceanogr. Rep. No.16.

ROCHFORD, D.J. (1959).- The primary external water masses of the Tasman and Coral Seas. C.S.I.R.O. Aust. Div. Fish. Oceanogr. Tech. Pap. No. 7.

ROCHFORD, D.J. (1960a).- The intermediate depth waters of the Tasman and Coral Seas. I. The 27.20 sigma-t surface. Aust. J. Mar. Freshw. Res. 11: 127-147.

ROCHFORD, D.J. (1960b).- The intermediate depth waters of the Tasman and Coral Seas. II. The 26.80 sigma-t surface. Aust. J. Mar. Freshw. Res. 11: 148-165.

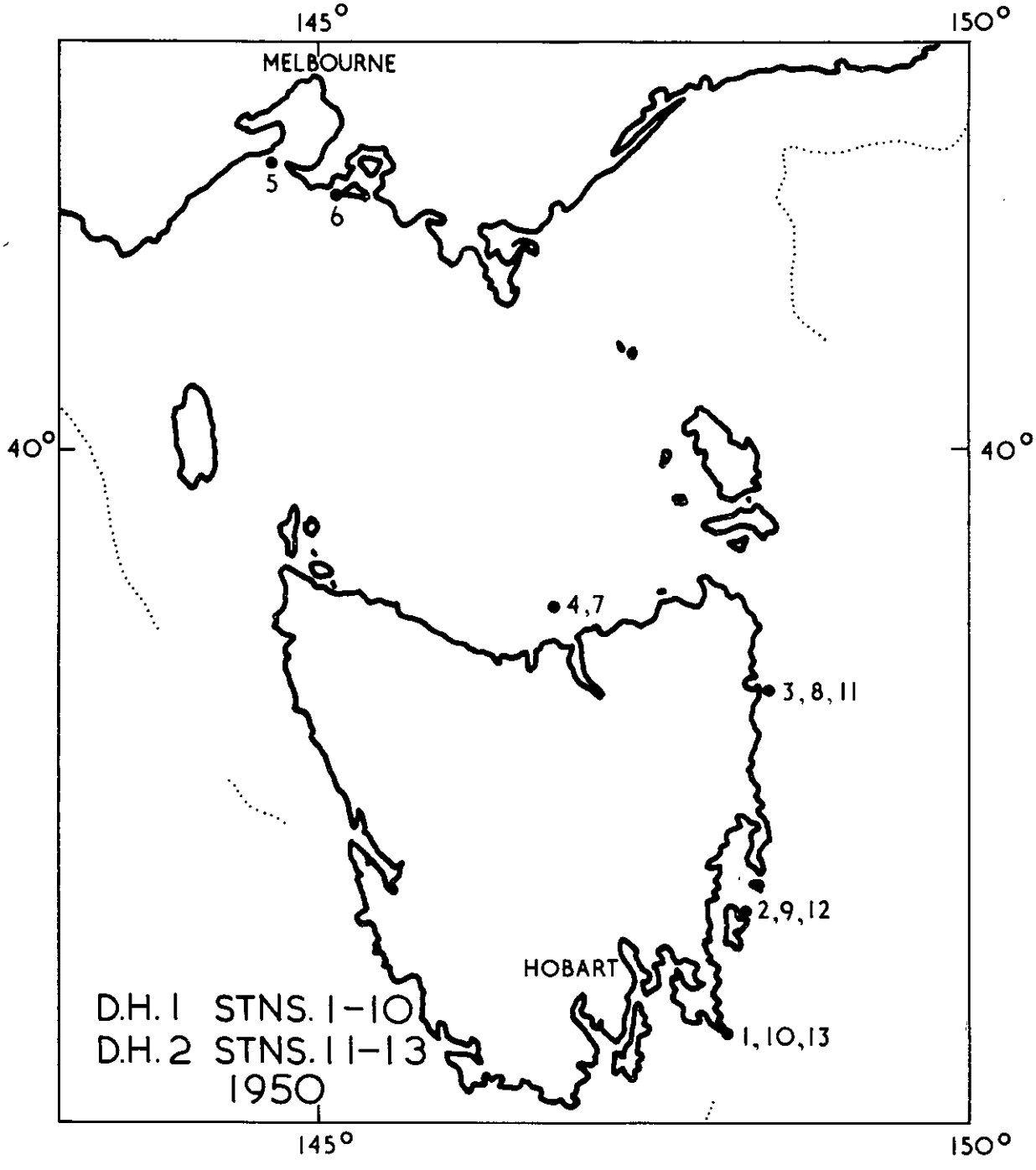

Fig. 1. Chart showing station positions DH1/50 and DH2/50.

