PRIFYSGOL BANGOR UNIVERSITY

Canolfan Defnydd Tir Cynaliadwy
Sir William Roberts Centre for Sustainable Land Use

CYNNAL - SUSTAIN

Sir William Roberts Centre for Sustainable Land Use Newsletter Spring 2023

WELCOME

Canolfan Defnydd Tir Cynaliadwy
Sir William Roberts Centre for Sustainable Land Use

From Norman Dandy, Director, Sir William Roberts Centre

SPRING 2023
ISSUE 5

"Welcome to the Spring 2023 edition of Cynnal-Sustain, in which you will find updates on a wide range of land-based sustainability research currently being undertaken at Bangor University. Ffion Evans introduces her doctoral research on circular agriculture, Sofie Roberts and Thora Tenbrink share their recent experiences working with Gwynedd community energy groups engaged in climate action, and Sophie Wynne-Jones updates us on her work as a Fellow within Welsh Government, trying to bridge the science-policy divide. We also hope you'll be interested in our new work on forest and woodland diversification strategies within the DiversiTree project.

The Sir William Roberts Centre was established almost five years ago and Ashley Hardaker and I wanted to share some reflections on the achievements made – and challenges faced – over that time. Effective interdisciplinarity does not happen overnight! We are extremely appreciative for the effort and time that many of our colleagues have put in to supporting the Centre's successful development. We hope the SWRC now forms the fertile soil from which the interdisciplinary research needed to meet sustainability challenges can continue to grow."

Norman Dandy,
Director,
Sir Wililam Roberts
Centre

CIRCULAR AGRICULTURE

Circularity in agriculture is increasingly recognised as a promising strategy to support a green transition towards sustainable food production. Ffion Evans, a doctoral researcher at Bangor, is looking at how circularity could improve the economic and environmental performance of agriculture. Circular agriculture aims to reduce the input of external and finite resources (e.g., phosphorus, fossil fuel, and land), recover and reuse or recycle lost resources (e.g., nutrients, biomass, energy), and regenerate natural systems.

As part of Ffion's project, the greenhouse gas (GHG) mitigation potential and economic impacts of adopting specific circular practices will be modelled. Stakeholder workshops with farmers, as well as with industry and policy representatives, will also be conducted to understand the barriers to and opportunities for wider adoption and out-scaling of circularity. This multidisciplinary approach to exploring enhanced circularity will allow the identification of optimal circular practices which could significantly reduce GHG emissions, whilst being cost-effective and acceptable for farmers.

Ffion will be giving a poster presentation and 2-minute 'pitch', at the international Agri Food & Climate Circle 2023 conference in Copenhagen, Denmark in May - to share the insights gained from the stakeholder workshops with leading experts within the agri-food industry.

This doctoral research is funded by Defra and contributes to the international collaborative CircAgric-GHG project which brings together a multidisciplinary, world-leading team with expertise in integrated crop and livestock systems, circularity, GHG mitigation, (inter-)systems modelling, digital agriculture, remote sensing, sustainable land use, and farm socio-economics. The overall objective of CircAgric-GHG is to enhance circularity, drive GHG mitigation and wider food system sustainability at multiple scales (farm, local, regional, national and international) across an agro-ecological gradient covering arctic, oceanic, continental, Mediterranean and tropical climates.

If you are aware of a group of farmers who would be interested in this project and willing to share their experiences and opinions of circularity, please do let us know (ffion.evans@bangor.ac.uk).

Ffion Evans,
Doctoral Researcher

NEWS IN BRIEF

Bangor has recently been awarded funding for two projects focused on novel aspects of forest health monitoring and technology. The Horizon Europe-funded FORWARDS project will establish a Europe-wide observatory via which to share data on forest disturbances and climate-smart forestry. The ASPEN project, led by SWRC Director Norman Dandy, will bring Bangor researchers together with colleagues at the universities of York and Nottingham to investigate the future contribution of 'trusted autonomous systems' to protecting forests.

In November last year Theresa Bodner successfully defended her doctoral thesis Emerging spaces for native woodland growth in Britain's crowded future landscapes. Dr Bodner is now Head of Nature Based Solutions at Trove Research where she leads the team on global forest, soil and blue carbon projects. More recently, Hollie Riddell has also completed her Centre-funded doctoral research Improving Carbon Footprinting of Lamb Production. We are all very proud of Theresa and Hollie's achievements and look forward to watching their careers unfold.

