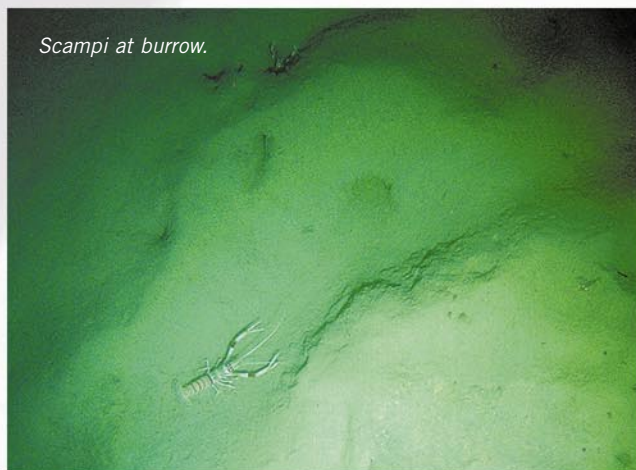


Counting scampi by camera

NIWA has developed a digital photographic system to assess scampi stocks and, potentially, other deepwater invertebrates. Scampi have been fished commercially since 1988, but no reliable estimates of biomass were available until photographic surveys began in 1998, despite commercial catch rate data and much other information. At first we used a film-based camera, but we changed to digital images as soon as suitable technology was available and could be modified for use on *Kaharoa*. During these surveys we typically take 600 to 1000 photographs of the seabed at scampi depths (200–600 m). Each photograph is then examined independently by three experienced readers who count the scampi and their characteristic burrows.



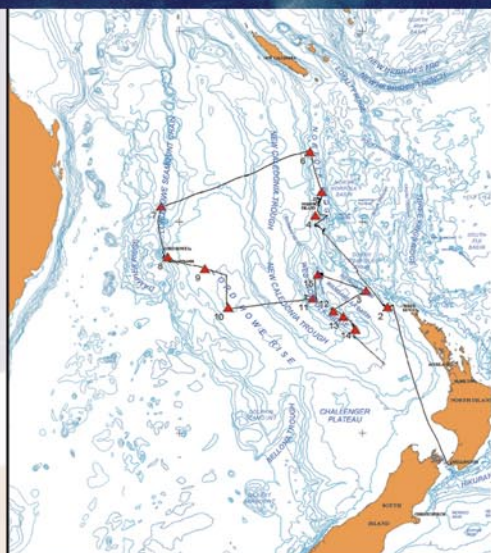
Scampi at burrow.

In the sea ice

Nineteen scientists from the National Institute of Polar Research of Tokyo, Japan, joined NIWA technicians and the crew of *Tangaroa* for JARE 44 – a 25 day voyage to the sea-ice zone of Antarctica. JARE 44 (the Japan Antarctic Research Expedition 44) followed on from the successful JARE 43, in which *Tangaroa* had been chartered for a similar survey in the same area.

It was the fifth year in succession that *Tangaroa* had successfully completed voyages in Antarctic waters. The main aims of JARE 44 and 43 were to evaluate the production of greenhouse gases during the biological processes of primary and secondary production, to study the growth of zooplankton and krill, and to evaluate sedimentation from the surface production layer.

Research vessels



'The best in the southern hemisphere'

'*Tangaroa* – the best research vessel in Australasia, probably in the southern hemisphere', so said Dr Clive Roberts, Curator of Fishes at Te Papa and Chief Scientist for NORFANZ, at a public seminar to mark the end of the pioneering survey. NORFANZ was a 4-week *Tangaroa* survey of deepsea habitats in the Tasman Sea, from northern New Zealand to Lord Howe and Norfolk Islands. The main aim was to provide information on the composition, nature, and potential vulnerability of unique and unexplored habitats; information which is essential to ensure these ecosystems are soundly managed. The survey was funded mainly by MFish and Australia's National Oceans Office, with scientific support from NIWA and CSIRO, and the 24 scientists on board represented more than 11 research organisations around the world.

More than 500 species of fish and 1300 species of marine invertebrates were recorded and photographed; many of them were new to science, new records for the region, or thought to be rare or endangered. In total, the survey covered more than 5000 nautical miles, providing the first accurate maps of the seafloor, with imagery and samples from 14 seamounts and 168 stations down to depths of 2000 m.

'It is the end of an amazing voyage,' wrote scientist Dr Mark Norman from Museum Victoria, in the last journal entry of the voyage. 'It has been a ground-breaking survey – the most complex and multifaceted marine research expedition ever conducted in Australasia.'



Tangaroa underwent a full survey in November 2002 and was fully compliant with international maritime requirements. The hull was blasted back to bare steel before it was repainted. No material damage was found. The vessel was used for 324 days last year in surveys ranging from Antarctica to the Norfolk Ridge.

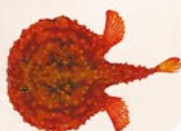


10 000 m of conducting cable can be fed out of the new winch on *Tangaroa*, which means that we can now deploy equipment down to depths of 5000 m.

Stone crab



Deepsea batfish



Blob fish

