

FRANKLIN

National Facility
Oceanographic Research Vessel

**Spawning and larval recruitment processes of commercially
important species in coastal waters off Victoria - Summer Cruise.**

RV FRANKLIN

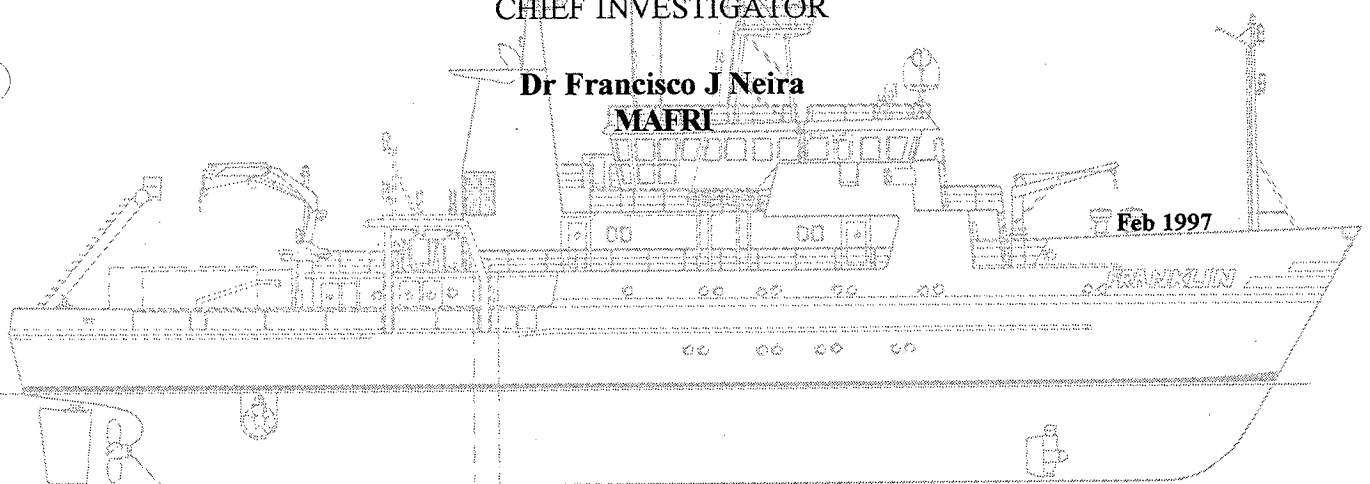
**CRUISE SUMMARY
FR 02/97**

Sail: Sydney, NSW 1000 Hrs Friday, January 24, 1997
Arrive: Portland VIC 1800 Hrs Saturday February 1, 1997
Depart: Portland VIC 2100 Hrs Saturday February 1, 1997
Arrive: Hobart, TAS, 0830 Hrs Tuesday, February 4, 1997

CHIEF INVESTIGATOR

Dr Francisco J Neira

MAFRI



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FRANKLIN is owned and operated by CSIRO

RV *Franklin*
Cruise Summary
Fr 02/97

Itinerary:

Sail:	Sydney, NSW	1000 Hrs Friday, January 24, 1997
Arrive:	Portland VIC	1800 Hrs Saturday February 1, 1997
Depart:	Portland VIC	2100 Hrs Saturday February 1, 1997
Arrive:	Hobart, TAS,	0830 Hrs Tuesday, February 4, 1997

Project:

Spawning and larval recruitment processes of commercially important species in coastal waters off Victoria - Summer Cruise.

1. Sampling Area.

The area sampled during Jan-Feb 1997 *Franklin* cruise Fr 2/97 comprised the entire Victorian coast and part of eastern South Australia from Gabo Island (149°55'E; 37°36.0'S) to Port MacDonnell (140°17 E; 37°49.0'S), south to 32 nm offshore. The surface of the area covered was about 14,560 nm².

