

Centre for Integrated Research into the Rural Environment

The £5M Centre for Integrated Research in the Rural Environment (CIRRE) is part of the Aberystwyth University and Bangor University Research & Enterprise Partnership. The Partnership was awarded HEFCW funding of £10.9M from 2007 to 2011 to provide research and entrepreneurship support across the Universities and to create four internationally recognised research Centres:

- Centre for Integrated Research in the Rural Environment (CIRRE)
- Centre for Catchment and Coastal Research (CCCR)
- Centre for Advanced Functional Materials and Devices (CAFMaD)
- Institute for Medieval and Early Modern Studies (IMEMS)

CIRRE brings together leading academics from the Institute of Biological, Environmental and Rural Sciences (IBERS) at Aberystwyth University, and the School of the Environment and Natural Resources and School of Biological Sciences at Bangor University. There are also strong links with the NERC Centre for Ecology and Hydrology (co-located with Bangor University in the Environment Centre Wales).

CIRRE's core competence is the ability to integrate research across a range of disciplines, from molecular biology through ecology to the social sciences, and to develop and test models that explain current landscape function and condition, and predict how this will change as a consequence of management and climate change.

The rationale for CIRRE

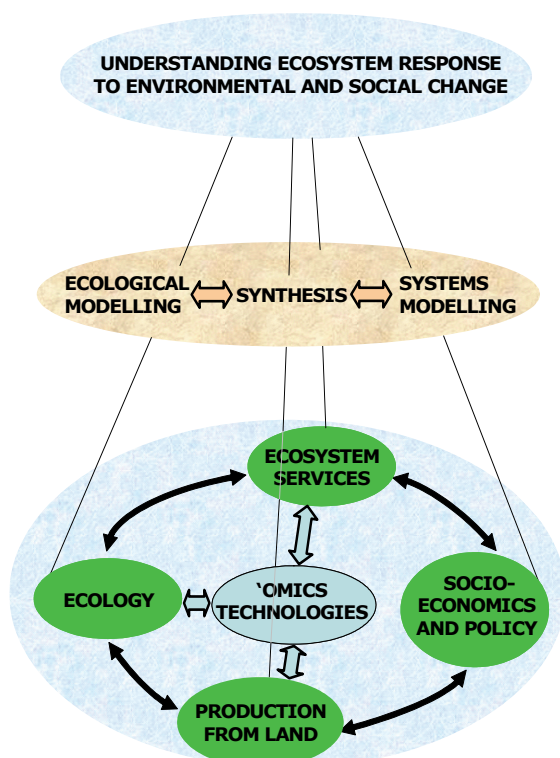
CIRRE's approach is to develop multifunctional understanding of land use which delivers a range of outputs (such as recreation and renewable resources) while retaining economically viable agriculture/forestry and delivering of environmental goods through "ecosystem services".

CIRRE's Vision

To be the world's leading research centre in sustainable rural environmental management

CIRRE's Mission

Provide evidence that enables policy makers and other stakeholders to manage sustainably the world's limited environmental resources and the risks associated with management regimes and climate change



An understanding of how changes feedback on land use and how ecosystems both respond and contribute to climate change is needed. An essential requirement for developing such a multifunctional view of land use is a greater understanding of the ecology of managed landscapes using the powerful tools of genomic and metabolomic technologies and new approaches to ecological and systems modelling. (Figure 1).

CIRRE aims to understand how different forms of land use will affect the sustainability and resilience of ecosystems, and the consequences of perturbations in these ecosystems on carbon, nutrient and sediment stocks and their fluxes. Key elements will be:

- the development of omics-level 'sentinel' technology that can be applied above and below ground to indicate ecosystem-level 'health', stress, recovery or stability, and
- the use of ecological and systems modelling to integrate information from gene to landscape levels within these complex systems.

The ultimate aim is to enable the impact of processes to be assessed across spatial and temporal scales within landscapes of contrasting structures, and socio-economic contexts.

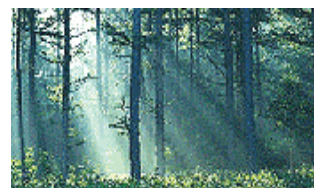
Figure 1

Research Streams

CIRRE aims to be a Research Centre that contributes to human well-being and the sustainability of the global environment, whilst contributing to the Welsh economy. The Centre's research plans have been confirmed by the BBSRC and NERC as falling within a number of their priority research funding areas. The three main streams are:

1. The impacts and drivers of climate change in the rural environment, which include:

- developing a research programme in climate change and the linkage of carbon and nitrogen cycling
- interfacing with the Welsh Climate Change Consortium and Research Council initiatives such as Living with Environmental Change (LWEC)
- integrating with the Centre for Ecology and Hydrology in Bangor



2. The management of rural landscapes to meet societal and economic demands, which includes research into:

- the impact of alternative spatial arrangements of rural landscapes elements on ecosystem services
- animal and human health and the rural environment
- the management of wildlife resources and the maintenance of biodiversity
- public engagement with the rural landscape
- socio-economic, hazard and risk modelling in the rural environment
- landscape-scale and ecological modelling



3. Developing science-based policy for the rural environment, which includes:

- Animal disease
- Biogeochemistry
- Biodiversity conservation
- Ecosystem health
- Waste management and pollution
- Energy and biofuels
- Epidemiology



CIRRE Members

CIRRE is led by Professor Jamie Newbold, Dr John Healey, and as well as 61 academic members, CIRRE has a number of directly funded Chairs and Researchers, their contact details are below. For information about their research interests and the wider CIRRE community please visit www.cirre.ac.uk. If you wish to speak to someone please contact the Partnership Office on 01970 62 8734

Dr Peter Dennis	pdd@aber.ac.uk	Upland grazing ecology, role of biodiversity in ecosystem processes and biodiversity response to environmental change
Dr Javier Gamarra	jgg@aber.ac.uk	Spatiotemporal scaling of ecological processes; theoretical ecology
Dr James Gibbons	j.gibbons@bangor.ac.uk	Ecological modelling; climate change adaptation and mitigation
Prof Peter Golyshin	p.golyshin@bangor.ac.uk	Environmental genomics
Dr John Healey	j.healey@bangor.ac.uk 01248 383703	Ecology and management of forests and agroforestry systems; restoration ecology
Dr Julia Jones	julia.jones@bangor.ac.uk	Exploitation of wildlife resources.
Prof Jamie Newbold	cjn@aber.ac.uk 01970 622242	Understanding and manipulation of gut ecosystems to improve animal productivity while reducing the environmental impact of animal husbandry
Prof Andrew Pullin	a.s.pullin@bangor.ac.uk	Evidence based conservation
Prof Chris Thomas	cjt@aber.ac.uk	Spatial and landscape ecology