Heli Gittins has published a paper on the role of nature-based interventions in facilitating access to nature nature. Co-authored with SWRC colleagues Sophie Wynne-Jones and Norman Dandy, along with Val Morrison in Bangor's School of Psychology, this is the first paper from her doctoral research completed in 2020.

SWRC's Seumas Bates and Norman Dandy will convene a panel entitled Woodland health: threats, solutions, and communities at the 2023 Association of Social Anthropologists annual conference.

Alex Ioannou reported progress on his doctoral research Reframing Wales to his funders, The Drapers' Company, during their annual visit to the university in March.

More than 70 people attended (in person or online) the first two SWRC seminars in our series What's the future for trees on farms? In March, the first was given by Dr Rebecca Wheeler from the University of Exeter. Our speaker in April was Bangor alumnus Clive Thomas of the Soil Association. Further seminars are scheduled throughout the spring.

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DIVERSIFYING OUR WOODLANDS FOR RESILIENCE

We are all becoming increasingly aware of the threats to Britain's trees, woods, and forests. These include climate change, unrestrained development, poor management, extreme weather events, and the prevalence of 'pests' and diseases. This has led to renewed interest in the resilience of our woodlands – demonstrated by publication of, for example, the 2018 Tree Health Resilience Strategy and the more recent Plant Biosecurity Strategy for Great Britain. Diversity – in terms of tree species, genetics, forest structure, and in the landscape – is widely cited as an essential component of this resilience. Not only can diverse woodlands maintain the 'functional redundancy' needed to ensure benefits are provided even if a tree species is lost, but a diverse ecosystem may confer greater initial resistance to threats.

Bangor University researchers are in the midst of delivering the DiversiTree project, which aims to improve understandings of the links between diversity and resilience, along with the strategies necessary for diversification of both existing and new woods. Different management objectives generate varied constraints and opportunities for diversification which the team hope to address. For managers of our productive forests, logistical, operational and economic drivers often create conditions most conducive to working relatively homogenous forest 'crops' (i.e. consisting of a limited range of species, frequently involving our most economically important tree, Sitka spruce (Picea Sitchensis)). Managers focused primarily on achieving conservation outcomes, such as nature recovery, may or may not be dealing with more intrinsically diverse woods, however, they are often similarly constrained by prescribed lists of 'native' species which may limit opportunities for diversification. For example, some trees considered to be non-native (e.g. sycamore (Acer pseudoplatanus) and beech (Fagus sylvatica) could substitute for native ash (Fraxinus excelsior) as ash dieback spreads through our landscapes. Current guidance, however, cautions against this diversification option.

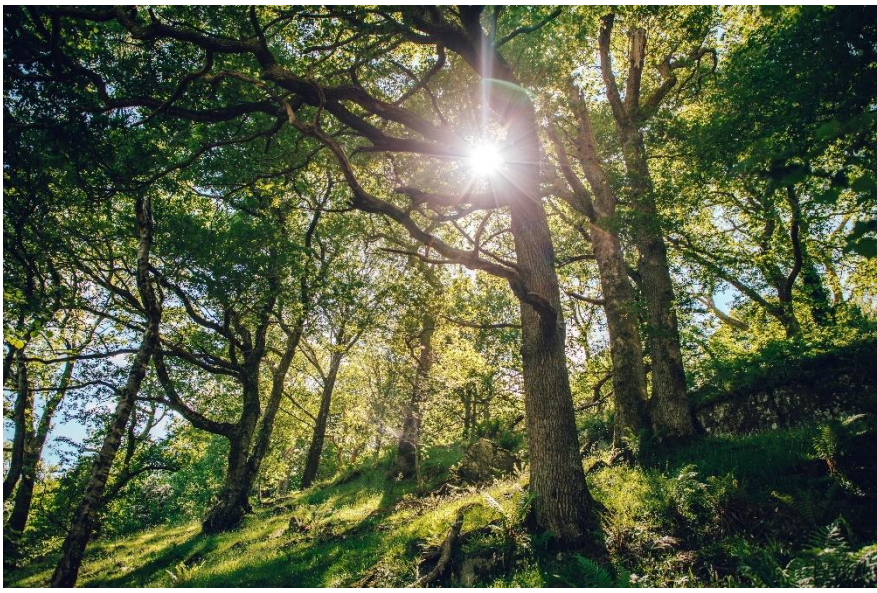
DiversiTree will investigate manager understandings of woodland diversity, the feasibility of diversification strategies, the impact of microbiomic diversity on pathogenic resistance, and aspects of diversity and ecological function. The Project team – which includes colleagues from the James Hutton Institute, University of Birmingham, and the Woodland Trust – aims to provide woodland managers with the knowledge and tools required to increase the resilience of their woodlands to contemporary threats.