2. Cruise Track.

The Jan-Feb 1997 ichthyoplankton survey covered 40 stations along eight parallel transects between Gabo Island (Vic) and Port MacDonnell (SA). Transects were 65 nautical miles apart, each containing 5 sampling locations located at 2,4,8,16 and 32 nautical miles offshore along each transect (see enclosed summary table). *Franklin* departed Sydney on Friday 24 January at 10:00 am and sampling commenced at the inshore station (2 nm) off Gabo Island on Saturday 25 January at 10:00 am. Upon completion of sampling the vessel docked in Portland (7th Transect) on Saturday 1 Feb at 18:00 hours where MAFRI personnel disembarked.

3. Sampling.

Sampling was conducted during daylight hours and commenced daily at 07:30 am. Sampling along transects 1-5 (Gabo Island, Cape Conran, Seaspray, Cape Liptrap and Barwon Heads) was carried out from the inshore-most station (2 nm) south to the offshore-most station (32 nm). Transects 6, 7 and 8 (Port Campbell, Portland and Port MacDonnell) were sampled from the offshore most station (32 nm) to the inshore-most station. The change in the track during the last three transects was decided after moderate to heavy seas in the offshore-most stations of Transect 1 and 2 made impossible the use of the EZ-net. Thus, it was decided that by sampling the offshore-most station early in the morning would be better, which indeed proved to be the case.

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 up to four 500 μ m mesh nets, was deployed from the stern of the vessel and lowered to the maximum permissible depth (in waters < 100 m) or to a 100 m (in waters > 100 m deep) depending on the station's depth. Samples in stations \geq 100 m deep were obtained in depth strata 100-75, 75-50, 50-25, and 25-0 using 4 nets. Each of the nets employed was opened for 15 minutes in the strata sampled. The EZ-net was not employed in shallow stations (to 30m). Instead, an oblique tow in strata 25-0 m was carried out using the MAFRI bongo sampler consisting of two 0.6 m diameter 3 m long, 500 μ m 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. Neuston (surface) samples were also obtained at each of the 40 stations by towing the bongo nets for 15 minutes. Upon completion of each tow, the nets were washed down and cod-end contents fixed with 10% formalin-seawater and stored in 1-2.5 litre capacity jars in the Biological Container Laboratory on boards the *Franklin*.

Surface seawater nutrient concentrations were monitored continually along each transect.

4. Data and samples obtained.

A total of 40 CTD profiles (conductivity (salinity), temperature, dissolved oxygen and chlorophyll fluorescence), and 150 water samples for nutrient analyses were collected with the CTD rosette through out the cruise. Ichthyoplankton samples totalled 150, of which 90 were obtained with the EZ-net and 60 with the bongo sampler. Samples obtained with the bongo net include an additional 20 neuston samples collected between transects apart from that routinely collected at each station. (total = 40).

Seabird observations were made during daylight hours over the duration of the cruise (see attached report).

Personnel.

Scientific.

MAFRI - All disembarked in Portland

Dr Francisco J. Neira	Chief Scientist	Ichthyoplankton
Mr David MacKeown	Technical Officer	Ichthyoplankton sampling
Ms Sharon Tait	Technical Officer	Ichthyoplankton sampling
Mr Robert Cowdell	Marine Scientist	Chemist
Mr Geoff Nicholson	Marine Scientist	Chemist

RAOU

Mr Dion Hobcroft

CSIRO - ORV

Mr David Vaudrey	Cruise Manager
Mr Phil Adams	Electronics
Mr Dave Terhell	Computing

Mr Ron Plaschke

HydroChem

Additional Observers - joined in Portland.

Mr Deon Mahoney

FRDC

Mr Michael Brown

CSIRO, Office of DCE, Env. and Nat. Resources.

