

## Summer Undergraduate Research Programme 2021

Project Number & Title:	<p><b>Project 11</b></p> <p>Investigation of nitrate inflows to a humic lake using high frequency monitoring data.</p>
Project Details	<p>The use of high frequency monitoring (HFM) data in freshwater lakes has shown that patterns of change in aquatic systems are strongly influenced by short-lived episodic events that have much longer lasting effects. HFM data can provide new insights into lake processes which affect ecosystem function. There are now new questions being posed on how climate change is altering freshwater nitrogen cycling. Multiple years of HFM physical, chemical, and other data from the Burrishoole catchment in Co. Mayo provide large amounts of data particularly on C fluxes. However, as with many oligotrophic systems, nutrients have largely been omitted from the monitoring programme. This project aims to address this gap with the examination of newly collected data on nitrate collected in 2019 following the installation of a new nitrate sensor to the Burrishoole catchment's extensive range of automated sensors. This sensor has collected data at 15 min intervals for almost a full calendar year. Fortnightly grab water samples were also taken in order to provide validation data. The HFM data has yet to be cleaned and quality controlled or compared to grab sample measurements of nitrate. This proposed work aims to process the high frequency data obtained from the nitrate sensor, which will involve carrying out extensive checks and quality control analyses. Well established R scripts will be used to do this work. These are used regularly in processing the data obtained from the Burrishoole monitoring programme. Assistance in this regard will be provided by the Marine Institute. Data on nitrate concentrations obtained from the sensor will be compared with nitrate values measured in the</p>

	laboratory from bimonthly grab samples in order to assess the reliability of the sensor.
Profile of Candidate	The candidate should show some interest in limnology or biogeochemistry and be motivated and enthusiastic about research and ideally have some experience with data analyses. Experience of open source statistical packages such as R is a benefit.
Project Supervisors	<p><b>Research Centre/Group:</b></p> <p>Centre for Freshwater and Environmental Studies</p> <p><b>Supervisory Team:</b></p> <p>Dr Valerie McCarthy, Dr Elvira de Eyto, Marine Institute (external technical support)</p> <p>All enquiries to Valerie.mccarthy@dkit.ie</p>
Duration	6 weeks
Number of Positions Available	1
Amount Awarded (per candidate)	Weekly stipend of €150 (tax free)
How to Apply	<p>Each applicant should submit the following documents by email to <a href="mailto:mary.matthews@dkit.ie">mary.matthews@dkit.ie</a>:</p> <ul style="list-style-type: none"> <li>• CV including academic transcripts</li> <li>• A 300 word statement as to why you are a suitable candidate for this project.</li> </ul> <p>Please state clearly in the subject line of your covering email the abstract title and project reference number.</p> <p><i>An applicant may apply for more than one programme, but each application must be made separately.</i></p>

