

Bush Telegraph

The House Magazine of the Edinburgh Centre for Rural Research

THE EARTH IN FOCUS

ECRR has enjoyed a busy schedule over the summer with its biennial Forum in May, a summer reception and presentation to the Scottish Science Advisory Committee in June, and two focused seminars in June and September. Regular monthly lunches were hosted by Stephen Blackmore at the **Royal Botanic Gardens Edinburgh**, in April, and by Randolph Richards at the **Institute of Aquaculture, University of Stirling**, in September.

The Forum, which was kindly hosted by **SNH** at its magnificent facilities in Battleby, Perthshire, attracted 80 delegates from ECRR member organisations, from institutions distributed widely across the UK, and some from Europe. Under its headline theme of *Applications of Earth Observation to Rural Research*, fourteen speakers addressed issues ranging through a spread of insect-borne diseases, natural hazards, land-use, conservation, climate change, food security and health. Gordon Campbell of the European Space Agency gave us a résumé of present capabilities in space technology together with a glimpse of new possibilities on the horizon. Abstracts of all presentations are available at www.ecrr.org.uk

Immediately prior to our summer reception at St Leonard's Hall, ECRR resumed its seminar series with a discussion on International Activities and Research. It was led by three speakers: Neil Thin from the **School of Social and Political Studies, Edinburgh University**, on *Joint Forest Practices in India*; Mark Watson from the **Royal Botanic Gardens Edinburgh**, on Experiences in Nepal and Pete Sweetnam of Mercy Corps (the Edinburgh charity), on their intervention following the Indian Ocean Tsunami. A number of new connections were made between participants pointing to future collaborative opportunities.

The second seminar was held at Stirling University on 5 September following a visit to the Institute of Aquaculture's new facilities and a presentation of current research. Under the subject banner "Management of Change in Scientific Organisations", Professor Robin Williams presented his thoughts and ideas from the perspective of a researcher into the process of handling science and technology policy, and the impacts on those doing it. Robin is Director of the Research Centre for Social Sciences in the Institute for the Study of Science, Technology and Innovation at Edinburgh University. A robust discussion, among ECRR Directors present, followed through the afternoon. Some key phrases emerging were: networks of excellence, critical mass nodes, heterogeneity, challenge of achieving buy-in of staff, middle-way models

between direct funding and competition, need for exemplars of successful models, maintaining some stability, geographical spread, agility of networks versus co-location in centres, tacit knowledge transfer through staff proximity, impact of patenting, people change only gradually, incentives more effective than sticks (Kittkat versus cat-herders), defensive versus new-way seekers, good research policy needed to achieve and manage appropriate change, external (often political) imperatives as drivers, EU backing of networks, policy reversals common, are life sciences at the threshold of big science (eg. physics)?

Finally, I would like to draw your attention to a new Scottish initiative in rural affairs. In June, ECRR participated in a discussion meeting convened at Stirling University by proposers of a Scottish Academy of Rural Policy. It is proposed that such an "Academy" would be built on distributed excellence across Scotland. This meeting was one of a number being held to solicit input and ideas from a broad spectrum of stakeholders; in this case, it was aimed at consultation with potential academic partners. The process is a feasibility study supported by SHEFC, which will generate a business plan with a sustainable funding strategy. Further information is available at www.policyweb.uhi.ac.uk

Chris Browitt
ECRR Scientific Director



Participants at the ECRR Earth Observation Forum in May 2005 enjoying a break in the grounds of SNH's Battleby Centre

British Geological Survey



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ASSESSING EARTHQUAKE RISK

[Editor's note: The following is the text of an article published in the BGS Earthwise magazine and reproduced here by kind permission]

Despite enormous efforts, no consistent way of predicting earthquakes has ever been found, and there is a growing belief that earthquakes may be inherently unpredictable, at least with regard to the sort of prediction that could be exploited for civil defence. So another way has had to be found to tackle the earthquake threat.

