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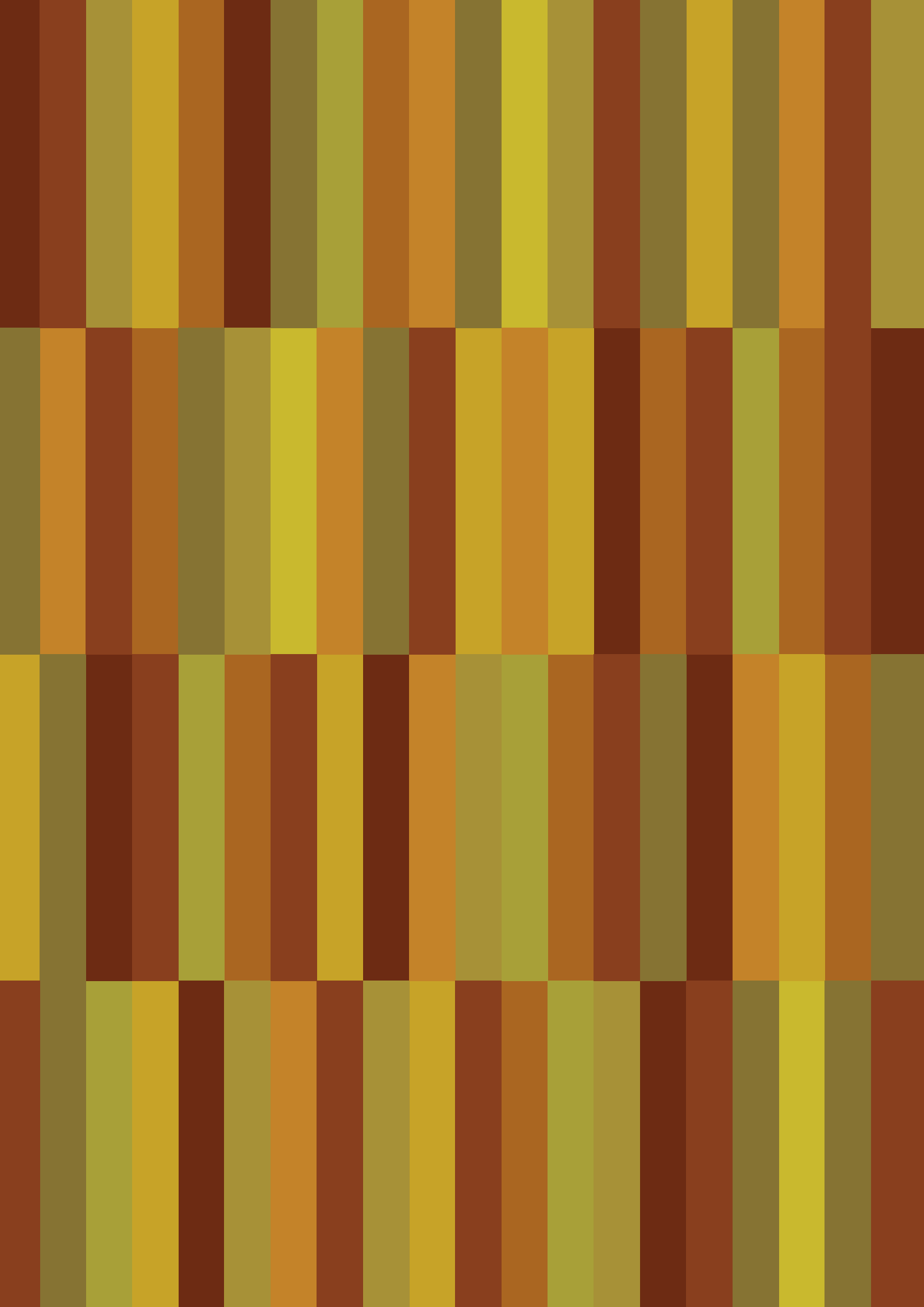
Rural Economy and
Land Use Programme

Changing landscapes:

Some achievements of the Rural Economy and Land Use Programme



Changing landscapes: Some achievements of the Rural Economy and Land Use Programme

The Rural Economy and Land Use Programme is an unprecedented collaboration between ESRC, BBSRC and NERC. Running between 2003 and 2012, with a budget of £25m and additional funding from the Scottish Government and Defra, the programme was set up to deliver interdisciplinary research on the social, economic, environmental and technological challenges facing rural areas. Relu has broken new ground, both in its research and in the management of the programme. Its philosophy of knowledge exchange has been particularly innovative. But when the programme is over, what impact will we see during the next five, ten, twenty years? Here, we examine some of the ways in which Relu research is already influencing policy and practice, regionally, nationally and internationally.

Food miles discredited as a true measure of ecofriendliness

This research came about because people were unsure how to compare the environmental impacts of food produced in different countries. The media were talking about 'food miles' and how eating food imported from abroad was bad for the environment. There was almost no scientific evidence to support or refute these claims.

Comparative Merits of Consuming Vegetables Produced Locally and Overseas

Principal Investigator: Gareth Edwards-Jones, Bangor University
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The project gathered evidence about the social and environmental benefits of food grown locally in the UK and overseas. They measured the greenhouse gas emissions from the same types of vegetable grown in different places in the UK, Spain, Kenya and Uganda and worked out whether the environmental impact of UK food was different from that of imports. They also investigated the health status of farm workers in the UK and overseas, and the nutritional quality of the food produced in the different countries. They found that there was no clear relationship between distance from the UK and the environmental impact of food, or its nutritional status, and the impact varied between seasons. Sometimes buying imported food was the best option and sometimes it was best to buy UK grown food. They found no evidence to support the proposition that food miles were a good indicator of environmental impact but they did find that the health of farmers in developing countries was enhanced by growing and exporting vegetables to the UK, which raises ethical questions about whether we should only buy produce grown in this country.

The research has had a lot of influence, leading to scientific acceptance that food miles are a poor indicator of environmental impact. After seeing the research results, the World Bank commissioned a paper with recommendations on how to make emerging carbon labelling schemes fair for developing countries, and the project also carried out work for two trade organisations on carbon footprinting of products.

Healthier, more profitable food can also protect the environment

This project investigated the question of whether production of meat and cheese that uses and maintains biodiverse natural grasslands can translate that into a source of additional product value, thereby providing both public and private benefits from grassland management.

