PhD Project – UK Centre for Ecology & Hydrology, and University of York, as part of the ACCE+ DLA

A multidisciplinary study of dune environments; past to present

Dune slacks are seasonal wetlands found within coastal sand dune systems. They support many rare plant and animal species, but are under threat from multiple factors, including excess nutrients and drying out due to climate change. This project will use a range of techniques to answer the following questions:

1) Can historical dune slack environments provide a baseline and inform possible trajectories for restoring dune slacks to good ecological condition?

2) How do nutrient availability and hydrological change interact in dune slacks and influence their biological diversity?

The oldest botanical data for dune slacks goes back around 100 years but was not linked to measurements of environmental conditions at the time. Understanding what dune slack ecosystems were like many hundreds of years ago can guide restoration for the future. This will be the first study to use this approach in dune slacks, motivated by increasing appreciation of the value of palaeoecological research to inform practical ecosystem conservation and management. This project will address these knowledge gaps by assessing diatom and testate amoeba communities in sand dune sites with contrasting nutrient levels and hydrological regimes, against historical baselines.

Fieldwork in year 1 will involve planning a survey of dune sites across the UK, taking sediment cores and groundwater samples to establish current conditions. In year 2, palaeo-samples of older sediments at key focal sites will be taken. The data generated will be linked to existing ecology and hydrology data from long-running ecohydrological and restoration study sites in year 3.

You will gain an understanding in key ecological successional and hydrological processes affecting biological communities in dune slacks. You will learn palaeo-ecological techniques such as diatom analysis to establish pH, salinity and trophic status. Laboratory skills acquired will include diatom identification, preparation of samples for radiometric dating, analysis of water and soil samples. You will learn integrated analysis of ecological and hydrological data to predict restoration potential under different nutrient and groundwater hydrological regimes. You will have the opportunity to

develop your presentation skills at conferences and written skills through publishing scientific papers. You will be part of the NERC ACCE+ community with access to the training opportunities and events that occur across the various institutions.

The project will be based at UK Centre for Ecology & Hydrology (UKCEH) Bangor, and you will be registered at University of York, where you will learn palaeo-ecological techniques. Bangor is a convenient base for fieldwork to be carried out at one of the key sites, Newborough Warren, less than 20 miles away, and for the placement with NRW who are also based in Bangor. Fieldwork will also take place at Saltfleetby in Lincolnshire as well as other UK sites.

To find out more information on the project and meet the supervisors, please attend the drop-in session on 9th December 1-2pm UK time. Please click on this link to Register your interest. You can find out further information on the ACCE+ website. The lead supervisor is Laurence Jones (UKCEH), with Katherine Selby (University of York). The project is also co-supervised by Ciara Dwyer (Lund University, Sweden), with Natural Resources Wales (NRW) as a CASE partner, and also supported by Lincolnshire Wildlife Trust (LWT).

How to Apply

All applicants to ACCE+ **must complete the ACCE+ personal statement proforma**. This is instead of a personal/supporting statement or cover letter. The proforma is designed to standardise this part of the application to minimise the difference between those who are given support and those who are not. Candidates should also submit a 2-page CV and the contact details of two referees.

The proforma is available here.

Please send your application to Laurence Jones LJ@ceh.ac.uk by the 8th January 2025.

Part-Time Study Options

All ACCE+ PhDs are available as part time or full time, with part time being a minimum of 50% of full time. Please discuss potential part time arrangements with the primary supervisor before applying to the programme.

Project CASE Status

This project is a CASE project. Your project will be co-supervised by the non-academic partner organisation, and you will spend 3-6 months on a placement with your CASE partner in their workplace. You will experience training, facilities, and expertise not available in an academic setting, and will build business and research collaborations.

Candidate webinar

The project primary supervisor will hold a candidate Zoom webinar in December 2024 to discuss the project with interested candidates. Please click on this link to Register your interest.

Funding Information

NERC ACCE+ DLA programme starts from October 2025.

UKRI provide the following funding for 3.5 years:

• Stipend (2024/25 UKRI rate £19,237)

• Tuition Fees at UK fee rate (2024/25 rate £4,786)

• Research support and training grant (RTSG)

Note - UKRI funding only covers UK (Home) fees. The DLA partners have various schemes which allow international students to join the DLA but only be required to pay home fees. Home fees are already covered in the UKRI funding, meaning that successful international candidates may not need to find any additional funding for fees.

About ACCE+

The ACCE+ DLA is committed to recruiting extraordinary future scientists regardless of age, disability, ethnicity, gender, gender identity, sexual orientation, faith or religious belief, pregnancy or maternity, parental or caring responsibilities or career pathway to date. We understand that a student's potential can be shown in many ways and we strive to recruit students from all backgrounds, and support them on their scientific journey.

We have designed our application systems to identify candidates who are likely to be successful in research regardless of what opportunities may have been available to them prior to their application.

Closing date for all applications is Wednesday 8th January 2025