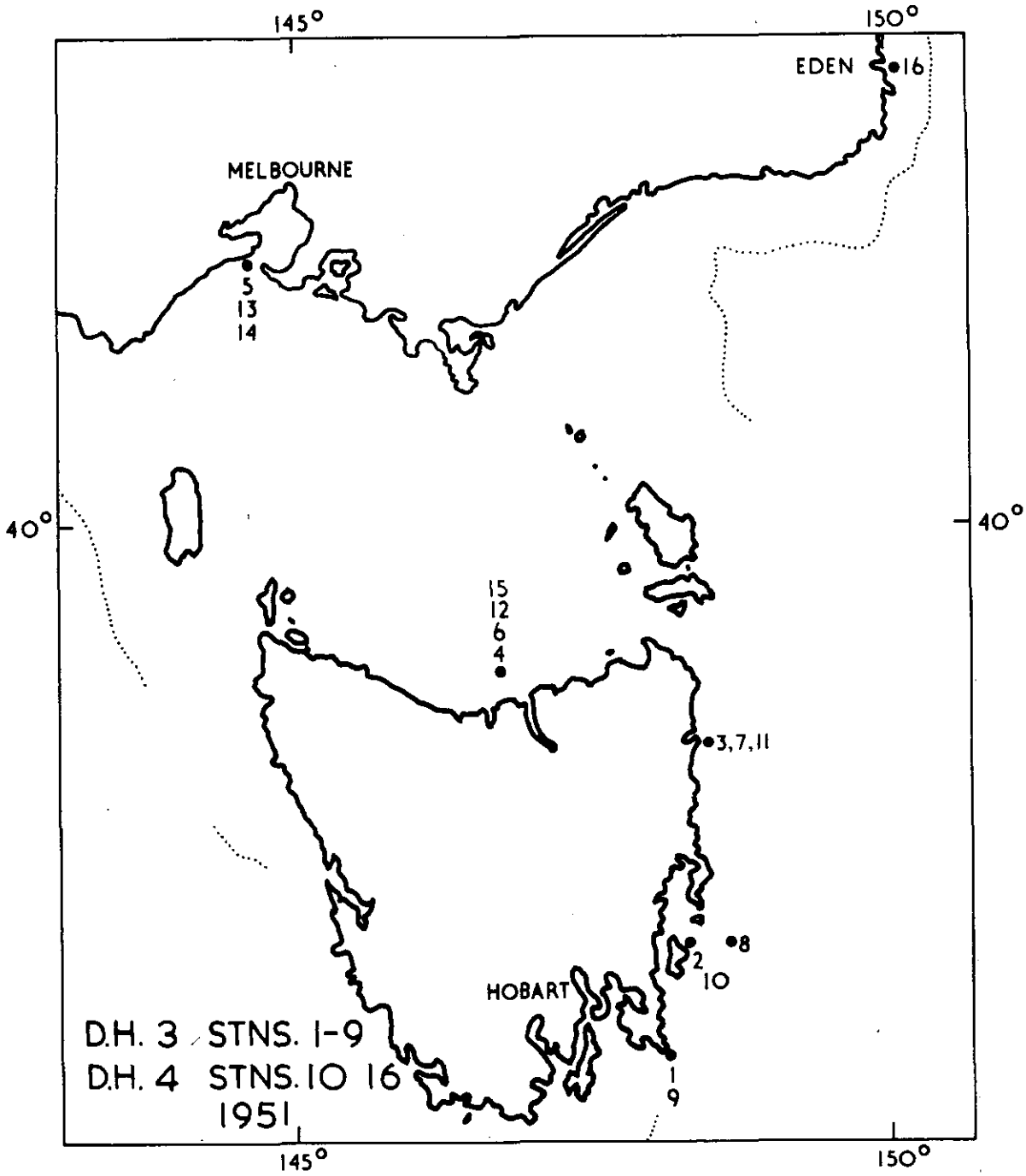

Fig. 2. Chart showing station positions DH3/51 and DH4/51.

