

Project Proposal Form – 2021 entry

Project Title	OU1 - Written in stone: the natural and cultural heritage of the Carboniferous
University (where student will register)	The Open University
Which institution will the student be based at?	As above
If other	
Theme (Max. 2 selections)	Climate & Environmental Sustainability <input type="checkbox"/> Organisms & Ecosystems <input type="checkbox"/> Dynamic Earth <input checked="" type="checkbox"/>
Key words	Carboniferous geology, natural capital, heritage, public engagement, National Trust
Supervisory team (including institution & email address)	Dr Clare Warren , OU; clare.warren@open.ac.uk Dr Stewart Clarke , National Trust; stewart.Clarke@nationaltrust.org.uk Dr Jonathan Larwood , Natural England; Jonathan.Larwood@naturalengland.org.uk Prof Richard Holliman , OU; Richard.holliman@open.ac.uk
Is the project co-designed by a student?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Is the PhD suitable for part time study?	Yes <input checked="" type="checkbox"/> This is a requirement of NERC

Project Highlights:

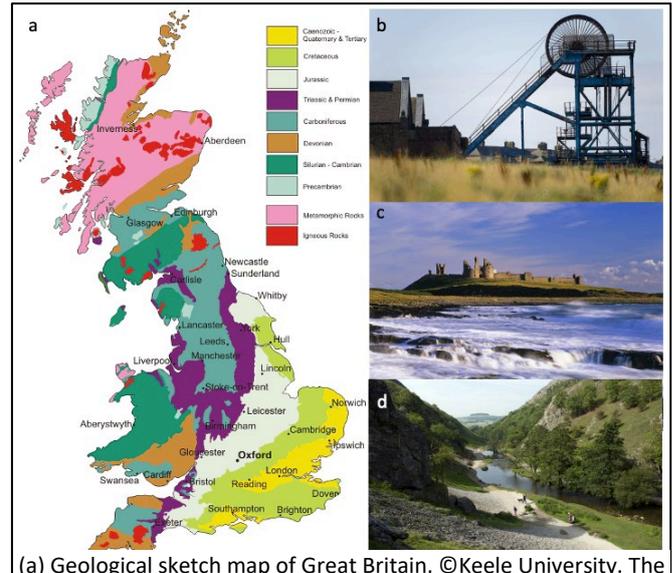
Exploring the role of natural capital in relation to:

- National Trust sites, explored through a combination of geological fieldwork and social research methods;
- Geological studies of the Carboniferous (and its influence) in different localities across the UK;
- Developing a transferable approach to the understanding of geology as a natural, social and economic asset.

Training in interdisciplinary scientific and social research techniques

Overview:

The Carboniferous Period, 359-299 Ma ago, has influenced our landscapes, the habitats and species they support, and human interaction with the natural world. It has provided (what is now) the UK with geological wealth, from the coal fields of northern England through the limestones and gritstones of central England, to the tin-bearing granites of southwestern England. This Carboniferous 'foundation' and natural wealth has played a huge role in the historical pattern of settlement and living, influencing societal change in the UK; a story that is recorded both in the natural landscapes and the built properties of the National Trust. Carboniferous geology was therefore an important factor in creating social and economic conditions (e.g. wealth and poverty).



(a) Geological sketch map of Great Britain, ©Keele University. The photographs in (b-d) illustrate some of the human interactions with Carboniferous geology. (b) Coal mine in Northumberland ©National Trust Images/Joe Cornish. (c) Dunstanburgh Castle, Northumberland ©National Trust Images/David Sellman (d) Dovedale, Peak District, ©National Trust Images/John Millar.

This project will connect, compare, and contrast a number of National Trust sites through the geological lens of the Carboniferous world. It will review the significance of Carboniferous geology in particular to the National Trust as a whole and a number of specific sites in particular. The project seeks to explore geological settings as an asset through which we can understand the natural world, and how social and economic conditions connect to it.

The aims of the project will be to:

1. Determine the extent to which Carboniferous geology shapes how the National Trust and its visitors think about particular places.
2. Develop an approach to assessing geology as a natural asset: operationalising natural capital in a geological context and exploring how a 'geosystems services' approach may be related to ideas about 'public benefit'.
3. Develop an approach that allows the National Trust to understand and capitalise on its geological assets to develop and benefit visitor experience through connecting places and properties through geology.

This project will involve deployment of a range of tools and approaches to natural capital and ecosystem services and their application to geology. The results will demonstrate the value of geology as a natural, social and economic asset that frames our understanding of geological past and our more recent histories, connecting people in different ways to the world around them through National Trust properties.

Methodology:

Review the relationship between Carboniferous geology and National Trust sites, e.g. through analysis of historical and contemporary documentation, engagement with National Trust staff, and geological surveys. National Trust sites will be selected for detailed focus, representing similarities and differences, e.g. in relation to the wider countryside, designed parks and gardens, built properties (and their collections), and associated histories.

Review, develop and test a framework for geological 'natural capital' and 'geosystem services' analysis in the context of National Trust sites.

Through engagement with key stakeholders e.g. NT staff, exhibition designers and local geology groups, develop a new way of connecting and engaging National Trust audiences with our rich geological heritage.

Use a range of social and historical methods to collect and analyse data, which could include archive and document analysis, surveys, and semi-structured interviews.

Test the framework on the selected sites and a new site to determine its adaptability to different contexts.