At present it seems that the best way to defend against earthquakes is through engineering solutions. If buildings are designed so that they do not collapse in an earthquake, the occupants will not suffer serious injury. The success of this approach can be seen in cases like the Kobe earthquake of 1995. Although 5480 people lost their lives in this earthquake, it was conspicuous, when the damage was examined afterwards, that recent buildings with good design suffered only minor damage, while older buildings (many in poor condition) collapsed.

However, much as it would be good to construct all buildings to resist earthquakes, in practice, antiseismic design features are expensive. The engineer has to trade safety off against cost. As a result, the question 'how safe is safe enough' becomes rather important. The engineer therefore needs a good idea of exactly what the hazard from earthquakes is. Often the first stage is simply to determine whether a site is in a seismically active

area or not. For this, simple maps of earthquakes or generalised hazard maps will suffice. Determining the hazard level more precisely for any place is a task for the seismologist. If the engineer decides that it is enough to be 99% sure that the strength of shaking the building is designed to withstand will not be exceeded in the building's lifetime, then the seismologist can determine the strength of shaking that has a 99% probability of occurring. The engineer then takes this as his design value. This process is known as a probabilistic seismic hazard assessment, or PSHA.

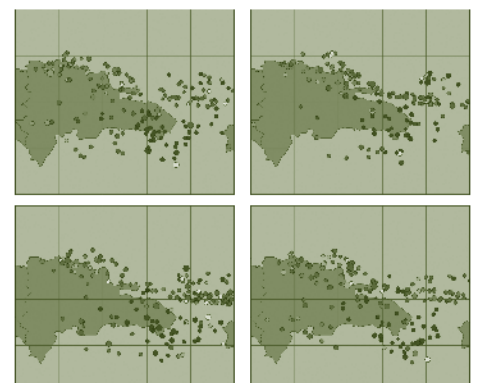
The way in which PSHA is practised in the BGS is easy to explain. The seismologist constructs a numerical model that describes all the earthquake sources in a region, together with their characteristic behaviour. Now imagine that we are concerned with a building that is expected to last for 50 years. The model can be used to run projections of possible seismicity for the next 50 years.

No one can say exactly what the next 50 years will hold, but possible projections compatible with past seismicity can easily be generated. If one generates, say, 10 000 such projections and notes the strongest shaking at the location of the building in each of them, then one can easily find the value that is exceeded 50% of the time, 10% of the time, 1% of the time, and so on. This stochastic simulation approach is very powerful, and also easy to understand, since the probabilities are all derived from observation of all the possible future outcomes. The results are the same as those obtained by analytical methods, but easier to check.

The hard part is setting up the numerical model in the first place. Just looking at an earthquake catalogue does not necessarily tell you all you need to know about the entire seismic process; 'smoothing' the seismicity, as is sometimes done, may blur over important local variations in hazard that are geologically explicable.

The analyst's task is to interpret the historical seismicity in the light of an understanding of the tectonic processes that are operating in the region. Often, this understanding can only be partial, and it becomes important to take uncertainty into account, for instance by using different interpretations as weighted alternatives. One of the fascinations of seismic hazard analysis is the way in which so many different types of information are distilled together to make the final model. The earthquake catalogue draws not only upon the skills of the seismologist but often also the historian and even the archaeologist.

Contributions from the geologist, the geophysicist and the geodesist are combined in piecing together the pattern of seismogenesis. Seismic hazard really benefits from a truly multidisciplinary approach, in which, by amalgamating expertise across the earth sciences, we can more effectively understand and quantify the hazard from earthquakes worldwide. The more we can do this, the more we can do effectively and efficiently to protect our societies from earthquakes.



Fifty years of seismicity in the Dominican Republic: one map is historical data and the other three are simulations from a model. Can you guess which is which? (Size of symbol shows magnitude and colour shows depth: darker events are deeper).

Moredun Research Institute



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TAKING PROTEOMICS TO THE NEXT LEVEL

Functional genomics has emerged in the past few years as a significant discipline in biological research. This rapidly expanding field now encompasses a range of approaches for gaining valuable understanding from the ever-increasing genome sequence data. Functional genomics plays an important role in assigning biological functions to gene products and correlating these products with biological traits. **Moredun Research Institute (MRI)** has an excellent reputation in the area of functional genomics and has significantly enhanced its existing resources and capabilities within its new Proteomics Facility.

