



UNIVERSITY OF
LINCOLN

UNIVERSITY OF LINCOLN JOB DESCRIPTION

JOB TITLE	Post Doctoral Research Associate in Soil Biology				
DEPARTMENT	College of Science (Schools of Life Sciences, Geography and LIAT)				
LOCATION	Joseph Banks Laboratories				
JOB NUMBER	COS736	GRADE	7	DATE	Nov 2020
REPORTS TO	Prof Matthew Goddard				

CONTEXT

Climate change and a growing human population represent a significant threat to humanity due to their substantial impacts on sustainable food production and the stability of ecosystems globally. Soils lie at the heart of part of a solution to this challenge for a sustainable future because soils provide several critical ecosystem services including: (i) (almost) all food production; (ii) key water regulation processes for flood management; (iii) the highest levels of biodiversity on Earth; and (iv) soils contain the largest dynamic reservoir of carbon on Earth (larger than that stored in the atmosphere and vegetation combined). Soil organisms are capable of both releasing and retaining carbon and nitrogen and play a role in the flux of atmospheric greenhouse gasses; in addition, soil organisms drive nutrient turnover that underlies productivity in agricultural and natural ecosystems. Understating the relationships between soil biological, physical and chemical properties is key to be able to best manage soils to enhance sustainable food security and ecosystem stability and prevent biodiversity loss.

While there are studies that have looked at specific soil aspects across narrow land-use gradients, there is virtually no integrated holistic knowledge of the role that land-use change has on multiple key processes in soils. This position will use Lincolnshire as a laboratory and conduct research that will initiate an understanding in this area and provide an evidence base to support land-use change decisions to help mitigate climate change, flood risks and biodiversity loss both locally and globally.

The aim of this research is to be able to predict the quantitative effect of land-use change (e.g. increased urbanisation or rewilding from agriculture) on integrated soil functions in terms of C and N dynamics, biodiversity and water retention, such that this can be mitigated. Such knowledge will provide the start of an evidence base upon which government, local authority, conservation and agricultural policies may be based. Since there is currently very little understanding of the effect of land-use change in these areas, the project will explore multiple soil functions among a range of land-uses.

Specifically, this project will look to target:

- 1) sustainable methods of land development that minimise C loss, retain the provision of natural and biodiversity services and minimise flood risk;
- 2) sustainable and climate change considerate methods of agricultural production to feed a growing population; and
- 3) sustainable methods of conservation for natural capital stocks which provide essential ecosystem services which underpin global ecosystems.

Along-side the main research aspects of this post, if the individual chooses, we will provide opportunities for career and CV development in the areas of student supervision, teaching and University service to prepare the PDRA for future applications for permanent departmental academic positions.

JOB PURPOSE
<p>The Post Doctoral Research Associate is responsible for conducting research on the project, as directed by the Principal Investigator, and is expected to operate with a significant degree of autonomy. S/he is not expected to operate as an independent researcher.</p> <p>The post holder may be required to help supervise the work of more junior researchers.</p>

KEY RESPONSIBILITIES

Literature Surveys
Undertake literature surveys and other investigations of the state-of-the-art, and prepare reports as required.
Programme of Research
Undertake a programme of research under the direction of the Principal Investigator, demonstrating a significant level of autonomy. Lead in the production of high-quality research outputs, including reports, papers and other publications of national/international standing.
Project Management
Perform project management activities, planning, scheduling, monitoring and reporting on progress of research projects.
Liaison and Networking
Identify and liaise with internal and external collaborators, and with colleagues in the Department, maintaining positive and effective working relationships.
Internal Research Activities
Participate in and help to organise internal research activities, including seminars, research meetings and conferences.
Continuous Professional Development
Undertake continuous professional development activities.
Grant Applications
Contribute to the production of grant applications.
Teaching Support
Engage in teaching support activities, up to a maximum of six hours per week, possibly including leading a small number of units (no more than two per annum). Aid in the supervision of postgraduate research students.

In addition to the above, undertake such duties as may reasonably be requested and that are commensurate with the nature and grade of the post.

ADDITIONAL INFORMATION

Scope and dimensions of the role

We seek an individual with a proven strong track record in the analyses of soil biology using next-generation DNA sequencing approaches to test ecological hypotheses. Ideally the candidate will also have, or will be expected to learn, the use of these techniques to not just analyse bacterial and fungal communities, but also metazoan communities via CO1 bar-codes or similar. Ideally the candidate will have experience with other more traditional methods of soil biology analysis and/or collaborate with those that do.

The candidate should be able to demonstrate experience and capability in field work, the molecular biology required to extract and process DNA and generate PCR amplicons, and the bioinformatics and analytical skills to analyse the DNA sequence data to test hypotheses. Ideally the candidate will have experience with science that not only describes the nature of biological communities but has gone on to attempt to evaluate the function of these. Ideally the candidate will have experience of or have collaborated with biogeochemists or similar in the understanding of soil biological communities.

The candidate ideally will also be able to demonstrate that they have successfully worked with multidisciplinary teams and ideally worked with various end-users in the agricultural, land management and/or conservation sectors.

The successful candidate will have a proven track record in leading the generation and publication of quality peer-reviewed published manuscripts and the dissemination of research at both specialist science conferences as well as events aimed at the general non-specialist public.

A driving license is desirable for field work.

Key working relationships/networks

Internal	External
<ul style="list-style-type: none">Principal InvestigatorHead of Research CentreHead of SchoolOther research and academic staff within the school	<ul style="list-style-type: none">Research collaboratorsSponsors and clients



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UNIVERSITY OF LINCOLN PERSON SPECIFICATION

JOB TITLE	Post Doctoral Research Associate	JOB NUMBER	COS736
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Selection Criteria	Essential (E) or Desirable (D)	Where Evidenced Application (A) Interview (I) Presentation (P) References (R)
Qualifications:		
PhD or equivalent (good candidates may be accepted with a PhD pending, subject to publication record)	E	A
Extensive knowledge specific to project/area	E	A/I
Experience:		
Extensive experience of relevant research methods	E	A/I
Authorship of research outputs of national/international standing	E	A/I
Experience of research in specific project area	E	A/I
Teaching support	D	A/I
Skills and Knowledge:		
Ability to design, conduct and project manage original research in the subject area	E	A/I
Excellent written communication, including the ability to write reports and research outputs	E	A/I
Ability to prioritise own workload and work to specified deadlines under pressure	E	A/I
Ability to communicate complex subjects orally	E	A/I
Skills specific to project/area	E	A/I
Competencies and Personal Attributes:		
Flexible approach to workload	E	I
Ability to work on own and as part of a team	E	I
Enthusiasm and commitment	E	I
Business Requirements:		

Essential Requirements are those, without which, a candidate would not be able to do the job. **Desirable Requirements** are those which would be useful for the post holder to possess and will be considered when more than one applicant meets the essential requirements.

Author	MRG	HRBA	DB
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