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# ecrr

Edinburgh Consortium  
for Rural Research

[www.ecrr.org.uk](http://www.ecrr.org.uk)

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## Broadband links remote communities

A recent workshop in Perth explored how fast internet access can be brought to isolated locations, and what benefits might follow. Professor Stuart Monro, ECRR Scientific Director, reports

**THE ECRR WORKSHOP** looking at rural broadband in Scotland, held in Perth on Monday 14th March, 2011, aimed to bring together a range of individuals who as researchers, users or providers of broadband to rural communities in Scotland could contribute to a discussion about the nature of the challenge and the scope for possible solution.

The opportunities generated by providing low-cost, high-speed (25Mb/s) broadband connection to remote-island Scotland, by means of wireless and optical fibre, was demonstrated by Professor Peter Buneman. He and his team were able to use spare 'backhaul'

node capacity at UHI to create the essential link to the global internet in a successful research testbed in Knoydart on the west of Scotland ('backhaul' is the broadband 'grid'). The absence of fast, easy, cheap access to the spine of the internet was identified as the factor limiting opportunity throughout the rural communities of Scotland. Details of the case for, and means of, implementing fast digital connection in Scotland were published in the Royal Society of Edinburgh (2010) report 'Digital Scotland' ([www.royalsoced.org.uk/422\\_Inquiries.html](http://www.royalsoced.org.uk/422_Inquiries.html)).

**Pictured above:**  
Corran on Loch Hourn, now connected to the world by the Tegola high-speed broadband project

Continued overleaf

## This issue in species

**Atlantic salmon** will be better able to resist a fatal virus, thanks to work on genetic resistance involving a team at The Roslin Institute... **page 5**

**Barley** used in the manufacture of Scotch whisky can be improved thanks to work on genetic markers carried out at the James Hutton Institute ... **page 9**

**Blueberries** could be a lucrative new crop for Scottish growers, according to researchers at the James Hutton Institute... **page 9**

**Owls** and **ospreys** are among the species that the public could learn about at events organised in early 2011 to celebrate the International Year of Forests ... **page 10**

**Deer** are a significant factor in the management of woodland, and will have to be taken into account by a study aimed at improving the lot of woodland birds... **page 10**

**Academics** with egos will be able to put themselves in the spotlight at 'Bright Club' nights in Edinburgh's comedy clubs ... **back page**

## About ECRR

**THE EDINBURGH CONSORTIUM FOR RURAL RESEARCH** exists to promote sharing of ideas and techniques among a group of organisations active in research into land, freshwater, coastal and marine resources, and their uses.

Our member organisations have bases throughout Scotland, and are at work all over the world.

Further details on the back page.

## Report: rural broadband

## From page 1

Presentations from Lynn Garrett, Sarah Skerratt and Frank Rennie also emphasised that there is a fundamental need in rural communities for fast, stable and reliable broadband. This need is fed by a variety of initiatives including; the development of small businesses in rural communities; the delivery of educational needs an enhanced way; the opportunities for telehealthcare to be taken up and developed; and the needs of communities to gain access to online communication, commerce, knowledge and entertainment. Access would also enable unthought-of innovation and stimulate new ways of doing things with the wealth of information progressively being built into the system.

During discussion it was noted that, increasingly, people select where to live on the basis of the availability of high-speed internet links which are both fast and reliable; children are internet natives whereas older folks are immigrants. However those currently retiring from work are also computer-savvy, demanding access to fast internet speed, and are frustrated if it is not provided. The market has failed to

**Increasingly, people select where to live on the basis of the availability of high-speed internet links which are both fast and reliable**

satisfy rural internet need and social inclusion has been largely ignored by previous discussions. Various organisations are building bits of internet in a disjointed and un-coordinated way. There are already plenty of reports describing the current situation, its solution, and detailing the benefits to be gained from the availability of high-speed internet provision to rural communities.

There was an identified need for Scottish government to give a lead in high speed internet provision. However, the political lifecycle does not seem to encourage the development of infrastructure. Ironically, the current lack of money may drive forward smart provision of fast, reliable broadband.

*The following report by Jane Atterton, on this workshop and a second event in Newcastle organised by the Northern Rural Network, is also available on the ECRR website.*

**Pictured right and opposite page: the Tegola team setting up their test equipment**



Photos: The Tegola Project, www.tegola.org.uk

## Rural broadband in the UK: a report of two recent events

Dr Jane Atterton, Researcher, Rural Policy Centre, SAC

**THE FIRST EVENT**, entitled 'Broadband in Rural Scotland' was organised by the Edinburgh Consortium for Rural Research and was held on Monday 14th March 2011 at Perth College, UHI. Speakers included Professor Peter Buneman from Edinburgh University (on the technical challenges of delivering rural broadband with particular reference to the 'Tegola testbed project', [www.tegola.org.uk](http://www.tegola.org.uk)), Dr Lynn Garrett from NHS Highland (on telehealthcare in remote rural areas), Dr Sarah Skerratt from SAC (on the contribution of rural broadband to thriving and resilient rural communities) and Professor Frank Rennie from Lews Castle College, UHI (on broadband as a tool for rural development).

The second event was organised by the Northern Rural Network and was held at the Centre for Life, Newcastle on Tuesday 15th March 2011. Speakers included Robert Ling from Broadband Delivery UK (BDUK) (on UK Government policy and broadband delivery plans), Bill Murphy from BT (on rolling out the fibre network and prospects for businesses and communities in the rural North), Hilary Talbot and Randal Richardson from Newcastle University (reporting some recent research on local broadband) and several case study presentations about local broadband initiatives

(including NYnet, Digital Dale, Northumberland Rural Community Broadband and Two Dales Live). More information about the NRN event can be found at: [www.ncl.ac.uk/cre/news](http://www.ncl.ac.uk/cre/news).

The key messages from the two events can be summarised as follows.