This involved detailed fieldwork on over 40 beef, lamb and cheese producing farms where farmers have specifically sought to graze their animals on natural grasslands. It included looking at the commodity values and the ecology of the grasslands, analysis of the health benefits of the meat, tasting panels and consumer focus groups. The aim was to establish whether products from animals grazed on such pasture showed specific qualities, either in composition or in the taste, to ascertain how consumers would respond, and to identify the broader economic and social impacts in rural areas of such positive relationships.

The research showed that, on certain farms, the active conversion from formerly improved pastures to natural grassland is leading to a net increase in the area under permanent grass with an associated growth in grassland diversity. As many of the farms concerned are located within what are recognised as priority habitats (notably heath, moorland and calcareous grassland), these higher value, extensive systems are helping to reverse biodiversity loss. It also demonstrated that differences in pasture biodiversity can positively affect meat quality (in raised Vitamin E content, lower skatole levels, and higher levels of certain nutritionally healthy fatty acids), chiefly as a result of the impact of plant species upon the rumen process.

There was evidence, therefore of the multiple values (to producers, to consumers, to citizens, to the environment and to the rural economy) of linking grassland biodiversity management to animal husbandry. It showed that there was a potential for strengthening such linkages within specialist food chains.

The research team has presented its findings at numerous meetings with farmers, grassland ecologists, conservationists and food suppliers across the UK. The project has been reported in the regional and national press and has led to collaboration with similar research being carried out in Europe. At least one farmers' group has developed a specialist beef production chain in direct response to the research findings.

Realising the Links between Quality Food Production and Biodiversity Protection
Principal Investigator: Henry Buller, University of Exeter
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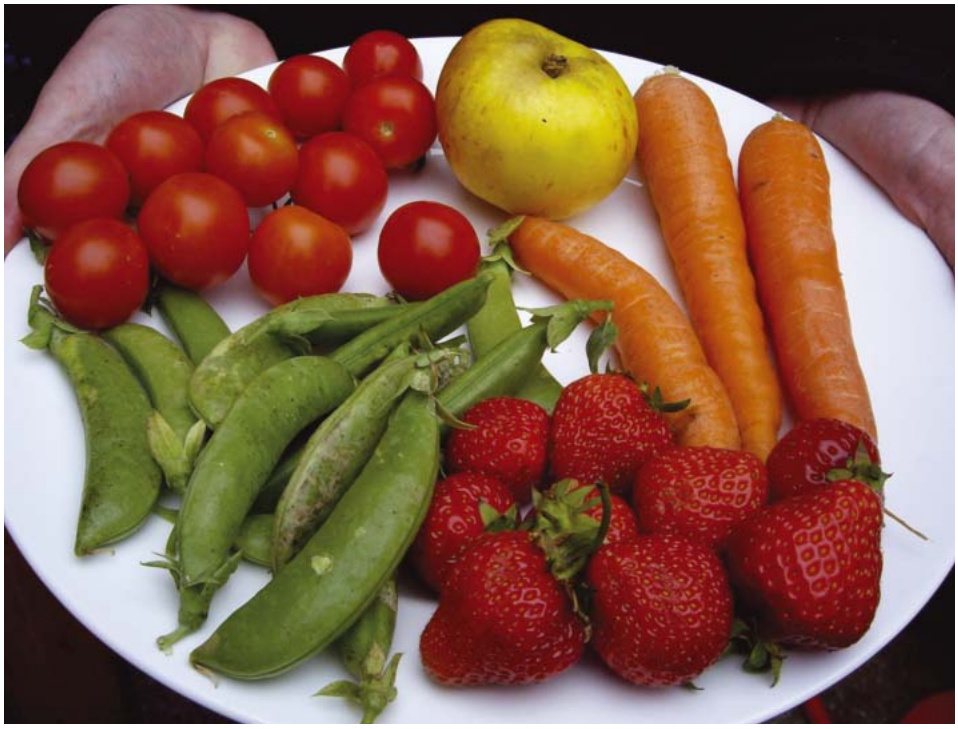

Research joins up Government's policy on land use and diet

It is now widely recognised that poor diets and obesity contribute to poor health, notably heart disease, strokes, diabetes and many cancers, thereby imposing a substantial burden on the nation through costs to the National Health Service, lost economic productivity, and up to 70,000 premature deaths a year.

The UK Government has attempted to encourage people to improve their diets through a range of interventions, including the five-a-day campaign to increase fruit and vegetable consumption and the Healthy Weight, Healthy Lives cross-government strategy under the auspices of the Department of Health. If attempts to persuade people to change their diets are effective, this could be at least as significant as agricultural policy in producing major shifts in farming and land use, but these potential impacts have not been well documented.

This project aimed to model the dietary changes needed to conform to healthy eating guidelines. The research explored the implications for agricultural production, land use and landscape, and, in particular, the magnitude of some of the trade-offs involved. Researchers considered two scenarios: first the impact of current agricultural policy, including Common Agricultural Policy reform, and secondly the impact of an amended national diet, on land use. Modelling under scenario one predicted a significant reduction in beef and dairy cattle numbers in most regions, and a sharp decline in sheep numbers. Modelling under scenario two predicted far deeper reductions in livestock numbers, especially in the uplands, with large areas of land left idle or under grazed. The study suggests that a shift to healthier eating would have significant impacts on land use. Policy makers need to consider the effects of Common Agricultural Policy reform in relation to such change and were urged to produce a new vision for the uplands.

High levels of interest from the local, farming, national and European media raised awareness of the issues. The research outputs also featured prominently at the UK Committee on Climate Change workshop on the implications for land use of dietary change.

Implications of a Nutrition-Driven Food Policy for the Countryside

Principal Investigator: Bruce Traill, University of Reading
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Obstacles removed to help switch from chemical pesticides to biological controls

Food security requires the reliable availability of key products such as fruit and vegetables, vital to a balanced diet. Fewer chemical pesticides are now available to control agricultural pests because of natural resistance and the withdrawal of some products for regulatory or commercial reasons.

Photo courtesy of Simon Budge, VHB Herbs

The Role of Regulation in Developing Biological Alternatives to Pesticides

Principal Investigator: Wyn Grant, Warwick University
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Agriculture needs more mass-produced biologically-based agents to control plant pests, but few have been coming onto the market. It is necessary to regulate these products: just because something is 'natural' doesn't mean it is safe. However, there were barriers preventing them from being licensed and so becoming available to growers. Many of the difficulties seemed to arise because the regulatory processes were designed for chemical pesticides, even though questions about chemical products were not necessarily relevant to biological products. The research team investigated the situation and talked to all the stakeholders, including supermarkets and regulators.

