

CSIRO MARINE RESEARCH

1997 RESEARCH VESSEL PROGRAM

CRUISE PLAN

FRV *SOUTHERN SURVEYOR*

CRUISE SS 02/97

7 AUGUST – 2 SEPTEMBER 1997

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PRELIMINARY

CSIRO Division of Marine Research (formerly Division of Fisheries) began studying the fisheries of the North West Shelf (NWS) in 1978, just prior to the declaration of the 200 nm Australian fishing zone. An intensive research programme was conducted on the NWS during 1982/83. This was followed by an actively adaptive or experimental management program since 1986. This cruise (1997) is the eighth since 1986 in the series and is a continuation of the experimental management program with its main objective being to measure changes in benthos and species abundance in the intervening years.

The program was designed to:

provide data on the changing structure of the Northwest Shelf fish and epibenthic community, improve the estimates of parameters required by existing methods of fisheries analysis, and provide the ecological background for development of new concepts in tropical multi-species management.

ITINERARY

LEG 1

Departure: Dampier 1200 h (WST) Thursday 7 August, 1997
Arrive: Dampier Wednesday 20 August, 1997

LEG 2

Departure: Dampier 1200h Wednesday 20 August, 1997
Arrive: Broome 0800 h Tuesday 2 September, 1997

AREA OF OPERATION

The Northwest Shelf study area, encompassing the three experimental management zones (see Figure 1).

AIMS

1. Determine the composition of the demersal fish community and the distribution and abundance of demersal habitats (based on epibenthic fauna) in each of the three experimental management zones.
2. Collect data and samples from which the basic population parameters (recruitment, growth and mortality) can be measured.
3. Conduct SDL/CTD transects (see Figure 1).
4. To obtain taxonomic specimens and photos of Northwest Shelf Shelf fish and invertebrate species.
5. To conduct trawls in deeper water (*i.e.* 300 m) in an attempt to collect species of importance to the Fish Taxonomy section's research. These trawls will be done overnight and only if time permits.

CRUISE PLAN

Sampling stations for the first two aims are chosen according to a stratified random design, with 44 stations in the eastern zone, 41 in the middle zone and 20 in the western zone.

The vessel will leave Dampier and commence work in the western shallow section of the study area, working in an easterly direction. The vessel will then put into Dampier on 20 August for refueling and scientist transfer. After refueling, the remainder of the random stations will be completed.

A stratified random design will be used to determine survey sampling locations. All sampling will be carried out during daylight hours. Data routinely collected from these samples are the identification and weights of each species caught (for determination of community composition), length frequency of selected species (for determination of relative recruitment, growth parameters and mortality rate), while some samples will also be used to provide otoliths (for determination of length at age, and hence growth parameters).

CRUISE OBJECTIVES

Length Frequencies – All individuals of the following species:

<i>Saurida undosquamis</i>	118001	<i>Saurida</i> sp. 2	118016
<i>Epinephelus areolatus</i>	311009	<i>E. rankini</i>	311010
<i>Lutjanus vittus</i>	346003	<i>L. sebae</i>	346004
<i>L. malabaricus</i>	346007	<i>Nemipterus furcosus</i>	347005
<i>N. celebicus</i>	347004	<i>Diagramma pictum</i>	350003
<i>Lethrinus choerorynchus</i>	351001	<i>L. nebulosus</i>	351008
<i>L. nematacanthus</i>	351002	<i>Parupeneus pleurospilus</i>	355004

It may occasionally be necessary to sub-sample *Saurida* sp. 2.

OTOLITHS

Two hundred otoliths for each of *Saurida undosquamis*, *Nemipterus furcosus*, *Lethrinus choerorynchus* and *Lutjanus sebae* are required from each of the three management zones. The relative frequency of fish lengths sampled for otoliths should be the same as the population length frequency (*i.e.* proportional sampling). Each fish sampled for otoliths will then be measured, sexed, reproductive status determined and eviscerated. The weights of the body and viscera (excluding digestive tract contents) will then be determined.

A benthos/fish association photographic survey will be carried out with the camera (Photosea 1000) being attached to the headline for all random trawl stations. These films will be developed on-board. There may be some ancillary video surveying carried out.

The SDL transects will be completed as time and location within the study area permits. The westerly and central one probably being completed in the first leg and the eastern transects being completed on the second leg.

SDL STATIONS FOR TRANSECTS:

Depth	Barrow	Legendre	Pt. Hedland
50 m	20°13.8' 115°31.9'	20°07.8' 116°30.1'	19°45.4' 117°59.4'
100 m	19°41.2' 115°30.0'	19°29.0' 116°30.7'	19°02.8' 117°58.4'
150 m	19°40.0' 115°30.1'	19°17.7' 116°30.8'	18°44.2' 118°00.0'
200 m	19°38.6' 115°30.8'	19°11.7' 116°30.8'	18°36.9' 118°00.1'
250 m	19°34.8' 115°30.1'	19°09.1' 116°30.6'	18°30.0' 118°00.0'

PERSONNEL

LEG

W. Whitelaw (Cruise Leader)	1, 2
C. Stanley	1, 2
G. Dews	1, 2
D. Cherry	1, 2
Chris Burdon (WA Museum - whales)	1, 2
Justy Siwabessy (acoustics PhD, University of WA)	1
S. Davenport	1
A. Graham	1
H. Webb	1
J. Cordell	1
Steve Newman (WA Fisheries)	2
L. MacDonald	2
T. Hay (NT Fisheries)	2
G. West	2
R. Campbell	2

All personnel are CSIRO staff unless otherwise indicated.

CONTACTS

For further information about this cruise contact:

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Chris Fandry
Acting Chief, CSIRO Marine Research

Date

18/7/97

Figure 1. Location map of Northwest Shelf study area.