**Innovative local initiatives** – there are a number of innovative examples across rural England and Scotland where rural communities have taken the initiative to ensure the delivery of broadband in areas that the commercial market will not reach. These examples show what can be done when communities take action themselves, sometimes in collaboration with others (including funders, universities, the public sector and the private sector), and also that 'one-size-doesn't-fit-all' with respect to the appropriateness of different technologies and delivery models in different places.

**Future-proofed solutions are required** – rural areas should not constantly be playing catch-up to other parts of the UK. Instead, rural areas must be provided with the most up-to-date technology, otherwise the 'digital divide' will simply keep re-appearing (and widening). Broadband delivery needs to be a long-term, apolitical issue, not subject to short-term political cycles.



## Report: rural broadband



**Demand for broadband in rural areas is high** – there is high demand for broadband in rural areas (some would argue that demand is higher than in urban areas), and broadband can bring significant and varied benefits to rural communities and businesses, including: health service provision (for example, enabling older people to remain in their own homes for longer); reducing deprivation and social exclusion and boosting a local sense of community; improving opportunities for distance learning; reducing the need to travel as far and as often to work; opening up

### ‘Rural areas must be provided with up-to-date technology, or the ‘digital divide’ will keep re-appearing’

new business opportunities locally, which in turn will encourage new people (including the ‘creative classes’) to move into rural areas, boost local economic multipliers and generate important extra-local social and economic connections for communities.

While in some instances the cost of broadband provision may be relatively high, there are important social benefits to be achieved in the long run (although these may be hard to measure).

**Community access to existing broadband infrastructure** – in some instances the most appropriate solution is for local communities to have access to existing broadband infrastructure (including backhaul), perhaps through a university or public sector organisation, such as a local authority. This creates a situation where local communities can

‘build into’ the infrastructure, and other providers can ‘build out’. Infrastructure needs to be as close to the community and as affordable as possible.

**Need for joined up thinking** – it is critical that all of the organisations involved in the funding and delivery of broadband in the UK (including BDUK, the Rural Broadband Partnership, INCA, the Community Broadband Network, Defra’s £20 million Rural Communities Broadband Fund, local authorities, and the providers and local communities themselves) work together to ensure that appropriate solutions are found to provide broadband across all areas of the UK. This was referred to at the NRN event by Hilary Talbot as a ‘jigsaw’ of provision by the private sector, the public sector and Community Broadband Organisations, which must be complete and joined up with no gaps between the pieces. The public sector has a critical role to play in this.

**Linking rural and digital policies** – broadband is critical in creating resilient and sustainable rural communities, and it is important that the two policy domains talk to one another. This is highlighted in the recent ‘Speak up for Rural Scotland’ Consultation, in which access to high speed broadband emerged as a clear priority for respondents amongst the 37 step changes set out in the document<sup>1</sup>.

*SAC’s Rural Policy Centre will carry out further work on rural broadband in Scotland in the coming months. Keep an eye on our website for more: [www.sac.ac.uk/ruralpolicycentre](http://www.sac.ac.uk/ruralpolicycentre)*

### The Tegola project

Peter Bunemann of the University of Edinburgh School of Informatics reported on this project to bring experimental broadband to Arnisdale, Corran, and the north-west coast of Knoydart using fibre optic cable and wireless. He stated:

- Tegola has now been up and running for more than three years.
- Despite student experiments and “west highland engineering” it has delivered reliability, speed and quality of service that would be the envy of most people in cities.
- It has been copied (Eigg Pilot) and other extensions and copies are now under way (Rum, Muck, Canna, South Knoydart, Laggan...)

### References

- 1 [www.scotland.gov.uk/Publications/2011/03/08135330/0](http://www.scotland.gov.uk/Publications/2011/03/08135330/0)
- 2 [www.culture.gov.uk/publications/7829.aspx](http://www.culture.gov.uk/publications/7829.aspx)
- 3 [www.royalsoced.org.uk/enquiries/Digital\\_Scotland/index.htm](http://www.royalsoced.org.uk/enquiries/Digital_Scotland/index.htm)

### The time for action is now

Although the broadband situation is constantly evolving (not least in terms of the latest technology), it is certainly time for action on rural broadband. We need to move beyond the debate around the need for high speed broadband in rural areas since this has been well established over many years. Rather, there is a need to take action to ensure that Next Generation Access (NGA) is available everywhere.

There are several different drivers which mean that action now is timely, including...

**In the UK**, the report entitled ‘Britain’s Superfast Broadband Future’ produced by the Department for Business, Innovation and Skills<sup>2</sup>.

**In Scotland**, the Digital Scotland report (produced in October 2010 by the Royal Society of Edinburgh)<sup>3</sup> and the importance of high speed broadband in the recent ‘Speak for Rural Scotland’ Consultation.

**The £530 million funding** available from BDUK for Local Broadband Plans in ‘the final third’.

**Technological advances** in different sectors, such as telehealth and telecare, which means that more activities and services can be undertaken using broadband.

**Debates around localism** and the Big Society.

**Public sector budgetary pressures** which mean that more services may be provided online as a means of generating cost savings.

## News

**New veterinary teaching building at Easter Bush**

**THE NEW VETERINARY** teaching building at Easter Bush brings under one roof a range of well-equipped lecture rooms, seminar rooms, tutorial rooms and library space, together with large open discussion areas and a cafeteria serving hot and cold food.

Having teaching located as close as possible to the small and large animal hospitals gives students access to the widest possible range of animals from wildlife to racehorses. From the earliest stages in their training they experience case-based teaching in a science-led environment.

The move also puts the School alongside its incorporated institution, The Roslin Institute in its own new building (see opposite). The co-location of vets and scientists means that treatments discovered in the laboratory can be implemented rapidly to prevent and cure illnesses and diseases.



