APPLICATION FOR THE CONSENT TO CONDUCT MARINE SCIENTIFIC RESEARCH IN AREAS UNDER NATIONAL JURISDICTION OF THE UNITED KINGDOM

Date: January 20, 2012

1. General information

1.1 Cruise name and/or number: CE12006

1.2 **Sponsoring institution:**

Name: Marine Institute

Address: Rinville
Oranmore
Co. Galway
Ireland

Name of Chief Executive: Dr. Peter Heffernan

1.3 **Scientist in charge of the project:**

Name: Professor Mark Johnson

Address: National University of Ireland, Galway

Telephone: ++353 91 495864
Telefax: ++353 91 525005

1.4 **Scientist(s) from UNITED KINGDOM involved in the planning of the project**

Name(s): Dr Helka Folch and Christine Morrow
Address: Queen's University Belfast, University Road Belfast, BT7 1NN, UK

1.5 Submitting officer: Bernadette Ní Chonghaile

Name and address:
Rinville
Oranmore
Co. Galway

Country: Ireland

Telephone: 00 353 91 387200

Telefax: 00 353 91 387201

2. Description of project (Attach additional pages as necessary)

2.1 Nature of objectives of the project:

This is a multidisciplinary deep-sea research cruise, combining two components: biodiscovery, and ecosystem functioning and nutrient recycling. The scientific objectives of the two components are as follows:
[1] Biodiscovery
Working on the lower slope and at bathyal/abyssal depths in canyon regions we aim to:
(i) Identify and map benthic macrofauna using conventional cores and ROV surveys;
(ii) Improve systematic knowledge of Porifera and Mollusca, groups with known biodiscovery potential, using traditional morphological techniques in combination with molecular biology;
(iii) Collect marine specimens for freeze-drying and the preparation of extracts in the MI Marine Biodiscovery Laboratory;
(iv) Collect marine specimens likely to have novel photoactive molecules;
(v) Characterise bacterial and archaeal diversity in deep sea water and sediment samples over spatial and temporal scales; and
(vi) Collect marine invertebrate samples (particularly sponges), seawater samples, and marine sediment to study and compare the microbiota associated with each of the samples, culture microorganisms and construct metagenomic libraries.

Please note that no biodiscovery work will take place in UK waters

[2] Ecosystem function and nutrient cycling
We aim to:
(i) Examine the mechanisms whereby biogenic material, essentially derived for the spring diatom bloom and deposited on the continental shelf, is advected into layers within the open ocean water column from whence it sinks to the sea bed;
(ii) Delineate the advective extent of these nepheloid layers of biogenic material derived from the continental shelf;
(iii) Detect and determine the diversity and abundance of deep-sea nitrogen cycling microorganisms;
(iv) Characterise and determine the origins, lability and recycling rates of dissolved and particulate organic matter supporting the currently accepted net heterotrophic nature of deep-sea cold-water coral reef communities;
(v) Collect calcifying detritivores (echinoids / asteroids), *Lophelia* branches, coral rubble and sediment to study the transfer of C and N through the detritivore foodweb; and
(vi) Collect water and sediment samples to determine mixing and resuspension rates at the sediment water interface using natural radiotracers.

2.2 Relevant previous or future research cruises:

CE10004
CE11006

2.3 Previously published research data relating to the project:

3. Methods and means to be used

3.1 Particulars of vessel

Name: Celtic Explorer
Nationality: Irish

Owner: Marine Institute

Overall length: 65.5m
Maximum draught: 5.7m
Net tonnage: 727
Propulsion: 2 x 1530 KW, 1000Rpm, 1 x 1020 KW, 1000 Rpm
Cruising speed: 10 Kts
Call sign: EI GB
Method and capability of communication –
Vsat Satellite Broadband
Imarsat –c
HF
VHF
Mini –M

Name of master: Antony Hobin/Denis Rowan
Number of crew:
Number of scientists on board: 15

3.2 Aircraft or other craft to be used in the project: N

3.3 Particulars of methods and scientific instruments

Types of samples and data	Methods to be used	Instruments to be used
Video	ROV transects	ROV
Sediment/biota samples	Cores	Box core/MegaCorer
Biota	ROV robotic arm	ROV
Water samples	CTD/Cores	CTD/MegaCorer
CTD data	CTD	CTD

3.4 Indicate whether harmful substances will be used: In small quantities in onboard laboratories following standard safety and disposal protocols. For example, formalin and ethanol for fixing and preserving material. No harmful substances will be put in the ocean.

3.5 Indicate whether drilling will be carried out: No

3.6 Indicate whether explosives will be used No

4. Installations and equipment

Details of installations and equipment (dates of laying, servicing, recovery, exact locations and depth):

