

## ***RV Investigator Voyage Plan*** **IN2015\_E02**

**Hobart to Hobart, 7-14 April 2015**

**Benthic biology – testing equipment, developing procedures  
and sample collection**



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<b>EQUIPMENT CHAMPIONS</b>	
<b>Name and title</b>	Dr Alan Williams and Mr Mark Green
<b>Affiliation</b>	CSIRO Oceans & Atmosphere
<b>Contact details</b>	Castray Esplanade, Hobart

<b>ITINERARY</b>	
<b>Mobilisation:</b>	Hobart
<b>Depart:</b>	Hobart, 1800* Tuesday, 7 April 2015
<b>Return:</b>	Hobart, 0800 Tuesday, 14 April 2015
<b>Demobilisation:</b>	Hobart, Tuesday, 14 April 2015

## Voyage objectives

This voyage is a trial of the new vessel for conducting benthic biological sampling. The voyage objectives are therefore a combination of specific aims for particular sampling gears and sample types – including the acquisition of high quality data sets and fully processed collections of specimens and samples – and to establish processes, procedures and work flows in particular areas of the vessel (e.g. working deck areas and sample processing laboratories).

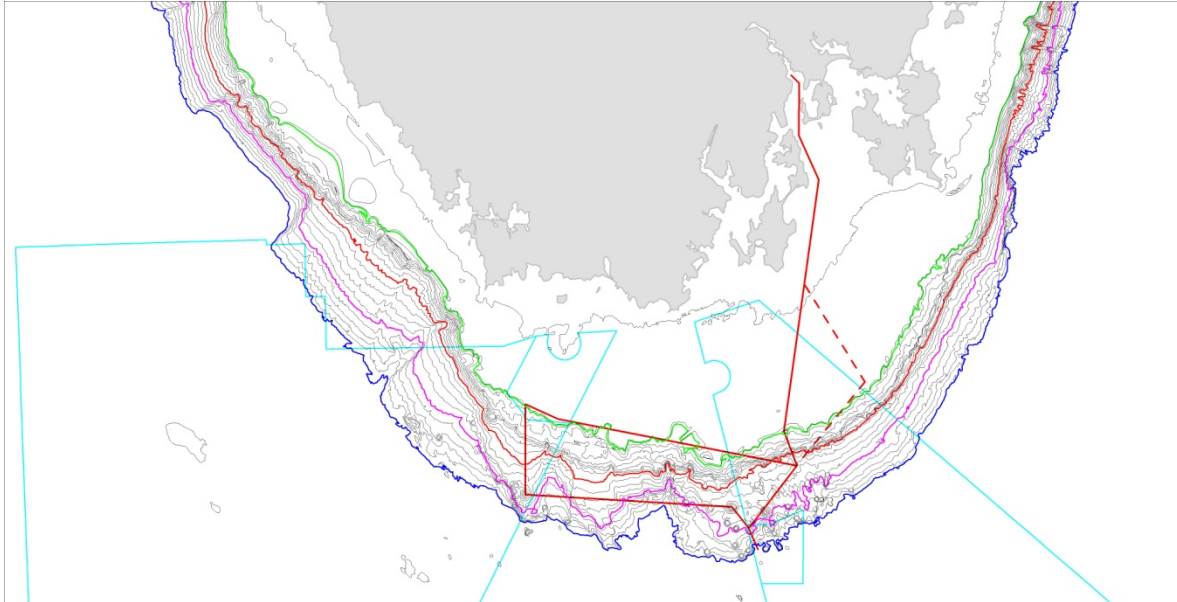
The trials of individual gears will commence with simple deployments in relative shallow and accessible (sediment) benthic habitats but will progressively target deeper and more challenging habitats as gear performance and safe-handling processes are established. We anticipate that each gear will be deployed several times.