The Moredun Proteomics Facility (MPF) features state-of-the-art tandem mass spectrometry (MS) and liquid chromatography instruments. This advanced equipment is key to functional genomics investigations leading to the identification and characterisation of proteins, often termed "proteomics".

The MPF, which has been supported by **SEERAD** (Scottish Executive Environment and Rural Affairs Department), **SEEL** (Scottish Enterprise Edinburgh and Lothians) and **ERDF** (European Regional Development Fund), will provide the technology necessary to further develop proteomics investigations and complement the existing genomics and transcriptomics (microarray) facilities in the ECRR network and beyond.

Proteomics focuses on proteins, the main functional component in cells. Characterisation of these essential molecules is therefore crucial to understanding biological systems. Proteomics techniques have many applications in biomedical science and biotechnology, ranging from comprehensive cataloguing of the protein content of biological samples to detailed characterisation of individual proteins.

To ensure that the MPF provides the highest proteomic capabilities, it has invested in two tandem MS instruments – Ultraflex-II MALDI-ToF-ToF and HCTultra-ESI ion trap from Bruker Daltonics, (the latter coupled with the Dionex Ultimate 3000 liquid chromatography system). These two instruments provide complementary approaches covering the full range of proteomics applications including protein identification, protein characterisation, expression analyses, biomarker discovery and tissue imaging.

Proteomics has multiple applications to help support a broad range of biological scientists. For instance, in disease research, proteomics can help provide diagnostic or epidemiological markers for

pathogenic micro-organisms. Microbial proteins that elicit immune responses and that may be useful vaccine, diagnostic or epidemiological markers can also be defined. Additionally the MPF's new MS instruments are able to compare samples from different states (e.g. disease and healthy) to monitor proteins (often termed "biomarkers") important in disease.

The MPF not only deals with infectious diseases from both pathogen and host perspectives, but also with a wide range of systems where protein characterisation is required. In addition to the above, the MPF provides DNA sequencing, 2D electrophoresis, MALDI-ToF MS, SELDI-ToF MS, preparative and analytical LC and peptide sequencing.

The MPF makes a key contribution to many on-going projects at Moredun and also supports researchers from other institutes, universities and companies. Further information about the MPF and the services it can provide can be found on Moredun's website (www.moredun.ac.uk) or by emailing proteomics@moredun.ac.uk.



Biomathematics & Statistics Scotland



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NEW DIRECTOR FOR BIOSS



David Elston, Director of BioSS

Professor David Elston has been appointed Director of BioSS, having been Acting Director for the past two years.

David has more than 20 years experience of statistical research and consultancy at five centres of ecological, environmental and agricultural research. He has worked for BioSS at the Macaulay Institute since 1990, and has been Head of Group there since 1995. During this time, he established fruitful collaborative links throughout the Macaulay Institute on topics including grazing ecology, soil and water chemistry, soil micro-organisms, environmental economics and remote

sensing. Outwith Macaulay, he acts as statistical advisor to CEH Banchory, and has active collaborations with Aberdeen and St Andrews Universities. His wide-ranging research interests cover spatial and temporal aspects of population modelling, together with the analysis of unbalanced hierarchical data and environmental monitoring.

David became Deputy Director of BioSS in January 2003, and Acting Director on the death of Rob Kempton in May 2003. Earlier this year he was awarded an Honorary Professorship in the University of Aberdeen's School of Biological Sciences.

David is a member of the UK Environmental Change Network's Scientific and Technical Advisory Group. He is a board member of both the Edinburgh Consortium for Rural Research and the Aberdeen Research Consortium.

NEW SEERAD FUNDING ARRANGEMENTS

The Scottish Executive Environment & Rural Development Department's research strategy for 2005–2010 will involve a change in its research commissioning procedures, from core-funding of its sponsored bodies to funding of four rolling programmes of research, each divided into multiple work packages. From April 2006, BioSS has proposed that its SEERAD-funded research be divided into the following three modules. Each aspect of each module relates to more than one SEERAD work package, and together the three modules input to all work packages.