Ms Carolyn Scott

CSIRO DMR, Site Safety Officer, Hobart

Ms Kim Finney

CSIRO DMR, Data Manager

Ms Kate Hodgson

CSIRO DMR

Mr Bob Edwards

Consultant

Ships Crew:

Capt Neil Cheshire

Master

Mr Ian Menzies

Chief Officer

Mr Doug Henderson

Second Mate

Mr Mike Culpepper

Chief Engineer

Mr Lindsay Cale

First Engineer

Mr Don Roberts

Electrical Engineer

Mr Yannik Hansen

Bosun

Mr Gerry O'Halloran

AB

Mr Wayne Browning

AB

Mr Peter Genge

AB

Mr Les Clarke

Greaser

Mr Gary Hall

Chief Cook

Mr Peter Dux

Second Cook

Mr Ian Melder

Chief Steward

O.R.V. FRANKLIN SUMMARY CRUISE JAN-FEB 1997

Transects and station positions east - west and N° of samples

Distance offshore nautical miles	Transect		1	2	3	4	5	6	7	8	Total samples
	Location		Gabo Island	Cape Conran	Seusprey	Cape Liptrap	Barwon Heads	Port Campbell	Portland	Port MacDonnell	
2	Longitude		149° 55'	148° 33'	147° 10'	145° 48'	144° 26'	143° 04'	141° 40'	140° 17'	8 3 10 21
	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)		100	29	20	16	30	50	52	22	
	Neuston samples		1	1	1	1	1	1	1	1	
	Bongo 25-0 m										
	EZ samples		4	1	1	1	1	2	2	1	
4	Subtotal samples		5	2	2	2	2	3	3	2	8 2 13 23
	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)		120	40	20	42	48	64	57	26	
	Neuston samples		1	1	1	1	1	1	1	1	
	Bongo 25-0 m										
	EZ samples		4	1	1	2	2	2	2	1	
8	Subtotal samples		5	2	2	3	3	3	3	2	8 3 18 29
	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)		120	54	30	67	63	67	75	50	
	Neuston samples		1	1	1	1	1	1	1	1	
	Bongo 25-0 m										
	EZ samples		4	2	1	3	2	2	3	2	
16	Subtotal samples		5	3	2	4	3	4	4	4	8 2 23 33
	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)		100	60	40	76	75	76	135	120	
	Neuston samples		1	1	1	1	1	1	1	1	
	Bongo 25-0 m										
	EZ samples		4	2	2	3	3	3	3	3	
32	Subtotal samples		5	3	3	4	4	4	5	5	8 5 11 24 130
	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)		150	361	60	80	80	84	1760	1470	
	Neuston samples		1	1	1	1	1	1	1	1	
	Bongo 25-0 m										
	EZ samples		*	*	2	3	*	*	3	3	
	Subtotal samples		1	1	3	4	2	3	5	5	24 130
	Total samples		21	11	12	17	14	17	20	18	

* = EZ not employed due to bad weather

BIRD OBSERVATIONS ABOARD FRANKLIN VOYAGE 297 24.1.97-4.2.97

DION HOBCROFT

A larval fish survey of inshore and offshore waters along the length of the Victorian and extreme south-eastern South Australian coastline. Observations were also recorded along the 100 metre depth between Sydney and Eden, NSW, and offshore waters between Portland to King Island and Strahan to South-West Cape in western Tasmanian waters.

Thirty seven species of bird of seven families were recorded during the voyage.

Black Swan *Cygnus atratus*: Single in flight 16 nautical miles south of Portland 1.2.97 possibly moving between King Island and the mainland.

Little Penguin *Eudyptula minor*: Observations of a couple near Wilson's Promontory on 27.1.97. Two more were observed fishing with Fluttering Shearwaters *Puffinus gavia*, 2 nautical miles south-west of Cape Otway on 30.1.97 and a single was heard calling in inshore waters off Port MacDonnell, South Australia on 31.1.97.

