

R.V. FRANKLIN

NATIONAL FACILITY OCEANOGRAPHIC RESEARCH VESSEL

RV FRANKLIN

RESEARCH SUMMARY

CRUISE FR 5/89

Sailed Melbourne 0100 Friday 28 April 1989
Arrived Coff's Harbour 0900 Thursday 11 May 1989

Principal Investigator

Dr Jim Lowry
Australian Museum

Survey of the Benthic Invertebrates from the Lord Howe Rise
and Seamounts close to the Coast of NSW

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August 1989

For further information contact

ORV Operations Manager
c/- CSIRO Division of Oceanography
GPO Box 1538, Hobart, Tas. 7001
Telephone (002) 20 6222
Telex AA 57182



R.V. FRANKLIN IS OWNED AND OPERATED BY CSIRO

RV FRANKLIN
RESEARCH CRUISE FR0589

CRUISE SUMMARY

1. Itinerary

Departed Port Melbourne 0100 hrs Friday 29/04/89
Arrived Coffs Harbour 0900 hrs Thursday 11/05/89

2. Scientific Program

Survey of the Benthic Invertebrates from the Lord Howe Rise and seamounts close to the New South Wales Coast.

The objectives were:

To sample the benthos of the Lord Howe Rise and prominent submarine seamounts between the New South Wales coast and the Lord Howe Rise to establish the extent of the fauna in each area.

To investigate the diversity of these faunas in relation to the geological age of the seamounts.

3. Principal Investigator

Dr J.K. Lowry
Division of Invertebrate Zoology
Australian Museum
P.O. Box A285
Sydney South
NSW 2000

4. Results

The first aim of this cruise was very successful. Considering the length of the cruise the sea state was excellent for benthic sampling on almost all occasions. There were some problems with damage to dredges on the seamounts. This damage was repaired very quickly by the ship's engineers. There was also some damage to the beam trawl net from the seamounts. This was repaired by the scientific team.

We took 34 dredge or sled samples and 15 beam trawls in depths from 131 to 2950 m. Sled samples were elutriated on deck through a 0.5 mm screen to separate small fragile invertebrates from the rest of the sample. The remaining coarse fraction was washed through a set of nested screen and large invertebrates were picked off. A portion of each sediment fraction was saved and preserved. Echinoderms were preserved in

70% ethanol and the other invertebrates were fixed in 10% formalin.

The following station list indicates the large conspicuous invertebrates and fish that were observed at the time. The two most interesting finds were the very rare sea-urchin Echinosigra paradoxa, originally described from off southern Iceland and taken in the Indian Ocean by the Galathea Expedition, and the strange ophidiid fish, Acanthonus sp., collected twice by the Galathea Expedition, once in the Gulf of Guinea and once in the Gulf of Panama. Both are recorded for the first time from Australian waters.

The samples are being sorted and catalogued in the Australian Museum. Specialists are being contacted to study various invertebrate and vertebrate groups and the results will be published in papers dealing with the systematics of these groups. Currently Dr Richer de Forges, ORSTOM, New Caledonia is studying the brachyuran decapods as part of his studies on faunal diversity of seamounts in the South Pacific, Dr Griffin, Australian Museum is studying the deep sea lobsters as part of his work on this group from eastern Australian waters and Dr Lowry is studying the lysianassoid amphipods as part of his work on this group in Australian waters.

Annotated Station List

FR0589-1 Gascoyne Seamount, western Tasman Sea, 36°42.70'S 156°13.03'E, coral and sand, 153 m, box dredge, J.K. Lowry et al. on ORV Franklin, 30 April 1989.

Dredge slightly damaged, small haul.

FR0589-2 Gascoyne Seamount, western Tasman Sea, 36°41.53'S 156°08.91'E; coral and sand, 145 m; box dredge, J.K. Lowry et al. on ORV Franklin, 1 May 1989.

Dredge full of sand and coral rubble, brachiopods, carrier shells, Xenophora and 1 sipunculid.