Above: veterinary teaching building

**Public engagement training database**

**EDINBURGH BELTANE HAS** a new training database on its website, which makes it easy to search for courses based on the skills you'd like to develop.

You can search by audience (e.g. festivals or schools); by type of communication you aim to achieve (so 'Writing to inform' might return training for writing press releases, or for creating web content); and by project management skills (e.g. evaluation or marketing/advertising).

'Beltane Bursaries' are available to help with the cost of attending courses at other institutions.

[www.tinyurl.com/pe-skills](http://www.tinyurl.com/pe-skills)

## Members' reports / UK Biochar Research Centre

**Biochar: carbon capture that also improves soils**

Described as 'a significant and sustainable response to climate change', this charcoal-like substance is the focus of a multi-disciplinary centre established two years ago

**THE UK BIOCHAR** Research Centre (UKBRC) was created in 2009, with the remit of undertaking disciplinary and multi-disciplinary research on the role of biochar (a charcoal-like substance produced by thermal transformation of organic residues, and used as a soil amendment) as a carbon storage technology, and its benefits within agricultural systems. The centre has grown rapidly since its inception, and now has over 20 staff.

Research at UKBRC focuses on three primary areas.

**1. Soil science and biochar functions led by Dr Saran Sohi**

The primary aims of this research are to develop mechanistic understandings of biochar-soil/plant interactions, as well as developing capacity to screen biochars according to their various functions in soil (e.g. long-term stability and nutrient value).

**2. Engineering and biochar production led by Dr Ondřej Maaek**

The key aims of this research strand are to relate production conditions to function, and to develop an understanding of how production can be tuned to optimise specific biochar functions and energy by-products.

**3. Biochar and social science led by Dr Simon Shackley**

An understanding of the biochar system, from production and feedstock availability through to deployment and impacts once applied to soils, is essential to determine the viability of biochar as an effective tool for climate change and soil amendment.

The systems research uses a combination of Life Cycle Analysis, techno-economic modelling, GIS tools & land-use modelling, policy analysis and decision-making tools to evaluate the economic value, practicalities, benefits and sustainability of biochar systems (and compare with competing options for use of biomass).

The multi-disciplinary scope of the research of the centre is unique. It has enabled a much more focused and integrated approach to biochar research.



Pilot-scale biochar production facility (above) at the new purpose-built UK Biochar Research Centre (pictured right)

**Feasibility of production at different scales will be investigated**

Dedicated laboratory and production facilities underpin the soil science and biochar production and engineering. Three purpose-built pyrolysis units are capable of producing biochar in varying amounts (tens of grammes to 30kg per day) under highly specific and controlled conditions. The energy value of pyrolysis by-products such as synthesised gases and bio-oils can be determined.

Lab facilities include soil science labs used for screening of biochar, and the study of soil/plant biochar interactions. These facilities will also enable the feasibility of biochar production at different scales to be investigated, providing valuable data for the systems analysis and social science.

**Contact****Dr Andrew Cross**

UK Biochar Research Centre (UKBRC), School of Geosciences, The University of Edinburgh, The Kings Buildings, Edinburgh EH9 3JN

[www.biochar.org.uk](http://www.biochar.org.uk)





Members' reports / The Roslin Institute



## Roslin moves to new HQ

**IN MARCH** The Roslin Institute moved to its new building at the Easter Bush Veterinary Campus. Staff and students are joined by the Animal Science staff and postgraduate students from the Scottish Agricultural College (SAC).

This critical mass of around 450 researchers, along with the clinical research and teaching of the Royal (Dick) School of Veterinary Studies next door and the nearby Moredun Research Institute, has created one of the largest Animal Science groupings in the world.

The building, funded by the Biotechnology and Biological Sciences Research Council, The University of Edinburgh and SAC, is inspired by the shape of a pair of chromosomes, with coloured glass panels, representing the DNA 'fins', to link the office and research laboratory blocks. The design was welcomed by Architecture Design Scotland (ADS), an organisation set up to inspire better building design. As well as laboratories and office space, the building incorporates breakout areas and meeting areas to encourage collaboration on scientific research.

Professor David Hume, director of The Roslin Institute, said: "The new building will provide state of the art facilities in which we can undertake research that will strengthen Scotland's international reputation as a world leader in animal biosciences.

"It will make a major contribution to Scotland's knowledge economy, and provide a focal point for the Easter Bush Research Consortium, bringing together scientists from The Roslin Institute, the Royal (Dick) School of Veterinary Studies, the Scottish Agricultural College and the Moredun Research Institute, with a view to fostering new ideas and streamlining research on animal disease and its implications for human health."

**Pictured right:**  
Atlantic salmon,  
*Salmo salar*



Photo: Hans-Peter Field CC BY-SA

**Pictured below:**  
new building of  
The Roslin Institute  
at Easter Bush



## Breakthrough on salmon disease

**A TEAM OF UK RESEARCHERS** is closing in on a gene that affects resistance to a fatal viral disease of Atlantic salmon.

The Infectious Pancreatic Necrosis (IPN) virus is a major killer in commercial salmon farming causing high levels of mortality in young salmon in all markets worldwide. Scientists at The Roslin Institute, University of Edinburgh and the Institute of Aquaculture at the University of Stirling are collaborating with Geneticists at Landcatch Natural Selection Ltd (LNS), the UK-based International Salmon breeding company to find this gene.

The team was first to publish evidence of the presence of an IPN resistance gene in 2008 and, for the first time in aquaculture, LNS used these results to apply marker-assisted selection, an advanced form of selective breeding, to improve resistance to IPN in their commercial strains.

New methods, based on the use of novel DNA sequencing technologies, were used to identify additional genetic markers, closer to the resistance gene. These improved Single Nucleotide Polymorphism (SNP) markers have recently been applied to families from the LNS breeding programme to select the most resistant fish for breeding.