Some supermarkets were more interested than others in encouraging the use of biocontrols, but there was a lack of interaction between supermarkets and policymakers. Distinct regulatory procedures in the European member states had led to a lack of an internal market and made it difficult to secure economies of scale.

The research team helped to change this situation. They developed a constructive relationship with the Pesticides Safety Directorate, and assisted with the implementation of the Biopesticides Scheme, which was designed to facilitate the registration of biocontrol products. They provided training for PSD staff, assisted in the implementation process and helped to overcome the risk averseness of regulators. They spread the biocontrol message to supermarkets' growers and participated in the European Commission's REBECA (Regulation of Biological Control Agents) policy action which informed the debate on the new legislation passed by the EU in 2009. This dismantled some of the internal regulatory barriers and gave a new emphasis to integrated pest management.

The Biopesticides Scheme has led to an increased rate of registration of new biologically-based products and better awareness among retailers. The project's Principal Investigator was invited to serve on the PSD's (now Chemicals Regulation Directorate) Availabilities and Alternatives Plan Implementation Group and continues to do so.

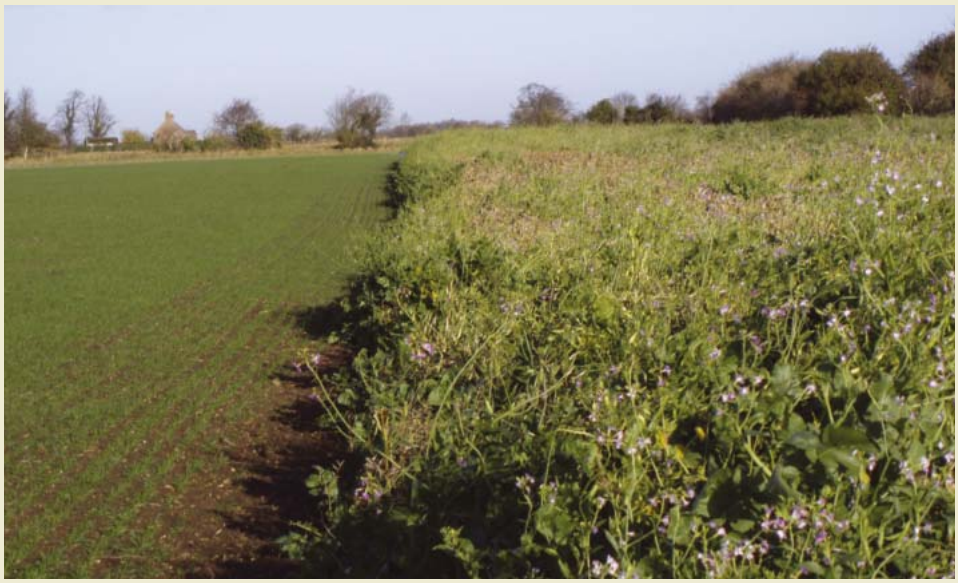
Agri-Environment schemes made more effective

This project was designed to have a highly focussed impact on agri-environmental policy and practice, specifically in relation to the English Environmental Stewardship scheme. The research highlighted the role of farmer knowledge, understanding and attitudes as critical in achieving successful agri-environment schemes, in terms of both environmental gains and farmer engagement.

The issues raised were novel and quickly attracted the interest of Defra and Natural England, who operate these schemes. As a result, policymakers came to realise that high quality, face-to-face training delivered by a credible trainer may be very effective in improving the outcomes from Environmental Stewardship. They have also accepted that the commoner, less direct communication channels used (e.g. leaflets, internet, telephone) may be good for reinforcement and maintenance, but may not be enough to build the necessary farmer enthusiasm and support.

A crucial impact was the citation of the project in the "Environmental Stewardship Review of Progress", where Defra and Natural England acknowledged the need for tailored and individual guidance for farmers on best practice in agri-environmental management.

Natural England has upgraded its delivery of farmer guidance through the Entry Level Stewardship Training and Information Programme which offers free workshops, one-to-one farm visits, farm walks and other events. This aims to provide improved guidance to many thousands of farmers.



Improving the Success of Agri-Environment Schemes

Principal Investigator: James Bullock, Centre for Ecology and Hydrology
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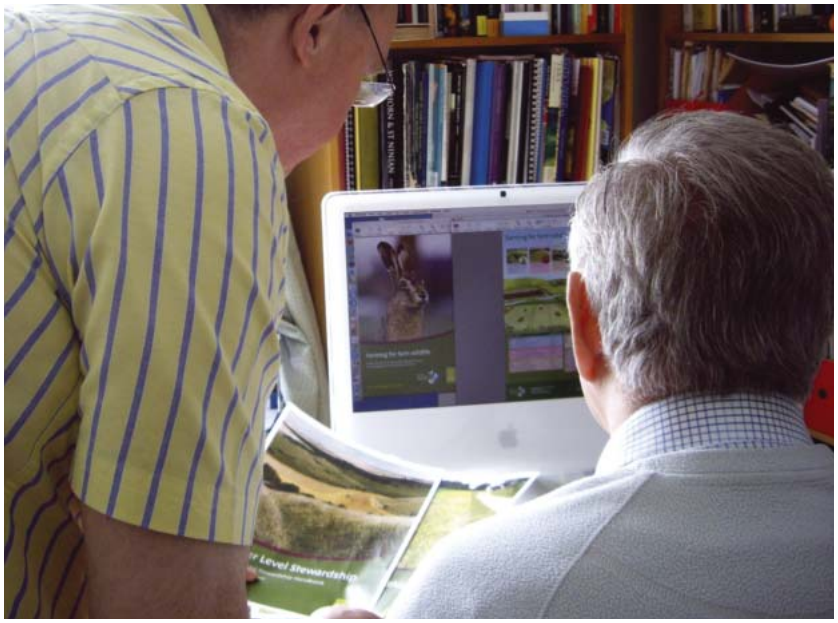
Cooperation between farmers brings environmental and economic gains

It has become increasingly clear that the farm-by-farm, piecemeal approach of current agri-environment schemes is a key weakness. Such contracts fail to manage the environment at the scale of species, landscapes and watersheds. To take advantage of the benefits that working at landscape scale could bring, neighbouring and closely located farmers need to be incentivised to cooperate.

