

FRANKLIN

National Facility
Oceanographic Research Vessel

CRUISE SUMMARY

R/V FRANKLIN

Fr11/97

Depart:	Bell Bay	1000h, Wednesday, 10 December 1997
Dock:	Portland	1100h, Thursday, 18 December 1997
Arrive	Hobart	1000h, Saturday, 20 December 1997

Principal Investigator

Dr Francisco Niera

Marine and Freshwater Resources Institute

For further information contact:

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ORV FRANKLIN CRUISE SUMMARY

Fr11/97

DECEMBER 1997

Project

Spawning and larval recruitment processes of commercially important species in coastal waters off Victoria - December 1997 cruise.

Itinerary

Sail: Bell Bay, December 10 1997, 10:00 hrs.

Dock: Portland, December 18, 1997, 11:00 hrs.

Arrive: Hobart, December 20, 1997, 10: 00 hrs.

Principal Investigator

Dr Francisco J. Neira

Marine and Freshwater Resources Institute

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Objectives

The aims of this project are to collect ichthyoplankton, physical and chemical data during summer and winter seasons along waters off Victoria. Data obtained on the composition, concentration and spatial distribution of fish eggs and larvae during summer cruises (January and December 1997) will be compared to that obtained in winter cruises (May and July 1998) and the data used to locate spawning areas of commercially important fish species. Ichthyoplankton concentrations will be correlated with physical and environmental variables in an attempt to identify retention areas and passive/active transport of these early stages. Samples collected will also be used to determine the spatial and seasonal distribution of southern rock lobster phyllosomes.

The main objectives of these surveys off Victoria are:

- To describe the composition, spatial and seasonal distribution of ichthyoplankton, with particular reference to the early stages of commercially-important fish species.
- To determine the area(s) of spawning of King George whiting (*Sillaginodes punctata*) off the Victorian coast.
- To determine the abundance of the different developmental stages of King George whiting at different locations and identify the possible occurrence of larval transport by back calculating the age of larvae.
- To determine the areas of spawning of pilchard (*Sardinops sagax*) off the Victorian coast and to describe the horizontal and vertical distribution of eggs and larvae.
- To identify regions of changing nutrient and chlorophyll concentration, and their relationship to physical properties (S,T) and ichthyoplankton density.
- To collect physical oceanographic data and satellite images to extend the 3D Bass Strait model of coastal currents.
- To develop an egg biomass survey technique to be used for future pilchard stock assessment.
- To describe the spatial and seasonal distribution of southern rock lobster phyllosomes.

Personnel

MAFRI (Vic):

Dr Francisco J. Neira	Chief Scientist	Ichthyoplankton
Mr Robert Cowdell	Marine Scientist	Chemistry
Mr Martin Lowrey	Marine Scientist	Chemistry
Mr David MacKeown	Technical Officer	Ichthyoplankton
Ms Pam Oliveiro	Technical Officer	Ichthyoplankton

CSIRO (ORV):

Mr Bob Beattie	Cruise Manager (Computing)
Mr Phil Adams	Electronics - EZ net
Mr Mark Lewis	EZ Net
Ms Rebecca Deed	Chemistry
Mr Mark Rayner	Chemistry

ORV Franklin:

Dick Dougal	Master
Arthur Staron	Ch Mate

Allan McCarthy	2nd Mate
Dave Lewis	Ch Eng
Greg Pearce	1st Eng
Andrew McLagan	Elec Eng
Jannick Hansen	Bosun
Wayne Browning	AB
Norm Marsh	AB
Gerry O'Halloran	AB
Les Clarke	Greaser
Gary Hall	Ch Cook
Peter Dux	2nd Cok
Ron Culliney	Ch Steward

Sampling area

The area sampled during the December 1997 ORV *Franklin* cruise comprised the Victorian coast and part of eastern South Australia from Gabo Island (149°55'E; 37°36'S) to Port MacDonnell (140°17'E; 37°49'S), south to 32 nm offshore.

Cruise track

The December 1997 ichthyoplankton survey occupied 34 stations along seven parallel transects off Cape Conron, Gabo Island, Seaspray, Cape Liptrap, Barwon Heads, Portland and Port MacDonnell (SA). Transects were 65 nautical miles apart, each containing five sampling stations located at 2, 4, 8, 16 and 32 nautical miles (nm) offshore (see enclosed summary table). The ORV *Franklin* departed Bell Bay on December 10 at 10.00 hrs and sampling commenced at the offshore-most station (32 nm) off Cape Conron on December 11 at 11:36 am. It was intended to commence sampling at the offshore-most station off Gabo Island but it was impossible to arrive at this station on time on December 11 due to bad weather. After sampling along the Cape Conron transect, we sailed east to complete the Gabo Island transect, before sailing west to sample along the remaining transects. All transects to the west of Seasprey were completed except transect 6 off Port Campbell, which was omitted due to bad weather and the fact that the vessel required to sail back to Hobart early on December 18 to be back on December 22. Sampling along Cape Conron, Seaspray, Cape Liptrap, Portland and Port MacDonnell transects was carried out from the offshore-most station (32 nm) to the inshore-most station (2 nm), while Gabo Island and Barwon Heads transects were sampled in reverse. Heavy seas at the offshore Portland stations 16 and 32 nm, and at the 32 nm Barwon Heads station made it impossible to use the EZ net. The vessel docked in Portland on December 18 at 11:00 hrs where MAFRI personnel disembarked.

