

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

Date: May 29, 2009

1. General information

1.1 Cruise name and/or number: CV0914

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: Dr Louise Allcock
Address: Martin Ryan Marine Science Institute
National University of Ireland, Galway
University Road
Galway
Ireland

Telephone: + 353 (0) 91 495868

Telefax:

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

Name(s): Jon Houghton
Address: Queen's University Belfast
School of Biological Sciences
97 Lisburn Road
Belfast BT9 7BL

1.5 Submitting officer:

Name and address: Aodhan Fitzgerald
Marine Institute
Rinville
Oranmore
Galway

Country: Ireland

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

2.1 Nature of objectives of the project:

- (i) To collect information on the water masses in the area of the Celtic Sea front, the Celtic Deep, and the coastal currents by deploying a CTD and by analysing ADCP data.
- (ii) To examine the spatial distribution of zooplankton in relation to different water masses using multivariate analysis techniques.
- (iii) To investigate the relationship of larger indicator species of gelatinous zooplankton such as jellyfish, hydromedusae and chaetognaths to the water masses.
- (iv) To map the distribution of floating algal rafts with respect to the water masses, and to collect a sample of rafts for genetic analyses of the component algae and fauna to determine the origin and history of these rafts.
- (v) To collect rafts of floating barnacles for a separate project funded under the Beaufort Biodiscovery programme.

Methodology

(i) *Oceanographic measurements*

A CTD will be deployed at each station. The Vessel mounted ADCP will be running throughout the survey.

(ii) *Multivariate analysis of zooplankton*

A small zooplankton net will be deployed at ten stations north of, inside and south of the Shannon. The same net will be deployed at a grid of stations overlying the Celtic Sea to test the hypothesis that the frontal region creates separate spatially coherent zooplankton communities. The net will be vertically hauled from bottom to surface at each station.

(iii) *Gelatinous zooplankton as indicator species*

Vertical net tows (from close to sea-bed to surface) will be conducted at each station, using a 1 m diameter ring net with a 700 μm mesh and a large closed cod-end. The net will be hauled at 0.5–1 m s⁻¹ with a flow meter mounted in the mouth in a position about halfway from the net mouth centre to the net rim (Harris et al 2000).

A rectangular pelagic net (2 m x 2 m opening, 4 m deep, 4 mm mesh size) will be towed in surface waters for 20 minutes at 3-3.5 knots along 5 sections of the Celtic Sea grid to obtain qualitative and quantitative data on the community composition of macro-gelatinous zooplankton (jellyfish).

(iv) *Collection and genetic analysis of rafts*

Rafts will be collected with a specially designed dip-net.

(v) *Collection of floating barnacles*

Samples will be collected using the dip-net specifically designed for collecting algal rafts (see above).

2.2 Relevant previous or future research cruises:

None

2.3 Previously published research data relating to the project:

None

3. Methods and means to be used

3.1 Particulars of vessel

Name: R.V. Celtic Voyager
Nationality: Irish
Owner: Marine Institute

Overall length: 31.5m

Maximum draught: 4m

Net tonnage: 340T

Propulsion: Wärtsilä UD25M5 (626 kW),

Cruising speed: 8kn

Call sign: EIQN

Method and capability of communication – GMDSS A class, E-mail. Mini M SAT C and GSM

Name of master: Denis Rowan/Fergus O Hehir/Anthony Hobbins

Number of crew: 7

Number of scientists on board: 8

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

3.3 Particulars of methods and scientific instruments

Types of samples and data	Methods to be used	Instruments to be used
Conductivity/temp/salinity	CTD	Seabird CTD
Water samples	CTD	Seabird CTD
Zooplankton	Vertical hauls	Zooplankton net
Jellyfish	Vertical and horizontal hauls	Zooplankton net small (2m x 2m) pelagic net
Algal rafts	Dip-netting	Dip net
Floating barnacles	Dip-netting	Dip net

3.4 Indicate whether harmful substances will be used:

Formalin and ethanol will be used as preservatives on board the vessel

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):