This project looked at the potential for collective options, and particularly considered the Dutch model, where farmers and non-farmers work together to jointly deliver environmental improvements in environmental cooperatives. They found that these kinds of collectives improved environmental performance and delivered benefits to the rural economy by helping to develop other collective activities such as marketing initiatives and tourist networks. They also improved farmers' environmental management skills, reduced government's transaction costs and improved the image of farmers.

In response to presentations from the project, the Land Use Policy Group - representatives from the UK statutory conservation, countryside and environment agencies - commissioned a study of ways of improving public good provision from agri-environment schemes, which included an assessment of collaborative schemes. The Welsh Assembly Government and Scottish Natural Heritage commissioned similar studies. Opinion has now begun to shift in favour of encouraging collaborative action. Sir John Lawton's official review "Making Space for Nature" supported creating additional opportunities for collaboration between farmers and stakeholders. Glastir, a new sustainable land management scheme developed by the Welsh Assembly Government, has a focus on wildlife corridors, buffer areas, and targeted programmes delivered by groups of farmers. These policy developments endorse the project's research finding that there are no substantial barriers to collaborative conservation management by UK land managers.



Co-operative Management of the Agricultural Environment

Principal Investigator: Jeremy Franks, Newcastle University
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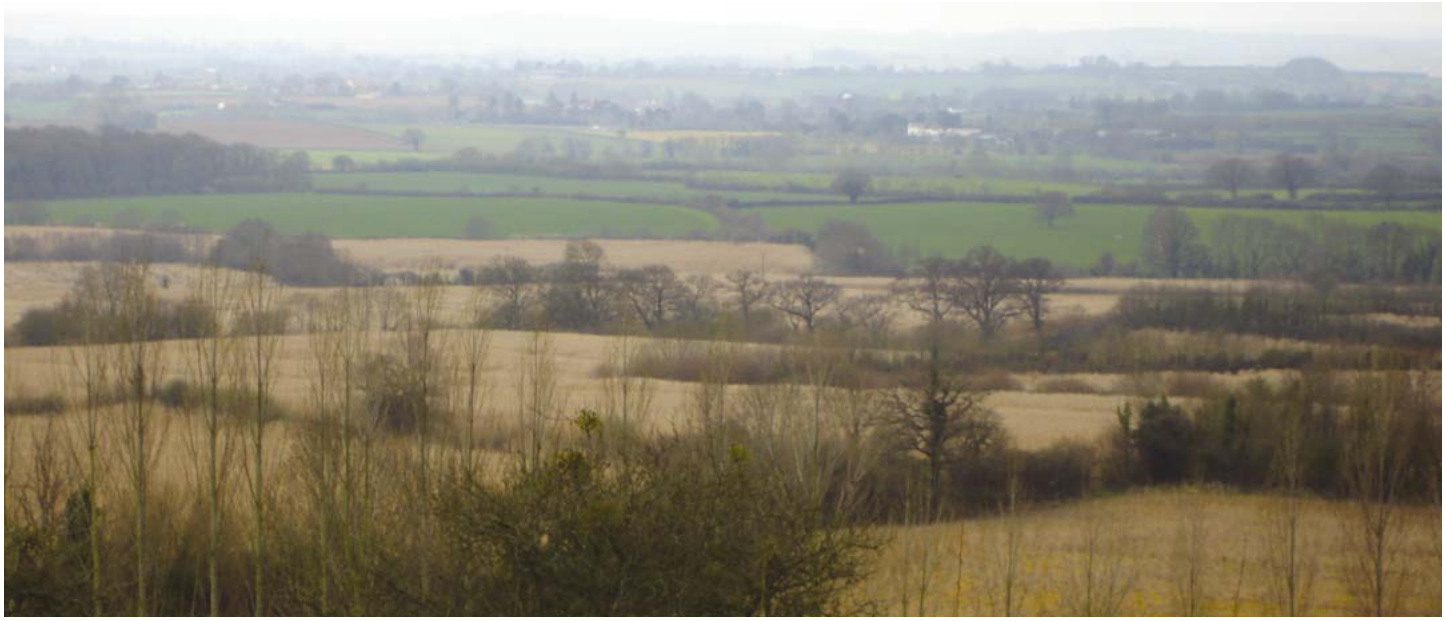
Government takes on board messages about energy crops

Future policies are likely to encourage more land use under energy crops: principally willow, grown as short rotation coppice, and miscanthus, a tall Asian grass. These crops could make an important contribution to the UK's commitment to reducing CO_2 emissions. However, perennial biomass cropping is a significant land use change from arable or grasslands, and decisions based on climate, soil and water suitability for the crops should be balanced against potential impacts on the countryside.



This project integrated social, economic, hydrological and biodiversity studies to investigate the environmental implications of planting these crops, how acceptable they would be to the public and how they would affect the rural economy. The researchers developed a scientific framework for sustainability appraisal of the medium and long term conversion of land to energy crops.

The biodiversity results from the project have been used to revise the Energy Crops Scheme and advise Natural England and Defra on strategies for energy crop planting. They were also used by the National Farmers' Union as evidence for including willow as an option in the Campaign for the Farmed Environment. The project developed GIS suitability mapping to show which areas of the country would be best suited to growing energy crops, while not impinging on protected areas or top grade land. These results have been used by the Department of Energy and Climate Change, the National Centre for Biorenewable Energy, Fuels and Materials, East Midlands Regional Assembly, Thames Gateway Sustainable Development Team, Rural Development Initiatives Ltd. and the Devon Wildlife Trust.

Impacts of Increasing Land Use Under Energy Crops
Principal Investigator: Angela Karp, Rothamsted Research
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Uplands people have the tools to choose their future

UK uplands are facing an unprecedented combination of pressures, as they experience the effects of climate change and a rising demand for home-grown food and energy security. Cultural, demographic and policy changes are also affecting upland communities. People who live and work in the uplands or use them in other ways, need to know more about the range of possible futures they may face if they are to prepare effectively.

This project set out to combine local knowledge and modelling techniques from natural science to express future scenarios for the uplands, and to work with stakeholders on identifying ways they could adapt. There have been considerable impacts on policy and findings featured prominently in the Mountains, Moorlands and Heaths chapter of the National Ecosystem Assessment.

