Finally, all the data collected is entered into a database and analysed by the students with the help of their research assistants. This information will be available online for consultation, and we encourage schools to share their experiences of monitoring with other participants from different schools.

This year, eight schools are participating in the programme, involving about 350 students, from 10 to 18 years of age, and their teachers for the monitoring of rocky beaches of the northern coast of Portugal. It is hoped that the success of the programme to date will provide a sufficient incentive for the development of the MoBIDiC programme along many other coastlines.

● For more information on the MoBIDiC programme and CIIMAR, see:
http://www.ciimar.up.pt/biodiversidade/index_biocost.htm
http://www.ciimar.up.pt/biodiversidade/MoBiDiC/.

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CIIMAR

The Associate Laboratory CIMAR was created in March 2002 from two research centres: the Centre of Marine and Environmental Research of the University of Porto (CIIMAR) and the Centre of Marine Sciences of the University of Algarve (CCMAR). It currently includes over 450 researchers.

CIMAR is dedicated to research, and to the dissemination and transfer of technology in the area of marine sciences. Its main objective is to carry out basic and applied research on the processes occurring in aquatic ecosystems, including the study of impacts of human activities on these ecosystems.

The Laboratory of Coastal Biodiversity within the CIIMAR based in Porto focuses its research on taxonomy, ecology and sustainable use of seaweeds. The role of biodiversity in ecosystem functioning is also investigated in coastal ecosystems, especially in rocky shores. The laboratory participates in five projects within the MarBEF Network of Excellence, and is leading the outreach project MoBIDiC.

Other research includes integrated aquaculture, where commercially important seaweeds are co-cultivated with fish to use the nutrients that are present in the water from the fish production tanks, to increase water quality and decrease the environmental impact of aquaculture. This research is done with commercial aquaculture facilities and there is a pilot plant working for the last four years. This lab has also been very active in the debate over priorities of research for the conservation and sustainable use of biodiversity, at national and European level, being a part of the European Platform for Research Strategy (EPBRS).

FEATURES

Marine education initiatives

Into the Deep – Irish school pupils explore the sea on board the *Celtic Explorer*

A GMIT/Marine Institute initiative

By David McGrath and Ian O'Connor

Children from primary schools in the County Galway villages of Oranmore and Clarinbridge on the west coast of Ireland spent a full day on board Ireland's largest research vessel, the 65 metre-long *Celtic Explorer,* in a joint initiative between the Galway-Mayo Institute of Technology (GMIT) and the Irish Marine Institute (MI).

On Sunday, 19th of March 2006, the pupils mustered on a windy dockside at 06:30 in the morning, in Galway Harbour, to go to sea. The GMIT-organised trip "Into the Deep" was part of the MI's "Explorers" programme – an integrated education project between the Marine Institute, GMIT, Galway Education Centre, Galway Atlantiquarium and other organisations in the Galway area.

The programme aims to introduce young people to the potential of Ireland's marine resource. When fully developed it will supply teacher training, educational materials and web-based facilities for those interested in the sea.

Five pupils from each of two local schools were accompanied on the vessel by teachers Mait Ó Brádaigh and Sean Holian, along with GMIT scientists and researchers Dr David McGrath, Dr Ian O'Connor, Noreen Burke, Clare Murray and Joanne O'Brien.

Following breakfast on board, all passengers went on a safety tour of the vessel, being instructed in the procedures to be adopted in the case of emergency and in the use of personal protection equipment on board. The cruise carried out a basic oceanographic programme, recording the salinity, temperature, water clarity and colour at various depths in the water column at a series of ten sampling stations from Mutton Island off

One of the pupils (Megan) with spider crab on board the *Celtic Explorer.*

Galway city to the most distant station off Fanore, Co Clare. The stations were chosen along a transect selected to ensure obvious gradients in water colour and clarity and both vertical and horizontal changes in salinity and temperature.

During the day, the pupils kept a log of the activities for their schools and were trained in the use of instruments for position fixing at sea, recording sampling station and weather data, and the use of various sampling devices including the Secchi disc, temperature/salinity meters and hydrometer. Pupils also learned to interpret tabulated results from the sampling stations. Interpretation was facilitated by the fact that, before the cruise itself, background material prepared by Dr Ian O'Connor of GMIT (and funded by the MI) had been sent to the schools on the internet.

The pupils also carried out whale-watches under the supervision of Joanne O'Brien who is doing research on porpoises and dolphins at GMIT. They observed other research activities carried out on the cruise, including the testing of large and small baited traps for the capture of marine organisms – a project being carried out by GMIT's Clare Murray – and beam trawling.

It was a long day, with the cruise work completed at 17:00, followed by dinner on board and return to the dockside at 19:00. The pupils worked at all times under the supervision of teachers and GMIT scientists, in teams of two. Each pupil carried out each of five activities on two occasions during the day, consulting a work roster routinely to determine their place in the programme. Pupils were obliged to wear appropriate personal protective equipment at all times on deck and in working areas and were permitted to observe but not deploy gear over the side.

The *Celtic Explorer.*

"The cruise provided a unique and especially valuable opportunity for the pupils to carry out a realistic scientific programme of marine research at sea," said Mait Ó Brádaigh, principal of Gaelscoil de hÍde. Sean Holian, principal at Scoil Mhuire, Clarinbridge, said, "It was a wonderful hands-on experience for all of us, precisely how science in the classroom must be enhanced."

The schoolchildren were delighted with the trip. Scoil Mhuire pupil Clodagh Moran said it was "a brilliant day" and thinks all schools should do it. Ronan Higgins said: "Now I know what working on the sea is like and I see the need why the crew are very safety conscious."

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FEATURES

Marine institutes and associations

IMarEST and MarBEF...
an opportunity for collaboration

By Olive Heffernan and Sarah Connolly

Marine science was once the domain of a rather specialised bunch of academics, from rocky shore ecologists to blue-water oceanographers, and much else in between. While those specialisations remain at the core of our understanding of the ocean, we have now entered an era in which marine science is part of a much larger global effort to understand the Earth as a system, with many tightly interconnected key components.

The benefit of taking a step outside of one's own 'pet topic' is evident in the fact that some of the most significant advances in marine science today are at the interface of disciplines. Disciplinary boundaries are being traversed by marine scientists who venture into new areas on their journey of scientific discovery. More than ever, 'interdisciplinarity' and 'multidisciplinarity' are terms that are not only widespread but, indeed, fashionable.

Concurrent with an expanded vision of marine science has been the development and application of marine technologies to specific ocean problems. From harmful algal blooms to eutrophication and fisheries management, the merger of marine science with engineering and technology has revolutionised our understanding of ocean issues, and promises to continue to do so.

In recognition of the need to address the challenge of living with a changing ocean environment, the Institute of Marine