Ruth Mitchell from the James Hutton Institute, DiversiTree project lead

swrc@bangor.ac.uk

THE SWRC AND INTERDISCIPLINARY COLLABORATION

The Sir William Roberts Centre was established nearly five years ago, in 2018, with the aim of fostering interdisciplinary land-based sustainability research. Demands for interdisciplinarity – that is, approaching research tasks from more than one scientific perspective - have become increasingly common and the Centre sought to increase Bangor's capacity to respond to these demands. Since then there have been some notable successes – including, recently, the completion of the Centre's first doctoral research projects – along with some substantial challenges.



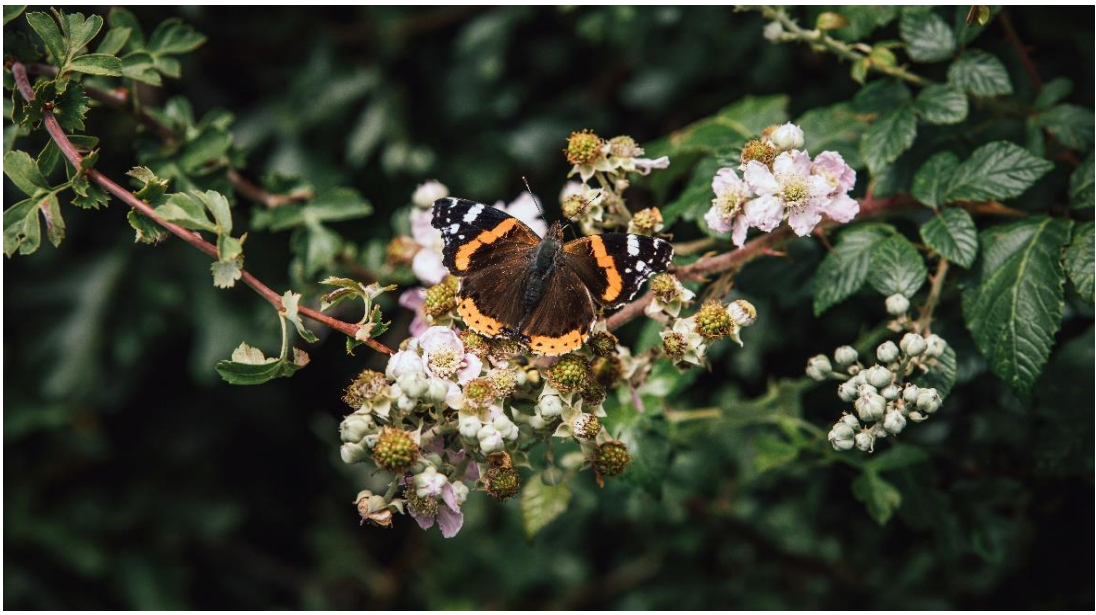
Since its establishment, SWRC researchers have been involved in projects securing eight new research projects worth £1.46M to the university. Our work is especially prominent in the forestry arena with involvement in current projects focused on understandings of microbiomic aspects of tree health (Future Oak), forest diversification strategies (DiversiTree), and the governance of forest monitoring and climate smart forestry (FORWARDSASP). Another new project, focused on the potential contribution of autonomous systems to forest protection (ASPEN), has begun recently. The Centre also funded a 12-month postdoctoral research position focussing on metrics for quantifying the land use sustainability, culminating in a paper co-authored with colleagues at Bangor and the University of Galway and career progression for an early career researcher. We are very proud of these achievements.

Achieving effective interdisciplinarity is far from a straightforward task. Our experience has shown that it is especially driven by the enthusiasm and commitment of interested individuals. The Centre's evolution has often relied on such individuals making time in their extremely full academic lives to follow-up an interesting idea, or contribute to a new research proposal. Conversely, of course, a lack of time is the primary barrier to developing interdisciplinarity.

It may seem obvious, but it is critical to note that interdisciplinarity does not happen in isolation. It thrives on interactions between different types of researchers working in different arenas. These interactions - often simply conversations – are essential for stimulating new ways of thinking about big challenges such as how to respond to climate change. Furthermore, interdisciplinary collaboration can be especially effective when it is clearly directed towards solving a specific problem. In our experience it is therefore vital to provide opportunities (over the long term) for diverse researchers to interact around these problems – preferably jointly experiencing aspects of them in the field. The 'talking shop' is often frowned upon – especially outside academic circles – but it is an essential component of interdisciplinarity. These exchanges can take any form: workplace chats; academic seminars; meetings with practitioners; or even dog walks! The covid pandemic arrived just a couple of months after our launch event at Henfaes and put a serious dent in our ambitions for face-to-face interactions. However, it has generated new opportunities, publications and ways of working, and we are now embarking on a new series of 'hybrid' seminars (delivered online and in-person) focused on 'The future for trees on farms' in the UK.