Common Diving-Petrel *Pelecanoides urinatrix*: First recorded in moderate numbers at 39.00 S, 146.52 E inshore waters adjacent to Wilson's Promontory. Small numbers or singles recorded off Venus Bay, Barwon Heads, Cape Otway, Portland and Strahan. In total 25 individuals were observed, 15 of these near known nesting stations near Wilson's Promontory on 27.1.97.

Southern Giant-Petrel *Macronectes giganteus*: Single adult observed by Neil Cheshire on 3.2.97 at 42.18 S, 144.47 E, offshore waters west of Strahan, Tasmania

Northern Giant-Petrel *Macronectes halli*: Five individuals, one adult and four immatures were sighted in waters off the west coast of Tasmania 2-3.2.97.

Great-winged Petrel *Pterodroma macroptera*: The most numerous and widespread gadfly petrel observed in shelfbreak waters off Gabo Island, Cape Conran, Port MacDonnell, Portland and King Island. All except one nominate subspecies off Portland were of the New Zealand breeding form *P.m. gouldi*. The great majority were in obvious wing moult. In total 80 individuals were logged. Interestingly none were seen in soth western Tasmanian waters.

White-headed Petrel *Pterodroma lessonii*: One individual was recorded inshore waters 29 nautical miles south-west of Cape Otway on 30.1.97. Three more were observed in shelfbreak waters off Port MacDonnell on 31.1.97 and 10 were logged west of King Island on 2.2.97. None were recorded in central and eastern Bass Strait waters or off Tasmania's south west coast.

Soft-plumaged Petrel *Pterodroma mollis*: Single in worn plumage flew by whilst conducting a CTD in 500 metres depth at 42.18 S, 144.47 E, west of Strahan, Tasmania. Water surface temperature was 16.4 degrees Celsius. 3.2.97

Fairy Prion *Pachyptila turtur*: Surprisingly rare in Victorian waters with singles noted on 28.1.97, 32 nautical miles south of Venus Bay and another on 30.1.97, 8 nautical miles south of Cape Otway. Both were actively feeding by hydroplaning. Another single prion was noted west of King Island on 2.2.97. Finally large numbers were observed near South-West Cape, Tasmania near known breeding stations. A single Fairy Prion was discovered on the trawl deck on the night of the 3.2.97. It was photographed and released.

White-chinned Petrel *Procellaria aequinoctialis*: A total of 35 individuals were recorded in shelfbreak and offshore waters between King Island and Strahan on 2-3.2.97. Many photographed whilst attracted to burley on 3.2.97 when 25 were counted at once.

Wedge-tailed Shearwater *Puffinus pacificus*: Recorded in eastern Victorian and Bass Strait waters only. Four were logged in waters near Gabo Island on 25.1.97 and a single was recorded at 38.19 S, 148.36 E, approximately 40 nautical miles south of Orbost Victoria on 26.1.97. 114 were counted along the NSW coast between Sydney and Point Perpendicular.

Buller's Shearwater *Puffinus bulleri*: Two individuals recorded. Single on 24.1.97 at 35.01 S, 150.56 E approximately 10 nautical miles east of Beecroft Peninsula, NSW. Another single recorded in Victorian waters where it is a rare vagrant on 27.1.97 at 38.38 S, 147.09 E approximately 12 nautical miles south of Seaspray. Water depth was 40 metres with a surface temperature of 18.7 degrees Celsius. This bird was amongst rafting Hutton's and Short-tailed Shearwaters.

Flesh-footed Shearwater *Puffinus carneipes*: Singles recorded off Gabo Island, 25.1.97, Orbost, 26.1.97 then absent central Bass Strait when another single off Cape Otway on 30.1.97. This species became more numerous around Port MacDonnell with 14 individuals on 31.1.97 and a further 3 off Portland on 1.2.97. The last sighting was of a single at 39.16 S, 142.37 E in seas north west of King Island, Tasmania.