FR0589-3 Gascoyne Seamount, western Tasman Sea, 36°42.31'S 156°09.95'E; coral and sand, 145 m; box dredge, J.K. Lowry et al. on ORV Franklin, 1 May 1989.

Dredge full of sand and coral rubble, most not processed, one goneplacid crab.

FR0589-4 Gascoyne Seamount, western Tasman Sea, 36°43.11'S 156°13031'E; coral and sand with many large invertebrates, 143 m; 1.2 m sled, J.K. Lowry et al. on ORV Franklin, 1 May 1989.

Dredge full of sand and coral rubble with numerous large epibenthic invertebrates including corals: gorgonaceans. Crustaceans: amphipods, goneplacid and majid crabs, Leptomithrax and Achaeus, pagurid, Porcellanopagurus, galatheids and shrimp; echinoderms: ophiuroids and crinoids; molluscs; bivalves, gastropods, Xenophora, opisthobranchs, Phylina sp..

FR0589-5 Taupo Seamount, western Tasman Sea, 33°14.36'S 156°09.52'E; marl bottom, 132 m; 1.2 m sled, J.K. Lowry et al. on ORV Franklin, 1 May 1989.

Dredge about 25% full, sieved, not elutriated. Large invertebrates included corals: white precious coral, Corallium, alcyonarians, stylasterids; crustaceans: amphipods, alpheid shrimps, majid, Huenia and xanthid crabs, galatheids, pylochelids, pycnogonids; echinoderms: ophiuroids; sponges.

FR0589-6 Taupo Seamount, western Tasman Sea, 33°14.57'S 156°09.59'E; very rough marl bottom, 131 m; 1.2 m sled, J.K. Lowry et al. on ORV Franklin, 1 May 1989.

Small sample, sieved, not elutriated. Similar to FR0589-5 except, bryozoan Iodictyum buchneri; crustaceans: Porcellanopagurus, majids Achaeus, Huenia and Pleistacantha.

FR0589-7 Taupo Seamount, western Tasman Sea, 33°14.21'S 156°10.68'E; very rough marl bottom, 133 m; 1.2 m sled (damaged), J.K. Lowry et al. on ORV Franklin, 2 May 1989.

Sled badly damaged. Sample elutriated and sieved. corals: alcyonarians and gorgonaceans; crustaceans: one majid ?Pleistacantha; molluscs: one gastropod Conus.

FR0589-8 Taupo Seamount, western Tasman Sea, 33°16.85'S 156°09.15'E; limestone and sand bottom, 244 m; 1.2 m sled, J.K. Lowry et al. on ORV Franklin, 2 May 1989.

Good sample with concretions full of holes and burrows, half elutriated, half sieved. Crustaceans: amphipods, Porcellanopagurus, pylochelids, carid shrimp, Plesionika, majids, Pleistacantha and Macropodia, xanthids; molluscs: pleurotomariid, Perotrochus richeri; polychaetes: serpulid; many sponges.

FR0589-9 Derwent Hunter Seamount, western Tasman Sea, 30°47.21'S 156°14.30'E; very rough marl bottom, 298 m; 1.2 m sled (damaged), J.K. Lowry et al. on ORV Franklin, 2 May 1989.

Sled badly buckled, came up backwards with a small sample including coelenterates: stylasterid corals, sponge.

FR0589-10 Derwent Hunter Seamount, western Tasman Sea, 30°48.18'S 156°13.27'E; large and small sandstone boulders on marl bottom, 288 m; box dredge, J.K. Lowry et al. on ORV Franklin, 2 May 1989.

Small sample with large limestone block and some small stones. Invertebrates included crustaceans: amphipods, a shrimp and a pagurid; echinoderms: parts of a crinoid and an ophiuroid; sponges.

FR0589-11 Derwent Hunter Seamount, western Tasman Sea, 30°46.67'S 156°14.39'E; 316 m; box dredge, J.K. Lowry et al. on ORV Franklin, 2 May 1989.

Aborted, problem with thrusters.