Dr. Ross Houston, leading the research at The Roslin Institute, said: "By using the latest DNA sequencing technology, we have now identified improved genetic markers which are accurate predictors of IPN survival in aquaculture salmon populations. This brings us much closer to identifying the gene responsible for resistance."

While researchers at Roslin and Stirling concentrate on finding the gene, geneticists at LNS are using the new markers to further improve their ability to identify salmon resistant to IPN for breeding. Dr Alan Tinch, Breeding Programme Director of LNS, said: "We have been able to identify fish genetically resistant to IPN in our own and customer breeding programmes using natural methods, without resorting to genetic modification".

### 'Relocate, innovate' open day, June 29th

An invitation to visit the new state-of-the-art Roslin Institute and meet the researchers, who will present their ground-breaking innovations in animal bioscience. For details, please see the website of The Roslin Institute or email [Helen.dundas@ed.ac.uk](mailto:Helen.dundas@ed.ac.uk)

#### Contact

**Patricia Hart,**  
Scientific Administrator (Comms)  
The Roslin Institute, Easter Bush,  
Midlothian EH25 9RG  
[patricia.hart@roslin.ed.ac.uk](mailto:patricia.hart@roslin.ed.ac.uk)  
[www.roslin.ed.ac.uk](http://www.roslin.ed.ac.uk)



**Pictured left:** Joshua Mtimuni of Bunda College and Dave Roberts of SAC examine Napier grass, a high-protein forage

## Malawi gives fresh perspective on agriculture's global challenges

A closer collaboration with Bunda College in this small south-east African nation is a true two-way partnership, aimed at learning more about sustainable systems and the efficient use of resources

**LINKS WITH MALAWI** have been reinforced through the signing of a memorandum of understanding with Bunda College, University of Malawi, at the British High Commission in the Malawi capital, Lilongwe.

Bunda College, University of Malawi deals with issues of agriculture, rural development, environment and natural resources. Currently it has 1300 students at both undergraduate and post graduate level.

SAC has already been working with staff at Bunda College and other research partners for over three years. The majority of the work is livestock-related, with staff from SAC's Dairy Research Centre at Crichton Royal, Dumfries, regularly travelling to the country to work with dairy farmers, technicians and researchers.

The signing of the memorandum took place during a reception hosted by Mr Fergus Cochran-Dyett, the British High Commissioner to Malawi.

It was signed by Professor Moses Kwapata, Principal of Bunda College, and Professor Geoff Simm, SAC Academic Director and Vice-Principal (Research) to cement the growing relationship between Bunda and SAC's other joint partners in Malawi. The aim



**Pictured above:** a smallholder with a crossbred cow – Malawi Zebu crossed with Holstein Friesian

is to expand beyond the current animal science projects and help address the grand challenges of global food security, climate change and the sustainable use of natural resources.

According to Professor Geoff Simm it is very much a two-way agreement. "Bunda College has a major role to play in helping tackle the immense challenges of improving global food security, living with global environmental change and making more sustainable use of our depleting natural resources. Working with Bunda and

other partners on dairy projects over the last few years has given us a much wider perspective on these issues.

"Our next aim is to broaden the collaboration beyond dairying to other livestock or crop systems and wider rural sociological issues. We have much to learn from Malawi about truly sustainable systems, resilience and efficient use of resources. We face shared challenges of identifying and reducing barriers to change."

A week before the signing, Alex Ferguson MSP, Presiding Officer of the Scottish Parliament, visited Bunda and its farm. He also met Helen Carty, an SAC Veterinary Investigation Officer based in Ayr, and Ainsley Bagnol from Dairy Research, Dumfries. They were training 35 farm advisers and research technicians on aspects of dairy cattle health, husbandry and recording. This included cow condition scoring, calf management and disease control.

**‘ Bunda College has a major role to play in helping tackle the challenges of improving food security, living with environmental change and making more sustainable use of our depleting natural resources ’**

Before returning to Scotland, Dr Dave Roberts and Dr Mizeck Chagunda, two of the SAC delegation from Dumfries, led an end-of-programme workshop on optimising smallholder dairying. Begun in 2008 and funded by Scottish Government, the project involves Bunda College, the government of Malawi and local dairy farmers. Dairying is important for many poor families in Malawi, providing valuable food products, a regular income and work.

There are several other ongoing projects, including the development of a joint Dairy Diploma with Bunda College and Barony College, Dumfries.

### Contact

**Mizeck Chagunda**  
Dairy systems researcher

Scottish Agricultural College,  
Crichton Royal Farm, Midpark House,  
Bankend Road, Dumfries DG1 4SZ

[mizeck.chagunda@sac.ac.uk](mailto:mizeck.chagunda@sac.ac.uk)

[www.sac.ac.uk](http://www.sac.ac.uk)



Members' reports / Moredun Research Institute



## The role of vaccination in controlling foot and mouth disease

Landmark conference discusses the practicalities of a new approach

**TEN YEARS ON** from the worst FMD outbreak in UK history, scientific experts and industry representatives attended a landmark conference held at Moredun Research Institute in March to discuss the significant role that vaccination could play in any future outbreak of the disease.

More than 100 invited delegates representing farmers, auctioneers, food processors, retailers, scientists, consumers, pharmaceutical companies, vets, Scottish and UK governments and devolved administrations attended the conference, titled 'Foot and Mouth – Vaccine to Live'.

The tragedy of the FMD outbreak of 2001 left a scar on the industry that still haunts all those who were affected. The conference was an opportunity both to take stock of the lessons learned from that epidemic, and to look forward at how future control models may look, given the diagnostic advances that are now available and the new international and European framework for FMD control.

Should the worst happen, and another outbreak occur in Scotland or elsewhere in the UK, a policy that sees animals vaccinated to control the disease and then enter the food chain



Photo: Keith Weller [www.ars.usda.gov](http://www.ars.usda.gov)

**Pictured above:**  
a Holstein Friesian dairy cow

may provide a viable alternative to the mass cull of animals seen during previous epidemics here.