The researchers have contributed to numerous policy reviews, including being commissioned to carry out work for the International Union for the Conservation of Nature on policy options for sustainable peatland management, and by Foresight Land Use Futures to review the future of the uplands for their report to Government. They were asked to contribute to the Commission for Rural Communities Uplands Inquiry, and were part of a team commissioned by Defra to look at barriers and opportunities for payments for ecosystem services, which helped shape the White Paper on the Natural Environment.

The research has also had impacts in economic and business contexts. The team advised Yorkshire Water, Premier Waste PLC and United Utilities on how to reduce discolouration of water by changing land management strategies, with beneficial effects on water treatment costs and a corporate social responsibility scheme to finance peatland restoration is now being developed.

Sustainable Uplands: Learning to Manage Future Change

Principal Investigators: Mark Reed, University of Aberdeen and Klaus Hubacek, University of Maryland
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New framework for valuing natural resources adopted

Changes in national and European policy, and legislation such as the European Water Framework Directive, which is designed to bring about environmental improvements, have huge implications for the way we use land, for the individuals who make their living by managing that land and for the communities in which they live. But often these kinds of directives, and their varied implications, are not "joined up" when policy is being developed.

This project addressed the issue of the full economic effect of the natural environment on human wellbeing across the UK and how we can define this. It has had a considerable influence on major policy developments. The research showed how we could link the ecosystems services, and our understanding of the systems that produce them, with an economic analysis of the role those services play in our lives.

The UK Government's National Ecosystem Assessment, the first analysis of the natural environment in terms of the benefits it provides to society and continuing economic prosperity, drew on the lessons for interdisciplinary collaboration developed by the team, and on the project's environmental economic methodology. The Principal Investigator was able to feed these experiences into the process when he co-authored the conceptual framework which underpins the National Ecosystem Assessment. The National Ecosystems Assessment will be used by Defra to guide environmental decision-making in the future and its ecosystem service approach will provide a framework for managing the UK natural environment. The recent Natural Environment White Paper adopts many of the recommendations made by the project.

Modelling the Impacts of the Water Framework Directive

Principal Investigator: Ian Bateman, University of East Anglia
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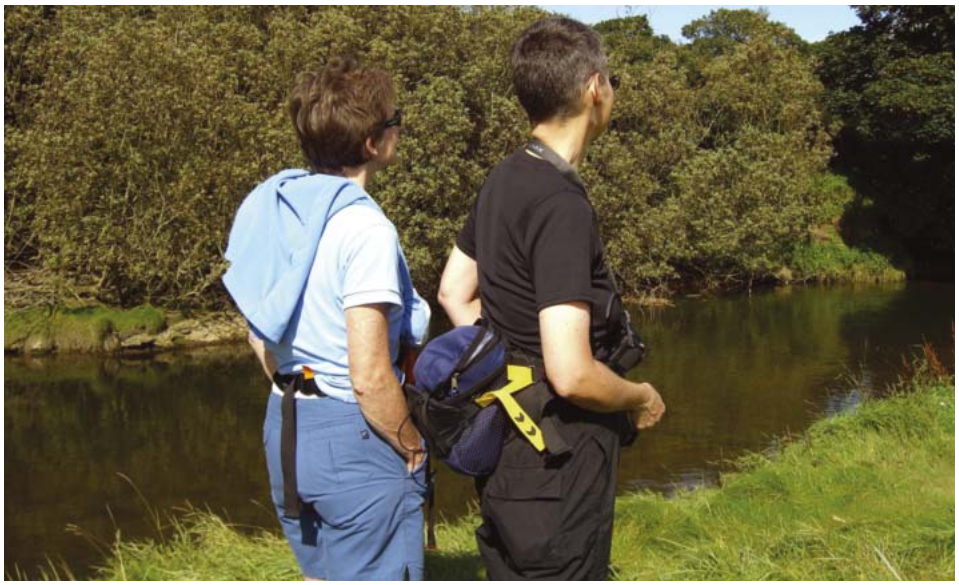

Research helps to save threatened freshwater pearl mussels

The work of this project has highlighted the plight, not just of the salmon and trout that spawn in Yorkshire's rivers, but also the threatened freshwater pearl mussel *Margaritifera margaritifera*. This has led to changes in how the river Esk is managed, which has benefited the whole ecosystem of the river.

Photo courtesy of North York Moors National Park Authority

Angling in the Rural Environment
Principal Investigator: Elizabeth Oughton, Newcastle University
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The pearl mussel is an important indicator species for the health of the river environment, requiring an intricate combination of distinct habitats in order to complete its life cycle. The sensitive juveniles live buried in the river bottom, and the species has a symbiotic relationship with salmonid fish. Thus the management of the river to reduce silt is important for salmon breeding, and the associated income from angling, and is also key to the conservation of the pearl mussel.

The project's research on the distribution of fine silts in the river has played a significant part in improving landscape management and encouraging joint working for the benefit of both species. Ecological findings have been used by Defra's Catchment Sensitive Farming team, the National Farmers' Union and in presentations to wildlife groups.

Two members of the project team have been co-opted onto the Esk Pearl Mussel and Salmon Recovery Project, along with representatives from the Environment Agency, Natural England and the North York Moors National Park. The whole team has contributed to the national steering group discussions on the National Priorities for Conservation of the Freshwater Pearl Mussel in England and Wales.

Anglers could play a crucial role, but there are communication problems that need to be overcome within the sport. It became clear to the researchers that the network of angling bodies channelled information down to anglers, but was not able to feed information effectively back up the chain to the Environment Agency. However, they were able to build new links between owners of fisheries and organisations where they could access information and advice, for example on fisheries management and regulation of still waters.