Sampling

Sampling was conducted during daylight hours and commenced daily at 07:30 am. At each site, a CTD profile and water samples for nutrient analyses at various depths were obtained. After the retrieval of the CTD rosette, the EZ-net sampler, fitted with four 500 mm mesh nets, was deployed from the stern of the vessel and lowered to the maximum permissible depth (5 m off the bottom in waters < 100 m deep) or to a 100 m (in waters > 100 m deep) depending on the station's depth. Samples in stations ≥ 100 m deep were obtained in the strata 100-75, 75-50, 50-25 and 25-0 m. Each of the nets employed was opened for 15 minutes in the strata sampled. The EZ-net was not employed in shallow stations (to 30 m). Instead, an oblique tow in these stations was carried out between 25 and 0 m using the MAFRI bongo sampler consisting of two 0.6 m diameter, 3 m long, 500 mm mesh nets, which was deployed using the oceanographic winch and associated A-frame on the starboard side. As with the EZ-net, the bongo sampler was towed for 15 minutes and the water volume sampled (m^3) estimated using digital General Oceanics flowmeters attached to the mouth of each net. Neuston (surface) samples were also obtained at each of the 34 stations occupied by towing the bongo nets for 15 minutes. Upon completion of each tow, the nets were washed and the cod-end contents fixed with 10% formalin-seawater and stored in 1-2.5 litre capacity plastic jars in the wet laboratory on board the ORV *Franklin*.

Samples obtained

We collected a total of 120 ichthyoplankton samples, of which 60 were obtained with the EZ-net and 48 with the bongo sampler. Samples obtained with the bongo net include an additional 12 neuston samples collected between transects apart from that routinely collected at each station. A total of 34 CTD profiles (sigma-t, temperature, dissolved oxygen, fluorescence), and 130 water samples for nutrient analyses were collected with the CTD rosette throughout the cruise.

SUMMARY ICTHYOPLANKTON CRUISE DECEMBER 1997

	Transect	1	2	3	4	5	6	7	8	Total samples
Distance offshore (nautical miles)		Gabo Island	Cape Conron	Seaspray	Cape Liptrap	Barwon Heads	Port Campbell	Portland	Port MacDonnell	
	Longitude	149° 55'	148° 33'	147° 10'	145° 48'	144° 26'	143° 04'	141° 40'	140° 17'	
2	Latitude	37° 36.0'	37° 50.5'	38° 26.0'	38° 44.5'	38° 19.0'	38° 41.0'	38° 27.0'	37° 49.0'	
	Max depth (m)	95	29	20	16	30	50	52	22	
	Neuston samples	1	1	1		1		1		
	Bongo 25-0 m		1	1	1	1			1	
	EZ samples	4					*	2		
	Subtotal samples	5	2	2	1	2	0	3	1	
4	Latitude	37° 38.0'	37° 52.5'	38° 28.0'	38° 46.5'	38° 21.0'	38° 43.0'	38° 29.0'	37° 51.0'	
	Max depth (m)	101	50	20	40	49	64	60	28	
	Neuston samples	1	1	1	1	1		1	1	
	Bongo 25-0 m		1	1	1				1	
	EZ samples	4				2	*	2		
	Subtotal samples	5	2	2	2	3	0	3	2	
8	Latitude	37° 42.0'	37° 56.5.0'	38° 32.0'	38° 50.5'	38° 25.0'	38° 47.0'	38° 33.0'	37° 55.0'	
	Max depth (m)	101	54	30	72	63	67	78	47	
	Neuston samples	1	1	1	1	1		1	1	
	Bongo 25-0 m			1				1		
	EZ samples	4	2		3	2	*	1	2	
	Subtotal samples	5	3	2	4	3		3	3	
16	Latitude	37° 50.0'	38° 04.5'	38° 40.0'	38° 58.5'	38° 33.0'	38° 55.0'	38° 41.0'	38° 03.0'	
	Max depth (m)	139	63	41	77	77	76	140	122	
	Neuston samples	1	1	1	1	1		1	1	
	Bongo 25-0 m							1	1	
	EZ samples	4	2	2	3	3	*	*	3	
	Subtotal samples	5	3	3	4	4		2	5	

32	Latitude	38° 06.0'	38° 20.5'	38° 56.0'	39° 15.5'	38° 49.0'	39° 11.0'	38° 57.0'	38° 19.0'	
	Max depth (m)	272	361	60	70	80	84	1760	1550	
	Neuston samples	1	1	1	1			1	1	6
	Bongo 25-0 m			1				1	1	3
	EZ samples	4	4	1	3	*	*	*	3	15
	Subtotal samples	5	5	3	4	0	0	2	5	24
	Total samples	25	15	12	15	12	0	13	16	108

* EZ not employed due to bad weather