Professor Julie Fitzpatrick, Chief Executive and Director of Moredun commented, "The threat of foot and mouth disease remains a serious one. Detailed pre-outbreak planning is essential to minimize the effects of what can be a devastating disease."

Dr Peter Nettleton, leading veterinary virologist added, "Foot and mouth vaccination is the modern alternative to mass slaughter. The use of vaccination to resolve the next outbreak could help to prevent the

tragic scenes, social upheaval and psychological trauma that were witnessed 10 years ago."

Breakout sessions at the conference gave delegates the opportunity to discuss the practicalities of vaccine manufacture and distribution, when and how the vaccine could be used, challenges vaccination may present to the processing industry, likely consumer reaction and impact on exports, amongst others.

Nigel Miller, President of NFU Scotland, said: "The Vaccine to Live event was designed to stimulate sensible discussion on how we can exploit the new diagnostic tools that are available to us, and how we could develop a Vaccine to Live policy within Scotland and the UK." He added, "But we need buy-in; from farmers being prepared to vaccinate their animals, processors being prepared to handle meat and milk from vaccinated animals and consumers both at home and across Europe being prepared to buy it."

*Presentations and reports from this event are available in the news section of the Moredun website*

### Contact

**Margaret Bennett**  
Communications Manager

The Moredun Foundation  
Pentlands Science Park, Penicuik  
[www.moredun.org.uk/news](http://www.moredun.org.uk/news)

Members' reports / Royal Botanic Garden Edinburgh

## Sowing the seeds of a career in horticulture

**CONTINUING DEDICATION TO** present young people with opportunities to train and work in horticulture is being demonstrated with the creation of four Modern Apprentice posts at the Royal Botanic Garden Edinburgh (RBGE).

At a time when there are concerns over recruitment in the sector, RBGE is spearheading this new initiative to show young people that training in horticulture is not only a satisfying experience; it can also

establish a fruitful long-term career. The application process is now underway and successful applicants aged 16 to 19 will be offered an initial two-year apprenticeship during which time they will receive training in all areas of horticulture at RBGE and also attend Oatridge College, West Lothian, on a day release basis. This combined time of work and study will equip them with the knowledge and skills to achieve an SVQ Level 2 in Amenity Horticulture.

David Knott, Curator of the Living Collections at RBGE, explained: "We are acutely aware of the current issues facing horticulture and more particularly the heritage/botanic garden sector and our aim is to encourage more young people by furnishing them with the skills that can bring them longer term benefits. This is a new initiative but we are encouraged by the interest shown."

After their initial two years the successful applicants may

also have the opportunity to extend their apprenticeship, allowing them to undertake an SVQ Level 3 qualification.

### Contact

**Sandra Donnelly**,  
Press & Marketing Officer

Royal Botanic Garden  
Edinburgh, 20a Inverleith Row,  
Edinburgh EH3 5LR  
[s.donnelly@rbge.ac.uk](mailto:s.donnelly@rbge.ac.uk)  
[www.rbge.org.uk/about-us/news](http://www.rbge.org.uk/about-us/news)



Royal  
Botanic Garden  
Edinburgh

## Can Scotland cope with flooding?

The recent Flood Risk Management Conference looked at ways in which communities can assess their exposure to risk and plan appropriate responses

**DEVELOPMENTS IN** the way in which flood risk is determined and conveyed, and the methods by which communities can increase their resilience to flooding, were high on the agenda at the recent SNIFFER Flood Risk Management Conference 2011, which provided a forum for new innovations and best practice amongst those working in Scotland's flooding community.

The events of the recent earthquake and tsunami in Japan serve as a stark reminder that despite our increasingly technological existence, humans remain vulnerable to extreme natural events. Through creating good warning systems, an informed public cannot stop such events, but it can ensure the impacts are lessened.

Thankfully, Scotland is not vulnerable to the same frequency or magnitude of earthquakes experienced by Japan. Yet other extreme natural phenomena, such as flooding, can still present a major threat to our communities and infrastructure. Timely warning of such a threat is key to ensuring that appropriate action can be taken.

Amongst 16 presentations covering flood-related issues, delegates were provided with an overview of the newly launched Scottish Flood



**Pictured above:**  
flooded streets

‘ **Moffat has established a Flood Action Group to develop a community action plan** ’

Forecasting Service. This new Scottish Government-funded initiative links experts from the Met Office and SEPA in a bid to improve flood forecasting.

The initiative allows improved and more timely information on the risk and potential severity of flooding situations to be delivered to local authorities and emergency services, and provide as much advance warning as possible of potential flooding to communities living in flood risk areas, thereby allowing them to take action to mitigate flood-related impacts.

Improving the resilience of local communities to flooding was explored by the Scottish Flood Forum. Supporting those affected by – or at risk of – flooding, the forum provides training to develop better individual and community resilience, through the development of community flood action plans, for example. The benefits can be seen in communities such as Moffat, which has established a Flood Action Group in order to determine local flooding risks and develop a community action plan in response.

Severe natural events can have a devastating impact upon communities. However, through improved early warning, and well defined community response, it is possible to reduce the severity of these effects.

Since 2004 SNIFFER has been commissioned by the Scottish Government to provide a research and knowledge management service, building networks to support the development and implementation of the Flooding Bill (Scotland).

PDFs of all presentations from the conference are at [is.gd/TD4pCP](http://is.gd/TD4pCP)

### Contact

**Chris Berry**  
 Communications & project manager  
 SNIFFER  
[chris@sniffer.org.uk](mailto:chris@sniffer.org.uk)

## Numbers are the focus for CAMERAS



**THE BioSS-ORGANISED** Forum for Quantitative Science, in November, brought together staff from research institutes and members of CAMERAS to discuss mathematical and statistical activities. Future annual meetings will focus on particular topics of interest.