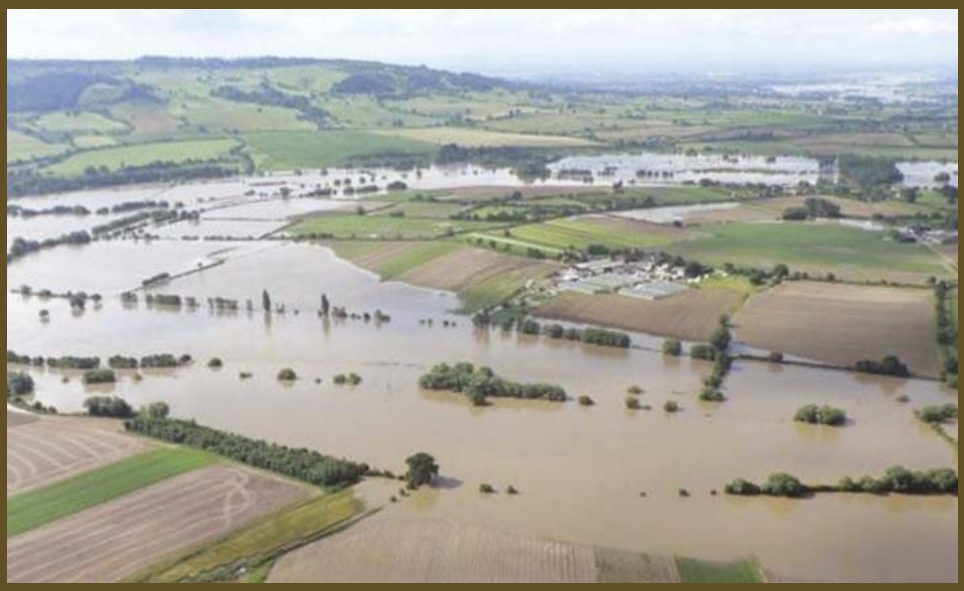
Government adopts messages on flood costs

Priorities for the use of rural land in the UK have changed considerably in the last 50 years. This is particularly the case in rural floodplains where land use is often required to meet diverse and competing demands associated with, for example, farming, nature conservation, recreation, control of flooding and the mitigation of climate change.

The researchers carried out a detailed analysis of past, current and possible future land use and water management on eight agricultural floodplains in England and also studied the impact of the severe 2007 floods on 80 farms. This confirmed that conflicts can arise between agricultural production and environmental outcomes, but also showed potential synergy between agricultural production and short-term flood storage to alleviate flooding of urban areas downstream. Contrary to popular belief, conflict can arise between flooding and biodiversity, which may be damaged by frequent or prolonged flooding. Reconnecting rivers with floodplains in order to 'make space for water' may also not provide the degree of control sometimes required by flood managers.

This research has helped us to understand the necessary trade-offs and potential costs and benefits of a range of land and water management options. The project has identified the scope for joining up hitherto fragmented policy themes and funding mechanisms in floodplains, and data have been applied in a range of policy reviews and developments.

The research provided the Environment Agency with valuable information about the agricultural costs of the 2007 floods in England and contributed insights to the Pitt Review on lessons learned from the 2007 floods. Results were fed into the Organisation for Economic Cooperation and Development's review of agricultural water management in the context of climate change and flood mitigation and adaptation, and have been used by the Foresight Land Use Futures Project and by the National Ecosystem Assessment to show how greater value might be obtained from farmland, floodplains and wetlands.



Integrated Management of Floodplains

Principal Investigator: Joe Morris, Cranfield University
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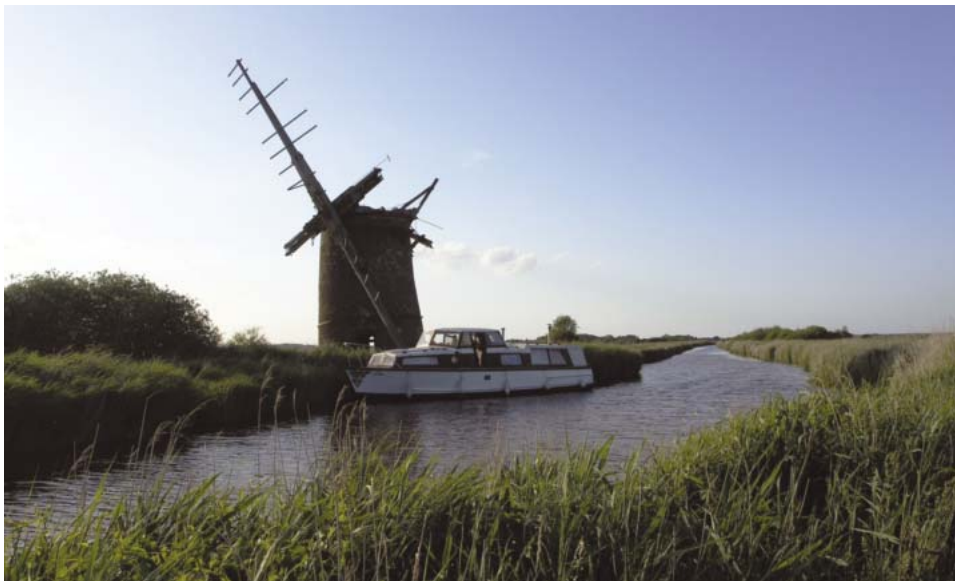
Better information for the public on water quality

Diffuse water pollution is difficult to assess and control. Pollution control must be integrated with management of land, flood risk, water abstraction, and the economic and social goals of communities. This project has defined a template of principles and approaches for integrated catchment management.

Researchers looked at catchment management and governance regimes in the UK, Europe, USA and Australia. They tested the lessons learnt through catchment assessment and planning in two case studies in England. They then developed an Ecosystem Health Report Card (which has been adopted by the Environment Agency for communicating information), and a participatory, interdisciplinary approach which yielded a new and innovative modelling tool. These have become established parts of the evidence informing national water and environmental policy, and in particular the adoption and piloting of a new catchment management approach by Defra and the Environment Agency.

The project has maintained close links with both, and also with Natural England, water companies and Rivers Trusts, and researchers have been consulted by senior staff in these organisations. At a regional level the project's template and recommendations have informed the Somerset Water Management Partnership's review of its objectives. A member of the team has now been awarded a NERC Knowledge Exchange Fellowship and is developing further applications of the catchment modelling approach, in partnerships with the Broads Authority, the Westcountry Rivers Trust and Defra.

Further research by members of the team, including the Wensum Demonstration Test Catchment project and work on pollution mitigation in China has been funded, and is building on the project's results.



Catchment Management for Protection of Water Resources

Principal Investigator: Laurence Smith, SOAS, University of London
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Community catchment management achieves environmental improvements

This project aimed to address a specific environmental problem encountered at Loweswater, Cumbria – the occurrence of potentially toxic blooms of blue-green algae on the lake.