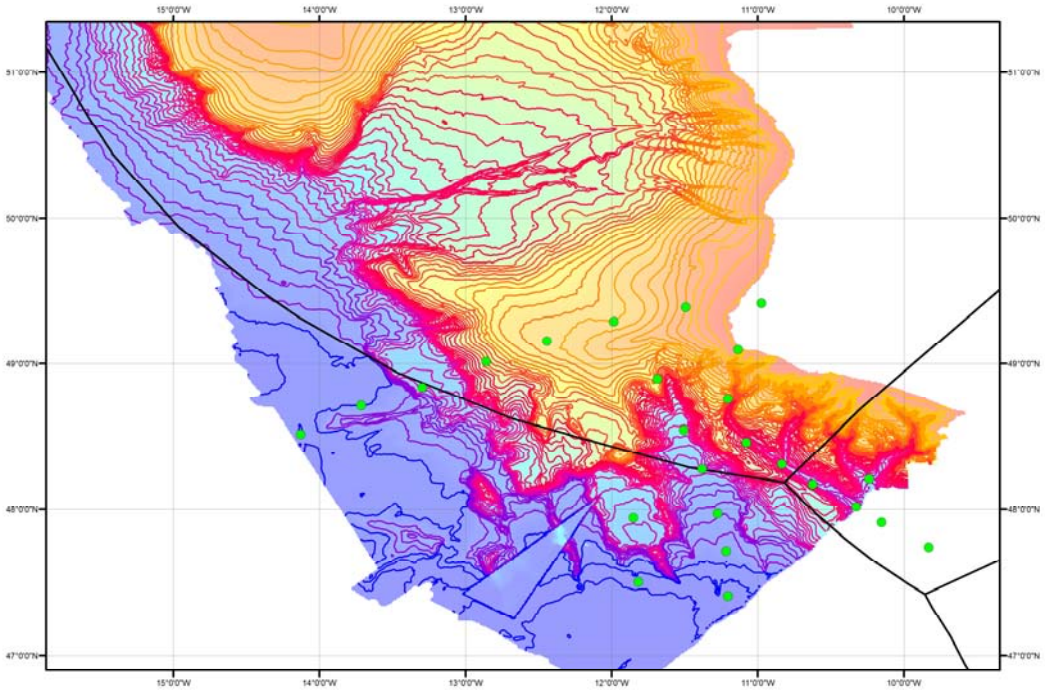
5. Geographical areas

5.1 Indicate geographical areas in which the project is to be conducted (with reference in latitude and longitude):

Between 47 and 50 degrees N and between west of 9 degrees W.

5.2 Attach chart(s) at an appropriate scale showing the geographical areas of the intended work and, as far as practicable, the positions of intended stations, the tracks of survey lines, and the locations of installations and equipment.

The project will be conducted between 9 and 16 degrees west and between 47 and 50 degrees N. Only a part of the project extends into UK waters (see map below). Intended stations marked as green dots.



6. Dates

6.1 Expected dates of first entry into final departure from research area of the research vessel:

Area will be entered between 12th April and 28th April 2012.

6.2 Indicate if multiple entry is expected: Possibly, depending on weather conditions.

7. Port calls

7.1 Dates and names of intended ports of calls in UNITED KINGDOM:

None

7.2 Any special logistical at ports of call:

7.3 Names/ Address / Telephone of shipping agent (if available)

8. Participation

8.1 Extent to which UNITED KINGDOM will be enable to participate to be represented in research project:

Two UK-based scientists (named above) are fully involved in this cruise.

8.2 Proposed dates and ports for embarkation / disembarkation:

None in UK waters. Mobilise Galway 12th April 2012, demob Galway 28th April 2012.

9. Access to data, samples and research results

9.1 Expected dates of submission to UNITED KINGDOM preliminary reports which should include the expected dates of submission of the final results:

Cruise reports normally submitted within 6 months of cruise completion.

9.2 Proposed means for access by UNITED KINGDOM to data and samples:

As stated above, two UK scientists are involved in the cruise and will have full access to data and samples.

9.3 Proposed means to provide UNITED KINGDOM with assessment of data, samples and research results or provide assistance in their assessment or interpretation:

This is an integrated interdisciplinary project involving research groups from the island of Ireland including Queen's University Belfast. Data sharing agreements exist within the consortium and the assessment and interpretation of data will involve both the UK and Irish scientists who are members of the consortium.

9.4 Proposed means of making research results internationally available:

Results will be published in international scientific journals. Where appopriate, data will, in due course, be submitted to public access repositories such as GBIF, Genbank etc.

10. Scientific Equipment

COMPLETE THE FOLLOWING TABLE-
SEPARATE PAGE FOR EACH COSTAL STATE:

INDICATE YES OR NO

LIST SCIENTIFIC WORK BY FUNCTION Eg: MAGNETOMETRY: GRAVITY DIVING SEISMICS BATHYMETRY SEABED SAMPLING TRAWLING ECHO SOUNDING WATER SAMPLING U/W TV MOORED INSTRUMENTS TRAWLING ECHO SOUNDING WATER SAMPLING	Water column including sediment sampling of the Seabed	Fisheries research within fishing limits	Research concerning the natural resources of the continental shelf or its physical character i-stics	DISTANCE FROM COAST		
				Within 12nms	Between 12-200nms	(Continental shelf work only) Beyond 200nm but within the continental margin
WATER SAMPLING	YES	NO	NO	NO	YES	NO
PROFILING INSTRUMENTS	YES	NO	NO	NO	YES	NO
SEDIMENT CORES	YES	NO	NO	NO	YES	NO
ROV	YES	NO	NO	NO	YES	NO

(On behalf of the Principle Scientist)

Dated ----------

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WATER SAMPLING	YES	NO	NO	NO	YES	NO
PROFILING INSTRUMENTS	YES	NO	NO	NO	YES	NO
SEDIMENT CORES	YES	NO	NO	NO	YES	NO
ROV	YES	NO	NO	NO	YES	NO

Mark Johnson

(On behalf of the Principle Scientist)

Dated 23/1/2012