Statistical Bioinformatics

Developments in molecular genetics technologies are generating enormous quantities of data, often of new data types. Simultaneously, new computing technologies, such as clusters and the GRID, are allowing easy access to rapidly

increasing computer processing power and data storage capacity. BioSS aims to develop and automate methodology for analysing these data, harnessing the computing power to extract maximum information from the data.

Mathematical and Statistical Methods for Process and System Models

Mathematical modelling has a key role in achieving many of SEERAD's objectives. BioSS will ensure that the modelling is as effective as possible, by addressing generic issues including: simplification, analysis and approximation of models for complex systems; parameter estimation and model selection in stochastic process models; Bayesian methods for decision support; and methodologies for modelling risks to biodiversity, and complex interactions in epidemic processes. The strategy will be to develop methodology in the context of specific collaborative applications.

Statistical Methodology

Statistical methodology needs constant development, firstly to keep pace with the requirements of new technologies being used in the biological and environmental sciences, and secondly to address new questions that arise as science becomes ever more quantitative. In particular, there is a pressing need for new methodology to correctly interpret large, highly-structured data sets. BioSS will develop and adapt methodology in key areas for SEERAD's programmes: image analysis, and spatially-temporally- and spatio-temporally structured data.

Science for Schools

SCIENCE ON THE MOVE

For two weeks in September 2005, the Schools of Chemistry and Biology from the University of Edinburgh went on tour with a mobile laboratory visiting 16–18 year old pupils in Edinburgh, West Lothian, East Lothian and Dumfries and Galloway schools. The visit was organised by Professor Mary Bownes and Dr Jan Barfoot (**Scottish Initiative for Biotechnology Education [SIBE], School of Biology**) and Dr Elizabeth Stevenson (School Outreach Officer, **School of Chemistry**) who at this time of year are normally running workshops for 16–18 year olds in the classroom.

Dr Elizabeth Stevenson said:

"We wanted to find out whether a mobile laboratory was a more effective way of running these workshops, in terms of flexibility for us and schools, enhanced education experience for the students and potential for increased outreach activity to a wider geographical area."

On the mobile laboratory the pupils did a variety of practical workshops on the subjects of biology and chemistry such as disease detection with antibodies, bioethical discussions, DNA fingerprinting, cool carbon dioxide (using dry ice and exploring molar volumes) and fashion faux pas (the chemistry of dyes). These workshops were all hands-on/brains-on in nature and designed to help pupils engage with their subject and discuss the broader implications of science within society. The workshops also aimed to help pupils think about the kinds of jobs scientists do and give them an opportunity to speak with staff and students from the University of Edinburgh.

The mobile laboratory was open to visits from the general public on the Edinburgh Monday holiday. Then, on the final afternoon, colleagues in the College of Science & Engineering were invited to see if the concept could be extended to other scientific disciplines and potentially be used as part of a recruitment strategy into the Sciences for the University.

The mobile laboratory was hired from Dublin City University where it is called the 'Science Bus' and tours around primary schools. The trip was funded by a generous donation from the Ogden Trust through SIBE, with in-kind support from the

Schools of Biology and Chemistry and the College of Science & Engineering.

This pilot tour of a mobile laboratory was enthusiastically received by teachers and pupils alike, despite the size and design being better suited to smaller pupils, and the organising team are currently reviewing the extensive feedback they collected from this pilot. Our colleagues from Dublin will be taking back some of our workshops to pilot with their pupils, while we will be evaluating if such a bus is financially viable in Scotland.



The Dublin City University Science Bus



Science on the move in the Science Bus – hold on tight at the back!

Science for Schools

YOUNG SCIENTISTS CELEBRATE AT THE ZOO

The Royal Zoological Society of Scotland played host to the annual Nuffield School Bursaries Scottish Celebration Event on 2nd September. Around 60 Scottish science students received certificates of completion and had the opportunity to display their work to their peers and their future scientific colleagues. A number

of ECRR member organisations were represented including **SAC, Edinburgh University** and **SCRI**.

