

Cullen Scholarship: Analysis of Long-term Trends in WFD Benthic Invertebrates Quality Element in transitional and Coastal Waterbodies Across Ireland (MSc Award)

Background

The purpose of the Water Framework Directive (WFD) is to improve water quality. Water quality is monitored through the assessment of a variety of proxies or Quality Elements such as, *inter alia*, benthic invertebrates, phytoplankton and water nutrient concentrations. The WFD benthic invertebrate Quality Element has been monitored in designated waterbodies ($n \approx 60$) across Ireland since 2013 with biological and environmental data collected from approximately 3,500 sampling stations over this period. A large long-term dataset now exists which, once analysed in detail, will help elucidate spatial and temporal trends in the benthic invertebrate Quality Element and water quality across Ireland.

Proposal

We propose a **two-year Master's project** on a full-time basis to assess long-term spatial and temporal trends in WFD benthic invertebrate quality element across Ireland.

The project will aim to:

- Describe long-term trends in benthic invertebrate Quality Element across Ireland;
- Compare and contrast differing trends within and across waterbodies and regions;
- Carry out detailed assessment defining the relationship between ecological status and different invertebrate community constituents; and
- Assess the relationship between the benthic invertebrate and other Quality Elements in space and time.

Location of Scholar

The Master's student will be based in their host Higher Education Institute (HEI) and in the Marine Institute in Galway (split circa 50/50 in modules of time as agreed between the HEI and MI supervisors).

Outcome

The student will undergo a two-year training period learning new research methodologies resulting in a Master's degree thesis, with additional outputs as follows:

- Database and maps of the benthic quality element trends which will feed into statutory advice provision within the Institute's Benthos Ecology Unit (BEU);

- These outputs could also feed in to advice provision across other service areas in the Marine Institute as there are direct links to Marine Spatial Planning, Cumulative Effects Assessment and reporting under the MSFD (Marine Strategy Framework Directive); and
- Peer reviewed publication of findings.

Links with Marine Institute Strategic Plan 2018-2022

This proposal is aligned with Strategic Focus Area 1 – Scientific Advice and Services, specifically within the initiative, Meeting the Needs of Decision makers.

Specific Requirements

The scholar should have a primary degree in an ecological or environmental science discipline, preferably with specialisations in marine science and applied aspects of marine ecology.

Financial Details

Scholarships will be up to €27,500 per annum (maximum funding of €55,000 over two years). This amount comprises a maintenance award of €18,500 (Irish Research Council rate effective 1-Jan-21) to the student as well as payment of fees to the host higher education institution (HEI). The maximum fees payable to the HEI will be €6,000 per annum. The scholarship award also includes a budget of up to €3,000 per annum for eligible research costs (travel & subsistence, publication costs, consumables and other costs e.g. laptop) for the sole use of the student, and are payable on a reimbursement basis direct to the host institution where the postgraduate student (scholar) is registered. There are no overheads payable on the scholarship. Publication costs are intended to cover publications on which the scholar is listed as first author and are published under Open Access. Scholars can also apply for additional funding under the [Marine Institute's Networking Initiative](#), which is an annual call.

Marine Institute Co-Supervisor

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