In addition, in March this year David Elston made a presentation at the Second CAMERAS Conference, Volcanoes and Snowstorms - Effective decision making and public communication in a risky

and uncertain world. He gave a statistician's perspective on variation, uncertainty and risk, and highlighted the challenge of demonstrating the evidence base underpinning policy decisions derived from complicated mathematical models.

CAMERAS (A Coordinated Agenda for Marine, Environment and Rural Affairs Science) is a collaboration between the Scottish Government, Food Standards Agency Scotland, Quality Meat Scotland, Scottish Water, Scottish Environment

Protection Agency, Forestry Commission Scotland and Scottish Natural Heritage.

### BioSS RECENTLY SECURED

Scottish Government funding for five new collaborative initiatives involving the research institute and university sectors: two Strategic Partnerships in animal science and food and drink, and three Centres of Expertise in climate change, animal diseases and water.

BioSS are also partners in a new EU FP7 project, TimeT,

linking the circadian clock to metabolism. It is led by the University of Edinburgh's Centre for Systems Biology.

### Contact

**Chris Glasbey**  
 BioSS  
 The King's Buildings,  
 Edinburgh EH9 3JZ  
[enquiries@bioass.ac.uk](mailto:enquiries@bioass.ac.uk)  
[www.bioass.ac.uk](http://www.bioass.ac.uk)  
[www.camerasscotland.org](http://www.camerasscotland.org)



## The hunt for the perfect blueberry

**SCOTTISH BERRIES ARE** famed for being among the best in the world so researchers are hoping canny Scots consumers can help them grow the best blueberries around.

In March, consumers took part in a survey seeking their views on what makes a good blueberry, how often they eat blueberries and whether they would prefer British-grown fruit. The work is being coordinated by the Scottish Crop Research Institute (SCRI), now part of the James Hutton Institute, as part of a HortLINK project to determine which blueberry varieties are best suited to British climate and growing conditions, in an effort to tap into a huge global market for the fruit.

"The popularity of blueberries is increasing all the time and it has the potential to be a real growth market for British farmers," said Dr Julie Graham, who is leading the work. "The survey is an important step in finding out what qualities shoppers are looking for in blueberries and will highlight the prospects for British-grown fruit."

The five-year HortLINK blueberry project is looking at the establishment, seasonality and machine harvestability of 40 different blueberry varieties in five UK locations. Fruit quality composition (size, colour, pH, juice content and sensory characteristics) are being examined so that those with the most appropriate qualities can be identified for the UK market.

### Contact

#### Phil Taylor

Head of Communications

SCRI, Invergowrie, Dundee

[www.scri.ac.uk](http://www.scri.ac.uk)

**Markers in barley (pictured right) can be used to improve its performance in whisky-making**



Photo: Lucas Hirschegger CC BY-SA 3.0

## DNA markers in barley help Scotch whisky to stay on top

**WORK AT SCRI** could help the whisky industry to remain as one of the top Scottish exports. Whisky is one of the most productive industries in Scotland, second only to oil and gas. The economic impact of the industry in 2008 was £3.9bn GVA (gross value added).

SCRI scientists have released details of how they are using DNA fingerprinting techniques normally associated with police investigations to improve the quality of barley used in whisky making.

The Tayside scientists have developed the ability to DNA fingerprint different barley varieties. In addition, they have developed collections of different barley types that either have been – or will be – scored for key aspects of barley yield and quality.

The technique enables researchers to identify specific DNA markers that can be utilised by plant breeders and processors in the identification of varieties for growing and processing. One of the markers does the valuable job, in the very early stages of production, of enhancing the purity of Scotch whisky. Barley breeders are using the markers developed by SCRI to improve the long term sustainability of the distilling industry.

The Scottish scientists have developed their own DNA fingerprint database that allows efficient storage and evaluation of the information. The technology is being shared with other partners and researchers around the world further underlining Scotland's leading position in research.

Other successes include using the barley database to highlight unique features of heritage barley varieties grown in the Highlands and Islands and identifying one of the key factors affecting the number of grains produced on barley ears.

Julie Hesketh-Laird, the SWA's Director of Operational & Technical Affairs, said: "Access to the right quality and quantity of malting barley is vital to make Scotch whisky."

"SCRI's research has an important role to play in optimising the barley varieties available to Scotland's distillers and supports the long term sustainability of our supply chain."

### Contact

#### Dr Bill Thomas

SCRI, Invergowrie, Dundee

[william.thomas@hutton.ac.uk](mailto:william.thomas@hutton.ac.uk)

**‘The blueberry could be a real growth market for UK farmers’**

**Pictured left: Dr Julie Graham working with fruit in the laboratory**



Photo: The James Hutton Institute



**Pictured left:**  
a family expedition  
in the International  
Year of Forests.  
**Below left:**  
finding out about  
FR's research work

**Pictured right:**  
wood warbler,  
a woodland  
species that  
the RSPB says  
is in decline



## Birds consortium gains funding to explore woodland management

**FOREST RESEARCH**, the Royal Society for the Protection of Birds and The University of Nottingham are in a consortium led by the British Trust for Ornithology, which has successfully secured Defra funding to investigate the effects of changes in woodland structure on bird populations.

The main question is whether habitat quality for woodland birds can be improved, and thus bird populations increased, through adopting particular silvicultural practices and management treatments, and/or by reducing deer browsing pressure.

Our researchers have several key tasks during this four-year study. The first is to identify field study sites in managed lowland broadleaved and upland conifer woodlands that are at different stand development stages. The second is to provide expertise on deer impacts, assess deer browsing and densities and carry out intensive monitoring of woodland structure.

Third, they will interpret how the relationships between birds, deer, and woodland structure and management may be affected by future forestry policy and practice, and how management to benefit woodland birds would affect wider woodland biodiversity.