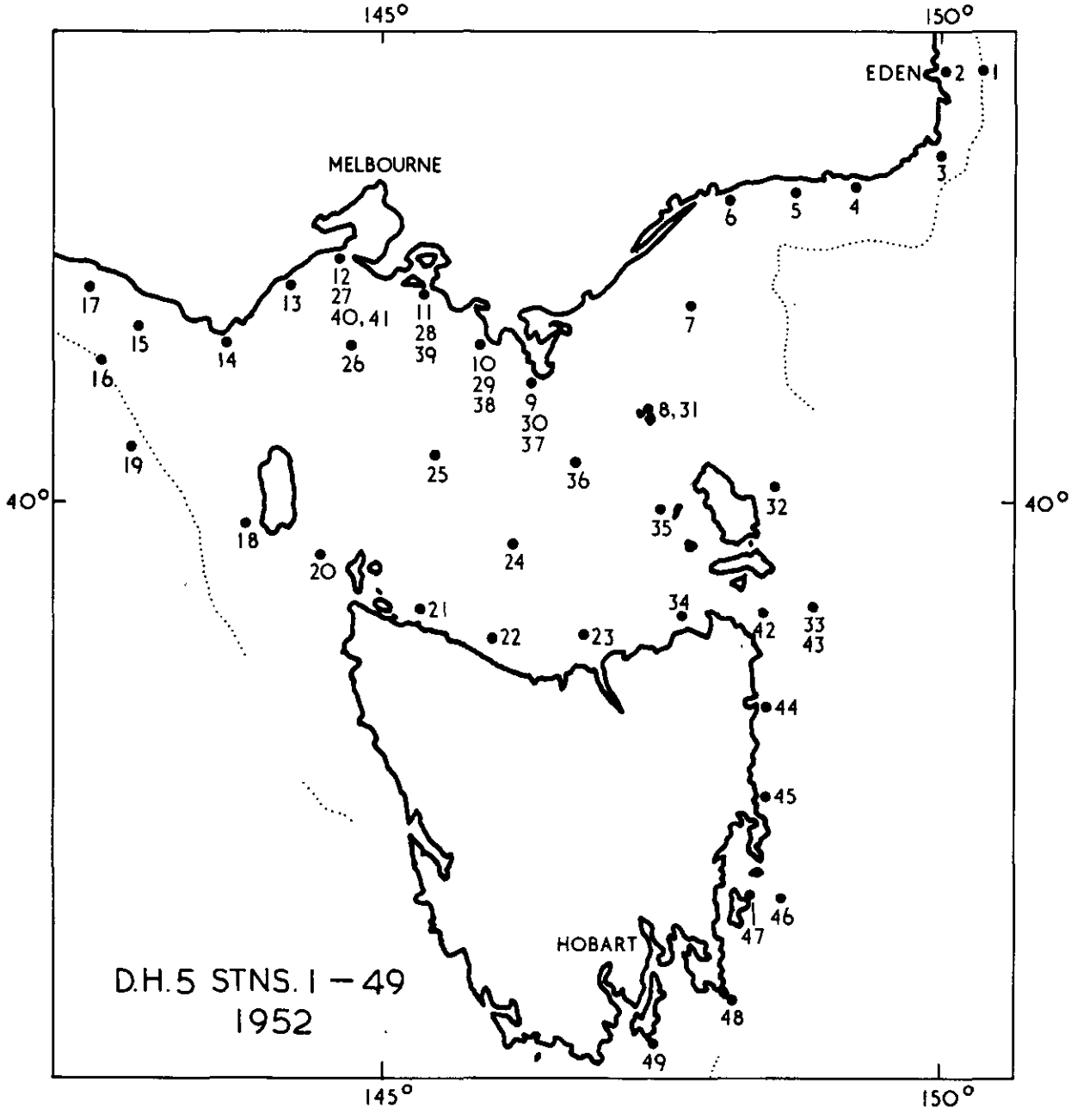

Fig. 3. Chart showing station positions DH5/52.