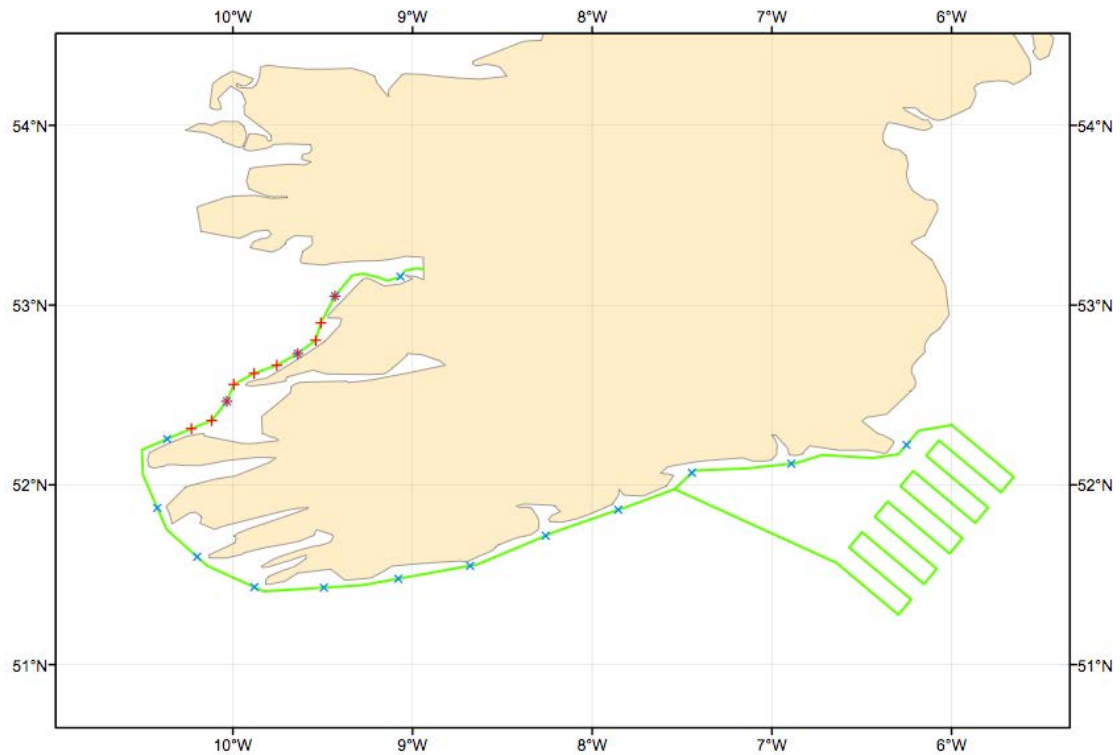
N/A

5. Geographical areas

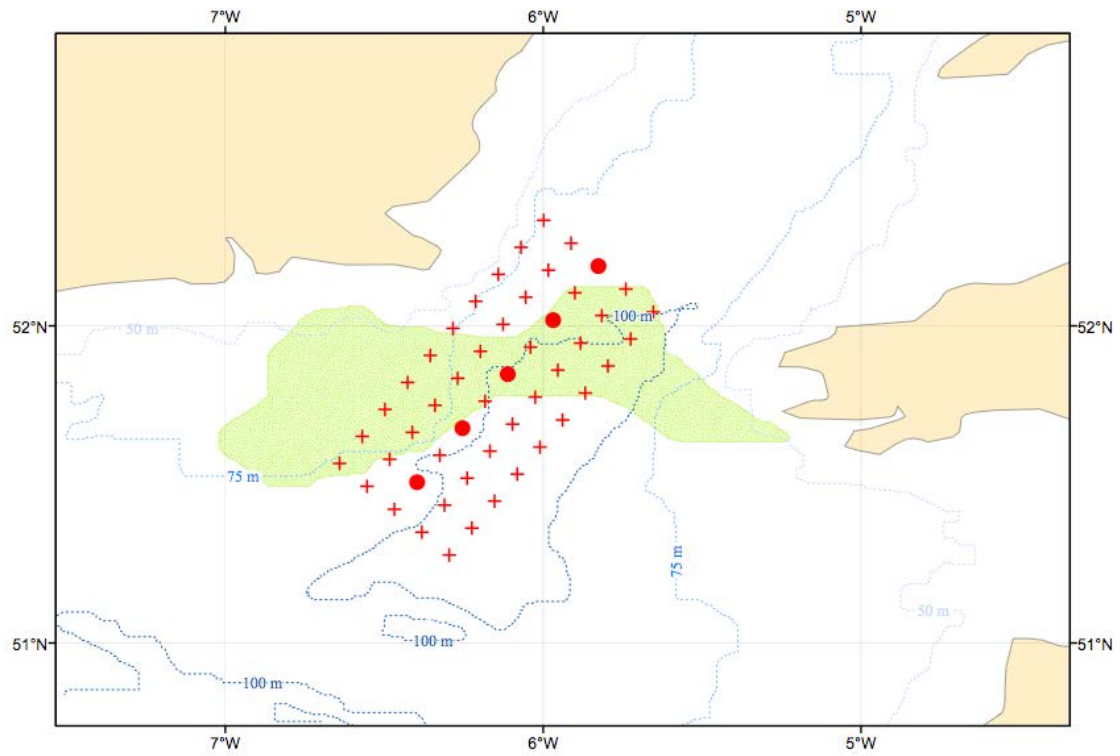
5.1 Indicate geographical areas in which the project is to be conducted (with reference in latitude and longitude):