Whilst noting that gear trials will be time-consuming, the voyage will be conducted in normal survey mode to the extent possible while maintaining safety to provide operational experience for future research voyages. This means maximising the safe and effective collection of scientific information during around-the-clock operations with real-time management of collections and data. This will be facilitated by including the input of staff from a range of Australian science agencies that have relevant experience:

1. Contribute to developing and refining Marine National Facility processes for safe and effective science operations at sea and introduce key stakeholders and science teams to *Investigator*, MNF and ASP operations:
  - a) Finalise procedures and Job Hazard Analysis (JHA) for each type of benthic sampling gear (see equipment list below) and the related scientific operations.
  - b) Undertake opportunistic testing and checks as per outstanding Statement of Functional Requirement (SFR) list.
  - c) Identify any problems, issues and conflicts and include these in a voyage report
2. Sample collection (supporting Objective 1)
  - a) Deep tow camera imagery, acoustic echo-sounder data and dropline catches will provide additional information to quantitatively document the large marine eel aggregation on Patience Seamount.
  - b) Deep tow camera data will also extend quantitative time-series (T3) analysis of benthos recovery on seamounts (selected seamounts).
  - c) DeepBRUVs landers will supplement a seamount fish community dataset, and enable the further assessment of this lander as a monitoring tool (selected seamounts).
  - d) Multicorer samples of soft sediment macrofauna and sediment geochemistry will provide contextual comparisons for analysis of GAB samples (selected areas).
  - e) All physical collections of benthic epifauna and fishes - including tissue samples – will be retained and curated in Australia's museums.

## Voyage track example

The voyage track is to the Tasmanian Seamounts via a return transit leg to the shelf edge within the Huon Commonwealth Marine Reserve (CMR); the voyage includes a westwards leg to the Tasman Fracture CMR (Figure 1).



**Figure 1.** Indicative vessel track for voyage IN2015 – EO2 shown in red; dashed section is a contingency if sampling within CMRs at the shelf edge is not permitted. (CMR boundaries shown in light blue; Tasman Fracture to the west, Huon to the east. Depth contours are: green 200 m; red 1000 m; pink 1500 m; blue 2000 m.

## Waypoints and stations

Activity	Site Region	Location (lat. Long)		Distance (n.m.)	Sampling	
		(degrees: decimal minutes)			Time (days)	Indicative Date
Mobilisation					0.5	April 7
Transit	Storm Bay (calibrations)				0.5	April 7/ 8
	Hobart to Huon CMR shelf edge	44:01.00	147:20.07	70	0.5	April 8
Science sampling	1 Huon CMR shelf edge	44:01.00	147:20.07	0	1.5	April 8/ 9
	2 Patience Seamount	44:07.60	147:23.04	7	0.5	April 9/ 10
	3 Hill U Seamount	44:19.47	147:10.57	15	0.5	April 10
	4 Pedra Seamount	44:15.67	147:06.25	5	0.5	April 10/ 11
	5 Main Matsykker Seamount	44:13.11	146:11.82	40	0.5	April 11
	6 Tasman Fracture CMR shelf edge	43:55.94	146: 12.45	18	0.5	April 11/ 12
	2 Patience Seamount	44:07.60	147:23.04	53	0.5	April 12/ 13
Transit	CMR shelf edge to Hobart	44:01.00	147:20.07	70	0.5	April 13/ 14
Demobilisation					0.5	April 14
Steaming (280 n.m.)	Between sampling sites				1.0	
	[Time on station]				[4.5]	
<b>TOTAL</b>					<b>8</b>	

## Station tally (indicative minimum estimate)

An indication of the number and distribution is shown below. Sample location at the shelf edge (yellow) and on seamounts inside CMRs (green) is dependent on Parks Australia authorisation.

	Shelf edge		Patience Hill U		Pedra			Main Mat	Tally per gear	Unit time (hr)	Total time (hr)
Site	1 & 6	1 & 6	2	3	4	4	4	5			
Depth (m)	100	200	850	1000	800	1000	2000	800			
Bottom type	Sand	Gravel	Rock	Rock	Rock	Mud	Mud	Rock			
Sled	2	2	0	0	2	1	1	0	8	3	24
Grab	2	2	0	0	0	1	1	0	6	1	6
Beam trawl	2	2	0	0	0	1	1	0	6	3	18
Towed camera	1	1	1	1	1	0	1	0	6	4	24
Corer platform	0	0	0	0	0	2	2	0	4	4	16
DeepBRUVs	0	0	1	0	0	0	0	1	2	6	12
Dropline	0	0	3	0	0	0	0	0	3	4	12
										Days	4.7

## Investigator Equipment

1. Sherman sled
2. Smith-McIntyre grab
3. MNF deep tow camera system
4. Large diameter block mounted on stern A-frame
5. USBL system
6. Multibeam sonar, ADCP, Sub-bottom Profiler
7. Rear deck facilities
8. Wet laboratory facilities
9. Biological processing areas
10. -80 and walk-in freezers
11. Communication/control systems (e.g. Operations Room, Bridge, rear deck).