Prof David Gani, Director of Research Policy and Strategy at the Scottish Higher Education Funding Council officially opened the event and gave a short presentation. The event provided the students with a vibrant opportunity to discuss their work with fellow students, supervisors, teachers and experienced scientists. Run

like a short conference the students all provided posters presentations. Four brave students also volunteered to give short oral presentations on the personal benefits of the scheme. For the attending scientists there was the opportunity for a preview of Scotland's up-and-coming scientific minds.

For the Society this event also promises to put zoology and the study of living animals on the scientific map. Zoology, and its associated subjects, is often misjudged as a "soft" science yet they remain popular choices with university applicants. Edinburgh Zoo and the Highland Wildlife Park have played a very important role in the delivery of biological/zoological education to both the visiting public and to curriculum-based groups for decades. That role also includes training young biologists, which is a major aim of Nuffield Bursary projects run over the summer by RZSS. This summer six Nuffield Bursary recipients spent one month conducting animal behaviour studies under the guidance of the Animal, Conservation and Education Department at Edinburgh Zoo where they learned the techniques of experimental design, animal observation, data recording, analysis and interpretation.



Nyasha Midzi (Royal High School) and Mia Jing Gao (St Georges School) worked with Professor Andrew Hudson in the Institute of Molecular Plant Sciences at the University of Edinburgh.



SAC Crichton Royal Farm supervised students Jessica Florey and Katy Coltart at Edinburgh Zoo's Educational Centre in September

SCRI HOSTS SCHOOLS THEME DAYS

Two special theme days are to be held at the Scottish Crop Research Institute, Invergowrie, Dundee, for sixth year students from schools in Angus, Dundee, Perth & Kinross and Fife.

Advanced Higher Biology Day,
1st November 2005 - 'From DNA to the Environment'

Advanced Higher Chemistry Day,
2nd November 2005 - 'Separation and Identification of Molecules'

If a school would like to participate in either or both of the theme days at SCRI, or for information about future events, please contact: Sharon Neilson, SCRI Education Officer Tel: 01382 562731 Fax: 01382 560002 E-mail S.Neilson@scri.ac.uk

People in the News

Dr J Neil Cape appointed Honorary Professor at Edinburgh University

After graduating with 1st class Honours in chemistry from St Andrews in 1974, Dr J Neil Cape taught for two years at the National University of Lesotho before returning to Cambridge, where he studied for a PhD in physical chemistry (on molecular dynamics of phase transitions). He joined what is now the **NERC Centre for Ecology & Hydrology** at Bush Estate in 1979 to work on air pollution and its effects on plants. He is currently Head of Site and deputy leader of the Atmospheric Sciences Section, and chairs the CEH Analytical Chemistry Network.



He has published over 120 peer-reviewed papers covering research from gas-phase reaction kinetics to plant physiology; current research interests include water-soluble organic nitrogen in the atmosphere, ozone reactions at leaf surfaces and effects on native upland plants, and atmosphere-surface exchange of oxygenated volatile organic compounds.

Neil is married, with three grown-up children, and plays an active part in the life of his local church, where he is an elder and plays bass guitar in the band.

Dr Chris Glasbey appointed Honorary Professor at SAC

Chris Glasbey, Head of Research at **Biomathematics & Statistics Scotland**, has been appointed a Visiting Professor at SAC. He was awarded a visiting professorship for his collaboration with SAC scientists in their livestock breeding projects.

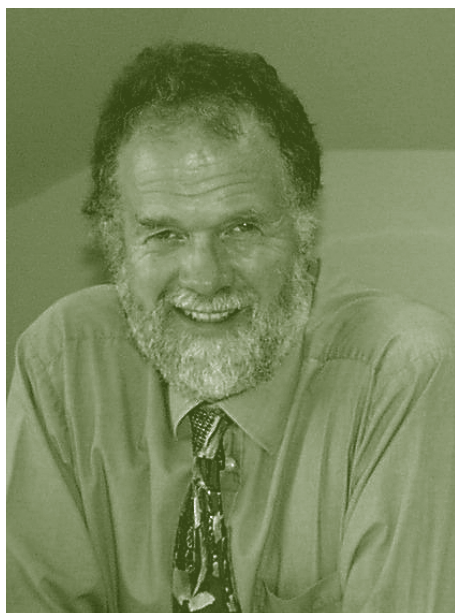
Chris's main research interest is in spatial and temporal modelling, particularly as applied in image analysis and bioinformatics. In his research he has published more than 100 papers in topics covering X-ray computed tomography, digital microscopy, and DNA microarrays. He is joint editor of *Applied Statistics* and a member of EPSRC Peer Review College.