FR0589-12 Derwent Hunter Seamount, western Tasman Sea, 30°46.84'S 156°14.41'E; 315 m; box dredge, J.K. Lowry et al. on ORV Franklin, 2 May 1989.

Dredge was on the bottom, but came up empty.

FR0589-13 Derwent Hunter Seamount, western Tasman Sea, 30°46.88'S 156°14.42'E; 300 m; box dredge, J.K. Lowry et al. on ORV Franklin, 2 May 1989.

Dredge lost.

FR0589-14 Elizabeth Reef, western Tasman Sea, 29°53.82'S 159°01.65'E; shell and coarse coral sand, 420 m; 1.2 m sled, J.K. Lowry et al. on ORV Franklin, 3 May 1989.

Dredge nearly full of coarse sand and shell, many dead Halimeda articles in the sediment. Invertebrates included crustaceans: alpheids, galatheids, pagurids, goneplacids, leucosiids and parthenopids; echinoderms: clypeastroids; molluscs: bursids, mitrids and scaphopods, Dentalium.

FR0589-15 Elizabeth Reef, western Tasman Sea, 29°54.82'S 159°00.85'E; shell and coarse coral sand, 650 m; 1.2 m sled, J.K. Lowry et al. on ORV Franklin, 3 May 1989.

Very similar to FR0589-14.

FRO589-16 Lord Howe Rise, western Tasman Sea, 29°37.73'S 159°46.65'E; pale grey ooze, 2600 m; epibenthic sled, J.K. Lowry et al. on ORV Franklin, 3 May 1989.

Small sample without large invertebrates, elutriated.

FRO589-17 Lord Howe Rise, western Tasman Sea, 29°42.06'S 159°48.31'E; pale grey ooze and pumice, 2450 m; beam trawl, J.K. Lowry et al. on ORV Franklin, 3 May 1989.

Sample included coelenterates: solitary corals; crustaceans: galatheids, Munidopsis, penaeids, Plesiopenaeus; echinoderms: large football-shaped holothurians.

FRO589-18 Lord Howe Rise, western Tasman Sea, 29°27.01'S 160°08.26'E; pale grey ooze, 2000 m; beam trawl, J.K. Lowry et al. on ORV Franklin, 4 May 1989.

Sample included coelenterates: alcyonarians, antipatharians, pennatulids; crustaceans: shrimps, stalked barnacles, pycnogonids; echinoderms: asteroids, holothurians, ophiuroids; molluscs: gastropods and scaphopods. Several fishes: Macrouridae, Bathypteroidae.

FRO589-19 Lord Howe Rise, western Tasman Sea, 29°24.57'S 160°08.73'E; pale grey ooze, 2000 m; epibenthic sled, J.K. Lowry et al. on ORV Franklin, 4 May 1989.

Small sample with some foraminiferans; coelenterates: pennatulids, polychaete tubes; echinoderms: ophiuroids; molluscs: arcids. Fish otoliths.

FRO589-20 Lord Howe Rise, western Tasman Sea, 29°13.20'S 160°35.25'E; pale grey ooze, 1550 m; epibenthic sled, J.K. Lowry et al. on ORV Franklin, 4 May 1989.

Dead Halimeda articles in the sediment. Crustaceans: amphipods, majid crab, Achaeus; echinoderms: ophiuroids; molluscs: bivalve shells; polychaetes.

FRO589-21 Lord Howe Rise, western Tasman Sea, 29°10.29'S 160°29.78'E; pale grey ooze, 1590 m; beam trawl, J.K. Lowry et al. on ORV Franklin, 4 May 1989.

Coelenterates: gorgonaceans, Isididae, pennatulids. Crustaceans: polychelids, Parapagurus, shrimps Funchalia and Nematocarcinus, crab Geryon; echinoderms: football-shaped holothurian, a flat echinoid Asthenozoma and ophiuroids; Sponges. Fish: Ophidiidae, Halosauridae, Lophiidae and Macrouridae.

