



JOB DESCRIPTION

Postdoctoral researcher opportunity for the development and application of molecular tools (including environmental DNA metabarcoding) targeting marine Invasive Alien Species

Job Title:	Postdoctoral Researcher
Reporting to:	Dr Luca Mirimin, Principal Investigator and Project Manager
Location:	Marine and Freshwater Research Centre, GMIT, Galway
Duration:	Fixed Term (up to January 2021)
Funding Agencies:	European Maritime and Fisheries Fund (EMFF); Department of Agriculture, Food and the Marine (DAFM); Marine Institute (MI)
Project Title:	MSP Research Initiative: Invasive Species

Description:

A position is available for a suitably qualified and strongly motivated researcher who will be part of an international research project on marine non-indigenous and invasive species (*MSP Research Initiative: Invasive Species*). The successful candidate will join GMIT's Marine and Freshwater Research Centre (MFRC), which has established substantial capacity and a strong reputation in strategically targeted areas of marine research aligned to national and international research priorities. The MFRC currently includes 30 research-active academic staff and contract researchers, and ~35 postgraduate students collaborating with SMEs, multinational industries, academic institutions and research institutes nationally and internationally. The wide breadth of research topics covered focus on work that enables sustainability, conserves biodiversity and improves productivity, with the management and preservation of marine and freshwater ecosystems being one of the main overarching themes of the centre.

Maritime spatial plans are envisioned to assist decision making related to actions that could affect the ecosystem services provided from marine habitats, and/or the natural capital assets inherent within them. This is reflected in Directive 2014/89/EU Establishing a Framework for Maritime Spatial Planning, which was transposed into Irish legislation by S.I. No. 352 of 2016. Invasive Alien Species (IAS) are increasingly recognized in numerous regulations as a key cause of the loss of native species and the reduction of biodiversity, and can have significant impacts on natural capital assets (e.g. EC 708/2007; EC 1143/2014). The presence of marine IAS can negatively affect marine-based industries such as aquaculture and shipping, and interagency efforts are ongoing to address specific sectoral impacts. This is the focus of the Invasive Alien Species Regulation (EC 1143/2014). Nonetheless, large knowledge gaps exist on introduction pathways/vectors, occurrence and potential spread of marine IAS around the island of Ireland's coastal and nearshore habitats. Knowledge that could map marine IAS' incidence in Irish coastal waters will greatly facilitate marine spatial planning and its expected role in aiding the achievement of the goals of Ireland's integrated marine plan, 'Harnessing Our Ocean Wealth', as well as decision making in relation to other relevant policy and legislation such as the Marine Strategy Framework Directive (MSFD).

The proposed research aims at developing and applying molecular surveillance methods to facilitate spatial mapping of marine IAS in Irish nearshore and foreshore waters and benthic habitats. The successful candidates will contribute to this project with direct involvement in the development and application of molecular approaches for the detection of IAS in a range of marine environments in high-priority sites around the Irish coast. In particular, this project aims to (i) establish a national reference database containing an inventory of information, including genetic data, of non-indigenous marine organisms that are present or could invade Irish marine waters; (ii) develop a molecular toolkit for systematic monitoring of marine NIS at a national scale; and (iii) generate maps and metadata to aid the implementation of national and international legislation in preventing the loss of native biodiversity and mitigating the impact of invasive marine species.

This project is led by GMIT with support from the Marine Institute and two international academic partners (University of Oviedo, Spain, and University of Southampton, UK). Work will primarily be based in the Marine Institute and GMIT (Galway, Ireland), with potential travel to the partner institutions. This research is funded by the European Maritime Fisheries Fund (EMFF) administered through the Department of Agriculture, Food and the Marine (DAFM), with support from the Marine Institute.

Minimum Requirements

- PhD in Biology, Molecular Biology, or equivalent¹/relevant area.
- Proficiency in molecular techniques.
- Expertise in either field and/or laboratory experimental design.
- Evidence of planning and executing concurrent tasks as an individual and as part of a research team.
- Must be fluent in spoken and written English.
- Have a full Irish or international driving licence.

Desirable Requirements

- Publication track-record and strong technical report writing and presentation skills.
- Experience in environmental DNA field approaches, including sample acquisition and nucleic acid isolation.
- Experience in environmental DNA laboratory approaches, including standard PCR, real-time quantitative PCR (qPCR), digital PCR (dPCR) and sample preparation for High Throughput Sequencing (HTS).
- Experience with environmental DNA metabarcoding data handling/processing and associated bioinformatics.
- Experience with GIS and/or other mapping tools.
- Experience working in a “clean room” environment and/or an accredited molecular laboratory (e.g. ISO17025 standard).
- Understanding of national and international stakeholders and other activities of relevance to the current project (as described above), with particular reference to ongoing marine environmental monitoring programmes.
- Evidence of being an influential team member and fully motivated.
- Proficiency in communication, initiative, flexibility and organisational skills.

¹ EU defines a PhD equivalent to 4 years fulltime research after a primary degree

Key Responsibilities:

1. Develop and apply environmental DNA sampling protocols to target a range of coastal marine environments;
2. Engage with relevant stakeholders and conduct extensive field work for sample collection at a national level;
3. Develop effective protocols for the capture and detection of nucleic acids from a range of biological and environmental materials;
4. Conduct molecular laboratory procedures, including DNA extraction, gel electrophoresis, DNA/RNA quantification, PCR, qPCR, dPCR, library preparation for HTS, and Sanger sequencing for DNA barcoding;
5. Design analytical pipelines for the processing of environmental DNA metabarcoding using a range of second and third generation sequencing platforms;
6. Design molecular qPCR/dPCR assays targeting specific groups of marine taxa;
7. Establish and maintain a reference database for biological and genetic data;
8. Conduct bioinformatics to analyse and interpret HTS results;
9. Maintain laboratory notebooks, research records and generate technical reports and data as required by the management team;
10. Attend regular meetings with the project team and at collaborating sites nationally and internationally;
11. Assist in planning and implementing the work activities of the research programme with both GMIT and the relevant collaborators team members;
12. Execute project activities within the agreed timelines;
13. Ensure that project work is performed in line with Health and Safety and other relevant Institute policies;
14. Maintain confidentiality of all background IP, foreground IP, and research results emerging from the project.

Project Start-Date: April 2019

Project Duration: Fixed Term up to January 2021

Salary: €37,223.00 (Point 1) in Year 1 & €37,757.00 (Point 2) in Year 2 of the Post-Doctorate Researcher Level 2 scale.

*Pension contribution @ 20% of salary.

**The appointee will not become a member of the Public Service pension scheme and the pension contribution will only be paid where an approved PRSA is established by the appointee).*

Further information on the position may be obtained from Dr Luca Mirimin (luca.mirimin@gmit.ie)

Interested applicants should submit a detailed *Curriculum Vitae*, including contact details of 2 referees, and a personal statement clearly indicating your (i) understanding of the research topic, (ii) motivation for the position and (iii) how the minimum and (where appropriate) desirable requirements are met to hr@gmit.ie

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Latest date for receipt of completed application is: **1.00pm on Friday, 8th March 2019**

Interviews are scheduled to take place on 20th March 2019 with an expected start date in April 2019. Note that a separate application will be required in order to be considered for other positions currently available for the same project.

Please note:

Applications received after the closing date will not be accepted.

Candidates must hold a valid work permit/hosting agreement to work in Ireland.

Garda Vetting will apply.

The Galway-Mayo Institute of Technology is an equal opportunities employer and welcomes applications from people with a disability.

Cuirfear fáilte roimh chomhfhreagras trí Ghaeilge.