

NIWA Vessel Management



RV Tangaroa reached her most southerly latitude yet: 75° S.

Intrepid *Tangaroa* surveys Ross Sea

Tangaroa visited Antarctic waters for the sixth time, conducting geophysical, hydrographic, and biodiversity surveys of the Ross Sea and neighbouring islands for Land Information New Zealand and the Ministry of Fisheries.

The ship carried 37 personnel on a 48-day, 8525 nautical mile voyage across one of the world's most inhospitable stretches of ocean.

'Conditions in the Ross Sea were tricky, with swathes of thick pack ice, and visibility often reduced by fog or snow,' says voyage leader John Mitchell. 'The captain and crew did an excellent job of manoeuvring the ship and seismic survey equipment through the ice.'

Explorers of the deep

A new deepwater video camera system deployed on *Tangaroa* captured stunning images of the Graveyard seamounts complex on the Chatham Rise. The camera and frame were purpose-built in NIWA workshops to record deepsea habitats and living things. The images are being used to describe seamount biodiversity, and to help assess impacts of bottom trawling on seamount communities.

The video system had a real-time feedback to the vessel, enabling the camera to be monitored and adjusted as it was 'flown' within a few metres of the seafloor, at depths down to 1200 m.

The research is funded by the Ministry of Fisheries and the Foundation for Research, Science & Technology, and supported by the Census of Marine Life seamount programme.



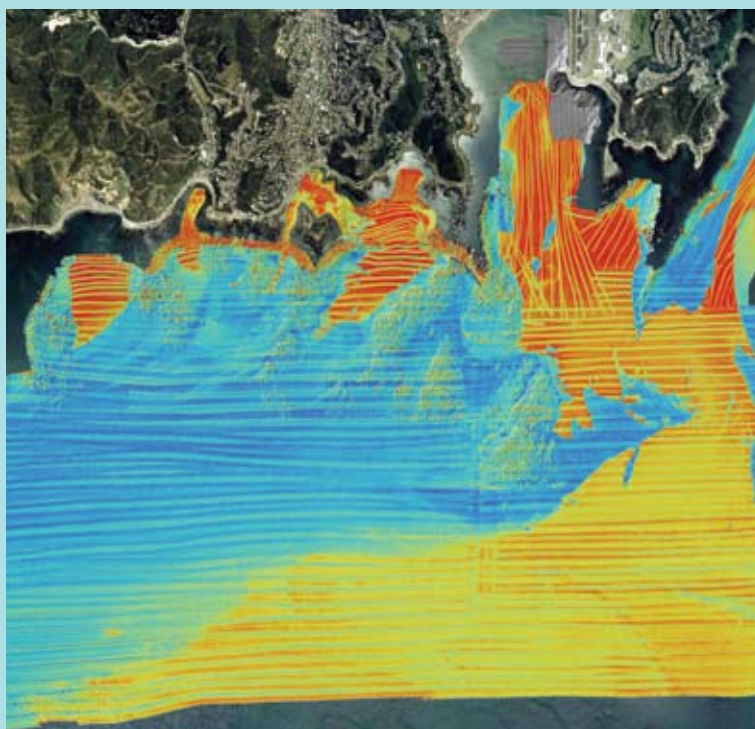
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Sophisticated sonar reveals marine habitats

NIWA vessels' multibeam sonar capabilities offer a rapid, accurate, and objective means of mapping marine habitats, with myriad applications.

NIWA recently applied this technology to map 46 square kilometres of seafloor habitats in and around the proposed Taputeranga Marine Reserve on Wellington's south coast, in conjunction with Victoria University and the Department of Conservation. Combining the shallow water capabilities of survey launch *Pelorus* and research vessel *Kaharoa* enabled the team to map close to the shoreline and cover the entire subtidal area.

The vessels were equipped with an EM3000D high resolution echosounder. This sends out 254 beams of sound to provide unsurpassed detail of the seafloor, even distinguishing between coarse and fine gravel substrates.



Map of seafloor habitat types on Wellington's south coast. Red-yellow areas indicate coarse and medium-fine sands; light blue, fine gravel; dark blue, coarse gravel; isolated red-yellow areas, rock.

NIWA Research Vessels

RV *Tangaroa*



Tangaroa is New Zealand's premiere research and survey vessel, equipped for hydrographic, bathymetric, oceanographic, and biological surveys, and both trawl and acoustic fisheries surveys. *Tangaroa* has an ice-strengthened hull, enabling it to operate in Antarctic waters.

RV *Kaharoa*



Kaharoa is primarily a coastal and inshore vessel with hydrographic, bathymetric, oceanographic, biological, and fisheries survey capacities, but over recent years has deployed Argo floats across the Pacific to North and South America and Hawaii.

Pelorus



Pelorus is a purpose-built rugged science support and hydrographic survey launch, which has been fitted out to operate in Antarctic conditions. It can be carried on and launched from *Tangaroa*.

Type:	Deepwater research vessel	Coastal research vessel	Survey launch
Year built:	1991 (Mjelllem & Karlsen Verf, Norway)	1981 (Whangarei Engineering Co.)	1977 (fully refitted 2000)
Owner:	NIWA Vessel Management	NIWA Vessel Management	NIWA Vessel Management
Length:	70.0 m	28.0 m	10.5 m
Beam:	13.8 m	8.2 m	3.0 m
Draft:	7.2 m	3.2 m	1.0 m
Hull:	Ice strengthened		
Cruising speed:	12 knots	10.5 knots	12 knots
Endurance:	60 days	30 days	
Crew:	14	5	
Accommodation:	30 scientific staff	6 scientific staff	
Miles steamed:	c. 900 000 nautical miles	c. 490 000 nautical miles	