FR0589-22 Lord Howe Rise, western Tasman Sea, 28°44.08'S
161°54.59'E; pale grey ooze, 1325 m; beam trawl, J.K.
Lowry et al. on ORV Franklin, 4 May 1989.

Crustaceans: shrimp, Funchalia and polychelid lobsters.

FR0589-23 Lord Howe Rise, western Tasman Sea, 28°42.80'S
161°55.64'E; pale grey ooze, 1325 m; epibenthic sled,
J.K. Lowry et al. on ORV Franklin, 5 May 1989.

Good sample, sled nearly half full of ooze. Whole
sample elutriated, remainder washed through 0.5 mm
screen and preserved separately. Scaphopods and
bryozoans conspicuous.

FR0589-24 Lord Howe Rise, western Tasman Sea, 28°06.87'S
163°03.255'E; coarse ooze, 1078 m; epibenthic sled,
J.K. Lowry et al. on ORV Franklin, 5 May 1989.

Small quantity of coarse sediment. Crustaceans:
amphipods; molluscs: pteropods and scaphopods.

FR0589-25 Lord Howe Rise, western Tasman Sea, 28°05.76'S
163°06.04'E; coarse ooze with pumice, 1051 m; beam
trawl, J.K. Lowry et al. on ORV Franklin, 5 May 1989.

Good sample: crustaceans: amphipods, stomatopods
Bathysquilla, shrimps, Funchalia, Glyphocrangon,
Nematocarcinus and Acanthephyra, polychelid lobsters,
stalked barnacles on pumice, 2 kinds of Parapagurus,
dorippid, Ethusina; echinoderms: holothurians,
echinoids, Asthenozoma; molluscs: dead bivalves, live
Propeamussium, xenophorids; sponge: Cladorhiza. Fish:
Pentacerotidae, eels and Ray eggs.

FR0589-27 Lord Howe Rise, western Tasman Sea, 27°59.3'S
162°48.6'E; coarse ooze with pumice, 1250 m; beam
trawl, J.K. Lowry et al. on ORV Franklin, 5 May 1989.

Much pumice in this sample, some specimens mangled.
Crustaceans: shrimps, polychelids, dorippid, Ethusina
many stalked barnacles on pumice; echinoderms:
collapsing urchins echinothurids: one small
holothurian.

FR0589-28 Lord Howe Rise, western Tasman Sea, 27°58.99'S
162°51.55'E; coarse sediment with pumice, 1250 m;
epibenthic sled, J.K. Lowry et al. on ORV Franklin, 6
May 1989.

Much pumice, sea pens; one majid crab Platymaia.

FRO589-29 Lord Howe Rise, western Tasman Sea, 27°34.04'S 161°34.37'E; pale grey ooze, 1500 m; epibenthic sled, J.K. Lowry et al. on ORV Franklin, 6 May 1989.

Excellent sample, thick ooze with foraminiferans, crustaceans: amphipods, isopods; worms; molluscs: bivalves; and brachiopods.

FRO589-30 Lord Howe Rise, western Tasman Sea, 27°35.94'S 161°39.48'E; 1500 m; beam trawl, J.K. Lowry et al. on ORV Franklin, 6 May 1989.

Unsuccessful sample, trawl did not tow in proper position. Coelenterates: one medusa: mollusca: one squid. Fish: one pelagic fish.

FRO589-31 Lord Howe Rise, western Tasman Sea, 27°39.8'S 161°46.3'E; 1423 m; beam trawl, J.K. Lowry et al. on ORV Franklin, 6 May 1989.

Good sample containing coelenterates: Umbellula, gorgonaceans, Metalogorgia crustaceans: one Gnathophausia, several Nephropsis, three kinds of shrimps, a polychelid and one Geryon; echinoderms: several kinds of holothurians, collapsing urchins echinothurids; molluscs: an opisthobranch, ophiuroids, Euryale living on gorgonacean. Fish: eels, Chaunax, brotulids.

