FRANKLIN

National Facility
Oceanographic Research Vessel

RESEARCH PLAN

FR 4/96

Sail	Dampier	1000	Thursday 21 March 1996
Arrive	Fremantle	1000	Saturday 30 March 1996

Distribution and Abundance of scaley mackerel (Sardinella Lemuru) eggs and larvae along the mid west coast of Western Australia

-oOo-

Seabird distributions and densities in relation to oceanic factors off Western Australia.

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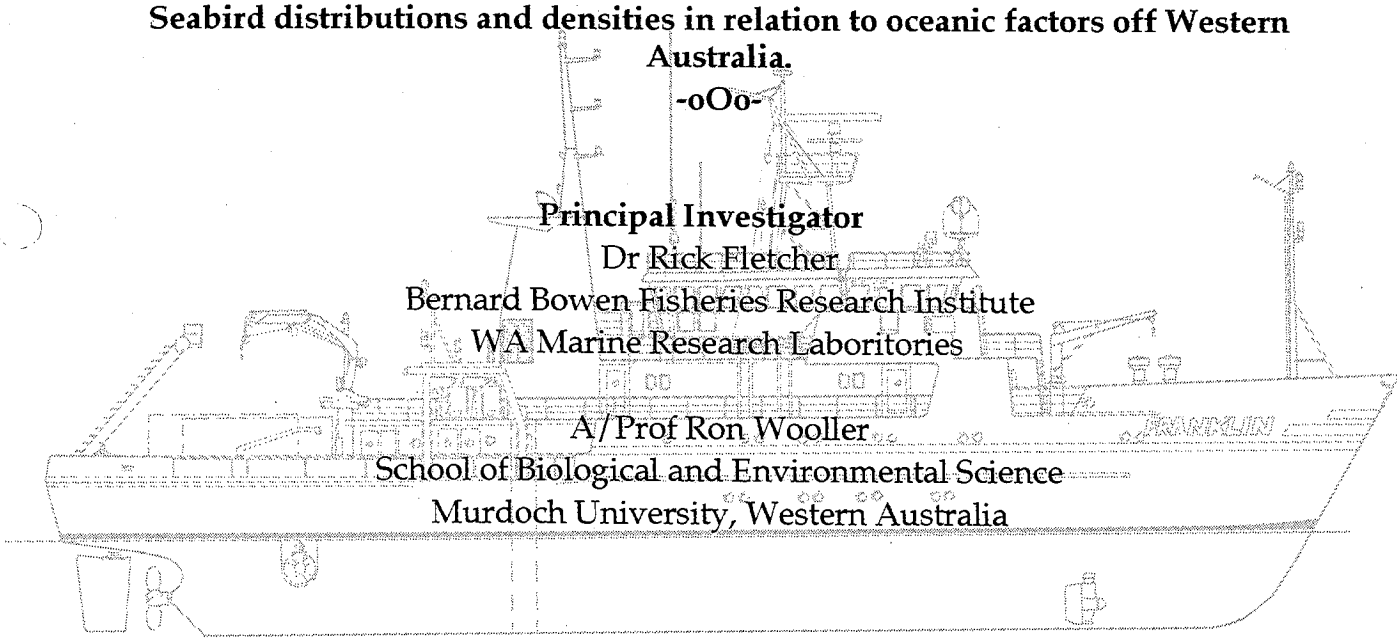

Principal Investigator
Dr Rick Fletcher
Bernard Bowen Fisheries Research Institute
WA Marine Research Laboritories

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Jan 1996

AUSTRALIA

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Franklin

Research plan
Cruise Fr 2/96

" Distribution and Abundance of scaley mackerel (Sardinella Lemuru) eggs and larvae along the mid west coast of Western Australia
-oOo-
Seabird distributions and densities in relation to oceanic factors off Western Australia.