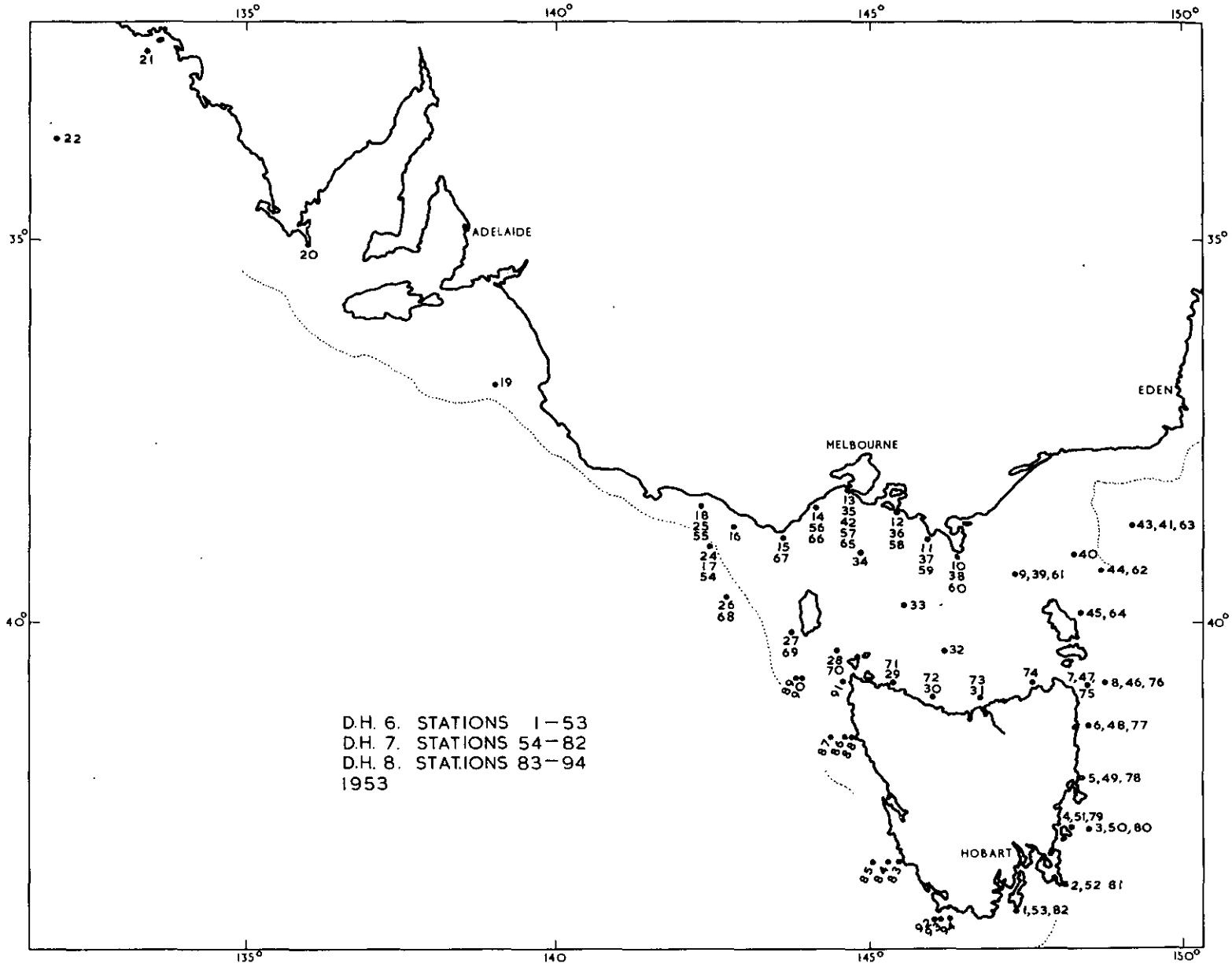

Fig. 4. Chart showing station positions DH6/53, DH7/53 and DH8/53.

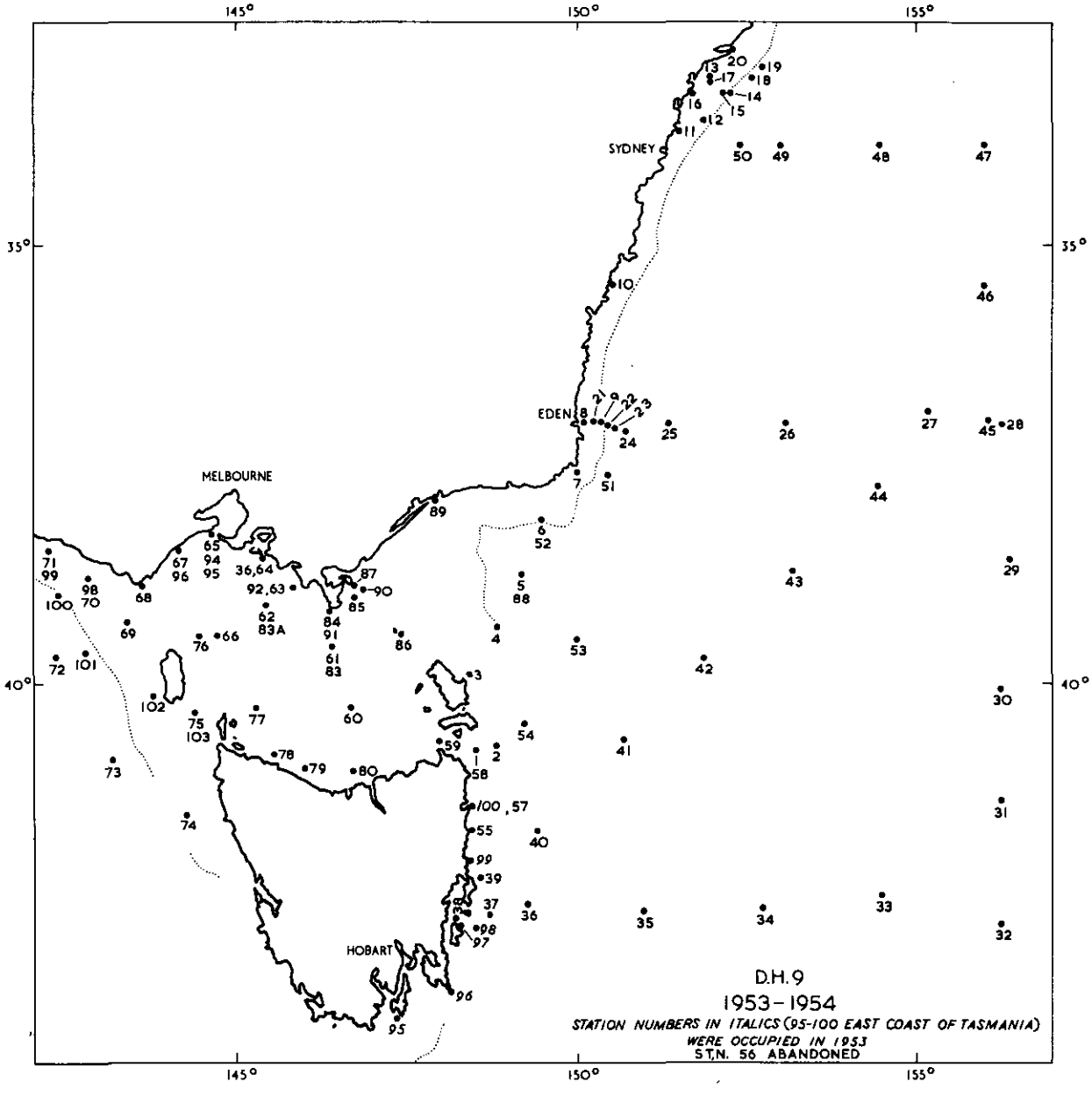

Fig. 5. Chart showing station positions DH9/1953-54.