There had been previous attempts to tackle the problem, including scientific monitoring of lake/stream water quality by the Centre for Ecology and Hydrology and the Environment Agency, and 'enforcement letters' from the Environment Agency to holdings considered to be in breach of waste regulations. Local farmers had also got together to form the Loweswater Improvement Group to address sources of phosphorus pollution in the catchment. But these varied approaches were not joined up, there was a lack of communication between different parties, agencies and local residents, and so little was achieved to improve Loweswater's environment.

This project, however, managed to initiate a new approach: the Loweswater Care Project, a forum that would be created together by researchers, the local community, agency representatives, and other stakeholders to share expertise, plan and negotiate action. It was inclusive, giving institutions, researchers, and local residents an equal say, and encouraging innovation. The Loweswater Care Project provided a space for making and developing collective knowledge, and questioning established procedures. The agenda was driven by the participants, who met regularly and the project funded some studies which were defined and carried out by the group itself.

Practical outcomes from the project included alterations to farming practices, improvements in septic tank management, initiatives to clear vegetation and an improvement in relations between the National Trust and farmers. Good links were established with other community groups who sought advice, and written evidence was provided to various Government consultation documents, including the Environment Agency's consultation on the EU Water Framework Directive and the Commission for Rural Communities' Uplands Inquiry.

Since the beginning of 2011 the Loweswater Care Project has been run by a small local group consisting of Loweswater residents and farmers, and it continues to work with relevant environmental institutions and scientists towards improving the sustainability of Loweswater's environment.

Testing a Community Approach to Catchment Management

Principal Investigator: Claire Waterton, Lancaster University
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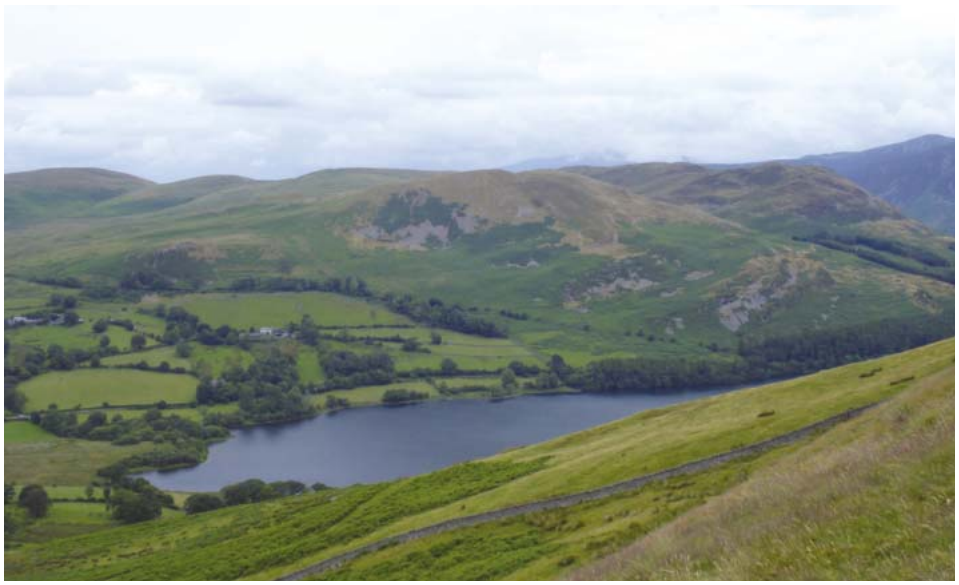

New scheme modelled to combat flooding

In 2005, the UK Government adopted a new policy on managing flood risk: *Making Space for Water*. The vision was clear: flood risk management had to evolve to work more with natural processes through a wider portfolio of responses; to make more space for water to be slowed and stored in the environment; at the same time sustain those, notably rural, communities for whom flood reduction was not being prioritised; and also secure greater local participation in decision-making.

This project addressed the challenges directly, and recognised that they are fundamentally linked. Identifying where the "Space for Water" should be is as much a social and an economic challenge as a technical one, because rural landscapes are inhabited places in which livelihoods are often vulnerable.

The researchers started work in a community that had been flooded four times in the preceding 10 years: the town of Pickering in North Yorkshire. A proposed flood ralleviation scheme had failed to pass the Environment Agency's cost-benefit threshold, leading to public controversy. The project established a competency group to address the problem, inviting local people affected by flooding to work with natural and social scientists. Ryedale Flood Research Group, as it became known, developed a new model for testing possible solutions. They publicised their bund storage proposal at an exhibition which attracted over 200 people, including practitioners, local people and media.

The work resulted in the nomination of Pickering as a Defra Demonstration Project, led by the Forestry Commission, with researchers involved in this project funded to apply the models further to Pickering. It has also helped the Environment Agency to re-engage with the community and move forward after a period of stalemate, providing an alternative way of doing flood risk science that could be applied more widely.

Understanding Environmental Knowledge Controversies

Principal Investigator: Sarah Whatmore, University of Oxford
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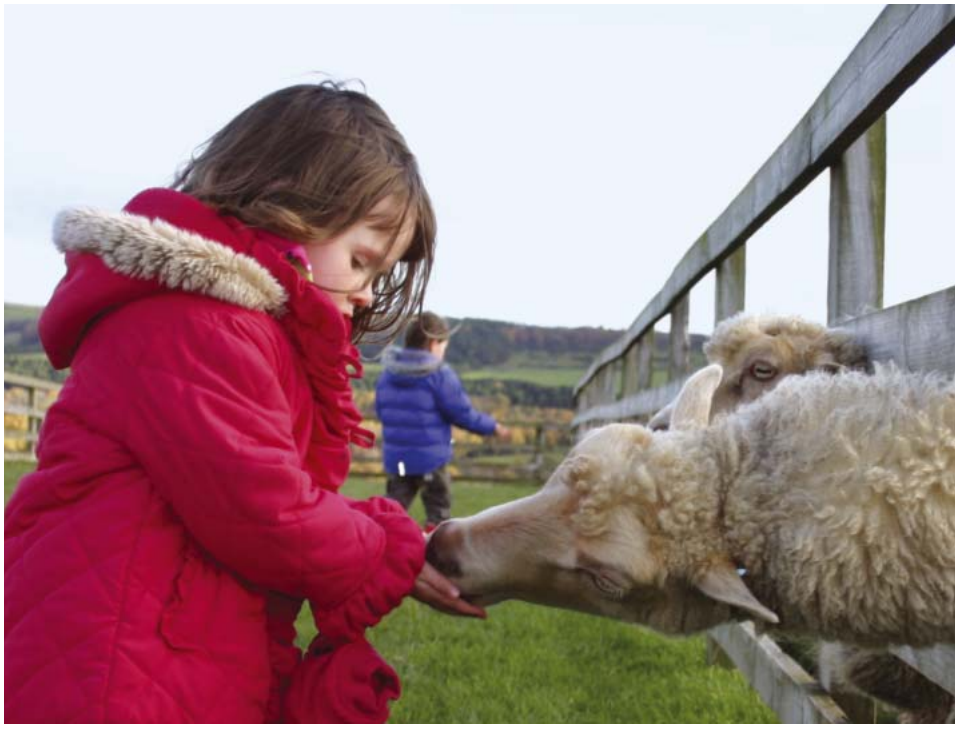