## Fantastic forests and raised awareness

The UN's International Year of Forests aims to raise awareness of conservation, sustainable management and sustainable development

**FOREST RESEARCH (FR)** is supporting the International Year of Forests (IYF) in a number of ways, but most significantly through three public-orientated events that were held at the Royal Botanic Garden Edinburgh this Spring.

In January, FR teamed up with the Sylva Foundation to run the Forestry Commission's first IYF events of the year in Scotland. This weekend event provided an opportunity for the public to engage with the One Oak project and to learn about the contribution that FR scientists have had with this project. We provided a range of hands-on activities and learning opportunities for all ages from 5 years up.

In February, FR teamed up with staff from Forestry Commission Scotland and the Tweed Valley Osprey Volunteers to run an event entitled Fantastic Forests. Again, this weekend event aimed to provide the public with some hands-on experiences and the opportunity to speak to scientists face-to-face. We provided a range of activities that included photosynthesis and carbon capture, dendrochronology, learning about owls and ospreys, and featured current forest pests and disease.

Over the two weekends we attracted 900 people of all ages to the



events. It was worthy of note that many of them stayed for up to an hour, taking time to participate in all the activities.

The third event was held during the Edinburgh International Science Festival. A Real-life Science Lab was held at the Royal Botanic Garden in April. We teamed up with Edinburgh Napier University and focused on the properties and use of wood.

### Contact

**Steve Penny**  
Research Liaison Officer (Scotland)  
[steve.penny@forestry.gsi.gov.uk](mailto:steve.penny@forestry.gsi.gov.uk)  
[www.forestry.gov.uk/forestresearch](http://www.forestry.gov.uk/forestresearch)  
[www.sylva.org.uk/oneoak](http://www.sylva.org.uk/oneoak)

## The role of research liaison officers

**KNOWLEDGE TRANSFER** is an important component of Forest Research's work and, to facilitate this process, it has three Research Liaison Officers: Steve Penny, based at Northern Research Station; Suzanne Martin, who works from Surrey in England; and Chris Jones at Talybont in Wales. Their role is to provide a dedicated link between Forest Research and its forestry and land-use-sector customers. They work actively to improve awareness of research, and in particular of the significance of the results of research, amongst many different stakeholders, including policy makers and forest practitioners.



## Forthcoming events

### I Know Where I'm Going: Remote Access to World Heritage Sites from St Kilda to Uluru

International conference, Edinburgh – November 23-24, 2011

This international conference will explore the potential created by new technologies to develop high-quality, remote-access visitor experiences for UNESCO World Heritage Sites and other sites of cultural, historical and natural significance.

The conference has three main objectives:

- To showcase the new technologies available: including the 3D laser scanning of St Kilda as part of the Scottish Ten project to create exceptionally accurate digital models of Scotland's five UNESCO World Heritage Sites and others

worldwide, in order to better conserve and manage them. Other forms of digital mapping will also be demonstrated.

- To debate the benefits and the challenges that these new technologies present. This applies not only to issues of preservation, conservation, interpretation but also to the benefits and pitfalls of virtual access to sensitive sites and the economic benefits of tourism promoted thus.

- To encourage site managers worldwide – particularly those within the UNESCO World

Heritage Sites network – to consider the benefits and the impacts these

new technologies could have for their own sites, allowing them to investigate these further and clarify issues of acquisition, installation, costs etc.

This conference is organised by Proiseact Nan Ealan (Gaelic Arts Agency) in partnership with the UKNC for UNESCO Scotland, UNESCO, the National Trust for Scotland, Inspace, Historic Scotland (Scottish Ten Team), Comhairle Nan Eilean Siar



(Above) St Kilda, World Heritage Site

(Western Isles Council) and Museums Galleries Scotland. Keynote speakers will include Dr Mechtild Rossler, Chief of Section Policy and Statutory Implementation Unit, UNESCO World Heritage Centre.

Register at [inspace.mediascot.org/holder/iknowwhereimgoing](http://inspace.mediascot.org/holder/iknowwhereimgoing)

[www.scottishten.org](http://www.scottishten.org)

## ECRR news

### Mike Talbot retires as Secretary/Treasurer – and Mike Steele as editor, Bush Telegraph

**IN APRIL** Mike Talbot retired from his role as Secretary/Treasurer of ECRR. Mike had 12 years' experience of the consortium and over those years has informed its members kindly and with a 'light touch', but also in a highly committed manner. His depth and breadth of knowledge of the consortium have been very much appreciated.

BioSS had great pleasure in hosting Mike during his tenure as Secretary/Treasurer and all wish him well as he reduces his work commitments. He will remain a BioSS Associate.

The restructuring of arrangements for the production and maintenance of the ECRR website and Bush Telegraph has led to these coming 'in house' and the retirement of Mike Steele after about nine years as Editor of the latter. Members will fondly recall his long-distance calls for copy. He sends many thanks for the supply of interesting articles and photos over the years.

Mike will continue to run the British Society of Animal Science.

## Conference report

### Climate Connections seminar

Perth College, UHI – May 13, 2011

**MUCH ACTIVITY WITHIN** Scotland is directed both at increasing our understanding of climate change and our ability to respond. We require greater awareness of the wealth of scientific endeavour and innovation in Scotland relating to climate change and greater connectivity between the various initiatives that exist. Taking its cue from the above factors, ECRR's Climate Connections seminar was held in Battleby on 13 May, supported by UHI and SNIFFER.

This explored the role that climate-related knowledge networks play in shaping the understanding of, and responses to, climate change within a Scottish rural context. The event was attended by over 60 people from a wide range of sectors, including those with policy and research interests, and with a keynote speech provided by Professor Anne Glover.

