Fully funded 4 year PhD in Plant Ecophysiology available at Trinity College Dublin

The Trinity College Dublin, School of Natural Sciences, Botany discipline is seeking a highly qualified and motivated candidate to undertake a PhD project that will investigate the carbon and greenhouse gas dynamics of raised bog ecosystems.

Project background.

Peatlands are distinctive ecosystems that develop at the interface between terrestrial and aquatic biospheres, they cover only between 2-6% of the earth’s surface but play a significant role in global carbon (C), water and greenhouse gas (GHG) dynamics. These ecosystems store approximately 15 x 10^2 Pg of C representing ~33% of the global soil C pool, and contribute up to 30% of the global methane (CH₄) emissions, which has a global warming potential 26 times greater than carbon dioxide (CO₂) over a 100-year timeframe. In Ireland, peatlands cover between 14-20% of the land area and sequester an estimated 72,000 t C yr⁻¹, however much of this area has been modified by anthropogenic activities such as extraction for energy, horticulture or domestic purposes or through drainage for agriculture or forestry. Such land management activities have significant implications for the C sequestration potential and GHG dynamics of these ecosystems, and the restoration of degraded areas is required to enhance the C sink strength of these ecosystems and further offset national GHG emissions. Of particular national significance is the occurrence of peat-forming raised bogs, such as Clara Bog, Co Offaly, an annex II habitat under the EU Habitats Directive (92/43/EEC), which while degraded is one of the best examples of active raised bog in Western Europe. This project will investigate the C and GHG dynamics of this ecosystem. Specifically this project will:

- Quantify the net ecosystem C and GHG budgets of Clara bog and investigate the key environmental and ecological drivers of emissions.
- Assess the influence of inter-annual climatic variability and restoration activities on the biogeochemical cycles of Clara bog.
- Develop a gross primary productivity model that can be used to upscale the biogeochemical data by integrating eddy covariance flux data with remote sensing products.
- Parameterise the ECOSSE biogeochemical model for raised peatlands to assess the impacts of restoration management and future climate change on the biogeochemical cycles of these ecosystems.
- Inform national GHG emission inventories and the development of policy and practice for the protection and rehabilitation of degraded peatlands.

Funding

This project is funded by the Trinity College Dublin, Provosts PhD Project Awards, and includes:

- Fees for a PhD in Science: €7,013 (EU); €13,768 (non-EU)
- Annual stipend: €16,000 for 4 years
- Access to a recently installed eddy covariance experimental platform on Clara bog.

Applications

This is a prestigious and highly competitive research opportunity. Applicants must have a degree in a related discipline, a full, clean driving license and be capable of working independently and as part of a dynamic and inter-disciplinary research group. The start date for this PhD is September 1st 2018.
Enquiries regarding this position can be made via email (saundem@tcd.ie) or by phone (+353 1 8964870).

Interested candidates should send preliminary applications to Dr Matthew Saunders (saundem@tcd.ie), please include TCD Provost PhD Project Award in the subject heading of the email.

Applicants should provide a single PDF document that includes:

- A cover letter stating your suitability and motivation for this PhD with reference to relevant experience and achievements.
- A CV that includes your relevant experience, undergraduate results, postgraduate results (if applicable), any relevant publications and contact information for 2 academic referees.

The deadline for applications is 17:00 hrs on the 4th May 2018.

References