Itinerary:

Depart	Dampier	1000h Thursday March 21,1996
Arrive	Fremantle	1000h Saturday March 30, 1996

Principal investigator:

Dr Rick Fletcher
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Murdoch University
Perth, Western Australia 6150

Scientific objectives:

1. To deteremine the distribution and abundance of scaly mackerel eggs and larvae along the mid West Coast of Western Australia.

2. Determine the influence of the Leeuwin current on the depth stratification scaly mackerel eggs and larvae.

3. Document the distribution of all larval fishes in relation to longshore and offshore gradients along the west coast of WA in relation to oceanographic and ecological conditions.

4. To enhance the appreciation of the relative distributions anbd densities of seabird species, inrelation to oceanographic factors, in the eastern Indian Ocean.

Cruise objectives

Plankton samples, using vertical, surface and multiple opening and closing EZ net will be taken along the transects from North West Cape to Fremantle. At most stations CTD drops will be made to characterise the oceanographic conditions in the region. The ADCP will be used to measure the intensity and direction of currents. The depth sounder will be used to obtain a record of density of adult fish in th earea for comparison with plankton tows.
Quantative observations will be made of seabirds (ie counts, not just prescence / absence or frequency scores), then correlated with position and as much of the physical and biological information as can be collected at the time of observations.

Cruise track

Sampling would be done on a grid basi (see fig 1) from the North West Cape Region down to Fremantle. Th emost intensive sampling would be in the Geraldton region. Plankton stations are spaced at up to 20 nmiles apart in the northern regioı decreasing to every 5 nmiles near Geraldton. This track is slightly expanded from the origiinal cruise plan, which was determined for only 5 days duration. we currently have 9 days duration, and the path of the ship, travelling in one direction from north to south, facilitates the slight expansion of the sampling region.

ORV Equipment:

Underway
Accoustic Doppler Current Profile, Fluorometer, Meteorological Data, Thermosalinograph, Depth Sounder.

Hydrology
CTD, Nutrient Analyses, Fluorescence

Other
EZ Net System, small winch

User Equipment:
3 Vertical Zooplankton Nets
1 Surface Zooplankton Net
1 Vertical Phytoplankton Net
Chemicals
Jars

Time estimates :
See table 1.

Personnel:

Dr W.J Fletcher	WA Marine Fisheries	Chief Scientist
Dr D.J. Gaughan	"	
Mr R.J. Tregonning	"	
Mr K.A. White	"	

Dr Nick Dunlop	Murdoch University	
Mr Chris Surnam	"	
David Vaudrey	ORV	Cruise Manager
Phil Adams	ORV	
Bernadette Heaney	ORV	
Bob Griffiths	ORV	
Dave Wright	ORV	
Wayne O'Donohue	CSIRO Oceanography	

This cruise plan is in accordance with the directions of the National Facility Steering committee for the oceanographic research vessel *Franklin*.