Training and skills:

Students will be awarded CENTA2 Training Credits (CTCs) for participation in CENTA2-provided and 'free choice' external training. One CTC equates to 1/2 day session and students must accrue 100 CTCs across the three years of their PhD.

Full training in research design, methods and analysis will be provided. Depending on the background of the student, specific training in interpreting Carboniferous geology, natural capital/ecosystems service framework development and/or the social aspects of linking geological natural and social heritage will be provided. It is not expected that applicants would have experience in all of these methods prior to starting the PhD.

The School of Environment, Earth and Ecosystem Sciences has a thriving postgraduate community. Online teaching opportunities including teaching on OU undergraduate modules and Massive Open Online Courses (MOOCs) are available via the OU Virtual Learning Environment.

Additionally, our students can gain excellent skills in science engagement by contributing travel experiences to platforms such as TravelingGeologist (<http://www.travelinggeologist.com>), the CENTA student research blog (<https://centaresearch.wordpress.com>), the Earth Heritagemagazine (<https://www.earthheritage.org.uk>) and the National Trust magazine.

Partners and collaboration (including CASE):

This project involves a partnership between geologists and social scientists at the Open University and researchers at the National Trust and Natural England. CASE status with the National Trust/Natural England is being actively explored.

COVID-19 Resilience:

All fieldwork will be in the UK and will follow Government Guidelines on Covid-19 mitigations. The fieldwork can be conducted at any time of the year and specific fieldwork sites can be changed if local regulations change. Access to online archive/library resources will be facilitated as required. Interviews, supervisions and discussions can be conducted online. Both the Open University and the National Trust have working Covid-19-safe working and operating procedures in place.

Possible timeline:

Year 1: Review the relationship between National Trust sites and the Carboniferous geology of the UK. Develop a sampling framework and select key National Trust sites for more detailed study. Present preliminary project outline/results to the School. Pass probation upgrade.

Year 2: Fieldwork at specified sites, conduct interviews with National Trust staff. Develop a framework for geological 'natural capital' and 'geosystem services' analysis. Work with sites to analyse and co-develop 'Spirit of Place' statements that represent relevant aspects of geology. Present preliminary results at a national conference and to the National Trust.

Years 3-4: Finalise the geological natural capital framework, return to the sites to test it works and test on a new site. Present results at an international conference and to the National Trust. Write thesis, prepare articles for publication.

Further reading:

Brilha, J., Gray, M., Pereira, D.I. and Pereira, P., 2018. Geodiversity: An integrative review as a contribution to the sustainable management of the whole of nature. *Environmental Science & Policy*, 86, pp.19-28.

Gray, M., Gordon, J.E., Brown, E.J., 2013. Geodiversity and the ecosystem approach: the contribution of geoscience in delivering integrated environmental management. *Proceedings of the Geologists' Association*, 124, 659-673.

Gray (2019) Geodiversity, Geoheritage and Geoconservation for society, *International Journal of Geoheritage and Parks*(2019), <https://doi.org/10.1016/j.ijgeop.2019.11.001>

Larwood, J., France, S., and Mahon C., (Eds) 2017. Culturally Natural or Naturally Cultural? Exploring the relationship between nature and culture through World Heritage. *United Kingdom: IUCN National Committee UK*. <https://iucnuk.wordpress.com/2017/10/19/culturally-natural-or-naturally-cultural/>

Stace, H, and Larwood, J.G., 2006. Natural foundations: geodiversity for people, places and nature. *English Nature*, Peterborough. <http://publications.naturalengland.org.uk/publication/60005>

Stewart, I.S. and Gill, J.C., 2017. Social geology—integrating sustainability concepts into Earth sciences. *Proceedings of the Geologists' Association*, 128(2), pp.165-172.

Further details:

Students should have a strong background in one of geology, physical geography, science and society, or science communication, and enthusiasm for interdisciplinary research and learning new approaches and techniques. Familiarity with at least one of the methodological approaches would be desirable but is not required. If you're not sure whether your academic background is suitable, please contact one of us. We'd love to hear from you.

The successful student will join well-established teams researching geological processes and science communication at the Open University and natural capital assessment at the National Trust and Natural England.

Please contact **Clare Warren**, clare.warren@open.ac.uk or **Stewart Clarke**, stewart.clarke@nationaltrust.org.uk (**National Trust**) for further information.

Applications should include:

- an academic CV containing contact details of three academic references
- a CENTA application form, downloadable from: [CENTA application](#)
- and an Open University application form, downloadable from: [UK OU application form](#) (for UK-based applicants, see below) or [Overseas OU application form](#) (for overseas applicants, see below)

Applications should be sent to STEM-EEES-PHD@open.ac.uk by **11th January 2021 (12pm, noon)**

Eligibility: CENTA studentships are open to all applicants who meet the academic requirements (at least a 2:1 at UK BSc level or at least a pass at UK MSc level or equivalent). Please note that unless you are eligible for a Home award, you will need to consider how you will be able to meet any shortfall in funding for tuition fees. Please contact the supervisors listed on the project for more information.

To be eligible for a full (Home) award a student must have no restrictions on how long they can stay in the UK and have been ordinarily resident in the UK for at least 3 years prior to the start of the studentship.

(For further information please see Annex B in the following document: <https://www.ukri.org/files/funding/ukri-training-grant-terms-and-conditions-guidance-pdf/>)