Better health protection in the countryside

***E coli* O157 is a stomach bug passed to humans from animals, particularly cattle and sheep, via food or water, or as a direct result of contact with animal faeces. It can cause severe illness in individuals, particularly children, and there have been some high profile outbreaks.**

Reducing *E coli* O157 Risk in Rural Communities
Principal Investigator: Norval Strachan, University of Aberdeen
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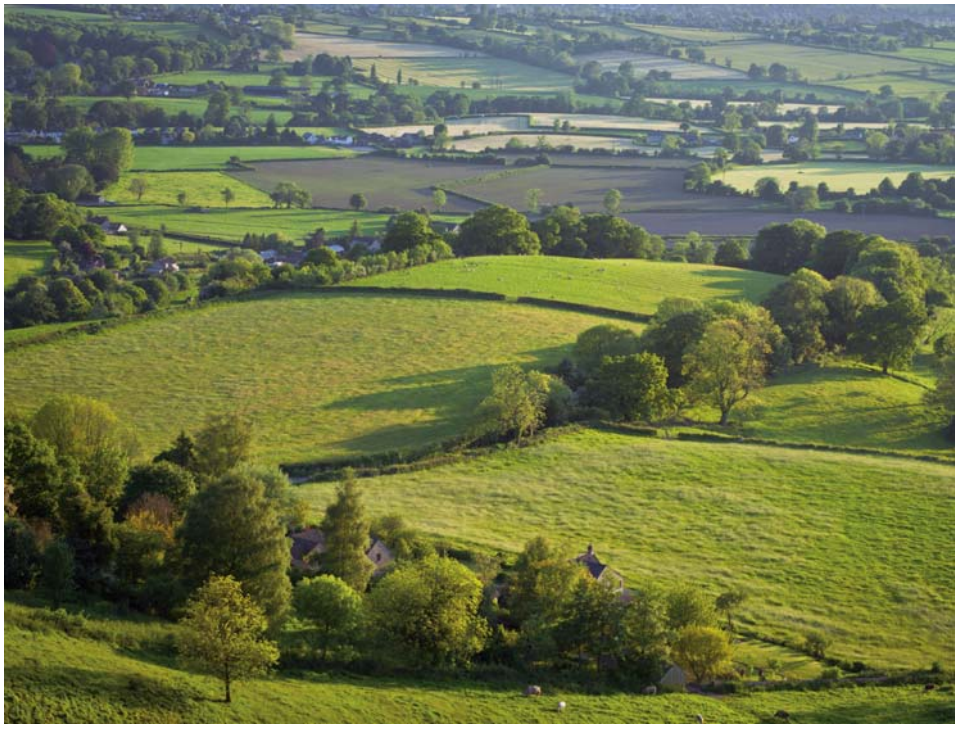
In August and September 2009, for example, 93 people became ill after visiting Godstone Farm, a farm attraction open to the public. Most of these (over 80%) were under 10 years of age. Seventeen children suffered severe effects to their kidneys, with eight requiring dialysis. Some of these might have permanent kidney damage.

Following the outbreak, the UK's Health Protection Agency established an independent investigation to understand why it happened, and to make recommendations to reduce the risk to those who visit open farms in the future.

The Relu research, which had begun earlier, was seeking to find out how aware farmers, other rural residents, and countryside visitors were of *E coli* O157, and how the environmental risks could be reduced. Because of the work they had done, the team was asked to provide written and oral evidence to the Godstone Farm investigation. Their evidence was strongly reflected in the final report, which said that visitors to the countryside generally have a low level of understanding about the risk of *E coli* O157 infection from contact with farm animals and the farm environment. It endorsed their recommendation that more should be done to raise public awareness.

The team's finding, that there is greater awareness in Grampian (possibly the result of higher incidence, and more frequent reporting in the local media), was also used to conclude that raising public awareness, although not easy, is a feasible objective. A cross-governmental group is reviewing the recommendations for changes to, for example, advice given to visitors to open farms.

So this research has contributed to formulation of new health protection policy and advice, and should make it easier in the future for the public, particularly those with responsibility for children, to make more informed choices about the benefits and risks of farm visits.



Changing the way we think about landscapes and land management

At programme level Relu has influenced thinking on fundamental issues affecting rural areas. Government and public debate over land use in the UK has gained considerable momentum over the past three years, with Relu research making a major contribution.

With over 20 research projects on various aspects of land use, Relu positioned itself to provide evidence and analysis to a series of major inquiries. The programme successfully drew in public and expert contributions by means of the high profile, on-line "Great Land Use Debate" held during Science Week 2009.

The pervasive influence of Relu can be seen in the broad analytical perspective taken on board by the inquiries in relation to the strategic significance of rural land and their integrated approach to the land system, transcending scales, and rural-urban divides. They have, increasingly, encouraged a multifunctional approach to land use and brought ecosystems thinking into their analysis on the value of land and decision making. They have moved towards the promotion of cooperation between landowners, managers and stakeholders to deliver an optimal mix of public and private benefits and an appreciation of the regional and landscape context of land use.

Relu's Great land Use Debate and the questions that the Programme raised about what rural land is for and what our priorities should be heralded and helped to set this important national agenda.

Resources

All Relu publications are available at www.relu.ac.uk or email relu@ncl.ac.uk for hard copies.

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Changing landscapes: Some achievements of the Rural Economy and Land Use Programme

By Anne Liddon, Science Communications Manager, with contributions from the Relu research projects.

Further information on the Relu programme and all Relu publications may be obtained at www.relu.ac.uk or by contacting relu@ncl.ac.uk.

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