C B Fandry
CSIRO Division of Oceanography

G W Paltridge
National Facility Steering Committee

November 1995

Aus 5020 8

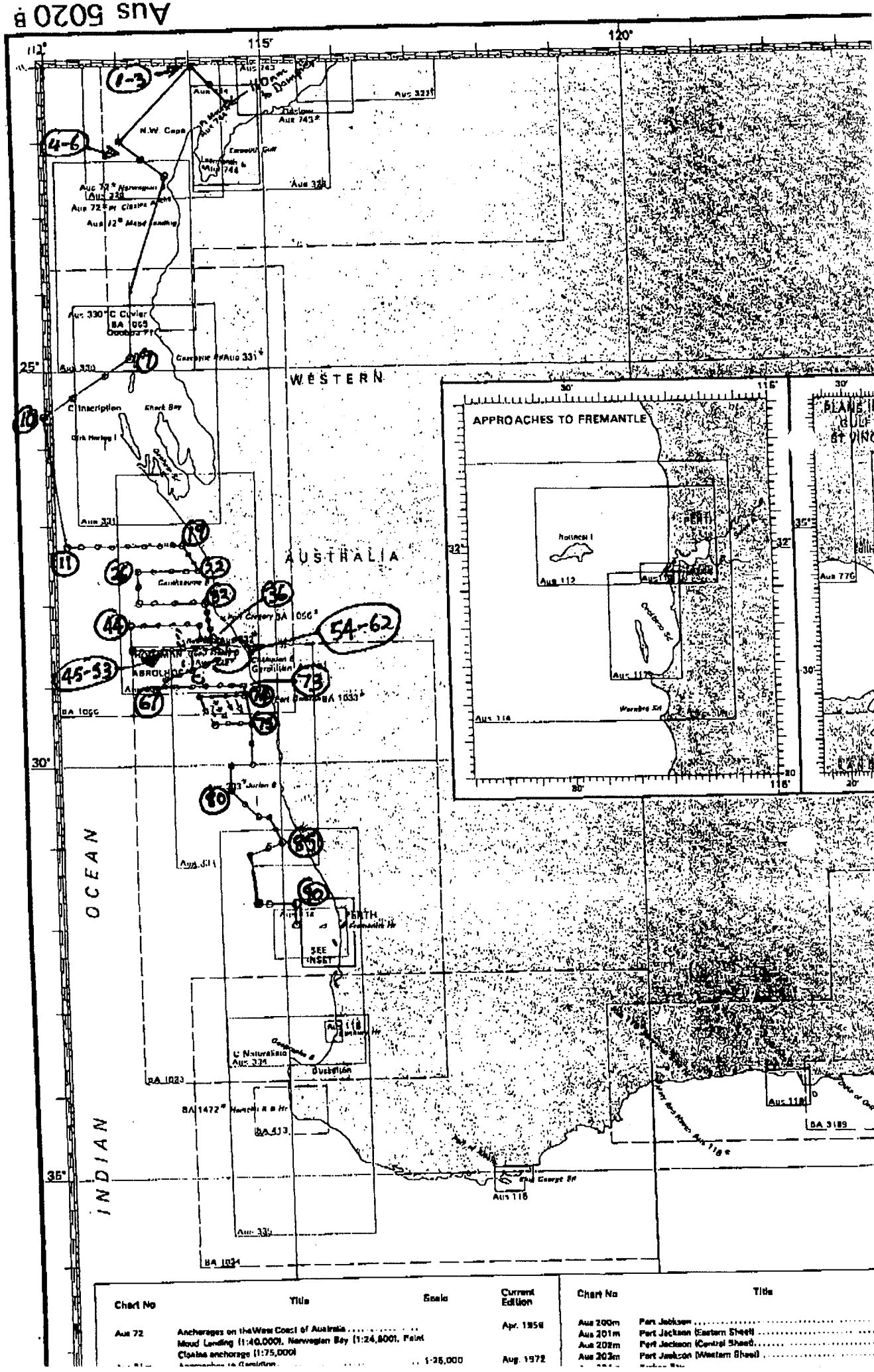

Chart No	Title	Scale	Current Edition
Aus 72	Anchorages on the West Coast of Australia ..... Maud Landing (1:40,000), Norwegian Bay (1:24,000), Point Cloates anchorage (1:75,000)		Apr. 1958
	.....	1:25,000	Aug. 1972

Chart No	Title
Aus 200m	Port Jackson .....
Aus 201m	Port Jackson (Eastern Sheet) .....
Aus 202m	Port Jackson (Central Sheet) .....
Aus 203m	Port Jackson (Western Sheet) .....