FRO589-32 Lord Howe Rise, western Tasman Sea, 27°11.97'S 160°37.80'E; pumice, 1960 m; beam trawl, J.K. Lowry et al. on ORV Franklin, 7 May 1989.

Crustaceans: one Gnathophausia, six Parapagurus, some shrimps and very long sponge spicules. Fish: some eels.

FRO589-33 Lord Howe Rise, western Tasman Sea, 27°13.34'S 160°43.41'E; pale grey ooze with much small pumice, 1989 m; epibenthic sled, J.K. Lowry et al. on ORV Franklin, 7 May 1989.

Small sample, elutriated. Crustaceans: amphipods, shrimps and Parapagurus; echinoderms: an extremely rare sea urchin, Echinosigra paradoxa, brittle stars; many small molluscs; several ascidians.

FRO589-34 Lord Howe Rise, east of Gifford Guyot, western Tasman Sea, 26°51.66'S 159°49.07'E; 2500 m; epibenthic sled, J.K. Lowry et al. on ORV Franklin, 7 May 1989.

Unsuccessful bottom sample, crustaceans: some pelagic copepods and mysids.

FR0589-35 Lord Howe Rise, east of Gifford Guyot, western Tasman Sea, 26°51.57'S 159°48.72'E; 2500 m; beam trawl, J.K. Lowry et al. on ORV Franklin, 8 May 1989.

Crustaceans: Parapagurus, shrimps; echinoderms, a multilegged asteroid, many ophiuroids; polychaetes, scale worms. Fish: Ipnops.

FR0589-36 Gifford Guyot, western Tasman Sea, 26°41.45'S 159°26.70'E; 292 m; 1.2 m sled, J.K. Lowry et al. on ORV Franklin, 8 May 1989.

A very small sample, crustaceans: a galatheid and a pagurid.

FR0589-37 Gifford Guyot, western Tasman Sea, 26°42.21'S 159°28.02'E; 294 m; 1.2 m sled, J.K. Lowry et al. on ORV Franklin, 8 May 1989.

Small sample, entirely preserved.

FR0589-38 Gifford Guyot, western Tasman Sea, 26°43.39'S 159°28.54'E; 295 m; beam trawl, J.K. Lowry et al. on ORV Franklin, 8 May 1989.

Coelenterates: Subergorgia; crustaceans: chirostylids living among the Subergorgia branches, stenopodid shrimps, one Trizopagurus in Fusinus shell, one majid, Chlorinoides sp; echinoderms: echinoids Toxopneustidae and Clypeaster. Fish: eels, Bothidae, 2 species, Congiopodidae, Scorpaenidae, Hoplichthyidae, Ogcocephalidae.

FR0589-39 Gifford Guyot, western Tasman Sea, 26°44.27'S 159°28.93'E; 306 m; beam trawl, J.K. Lowry et al. on ORV Franklin, 8 May 1989.

Trawled for thirty minutes. Unfortunately there was a tear in the bottom of the net and most of the catch was lost. Coelenterates: gorgonaceans caught in net, one antipatharian, some stylasterids and some small white spherical sponges; one scorpaenid fish.

FR0589-40 Gifford Guyot, western Tasman Sea, 26°45.27'S 159°30.59'E; 315-360 m; 2 m sled, J.K. Lowry et al. on ORV Franklin, 8 May 1989.

There were gravel and boulders in the net. Coelenterates: gorgonacean fragments, numerous dendrophyllid and stylasterid corals. Crustaceans: Plesionika, galatheids, pagurids, xanthid crabs; echinoderms: 1 large asteroid, some regular echinoids; Molluscs: many small gastropods. Sponges: some

calcareous sponges, sphinctozarians.

- FRO589-41 Between Gifford Guyot and Britannia Seamounts, western Tasman Sea, 27°08.36'S 158°15.17'E; 2860 m; beam trawl, J.K. Lowry et al. on ORV Franklin, 8 May 1989.

Small sample with some pumice. Pumice with 1 Stephanoscyphus and a strobulating coelenterate. Some specimens which may have come from previous sample.