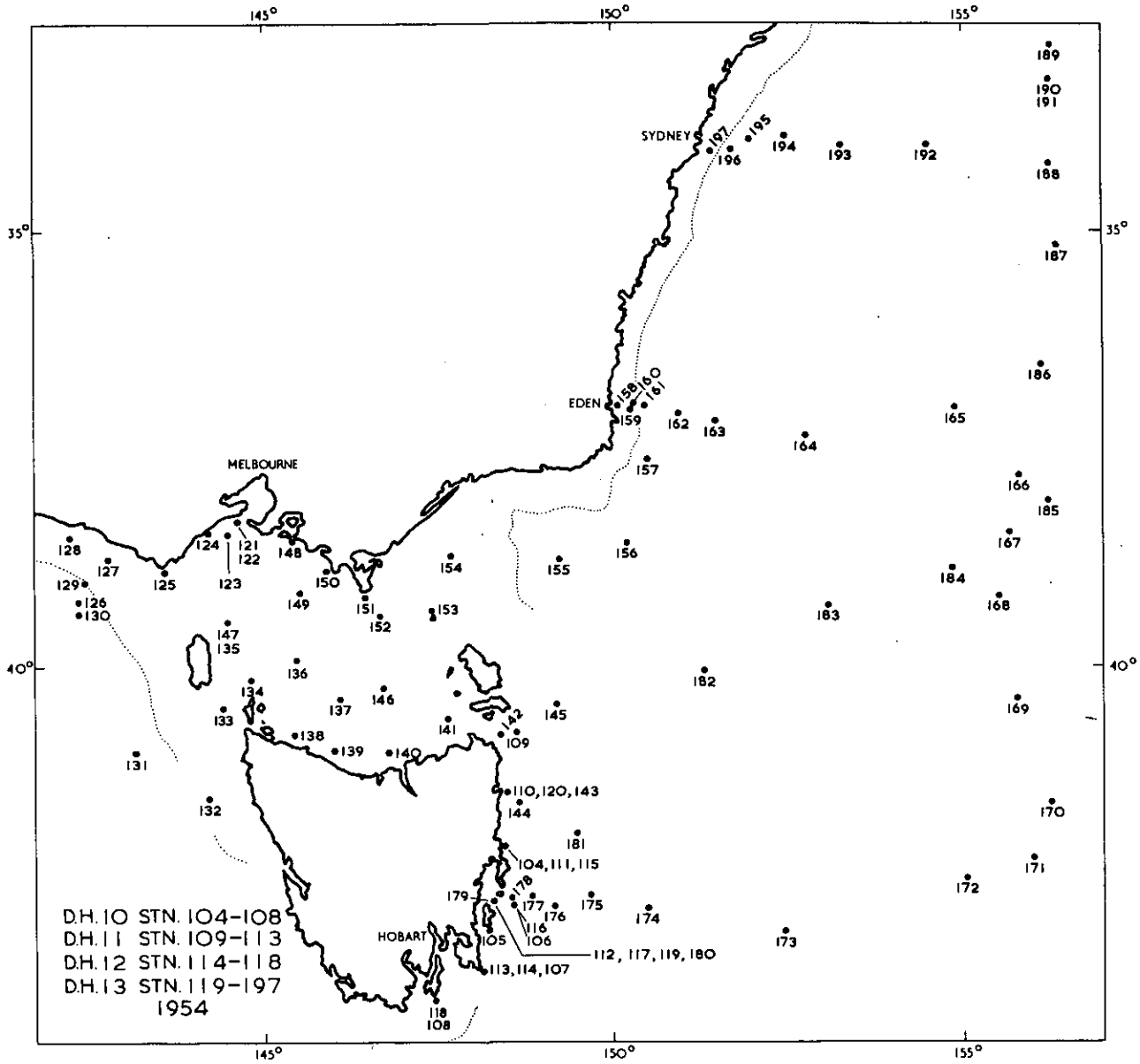

Fig. 6. Chart showing station positions DH10/54, DH11/54, DH12/54 and DH13/54.