As well as featuring informative, scene-setting presentations from a range of research providers and users, the event also played host to a series of



(Above) Networking during the lunch break

participative workshops covering the themes of: The State of the Environment and Impacts; Drivers and Responses; and Communication of Climate Change Research.

A report summarising activity across rurally-focused research networks for climate change will presently be published on the ECRR website. In advance of this, presentations, videos and exhibits from the day are available at [www.perth.uhi.ac.uk/specialistcentres/cms/Conferences/CC/Pages/ProgrammeandRegistration.aspx](http://www.perth.uhi.ac.uk/specialistcentres/cms/Conferences/CC/Pages/ProgrammeandRegistration.aspx)

## And finally ... Is science the new rock 'n' roll?

A GROWING NUMBER of academics are braving the spotlight to engage the public at Bright Club events, 'The thinking person's variety night'. There are currently Bright Clubs in London, Manchester and Cardiff, giving academics the chance to vent about anything from Greek Mythology to Neuroscience to the Booze Britain culture. The events are being met by enthusiastic audiences, and media interest including the Guardian and New York Times!

Edinburgh Beltane is looking to support a Bright Club initiative in Edinburgh. If you would like to find out about getting involved, please contact sarah.west@ed.ac.uk.



Dr Jason Dittmer, a geographer from University College, performs at a Bright Club event in London

## ECRR diary 2011

Aug  
29

**Institute of Aquaculture, Stirling**  
Executive Committee meeting, 11.00  
Directors' lunch, 12.30

Oct  
3

**Forest Research, Easter Bush**  
Executive Committee meeting, 11.00  
Directors' lunch, 12.30

Nov  
16

**The University of Edinburgh**  
AGM and Main Board meeting, time TBA  
Reception to follow

Dec  
6

**James Hutton Institute, Aberdeen**  
Executive Committee meeting, 11:00  
Directors' lunch, 12:30

## ECRR member organisations

<b>Biomathematics and Statistics Scotland</b> .....	<a href="http://www.bioss.ac.uk">www.bioss.ac.uk</a>
<b>British Geological Survey</b> .....	<a href="http://www.bgs.ac.uk">www.bgs.ac.uk</a>
<b>Centre for Ecology &amp; Hydrology Edinburgh</b> .....	<a href="http://www.ceh.ac.uk">www.ceh.ac.uk</a>
<b>Centre for Mountain Studies, University of the Highlands and Islands</b> .....	<a href="http://www.uhi.ac.uk">www.uhi.ac.uk</a>
<b>Forest Research, Northern Research Station</b> .....	<a href="http://www.forestresearch.gov.uk">www.forestresearch.gov.uk</a>
<b>Heriot Watt University</b> .....	<a href="http://www.hw.ac.uk">www.hw.ac.uk</a>
<b>Institute of Aquaculture, University of Stirling</b> .....	<a href="http://www.aquaculture.stir.ac.uk">www.aquaculture.stir.ac.uk</a>
<b>James Hutton Institute</b> .....	<a href="http://www.hutton.ac.uk">www.hutton.ac.uk</a>
<b>Moredun Research Institute</b> .....	<a href="http://www.moredun.ac.uk">www.moredun.ac.uk</a>
<b>Napier University, School of Life, Sport &amp; Social Sciences</b> .....	<a href="http://www.napier.ac.uk/fhlss/SLSSS">www.napier.ac.uk/fhlss/SLSSS</a>
<b>National Museums of Scotland</b> .....	<a href="http://www.nms.ac.uk">www.nms.ac.uk</a>
<b>Roslin Institute, University of Edinburgh</b> .....	<a href="http://www.roslin.ed.ac.uk">www.roslin.ed.ac.uk</a>
<b>Royal Botanic Garden Edinburgh</b> .....	<a href="http://www.rbge.org.uk">www.rbge.org.uk</a>
<b>Royal Society for the Protection of Birds - Scotland</b> .....	<a href="http://www.rspb.org.uk/scotland">www.rspb.org.uk/scotland</a>
<b>Science &amp; Advice for Scottish Agriculture</b> .....	<a href="http://www.sasa.gov.uk">www.sasa.gov.uk</a>
<b>Scottish Agricultural College</b> .....	<a href="http://www.sac.ac.uk">www.sac.ac.uk</a>
Research & Development	
Education & Training	
<b>Scottish Natural Heritage</b> .....	<a href="http://www.snh.gov.uk">www.snh.gov.uk</a>
<b>SNIFFER (Scotland &amp; Northern Ireland Forum for Environmental Research)</b> ..	<a href="http://www.sniffer.org.uk">www.sniffer.org.uk</a>
<b>Society, Religion and Technology Project</b> .....	<a href="http://www.srtp.org.uk">www.srtp.org.uk</a>
<b>University of Edinburgh</b> .....	<a href="http://www.ed.ac.uk">www.ed.ac.uk</a>
College of Science & Engineering	
College of Medicine & Veterinary Medicine	
College of Humanities & Social Science	
<b>University Marine Biological Station Millport</b> .....	<a href="http://www.gla.ac.uk/marinstation">www.gla.ac.uk/marinstation</a>

### CONTACT ECRR

Scientific Director:  
Professor Stuart Monro  
[stuart.monro@dynamicearth.co.uk](mailto:stuart.monro@dynamicearth.co.uk)

Secretary/Treasurer:  
Dr Alastair A Macdonald  
[alastair.macdonald@ed.ac.uk](mailto:alastair.macdonald@ed.ac.uk)

ECRR, Royal (Dick) School of Veterinary Studies, The University of Edinburgh, Easter Bush, Midlothian EH25 9RG  
0131 650 6120

### FUTURE ISSUES

Contributions to the ECRR newsletter (formerly The Bush Telegraph) are welcomed. All contributions, comments and suggestions should be emailed to the Secretary/Treasurer as above

### COPY DEADLINE

Deadline for copy in the next issue is 1st September 2011

### DISTRIBUTION

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