Sooty Shearwater *Puffinus griseus*: Recorded in very small numbers almost daily around the Victorian coastline with the exception of central Bass Strait. Singles noted off Gabo Island, Cape Otway, Port MacDonnell, Portland and King Island. Birds were normally noted in moult.

Short-tailed Shearwater *Puffinus tenuirostris*: Easily the most abundant species recorded daily often in large to huge numbers. Greatest concentrations were off

Gabo Island and south western Tasmania. Approximately 25 000 birds were recorded.

Fluttering Shearwater *Puffinus gavia*: 41 individuals providing views good enough to identify to species. Small numbers recorded off Gabo Island, Orbost, Seaspray, Venus Bay, Barwon Heads, Cape Otway and singles off King Island and Strahan.

Hutton's Shearwater *Puffinus huttoni*: 211 individuals seen providing views good enough to identify to species. Of these 196 were identified in several small flocks in inshore waters off Seaspray on 27.1.97. 200 more small shearwaters which could not be identified to species were seen in inshore waters off Barwon Heads on 29.1.97. Only 4 small shearwaters were seen in western Victorian and Tasmanian waters, these being 2 Fluttering, 1 Hutton's and 1 unidentified.

Wandering Albatross *Diomedea exulans*: Single on 30.1.97, 16 nautical miles south of Cape Otway. Plumage transitional between stage 3-4. Seven individuals in deep sea west of King Island on 2.2.97. 14 individuals between Strahan and South-West Cape on 3.2.97. Stages 1,2,3 and 4 were observed. No probable breeding age birds were observed. At least three birds were Stage 1.

Royal Albatross *Diomedea epomophora*: A total of 4 individuals seen on 2-3.2.97 in seas off King Island and western Tasmania. 2 subspecies *sanfordi* and 2 nominate subspecies were involved.

Black-browed Albatross *Diomedea melanophris*: 10 individuals all immature were recorded off Gabo Island, Cape Otway, Port MacDonnell and Portland. None were recorded in central Bass Strait. More than 200 individuals were seen between King Island and South-West Cape including several adults of the subspecies *impavida*.

Shy Albatross *Diomedea cauta*: 75 individuals recorded along the Victorian coast, 45 of these off Gabo Island on 25.1.97. Very small numbers in central Bass Strait becoming more numerous west of Cape Otway. More than 300 were recorded in waters west of King Island and along the west Tasmanian coast. Many adults were in heavy wing moult. Two adults of the New Zealand breeding form *D.c. salvini* were observed closely on 3.2.97 in shelfbreak waters west of Strahan.

Yellow-nosed Albatross *Diomedea chlororhynchos*: 24 individuals were seen in Victorian waters first logged at Venus Bay becoming progressively more numerous further west with a maximum of 12 off Portland on 1.2.97. A further 55 individuals were seen between King Island and South-West Cape, Tasmania the great majority near King Island which had 45 individuals. All were subspecies *D.c. bassi* and most were adults.

Buller's Albatross *Diomedea bulleri*: A single adult was observed in attendance behind a trawler 32 nautical miles south of Gabo Island at 37.50 S, 149.55 E on

25.1.97. A further 3 adults were observed in seas west of King Island on 2.2.97. Finally 22 adults were counted between Strahan and South-West Cape on 3.2.97 with many inside the continental shelf. All appeared to belong to the nominate subspecies.

Wilson's Storm-Petrel *Oceanites oceanicus*: Two sightings only. Single in shelfbreak waters south of Gabo Island on 25.1.97. Single in shelfbreak waters west of King Island on 2.2.97.

Grey-backed Storm-Petrel *Garrodia nereis*: 17 individuals recorded in deepwater around King Island and Strahan, Tasmania on 2-3.2.97.

White-faced Storm-Petrel *Pelagodroma marina*: The most widespread and numerous storm-petrel. Only 5 observed around the Victorian coastline with 4 in shelfbreak waters south of Gabo Island and one off Port MacDonnell on 31.1.97. More than 10 were logged west of King Island on 2.2.97 and a single south of Strahan on 3.2.97.