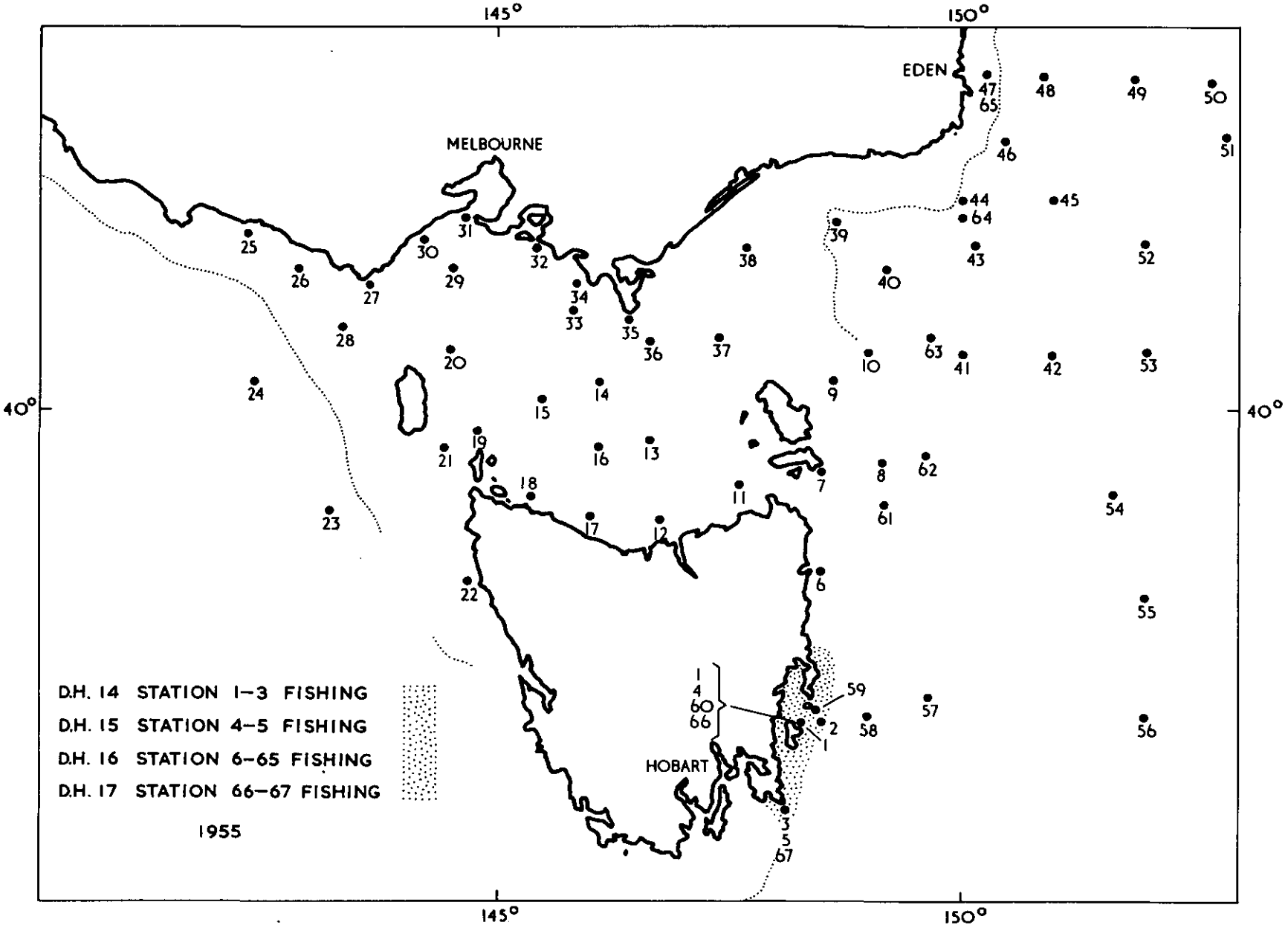

Fig. 7. Chart showing station positions DH14/55, DH15/55, DH16/55 and DH17/55.

