

FRANKLIN

National Facility
Oceanographic Research Vessel

RESEARCH PLAN

CRUISE FR 4/94

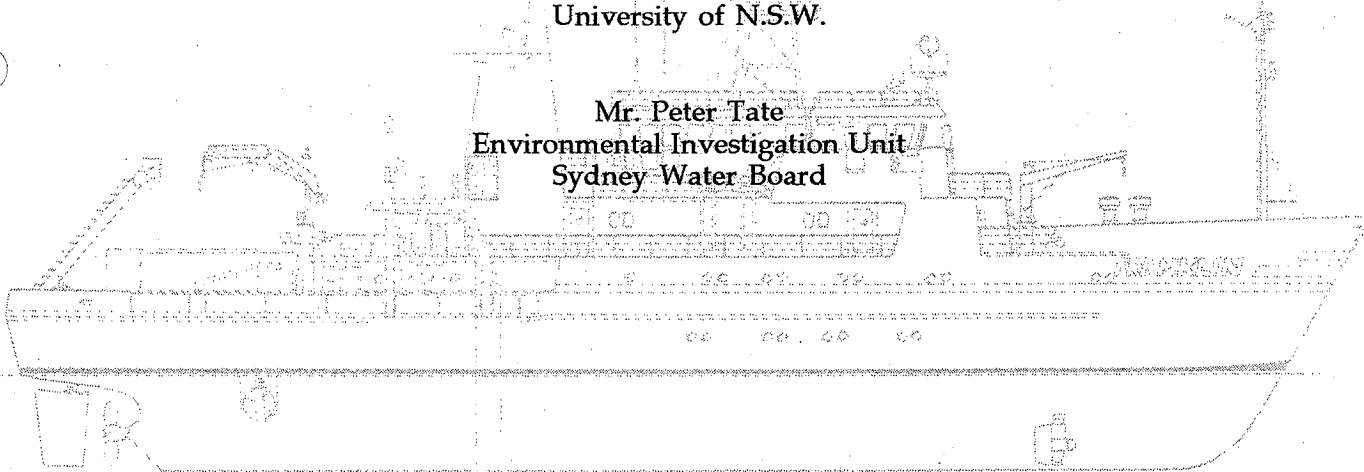
Sail Sydney: 09:00 Hrs 30 March 1994
Arrive Hobart: 15:00 Hrs 8 April 1994

COASTAL DYNAMICS AND ICHTHYOPLANKTON DISTRIBUTIONS IN THE SYDNEY REGION

Investigators

Professor Jason H. Middleton and Dr. Iain Suthers
Centre for Marine Science
University of N.S.W.

Mr. Peter Tate
Environmental Investigation Unit
Sydney Water Board



For further information contact:

ORV Operations Manager
CSIRO Division of Oceanography
GPO Box 1538, Hobart, Tasmania 7001

Phone (002) 32 5222
Fax (002) 32 5000
Telex AA 57182



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RESEARCH PLAN

R.V. FRANKLIN

FR 4/94

Itinerary

Depart Newcastle: 09:00 Hrs 30 March 1994
Arrive Hobart: 15:00 Hrs 8 April 1994

Scientific Program

The overall program aims at determining the baroclinic current structure of the coastal waters off Sydney, and the effects on the distribution of nutrients and planktonic fish. Specific objectives are:

- To observe the baroclinic structure of the region, and by comparison with theory, to determine the contributions from wind-driven upwelling and downwelling, Ekman pumping due to the East Australia Current (EAC), forcing of shelf currents due to longshore pressure gradients induced by the EAC, baroclinic nearshore processes driven by coastal trapped waves (CTW's), and across shelf transport driven by internal waves.
- To determine the relationship between the temperature and salinity structure of the various water masses, the dynamical environment and the ichthyoplankton community. In particular we wish to examine the vertical and horizontal distributions of ichthyoplankton in the EAC, in estuarine plumes and fronts (where possible), and in coastal waters.

This is the second of two cruises, the first being FR2/94.

Investigators

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Centre for Marine Science
University of N.S.W.
PO Box 1, Kensington, NSW 2033

Mr. Peter Tate
Environmental Investigation Unit
Sydney Water Board
PO Box A53, Sydney South, NSW 2001.

Cruise Objectives

1. To undertake CTD casts and Acoustic Doppler Current Profiler profiles along three transects indicated on the attached cruise track, so as to delineate water mass characteristics from the nearshore zone to the East Australian Current, and their relative movement.
2. To recover a set of current meter moorings along a transect line from Bondi Beach out to 1000m depth.
3. To obtain EZ net samples in the various water masses delineated by the CTD casts. The ADCP and CTD survey will determine the locations for biological sampling.

Some of these operations will be concurrent with small vessel operations conducted by UNSW and Water Board personnel.

Cruise Track

The cruise track is shown in Figure 1.

ORV Equipment required

All standard systems; especially the profiling CTD system with altimeter and 12 bottle rosette plus profiling fluorometer.

The XBT system, the ADCP system with operational bottom tracking, scientific sounder, Inmarsat, thermosalinograph, GPS, computers, underway fluorometer and autoanalyser, boom for surface net deployment.

The EZ net plus associated CTD system and winch.

Container lab for formalin work.

HIAC particle counter.

Aanderaa Tape Reader

We will also require a large storage space and clear deck area for mooring work and EZ net.

Time Estimates:

- Mar 30: 09:00 Depart Newcastle.. After sunset begin overall CTD survey along Bondi Section.
- Mar 31: Recover moorings in daylight. After sunset continue CTD sections along one of the three transects (to be determined from satellite images).
- Apr 1: (Day and Night) Undertake CTD transects to delineate water masses.
- Apr 2: Day (CTD survey); Night EZ net survey.
- Apr 3,4,5: as for April 2, except some EZ net tows during the day on 5th April.
- Apr 6: (06:00-12:00) unload gear/change personnel at Watsons Bay. Depart for Hobart.
- Apr 7: Various ADCP surveys enroute. Occasional EZ net tows, CTD's.

Personnel

Iain Suthers	(UNSW - Chief Scientist)
Jason Middleton	(UNSW - ADCP, CTD)
Greg Nippard	(UNSW - ADCP, CTD)
Mark Gibbs	(UNSW - ADCP, CTD)
Peter Tate	(Water Board - ADCP, CTD)
Peter Barnes	(UNSW - EZ net, CTD)
Kim Smith	(UNSW - EZ net, CTD)
Dave Rissik	(UNSW - EZ net)
Linda Worland	(UNSW - EZ net, CTD)
Brad Morris	(UNSW - ADCP, CTD)
Mike Lowry	(UNSW - EZ net, CTD)
Dave Edwards	(CSIRO - Cruise Manager)
Bob Beattie	(CSIRO - Computing)
Val Latham	(CSIRO - Hydrology)

There will be some exchange of personnel at Watsons Bay through the cruise.

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



A.D. McEwan
CSIRO Div. of Oceanography



G.W. Paltridge
National Facility Steering Committee

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