

# Research Vessels



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1. A NIWA kayak in action.
2. Naiad in clear water in Ross Sea.
3. RV Kaharoa.
4. Deploying NIWA's Deep-Towed Imaging System from RV Tangaroa.
5. One of NIWA's 30 smaller powered boats.
6. RV Tangaroa.
7. Fisheries research trawl on RV Kaharoa.
8. RV Tangaroa, with Pelorus on-board, in Ross Sea, Antarctica.



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## The NIWA fleet

The image on the front cover of this report is iconic: RV *Tangaroa* ploughing through the worst sea ice in the Ross Sea for 30 years.

*Tangaroa* is the only ice-strengthened research vessel in New Zealand. In 2007–08, it travelled 45 129 nautical miles, covering vast tracts of ocean from the Kermadecs in the north to Antarctica in the south.

In late 2007, for example, *Tangaroa* surveyed two remote, deepwater basins, the Capel and Faust Basins, some 800 km east of Brisbane, for the Australian Government's geoscience research organisation, Geoscience Australia. The voyage provided significant new information to the Australian Government's multimillion dollar Offshore Energy Security programme, which aims to encourage new oil and gas exploration.

Using multibeam sonar, a sub-bottom profiler, and marine magnetic and gravity meters, *Tangaroa* mapped over 25 000 square kilometres of seabed, at a water depth between 1200 and 2700 metres. More than 40 hours of video and over 4000 photos were also taken.

*Tangaroa* remains the flagship of New Zealand's ocean exploration. But few people realise that NIWA owns a fleet of more than 30 vessels.

At 28-metres, our second-largest research vessel *Kaharoa* is less than half the size of *Tangaroa*, yet it, too, makes epic journeys. The deployment of ocean-profiling Argo floats, for example, has now taken it 76 996 nautical miles as far afield as Chile, California, and Mauritius.

The 10.5 metre hydrographic survey launch *Pelorus* is carried to the Antarctic on *Tangaroa* as a support/rescue craft. Closer to home, it conducts such projects as mapping the Wellington harbour (mid-2008).

NIWA operates about 30 other Maritime New Zealand certified vessels based at Bream Bay, Auckland, Hamilton, Rotorua, Turangi, Wellington, Nelson, Greymouth, Tekapo, Christchurch, and Dunedin. A new coastal research vessel delivered to Hamilton this year, for example, heralds an advance for sustainability.

*Rangitahi III* is a custom-made survey vessel built in Kumeu. It'll be used for a wide range of coastal research work, such as seabed sediment sampling, habitat mapping, and aquaculture impact assessments. Although *Rangitahi III* is longer, wider, and twice as heavy as its predecessor, we achieved substantial carbon emission savings by selecting state-of-the-art electronically controlled stern drive engines that are very fuel efficient. At typical survey speeds for side-scan sonar, the new vessel uses about six times less fuel than the old one.

About 80 science staff are qualified to operate NIWA's research boats under 7.5 metres in length. Operation of these boats requires a minimum of Master of Small Research Boat, a qualification issued by NIWA under delegation from Maritime New Zealand. Our staff also use small, non-motorised craft (including sit-on-top kayaks, Canadian canoes, and aluminium dinghies) to visit remote study sites on ponds, lakes, rivers, and estuaries.