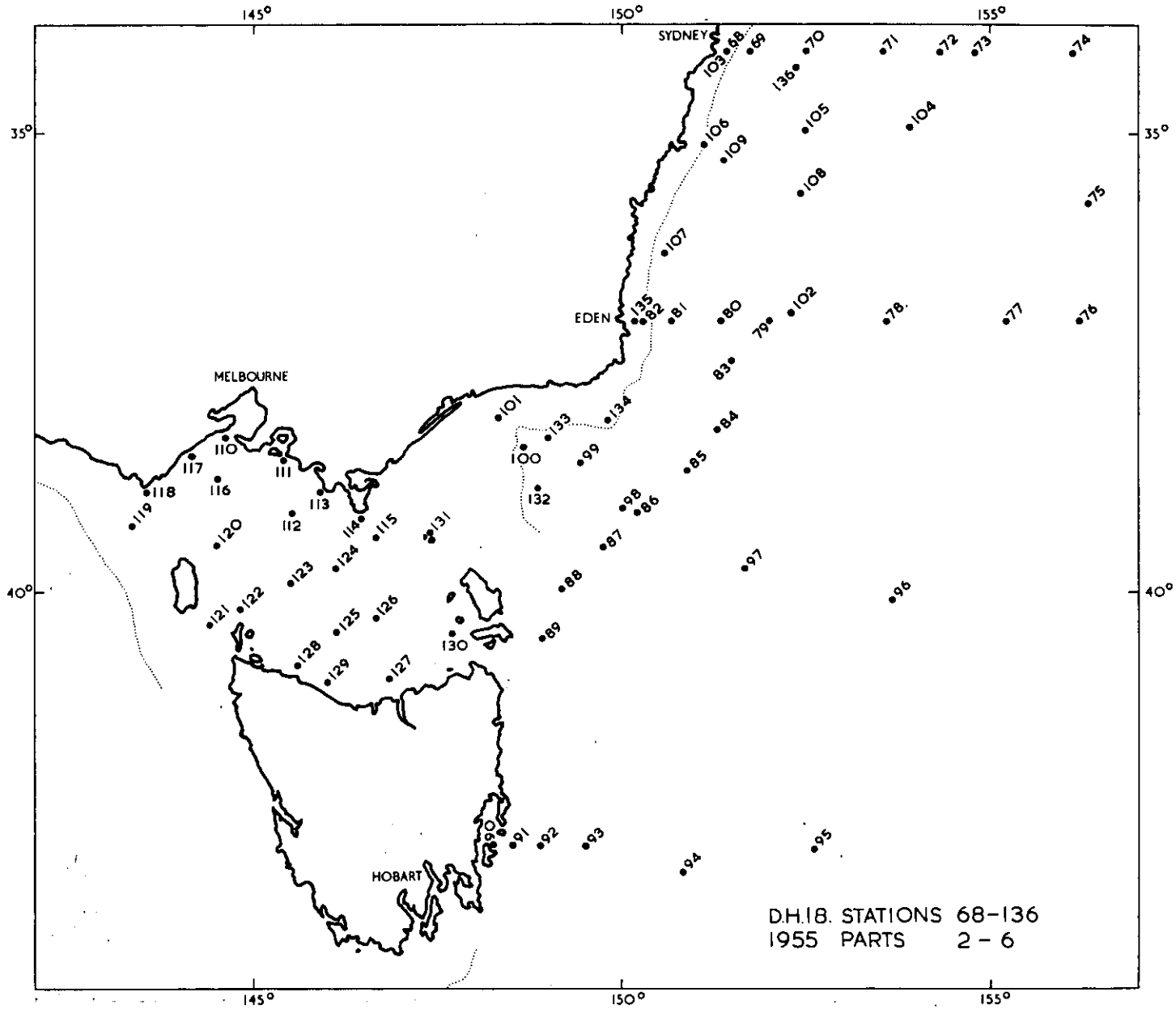

Fig. 8. Chart showing station positions DH18/55 Parts 2-6.

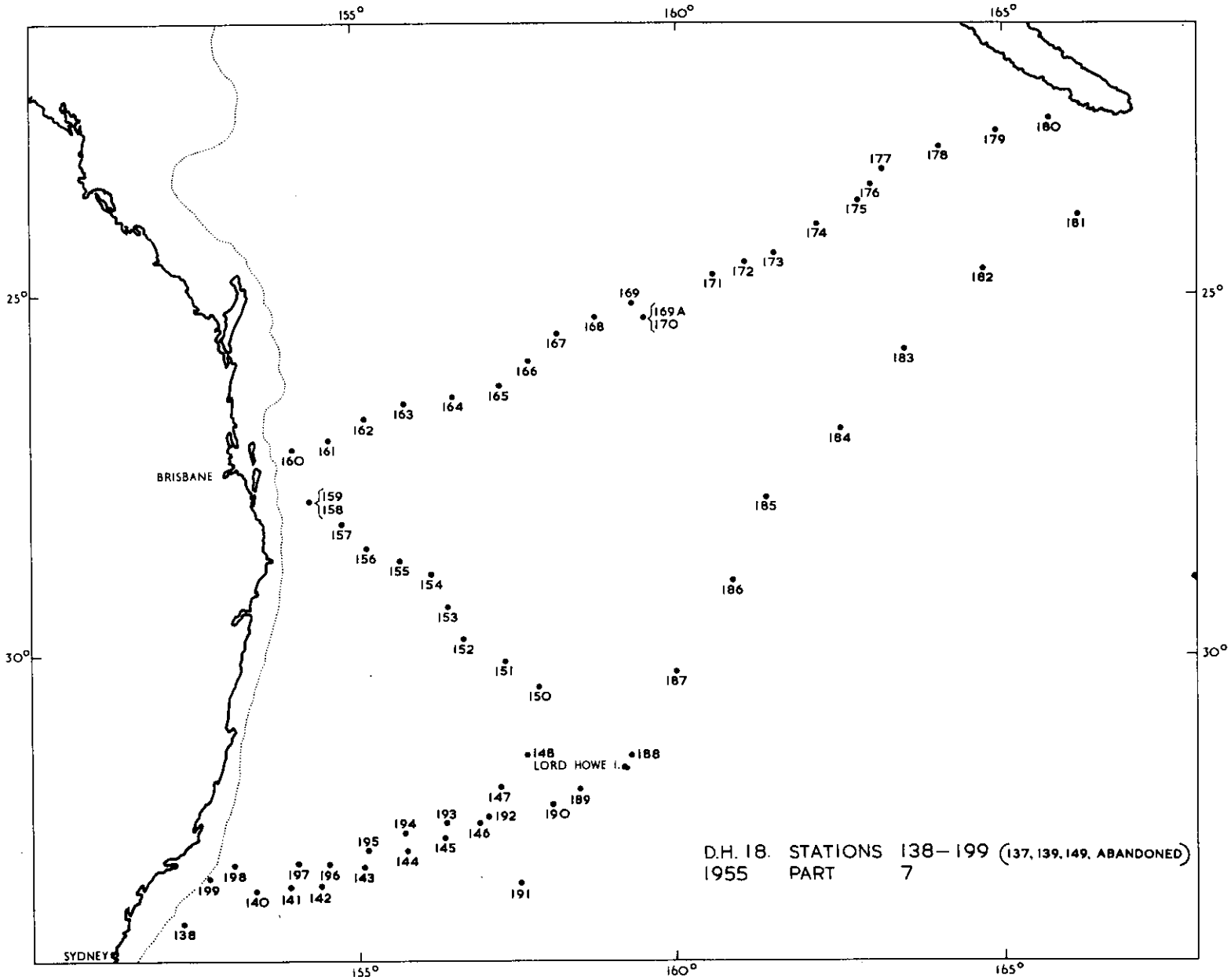

Fig. 9. Chart showing station positions DH18/55 Part 7.