## User Supplied Equipment

1. Instrumented Corer Platform with 6-barrel KC Multi-corer
2. DeepBRUVs lander (x 3)
3. CSIRO Beam trawl (x 2)
4. D&N Francis electric hydraulic winch with ~3000 m of armoured fibre-optic cable
5. CSIRO fishing dropline
6. Core sample elutriation system

## Notes on equipment operations

1. Trained MNF Support Staff will take control of towed body winch when within 200 m of the bottom and during retrieval of equipment.
2. The user-supplied D&N Francis winch will be operated by the science team on board. Crew will assist with deployment and operating the A-frame.

## Muster list and cabin allocation

### Shifts

A Shift 1400-0200

B Shift 0200-1400

Name (Shift)	Position/Role	Organisation	Cabin Type	No.
Tegan Sime (Float)	Voyage Manager	CSIRO MNF	Voyage Manager	302
Alan Williams (A)	Equipment Champion	O&A CSIRO	Chief Scientist	301
Mark Green (B)	Deputy Equipment Champion	O&A CSIRO	Single Scientist 1	303
Lisa Woodward (Float)	Deputy Voyage Manager	CSIRO MNF	Single Scientist 2	304
Tim O'Hara (B)	Oversight: biological processing	Museum Victoria	Single Scientist 3	305
Matt Sherlock (A)	Towed Camera Operations	O&A CSIRO	Double Scientist 1	306A
Jeff Cordell (B)	Towed Camera Operations	O&A CSIRO		306B
Brett Muir (B)	SIT	O&A CSIRO	Double Scientist 2	307A
Aaron Tyndall (A)	SIT	O&A CSIRO		307B
Pamela Brodie (A)	DAP	O&A CSIRO	Double Scientist 3	308A
				308B
John Pogonoski (A)	Biological processing	NRCA CSIRO	Double Scientist 4	309A
Alistair Graham (B)	Biological processing	NRCA CSIRO		309B
Cameron White (A)	Sediment Geochemistry	Energy CSIRO	Double Scientist 5	310A
Charles Heath (B)	Sediment Geochemistry	Energy CSIRO		310B
Franzis Althaus (A)	Biological processing	O&A CSIRO	Double Scientist 6	311A
Nicole Morgan (B)	SIT	O&A CSIRO		311B
Sebastian Holmes (A)	Biological processing	UWS	Double Scientist 7	312A
				312B
Tara Martin (A)	GSM	O&A CSIRO	Single Scientist 1	111
Karen Gowlett-Holmes (A)	Biological processing	NRCA CSIRO	Double Scientist 1	112A
				112B
Dave Watts (A)	GSM	O&A CSIRO	Double Scientist 2	113A
Stuart Edwards (B)	GSM	O&A CSIRO		113B
Chris Blood (A)	O&A workshop	O&A CSIRO	Double Scientist 1	101A
Craig White (B)	O&A workshop	O&A CSIRO		101B


Name (Shift)	Position/Role	Organisation	Cabin Type	No.
Stephen Keable (A)	Biological processing	Australian Museum	Double Scientist 2	102A
Mark McGrouther (B)	Biological processing	Australian Museum		102B
Skip Wooley (B)	Biological processing	Museum Victoria	Double Scientist 3	103A
				103B
Mark Lewis (A)	SIT	O&A CSIRO	Double Scientist 4	104A
Anoosh Sarraf (B)	DAP	O&A CSIRO		104B
Andrea Crowther (A)	Biological processing	South Australia Museum	Double Scientist 5	105A
Sabine Piller (B)	Biological processing	UWS		105B
Amelia Lewis (A)	Biological processing	Uni of Adelaide	Double Scientist 6	106A
Deb Osterhage (B)		UTAS		106B
Di Bray (A)	Biological processing	Museum Victoria	Double Scientist 7	107A
Melanie McKenzie (B)	Biological processing	Museum Victoria		107B
Mike Gresham (B)	Data Management	Energy CSIRO	Double Scientist 8	108A
				108B

SIT – Seagoing Instrumentation Team

DAP – Data Acquisition and Processing

GSM – Geophysical Surveying and Mapping

## Signature

<b>Your name</b>	Dr Alan Williams	Equipment Champion	
<b>Date:</b>	20 March 2015		