- FRO589-42 Between Gifford Guyot and Britannia Seamounts, western Tasman Sea, 27°07.97'S 158°14.89'E; 2900 m; epibenthic sled, J.K. Lowry et al. on ORV Franklin, 8 May 1989. Unsuccessful.

- FRO589-43 Between Gifford Guyot and Britannia Seamount, western Tasman Sea, 27°13.44'S 157°58.11'E; pumice, not sediment, 2900 m; epibenthic sled, J.K. Lowry et al. on ORV Franklin, 9 May 1989.

Small sample with some pumice and no sediment. Crustaceans: one cirriped; echinoderms: 1 ophiuroid; molluscs; some bivalve shells.

- FRO589-44 Between Gifford Guyot and Britannia Seamount, western Tasman Sea, 27°18.74'S 158°03.98'E; 2950 m; beam trawl, J.K. Lowry et al. on ORV Franklin, 9 May 1989.

Pumice stones damaged the catch. Coelenterates: an alcyonarian, Umbellula; crustaceans; some shrimp; sponges. Fish; one ophidiid, Acanthonus sp., not previously recorded from Australia.

- FRO589-45 Britannia Seamount, western Tasman Sea, 28°08.87'S 155°39.70'E; 465 m; 1.2 m sled, J.K. Lowry et al. on ORV Franklin, 10 May 1989.

Sample unsuccessful, sled lost.

- FRO589-46 Britannia Seamount, western Tasman Sea, 28°17.04'S 155°36.46'E; limestone and coarse coral sand bottom, 425 m; 1.2 m sled, J.K. Lowry et al. on ORV Franklin, 10 May 1989.

Very good sample. Bryozoans; coelenterates: hard coral Javina, dendrophyllids and stylasterids; crustaceans: Metapeneopsis, chirostylids, several kinds of pagurids, a cancrid, Cancer, majids, Sphenocarcinus and Acheus and a xanthid; echinoderms: small yellow crinoids, small green stalked crinoids, Pentacrinus, an asteriid, several kinds of regular and irregular echinoids; molluscs: arcids, turrids and vermitids; sponges: Corallistes.

FRO589-47 Britannia Seamount, western Tasman Sea, 28°17.47'S 158°37.89'E; limestone and coarse coral sand bottom, 419 m; 1.2 m sled, J.K. Lowry et al. on ORV Franklin, 10 May 1989.

Similar to FRO589-46, plus crustacean: two majids Sphenocarcinus, 5 xanthids, many small amphipods; molluscs; one spondylid.

FRO589-48 Britannia Seamount, western Tasman Sea, 28°18.48'S 155°38.62'E; limestone and coarse coral sand bottom, 415 m; beam trawl, J.K. Lowry et al. on ORV Franklin, 10 May 1989.

Unfortunately the net tore on the bottom and much of the catch was lost. Coelenterates: gorgonaceans; crustaceans: 3 lobsters Puerulus angulatus, 1 homolid crab Latreillopsis multispinosa; echinoderms: crinoids.

FRO589-49 Britannia Seamount, western Tasman Sea, 28°17.73'S 155°38.34'E; limestone and coarse coral sand bottom, 422 m; 2 m sled, J.K. Lowry et al. on ORV Franklin, 10 May 1989.

Net on sled badly damaged. Coelenterates: crinoids; crustaceans: galatheids, crabs and amphipods; echinoderms: crinoids.

J.K. Lowry

The redeployment of the oceanographic buoy on the Gascoyne Seamount was not carried out due to prior retrieval. The participants from Lawson and Treloar therefore were not on the cruise.

PERSONNEL

Dr J.K. Lowry	Australian Museum	Chief Scientist
Ms P.B. Berents	"	
Mr R.T. Springthorpe	"	
Mr R. Paterson	"	
Ms J. Waterhouse	"	
M B. Richer de Forges	ORSTOM - Noumea	
Mr A.M. Forbes	CSIRO - ORV	Cruise Manager
Mr D.W. Edwards	"	
Mr J.R. Dunn	"	