DIVISION OF FISHERIES AND OCEANOGRAPHY

REPORTS

1. Thomson, J.M. (1956).- Fluctuations in catch of yellow-eye mullet Aldrichetta forsteri (Cuvier and Valenciennes) (Mugilidae).

2. Nicholls, A.G. (1957).- The Tasmanian trout fishery. I. Sources of information and treatment of data. (For limited circulation: not available for exchange).

3. Nicholls, A.G. (1957).- The Tasmanian trout fishery. II. The fishery of the north west rivers. (For limited circulation: not available for exchange).

4. Chittleborough, R.G. (1957).- An analysis of recent catches of humpback whales from the stocks in Groups IV and V. Prepared for the International Commission on Whaling.

5. F.R.V. Derwent Hunter Scientific Reports of Cruises DH3/56, DH4/56, DH5/56.

6. Cowper, T.R., and Downie, R.J. (1957).- A line fishing survey of the fishes of the south-eastern Australian continental slope.

7. Davis, P.S. (1957).- A method for the determination of chlorophyll in sea-water.

8. Jitts, H.R. (1957).- The ^{14}C method for measuring CO_2 uptake in marine productivity studies.

9. Hamon, B.V. (1957).- Mean sea level variations on the east Australian coast.

10. Nicholls, A.G. (1957).- The Tasmanian trout fishery. III. Rivers of the north and east. (For limited circulation: not available for exchange).

11. Nicholls, A.G. (1957).- The population of a trout stream and the survival of released fish. (For limited circulation: not available for exchange).

12. F.R.V. Derwent Hunter Scientific Report of Cruise DH6/56.

13. Chau, Y.K. (1957).- The coastal circulation of New South Wales from drift card results 1953-56.

14. Kott, Patricia (1957).- Zooplankton of east Australian waters 1945-54.

15. F.R.V. Derwent Hunter Scientific Reports of Cruises DH1/57-DH4/57.

16. Rochford, D.J. (1958).- The seasonal circulation of the surface water masses of the Tasman and Coral Seas.

17. Chittleborough, R.G. (1958).- Australian catches of humpback whales 1957. Prepared for the International Commission on Whaling.

18. Australian documents prepared for the Unesco Conference on the Oceanography of the Tasman and Coral Seas, held at Cronulla, August 9-14, 1958.

19. F.R.V. Derwent Hunter Scientific Reports of Cruises DH5/57, DH6/57, DH7/57, DH8/57.

20. F.R.V. Derwent Hunter Scientific Reports of Cruises DH9/57, DH10/57, DH11/57, DH12/57.

21. F.R.V. Derwent Hunter Scientific Reports of Cruises DH13/57, DH14/57, DH15/57, DH16/57.

22. Robins, J.P. (1959).- F.R.V. Marelda Scientific Report of Cruises July 1957 - May 1958.

23. Chittleborough, R.G. (1959).- Australian catches of humpback whales, 1958. Prepared for the International Commission on Whaling.

24. H.M.A. Ships Queenborough and Quickmatch. Scientific Reports of Cruises in 1958.

25. H.M.A.S. Warrego. Scientific Reports of Cruises 1957-58.

26. Thomson, J.M. (1959).- Summary review of a scientific survey of Lake Macquarie by C.S.I.R.O. Division of Fisheries and Oceanography.

27. F.R.V. Derwent Hunter Scientific Reports of Cruises DH1/58-DH9/58.

28. Wood, E.J.F. (1963).- Checklist of Dinoflagellates recorded from Indian Ocean.

29. Chittleborough, R.G. (1960).- Australian catches of humpback whales, 1959. Prepared for the International Commission on Whaling.

30. F.R.V. Derwent Hunter Scientific Reports of Cruises DH10/58-DH20/58.

31. Chittleborough, R.G. (1961).- Australian catches of humpback whales, 1960.

32. F.R.V. Derwent Hunter Scientific Reports of Cruises DH1/59-DH10/59.

33. F.R.V. Derwent Hunter Scientific Reports of Cruises DH11/59-DH11/60.

34. Chittleborough, R.G. (1962).- Australian catches of humpback whales, 1961.

35. Chittleborough, R.G. (1963).- Australian catches of humpback whales, 1962.

36. Wood, E.J.F. (1963).- Checklist of diatoms recorded from the Indian Ocean.

37. Hynd, J.S. and Vaux, D. (1963).- Report of a survey for tuna in Western Australian waters.

38. Bannister, J.L. (1964).- Australian whaling 1963 catch results and research.