Teagasc PhD Walsh Scholarship Opportunity

Assessing the sensitivity of biodiversity indicators for detection of change in land cover classes

Walsh Scholarships Ref Number 2024010 (2024)

Applications are sought for a 4-year PhD scholarship position on the research topic of 'Assessing the sensitivity of biodiversity indicators for detection of change in land cover classes'. The scholarship is funded by Teagasc, the Agriculture and Food Development Authority, under the Walsh Scholarships Programme.

Background: The release of the National Land Cover Map 2018 (NLCM) offers the opportunity to monitor quantity, quality and change of land cover and habitats in a regular, systematic and repeatable way that is national in scale. Given its novelty, there is an urgent need to assess the degree to which data within NLCM can meet objectives around monitoring of biodiversity. This work will inform the accuracy and sensitivity of monitoring methods for farmland biodiversity, facilitate better interpretation of habitat extent as a proxy biodiversity indicator, and enhance understanding of the rate of change in land use across different landscape types. Outcomes will guide whether current monitoring approaches can effectively assess the success or failure of a farm habitat policy and provide feedback on how best to measure change in the Irish farming landscape.

This Walsh Scholarship will:

- Review prominent policies for biodiversity restoration in Ireland; identify targets of such policies, and consider to what extent existing mechanisms are capable of delivering the required level of restoration.
- Simulate different land management scenarios on farmland habitats, using the NLCM data as a scenario baseline, assess measurement metrics and improve understanding of the factors that influence the design of biodiversity indicators and the levels of accuracy and statistical power required to measure change in habitat extent (farm-level).
- Independently use Earth Observation to map a series of monads (in 2025) to the standards of the NLCM to assess alternative sampling methodologies to measure change (thus policy effectiveness) of farm habitats (compared to Task 1 approach).
- Build scenarios of potential trajectories in farm biodiversity (based on habitat) to identify whether effects of policy goals are detectable and to quantify what minimum level of change in habitat extent would be needed to be detectable using remote methods.

This scholarship is part of a wider collaborative Teagasc project aiming to introduce biodiversity indicators into the Teagasc National Farm Survey.

The successful candidate will join a team with a track record of success in this research topic, and have access to research infrastructure (satellite, imagery, field plots for validation, technical and farm support) and development (PhD training and professional development).

The doctoral candidate will be supervised jointly by Assoc. Prof. Ainhoa González, University College Dublin (ainhoa.gonzalez@ucd.ie), and Dr Stuart Green (stuart.green@teagasc.ie) and Dr John Finn, Teagasc (john.finn@teagasc.ie).

The successful candidate will be registered as a PhD student at University College Dublin (UCD), and would have the option of being located at either Teagasc (Johnstown Castle, Wexford or Ashtown, Dublin) or UCD.

Requirements: Applicants must have:

- A first class or upper second-class honours degree in ecology, agricultural science, environmental science or a related subject.
- A Master's degree, or international equivalent, in ecology, agricultural science, environmental science, environmental resource management, geography or related subject areas.
- Geographic Information Systems (GIS) and spatial data management skills.
- Remote Sensing skills (e.g. land use classification).
- Excellent writing standards as evidenced through recognition of written work as part of undergraduate and Master's degrees.
- Ability to work to deadlines and produce effective timelines that achieve key aims.
- Ability to communicate with stakeholders efficiently and in a positive manner.
- Ability to work effectively within a team.
- Experience, or willingness to upskill (e.g. programming languages).
- Willingness to attend relevant workshops, and to present research at national and international conferences.
- Full EU driving licence.

For further information, please contact Assoc. Prof. Ainhoa González (ainhoa.gonzalez@ucd.ie) or Dr John Finn (john.finn@teagasc.ie).

Award: The PhD scholarship comprises a stipend of €25,000 per annum, and University fees up to a maximum of €6,000 per annum. The scholarship will run for a maximum of 4 years (48 months) from the date the student commences (expected to be 1st September 2024).

Application procedure: Applications should be sent by email to Assoc. Prof. Ainhoa González ainhoa.gonzalez@ucd.ie, Dr Stuart Green (stuart.green@teagasc.ie) and Dr John Finn john.finn@teagasc.ie (please include all co-supervisors in your email) on or before 5th July 2024. The application should include: 1) CV, 2) Masters/Undergraduate academic transcripts, 3) A cover letter outlining your motivation for applying and what makes you the right candidate; and 4) Contact details of two academic referees. Details regarding English language requirements can be found here.

Please submit these documents as one pdf or word file, titled with "*LastName*_WalshScholar2024". Shortlisted candidates will be invited for interview.

Closing date: 5th July 2024.