CRUISE TRACK 96-4

Station no.	Lat'.	Long'.	Samples t be taken	Est. time a station. Hr	Est. dist'n to next St	Est. time t nxt stn -11k	total Time
					160	14.5	14.5
	Dampier				23	2.1	17.6
1	21* 27'	114* 45'	C V S Ez.	1	23	2.1	20.7
2	21* 13'	114* 26'	C V S Ez.	1	93	8.5	30.2
3	21* 00'	114* 05'	C V S Ez.	1	29	2.6	33.3
4	22* 00	112* 50'	C V S	0.5	30	2.7	36.5
5	22* 20'	113* 10'	C V S	0.5	138	12.5	49.6
6	22* 40'	113* 34'	C V S	0.5	25	2.3	52.9
7	24* 55'	113* 04'	C V S Ez.	1	25	2.3	56.1
8	25* 07'	112* 40'	C V S Ez.	1	25	2.3	58.9
9	25* 18'	112* 15'	C V S Ez	0.5	106	9.6	69.0
10	25* 30'	111* 50'	C V S Ez	0.5	10	0.9	71.0
11	27* 14'	112* 14'	C V SEZ	1	10	0.9	72.4
12	27*14'	112* 25'	C V S	0.5	10	0.9	74.3
13	27* 14'	112* 37'	C V SEZ	1	10	0.9	75.7
14	27* 14'	112* 48'	C V S	0.5	10	0.9	77.1
15	27* 14'	112* 59'	C V S	0.5	10	0.9	78.5
16	27* 14'	113* 10'	C V S	0.5	10	0.9	80.4
17	27* 14'	113* 21'	C V S Ez	1	10	0.9	81.8
18	27* 14'	113* 32'	C V S	0.5	8.5	0.8	83.6
19	27* 14'	113* 43'	C V S Ez	1	8.5	0.8	84.9
20	27* 21'	113* 48'	C V S	0.5	8.5	0.8	86.1
21	27* 28'	113* 52'	C V S	0.5	11	1.0	88.1
22	27* 35'	113* 57'	C V S Ez	1	11	1.0	89.6
23	27* 35'	113* 45'	C V S	0.5	11	1.0	91.6
24	27* 35'	113* 33'	C V S Ez	1	11	1.0	93.1
25	27* 35'	113* 21'	C V S	0.5	12	1.1	95.2
26	27* 35'	113* 09'	C V S Ez	1	12	1.1	96.8
27	27* 48	113* 09'	C V S	0.5	11.5	1.0	98.9
28	28* 00'	113* 09'	C V S Ez	1	11.5	1.0	100.4
29	28* 00'	113* 22'	C V S	0.5	11.5	1.0	102.5
30	28* 00'	113* 35'	C V S Ez	1	11.5	1.0	104.0
31	28* 00'	113* 48'	C V S	0.5	7	0.6	105.6
32	28* 00	114* 00'	C V S Ez	1	7	0.6	107.3
33	28* 06'	114* 02'	C V S Ez	1	7	0.6	108.9
34	28* 13'	114* 04'	C V S Ez	1	7	0.6	110.5
35	28* 19'	114* 06'	C V S Ez	1	5.5	0.5	112.0
36	28* 26'	114* 08'	C V S Ez	1	5.5	0.5	113.5
37	28* 25'	114* 03'	C V S Ez	1	12	1.1	115.6
38	28* 25'	113* 56'	C V S Ez	1	11	1.0	117.6
39	28* 14'	113* 56'	C V S Ez	1	11	1.0	119.6
40	28* 14'	113* 44'	C V S Ez	1	11	1.0	121.1
41	28* 14'	113* 35'	C V S	0.5	11	1.0	123.1
42	28* 14'	113* 21'	C V S Ez	1	11	1.0	124.6
43	28* 14'	113* 06	C V S	0.5	21	1.9	127.5
44	28* 14'	112* 52'	C V S Ez	1	9	0.8	128.9
45	28* 35'	112* 52'	C V S	0.5	9	0.8	130.7
46	28* 35'	113* 04'	C V S Ez	1	9	0.8	132.0
47	28* 35'	113* 14'	C V S	0.5	9	0.8	133.8
48	28* 35'	113* 23'	C V S Ez	1	9	0.8	135.1
49	28* 35'	113* 33'	C V S	0.5	8	0.7	136.9
50	28* 35'	113* 42'	C V S Ez	1	8	0.7	138.1
51	28* 35'	113* 52'	C V S	0.5	8	0.7	139.8
52	28* 35'	114* 02'	C V S Ez	1			