The future is full of interdisciplinary potential and our hope is that the SWRC now provides a solid foundation on which to build this in the land-based sector. As Sir William's generous endowment is finally drawn down later this year, we must continue to seek new ways to generate the enthusiasm, time, opportunities, interactions, and ambitions essential to interdisciplinarity over the long term.

GRASSROOTS CLIMATE ACTION: COMMUNITY ASSEMBLIES ON THE CLIMATE



Taking action at the local level is critical to addressing the multiple impacts of climate change. GwyrddNi - a collaboration of community-led social enterprises and community energy groups in Gwynedd – is working to achieve precisely this. They are seeking to tackle climate change from the ground up through community-level Assemblies which provide opportunities for people to discuss and formulate Action Plans identifying each community's priorities. Recently, Thora Tenbrink and Grant Peisley of Datblygiadau Egni Gwledig were awarded funding (LCEE Catalyst Fund), to conduct research on these community engagements.

The aims of this research were to identify the issues surrounding climate engagement and the attempts to solve them. The research found new evidence of the ways in which local communities discussed climate action alongside their sense of heritage and belonging. Protecting the natural environment often translated into protecting their 'home patch', the place they love and the culture and communities that it sustains. This research was delivered by Bangor's Places of Climate Change Research Centre (PloCC) and developed understanding of notions of sense-of-place in relation to climate change. It highlighted that, while climate change may happen at the planetary scale, it is felt locally - in the places where we live and to which we feel attached.

The Assembly process not only corroborated academic theory - that collective deliberation and discussion between citizens produces 'better' decisions - but also highlighted the wealth of knowledge within each community: with participants identifying issues, as well as place-based solutions. In one group's action plan they noted the need to identify and map habitats, to support the flourishing of species in the right places for biodiversity, flood management and food production, and to create a patchwork of responses suited to place. This discussion addressed the 'what' as well as the 'how': with the group identifying some of the next steps required in order to achieve these aims. This included distinguishing key and invasive species within the locality, the possibilities surrounding the creation or restoration of wet areas, and to find partners (volunteers, landowners, custodians or others) to work together on realising the plans.

These action plans will be realised through Phase II of GwyrddNi and there will be new opportunities to get involved and take part. For more information please contact Sofie Roberts cop402@bangor.ac.uk. If you'd like to become involved with the PloCC, please see members' contacts via the collaborator finder.

WELSH GOVERNMENT POLICY FELLOWSHIP

Ensuring that government actors make best use of available research continues to be a key task in the land use arena, as in others. Over the last 15 months the SWRC's Sophie Wynne-Jones has been working within Welsh Government (WG) as part of an ESRC-funded Fellowship scheme designed to promote knowledge exchange between government and academia. During this Fellowship Sophie has been based within the Strategic Evidence Unit for Climate Change and Rural Affairs and worked with policy teams across the land use sector.

As a human geographer specialising in farmer 'behaviour' and agri-environment policy, Sophie has been working to support WG officials to access and make appropriate use of social research evidence in their land use policy design. A key task has been supporting the co-design of the Sustainable Farming Scheme, by advising on and ensuring the successful operation of an online survey, workshops and interviews with farmers through summer 2022. The evidence arising is now being used to inform the design of the scheme as it is being developed for release in 2025.

Why does this work matter? If farmers can't or won't engage with the scheme that WG has put forward, the targets for sustainable land management and 'net zero' which the scheme has been designed to support will not be achieved. Whilst we know the scheme actions should deliver on these priorities from an environmental perspective, if we don't have any insight from a 'behavioural' perspective as to whether farmers can, and are willing to engage with the actions, we are missing a key piece of evidence. So, Sophie's role has been to ensure WG have that evidence and can respond to it accordingly: reworking the scheme as needed so that is attractive and workable for farmers.

Other tasks Sophie has been involved with include working with the Forestry division to ensure the ambitions for tree planting in Wales are appropriately tailored to the needs and interests of land managers, and to ensure that WG are taking the most informed approach to supporting and communicating with land managers on these proposals. She has also been working with the Marine and Fisheries division to help them develop new funding schemes to build capacity in coastal communities.

Sophie Wynne-Jones