

Teachers: this article can be used for NCEA Achievement Standards in Biology (1.2, 1.4, 2.2, 2.5, 3.2), Chemistry (1.2, 3.4), Geography (1.7, 2.7, 3.7, 1.6, 2.6, 3.6). See other curriculum connections at www.niwa.co.nz/pubs/wa/resources

These techniques (see *Water & Atmosphere* 7(2): 22–28), have been little used in the Ross Sea. Stable isotope information can help us interpret the importance of particular species within the system, and therefore help predict the effect of their loss due to environmental change.

In the future we plan to increase the latitudinal extent of our study by sampling at more locations along the Victoria Land coast. For example, in February 2004, NIWA researchers

will join Italian, US and German scientists on board RV *Italica*, on a voyage from Terra Nova Bay to Cape Adare (see below).

Once we have information from many locations along this latitudinal gradient, we will conduct a full-scale analysis, the results of which will help us to more accurately predict the consequences of environmental change on the biodiversity of the Ross Sea’s marine communities. These predictions are crucial to help preserve this unique ecosystem. ■



Italica, breaking through ice in Terra Nova Bay. (Photo: Simon Thrush)

Voyage on the *Italica*

This summer (2003/04) marine ecologists from NIWA will join researchers from Italy, Spain, Germany and the USA on an expedition on the Italian research vessel *Italica*. Working from Terra Nova Bay to Cape Adare (see map, page 11) the expedition will undertake integrated sampling of the seafloor and water column along transects at depths from 15 to 500 m. This project marks growing international interest in the biodiversity of the Antarctic marine environment and the use of latitudinal gradients.

On this voyage we will visit sites in the coastal Ross Sea that have never been visited or sampled by marine ecologists. We expect to see dramatic changes as we move north along the coast, with increasing productivity, and coastal communities increasingly dominated by seaweeds. But we do not know how this will influence biodiversity; and perhaps we will come across species so far unknown to science. Most importantly, sampling these northern sites on the Victoria Land coast will add new information to our current databases, which are based on sites in McMurdo Sound and Terra Nova Bay. We need the information not only to obtain a more complete picture of the biodiversity of this environment but also to know why it changes.

Collaboration with our Italian colleagues began in 2002 when a team of Italian researchers joined NIWA scientists in studies in McMurdo Sound. Later in the season NIWA ecologists worked with Italian researchers at Terra Nova Bay to develop sampling techniques to support the coming season’s work from the *Italica*. This joint work with the Italian team illustrates two aspects of scientific research in Antarctica: its open and collaborative nature, and the large amount of planning and logistic support required. In the end, though, it will be the weather and sea-ice conditions that will dictate how much we can achieve.

Nevertheless, any information gathered will be important. Not only will it add to our fundamental knowledge of this fascinating environment, but it will also help us to make informed decisions about impacts associated with global climate change and the more immediate threats of increased tourism and fishing.

For more information, contact: Simon Thrush, NIWA, PO Box 11 115, Hamilton (ph 07 856 7026, fax 07 856 0151, s.thrush@niwa.co.nz)

The *Italica* voyage and research programme has been organised by Professor Riccardo Cattaneo-Vietti and Dr Mariachiara Chiantore of the Dipartimento per lo Studio del Territorio e delle sue Risorse, Università di Genova.