CRUISE TRACK 96-4

53	28* 35'	114* 11'	C V S	0.5	5	0.5	140.8
54	28* 30'	114* 11'	C V S Ez	1	9	0.8	142.6
55	28* 30'	114* 20'	C V S	0.5	6	0.5	143.6
56	28* 35'	114* 20'	C V S	0.5	9	0.8	145.0
57	28* 35'	114* 28'	C V S Ez	1	6	0.5	146.5
58	28* 42'	114* 28'	C V S	0.5	9.5	0.9	147.9
59	28* 42'	114* 20'	C V S	0.5	9	0.8	149.2
60	28* 49'	114* 22'	C V S	0.5	8	0.7	150.4
61	28* 49'	114* 13'	C V S Ez	1	6.5	0.6	152.0
62	28* 44'	114* 10'	C V S	0.5	9	0.8	153.3
63	28* 46'	114* 00'	C V S Ez	1	9	0.8	155.1
64	28* 48'	113*50.5	C V S	0.5	9	0.8	156.5
65	28* 50'	113*40.5	C V S Ez	1	9	0.8	158.3
66	28* 52'	113* 30'	C V S Ez	1	9	0.8	160.1
67	29* 01'	113* 30'	C V S	0.5	9.5	0.9	161.5
68	29* 01'	113* 40'	C V S Ez	1	9.5	0.9	163.3
69	29* 01'	113* 51'	C V S	0.5	9.5	0.9	164.7
70	29* 01'	114* 01'	C V S	0.5	9.5	0.9	166.0
71	29* 01'	114* 11'	C V S	0.5	9.5	0.9	167.4
72	29* 01'	114* 22'	C V S	0.5	9.5	0.9	168.8
73	29* 01'	114* 32'	C V S	0.5	9.5	0.9	170.1
74	29* 10'	114* 32'	C V S	0.5	21	1.9	172.5
75	29* 30'	114* 40'	C V S	0.5	15	1.4	174.4
76	29*45'	114* 40'	C V S	0.5	15	1.4	176.3
77	30* 00'	114* 40'	C V S	0.5	9	0.8	177.6
78	30* 00'	114* 30'	C V S	0.5	9	0.8	178.9
79	30* 00'	114* 20'	C V S	0.5	20	1.8	181.2
80	30* 20'	114* 20'	C V S	0.5	13	1.2	182.9
81	30* 30	114* 30'	C V S	0.5	13	1.2	184.6
82	30* 40'	114* 40'	C V S	0.5	9	0.8	185.9
83	30* 40'	114* 50'	C V S	0.5	11	1.0	187.4
84	30* 50'	114* 55'	C V S	0.5	11	1.0	188.9
85	31* 00	115* 00'	C V S Ez	1	19	1.7	191.6
86	31* 07'	114* 40'	C V S	0.5	19	1.7	193.9
87	31* 14'	114* 20'	C V S Ez	1	31	2.8	197.7
88	31* 45'	114* 23'	C V S	0.5	20	1.8	200.0
89	31* 45'	114* 46'	C V S	0.5	20	1.8	202.3
90	31* 45'	115* 10'	C V S	0.5	15	1.4	204.2
91	32* 00'	115* 10'	C V S	0.5	35	3.2	207.9
		Total time on station		64.5	Totals	143.4	
		Total Trip ime at 11 knots				207.9	

Thurs. 22 March - Sat. 30 March.

Maximum time available 9 X 24hrs. = 216 hrs.

Time difference= 9 credit

Samples	
C =	CTD
V =	vertical haul
S =	surface tow
Ez =	EZ multiple nets tow