Position	PhD opportunity in lake biogeochemistry
Project	**Resolving the links between nutrient and carbon budgets in the Burrishoole catchment** (part of the BEYOND 2020 project)
Project Supervisor	Dr. Valerie McCarthy
Salary Scale	3-year stipend of €16,000 per annum plus fees (appropriate for EU students studying at DkIT)
Location	Dundalk Institute of Technology and Marine Institute, Newport , Co. Mayo
Duration	36 months

Introduction:
Applications are invited for a funded PhD studentship which will form part of the BEYOND 2020 research cluster project (Burrishoole Ecosystem Observatory Network 2020). The Burrishoole research station (managed by the Marine Institute) is already an international index site for diadromous fish, and a world leader in the use of *in-situ* automated monitoring systems to track changes in freshwater systems. This multi-institute research cluster builds on the existing biological and sensor monitoring programmes by using next generation science and technology to further inform ecosystem response to environmental change, thus bringing the Burrishoole Ecosystem Observatory Network BEYOND 2020.

The BEYOND 2020 project is coordinated by Dundalk Institute of Technology (DkIT). The PhD student will share their time between Dundalk Institute of Technology and the Marine Institute in Newport, Co. Mayo. The position is funded for three years but this may be extended. Funding is through a Marine Institute project-based award (Marine Research Programme 2014-2020) and provides a 3-year stipend of €16,000 per annum plus fees (appropriate for EU students studying at DkIT). The successful candidate will be registered as a full time research student in DkIT, under the supervision of the PhD project supervisor, Dr Valerie McCarthy and co-supervisor Dr Eleanor Jennings. The PhD degree will be awarded by Dublin City University.

Project Overview:
The fate of carbon (C) in organisms, food webs and ecosystems is to a large extent regulated by mass-balance principles and the availability of other key nutrient elements. Lakes in peat catchments such as the Burrishoole Catchment receive high levels of humic substances and recent studies have identified increasing C concentrations, specifically dissolved organic carbon (DOC), in peatland catchments in Europe and North America linked to human activities. An increase in DOC export has major implications for lake carbon cycling, particularly in humic systems due to the high bacterial respiration and burial of organic C in sediments in these systems. In order to provide a reliable evaluation of potential ecosystem effects of increased DOC export, accurate assessment of the interactions and feedbacks between mixing regimes, pelagic C, nutrient cycles and plankton community structure and dynamics, is essential.

This PhD project, which forms part of the BEYOND 2020 research cluster project, aims to address the gap in current monitoring in the Burrishoole catchment by quantifying nutrient cycles to gain a fuller understanding of the drivers of productivity. The project will leverage the many data streams currently being collected in Burrishoole, primarily those from the deployment of long term, high frequency automated sensors and previous and ongoing studies which aim to resolve the carbon budget for the Burrishoole catchment. This data will be drawn upon to link carbon budgets to macro nutrient fluxes (nitrogen and phosphorus) in the catchment through the utilisation of high frequency monitoring and the measurement of seasonal and trophic dynamics of the main carbon and nutrient pools and microbial, zooplankton and phytoplankton populations. Isotopic and stoichiometric analysis will be used to determine the reliance of the ecosystem on allochthonous carbon and to determine the nutritional quality and potential implications for consumer production and internal nutrient cycling.

Essential Criteria

- Applicants should have a good primary degree (First or Upper Second Class Honours) or M.Sc. in an appropriate discipline (limnology, freshwater ecology, environmental studies or related field).
- Strong oral and written communication and interpersonal skills.
- Some data analytics/statistical skills.
- Any applicant whose first language is other than English must have certified English language proficiency of at least IELTS 6.5 or equivalent.
- EU driving licence.

Desirable Criteria

- Capability in handling large data sets, performing lab and field experiments and some familiarity with aquatic fauna identification and enumeration techniques.
- Experience in using the R programme.
- Boat handling experience.

Application Procedure

Submit an electronic copy of Curriculum Vitae and a letter of interest simultaneously to the **DkIT Research Office** to **Aideen Gaynor (email: aideen.gaynor@dkit.ie)** by the 12th May 2017 at **5pm.**

For more information please contact Dr. Valerie McCarthy (email: valerie.mccarthy@dkit.ie).