

Belowground Root Production in the World's Largest Tropical Peatland

A Masters by Research opportunity at the University of Leeds:

CongoPeat (web: congopeat.net; <https://tinyurl.com/y4lqvdc>; Twitter: @congopeat) is a Natural Environment Research Council programme that is investigating the past, present and future of the world's largest tropical peatland complex in the Republic of Congo and the Democratic Republic of Congo. As part of our programme of work we seek an enthusiastic **MSc by Research (Mbr) student to work alongside the project team on rates of root growth (below ground fine root production) at our key field sites in the Republic of Congo.**

Peatlands are critically-important ecosystems and store twice as much carbon as all the world's forests. Most current peatlands have existed for millennia and have proved resilient to past fluctuations in climate. However, there is uncertainty over how they will respond to future climate changes that will likely be outside the 'envelope' of past variations. As the climate changes, there is concern that peatlands globally will degrade and release their locked-up carbon to the atmosphere, exacerbating global heating. Exploitation of peatlands, for example for oil palm plantations, is also leading to peatland degradation and release of CO₂ to the atmosphere.

In 2017 members of the CongoPeat research team revealed that the world's largest tropical peatland is located in the geographical heart of Africa. For over 10,000 years peat has been building up in the Congo Basin, and today the central Congo peatland stores an estimated 30 billion tonnes of carbon. Our work on CongoPeat will help us understand how the system functions, assess the threats to its existence, and inform policy makers on the best ways to manage and conserve it.

One key part of the work is to quantify the flows of carbon in the peatland, via measurements of (i) carbon uptake in the production of leaves, trunks and roots, and (ii) carbon release by respiration. These measurements are undertaken on a monthly basis in our long-term field site near the village of Ekolongouma, in the Republic of Congo. The successful applicant will investigate the rate of root growth on the same monthly schedule. The equipment that will be used – a new type of mini-rhizotron developed by a PhD researcher at the University of Leeds – has been shown to be highly effective in tropical wetland soils. The mini-rhizotron access tubes will have been installed prior to the start of the Mbr project. The student will take rhizotron and auxiliary measurements in the field, and then analyse the data to obtain estimates of production rates in three ecosystem types: terra firme forest, hardwood-dominated peat swamp forest, and palm-dominated peat swamp forest.

We are looking for someone with a good BSc Hons degree in geography, ecology, environmental science, soil science, biology, or similar discipline. They must be numerate, willing to work under difficult tropical field conditions and keen to be part of an interdisciplinary and international scientific team.

The successful applicant will be trained in the use of the mini-rhizotrons and will gain experience in tropical fieldwork, image analysis, statistical analysis, peatland processes and the global carbon cycle, report writing, and paper writing. They will also develop organisational, presentational and time management skills. Their work will involve one (possibly two) field visits, beginning in February or March 2020 for a minimum of three months each, with members of the project team to a remote field area with challenging working conditions.

Supervisors: Prof. Simon Lewis (s.l.lewis@leeds.ac.uk), Prof. Andy Baird (a.j.baird@leeds.ac.uk) and Dr Greta Dargie (gcd3@st-andrews.ac.uk). Please contact them for further project details.

Dates. Closing date for application: 30th September 2019. Start date: 1st January 2020. Finish date: 31st December 2020.

Further details of the MSc by Research (MbR) may be found at: <https://tinyurl.com/yyaqplqc>. The successful candidate will be responsible for **fees** of £4500 (UK and non-UK EU applicants), but **all travel and fieldwork costs** will be met by the project.