Black-bellied Storm-Petrel *Fregetta tropica*: Single observed by Neil Cheshire in deepwater west of Strahan, Tasmania on 3.2.97.

Australasian Gannet *Morus serrator*: 45 individuals recorded around Victorian coast excluding Portland where many hundreds were observed in the vicinity of Lawrence Rocks. The great majority were adult birds. Approximately 100 were observed around King Island and south western Tasmania.

South Polar Skua *Catharacta maccormicki*: Single presumed adult intermediate morph with prominent golden buff nuchal collar observed briefly in wake at 39.43 S, 143.05 E. Ocean depth was 600 metres, surface temperature 16.6 degrees Celsius. Seas west of King Island Tasmania on 2.2.97. Unfortunately it flew quickly off into the distance and views were brief and the underparts not seen well at all. The identification was based on the extent of blonde collaring which I have not seen to this extent or neatly patterned in the Great Skua *Catharacta skua*.

Pomarine Jaeger *Stercorarius pomarinus*: 24 individuals seen around the Victorian coastline. Most numerous off Gabo Island, Orbest and Seaspray. Single dark morph off Venus Bay then absent till Port MacDonnell where three more individuals were noted. None were recorded off King Island or the west coast of Tasmania.

Arctic Jaeger *Stercorarius parasiticus*: Only three individuals along the Victorian coast all close inshore. Singles off Seaspray, Port MacDonnell and Portland. Two adult dark morphs and unaged light morph.

Long-tailed Jaeger *Stercorarius longicaudus*: Only two definite sightings both on 3.2.97. Both observations of singles between Strahan and South-West Cape. Both

unaged probable adults in winter plumage. One observed harrassing a Fairy Prion. A possible sighting off Port MacDonnell was too distant to be confirmed.

Pacific Gull *Larus pacificus*: A couple of adults off Wilson's Promontory on 27.1.97. Single adult 2 nautical miles south of Venus Bay on 28.1.97.

Silver Gull *Larus novaehollandiae*: A couple in water depths of 100 metres off the coast of Strahan on 3.2.97. Conspicuously absent from inshore waters around the Victorian coastline.

Crested Tern *Sterna bergii*: Recorded in small numbers around the Victorian coastline and south-western Tasmanian coastline.

Common Tern *Sterna hirundo*: Recorded only in Sydney Harbour on 24.1.97 where 10 terns were associating with flocking Wedge-tailed Shearwaters feeding on baitfish.

White-winged Black Tern *Chlidonias leucoptera*: Single in non breeding plumage at Ralph's Bay, Derwent River, Hobart on 4.2.97. Vagrant to Tasmania.

MARINE MAMMALS

Fur-seals *Arctocephalus pusillus/forsteri*: Recorded off Gabo Island, Venus Bay, Barwon Heads, Cape Otway, Port MacDonnell, Portland, King Island and Strahan to South-West Cape. Generally in small numbers of 5-10.

Sperm Whale *Physeter macrocephalus*: Single observed well in deep water (1800 metres) off the coast of Portland approximately 32 nautical miles south at 38.57 S, 141.40 E. Surface water temperature 17.7 degrees Celsius. Several blows followed by dive revealing tail flukes.

Dusky Dolphin *Lagenorhynchus obscurus*: Single at 43.23 S, 145.40 E, seas south of Strahan, Tasmania on 3.2.97. The ocean depth was 167 metres and the surface temperature 14.5 degrees Celsius. The individual was seen clearly through binoculars at 80 metre range as it leapt clear from the water. This species is rarely reported in Australian waters. Personal extensive field experience in subantarctic New Zealand waters.

Common Dolphin *Delphinus delphis*: Small groups of 10-15 recorded off Gabo Island, Venus Bay, Barwon Heads, Port MacDonnell, Portland and King Island.