The project will be conducted along the west and south coasts of Ireland with a grid of stations in the Celtic Sea. Part of this grid (the most easterly portion) is in UK waters. The most easterly extent of the grid is 5.6 degrees West.

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.

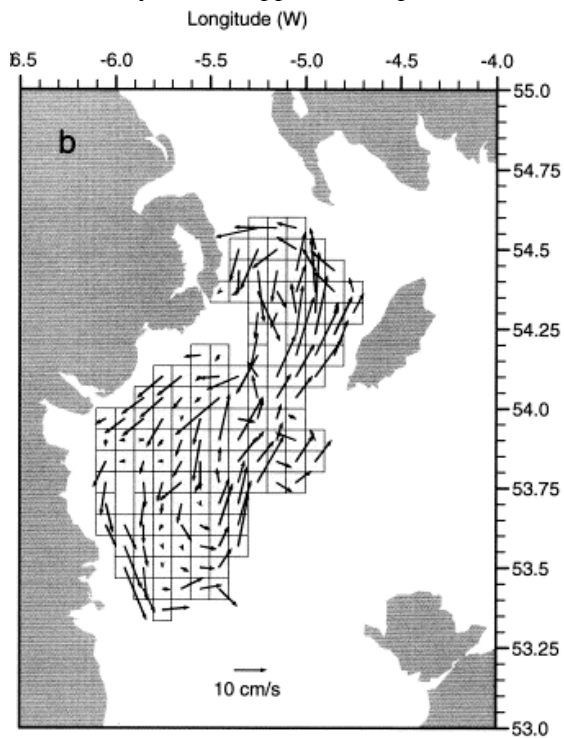


Proposed cruise track. Blue crosses indicate coastal stations for gelatinous zooplankton, red crosses indicate coastal stations for total zooplankton. Details of grid stations provided below.



Location of grid of stations (red symbols) overlying the Celtic Sea front and Celtic Deep. Red circles indicate stations at which the small pelagic net will be also be deployed. Green stippled area indicates position in which Celtic Sea front is most likely to be found.

In the event of bad weather (depending on wind direction etc), sampling may be relocated to the Irish Sea Gyre. The approximate position of this gyre is shown below:



6. Dates

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

Cruise departs from Galway 13th June, returns to Galway 22nd June following the cruise track indicated in the figure above

6.2 Indicate if multiple entry is expected:

The sampling grid lies on the border of UK/Irish waters so multiple entry into UK waters is anticipated.

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:

N/A

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

8. Participation

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

This is a collaborative project involving Queen's University Belfast and therefore UK scientists are fully involved in the research project. Two UK PhD students under the supervision of Jon Houghton (see above) will be on board the vessel.

8.2 Proposed dates and ports for embarkation / disembarkation:

No UK Ports involved. Cruise embarks/disembarks Galway, Ireland.

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 to Marine Institute within 6 months of cruise. Final results will be in the PhD theses of the students involved (ca. 2011/12) and in scientific publications.

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

UK participants will have full and immediate access to samples and data collected on board.

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 fully collaborative. UK participants will be involved in compiling the cruise report, and in all subsequent data analysis/assessment.

9.4 Proposed means of making research results internationally available:

Results will be published in the international scientific literature. All the senior scientists involved have excellent publication records.

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	No No Water column including sediment sampling of the Seabed			DISTANCE FROM COAST		
				Within 12nms Maximum of 3nm from coast from 10m contour	Between 12-200nms	(Continental shelf work only)
WATER SAMPLING	Yes			Yes	Yes	
PROFILING INSTRUMENTS (CTD)	Yes			Yes	Yes	
Zooplankton Nets	Yes			Yes	Yes	
Small (2m x 2m) pelagic net	Yes			Yes	Yes	
Underwater camera	Yes			Yes	Yes	
Dip net to collect rafting material	Yes			Yes	Yes	

M. Heas

(On behalf of the Principle Scientist)

29 May 2009

Dated -----