In April 2005 he gave his inaugural professorial lecture on digital image analysis: "Seeing is believing?" In his lecture Chris drew on examples from the world of art as well as science to explain how image analysis, the extraction of information from pictures, helps characterise the shape and form of objects. His lecture looked at images collected from microscopy, medical scanners and remote sensing, and at computer assisted image capture which is increasingly made use of



Professor Bill McKelvey, SAC Principal, with Chris at his inaugural lecture

People in the News



Dr Harry Griffin appointed Honorary Professor at Edinburgh University

Dr Harry Griffin BSc, MBA, PhD graduated from the University of Leeds with an Honours Degree in Biochemistry in 1969, and a PhD in 1973. His research interests in his early career were in lipid and membrane biochemistry. He spent three years at the Bowman Gray School of Medicine in North Carolina investigating the role of intracellular phospholipases before returning to a postdoctoral post at the University of Nottingham to study the role of inositol phospholipids turnover in neurotransmission. He was appointed to the AFRC's Poultry Research Centre in 1978 and much of his research since has been concerned with the genetic regulation of lipid metabolism in birds. In his research career he has published over 50 papers in refereed journals but in more recent years he has been increasingly involved in management and promoting public understanding of science. He was awarded an MBA from the University of Edinburgh in 1995 and has been Director of the Roslin Institute since August 2004.

Dr Martin Price appointed to Personal Chair at UHI Millennium Institute

Dr Martin Price graduated from Sheffield University with an honours degree in Natural Environmental Science. He studied for an MSc in Environmental Science at the University of Calgary, and for a PhD in Geography at the University of Colorado at Boulder. Since the late 1970s, he has conducted research in the mountains of North America, Western and Eastern Europe, and Siberia, focusing on the interactions of resident and visiting people with environmental processes, with particular emphasis on forestry, tourism, conservation, and the implementation of policies and interdisciplinary research.

Working at the University of Oxford's Environmental Change Unit (now Institute) from 1992, he established the Unit's Mountain Regions and Conservation Programme in 1995, where he supervised a number of MSc and DPhil students, in addition to lecturing.

Previously, he was Scientific Associate of the Institute of Geography of the University of Bern, Switzerland, Scientific Director of the International Centre for Alpine Environments, Bourget-du-Lac, France, and Postdoctoral Fellow at the National Center for Atmospheric Research, Boulder, Colorado, USA.



Mike Coffey awarded Inverarity Prize

Dr Mike Coffey of SAC's Sustainable Livestock Systems Group has been awarded the Inverarity Prize, 2005, for business innovation in recognition of his achievement in establishing livestock genetic evaluation services in **SAC**, in partnership with the **University of Edinburgh** and the **Roslin Institute**.

Mike led a successful bid in 2003 to the Milk Development Council which culminated in the award of a contract to provide genetic evaluation services for the UK dairy industry. This essentially involves processing the vast amount of ancestry and performance data (milk, fertility, health etc) on the UK's dairy cows to produce rankings of genetic merit of bulls and cows for each of these traits, and combined indices of overall economic merit. This information is used by most dairy breeding companies and dairy farmers to guide their selective breeding decisions.

Mike has also helped several leading beef and sheep breed societies, working together as BASCO, to update their ancestry and performance databases. Recently, the MLC has agreed to move its beef and sheep performance recording data onto this state-of-the-art BASCO database, and to subcontract the work of genetic evaluations for their beef and sheep clients to SAC and partners.

The Inverarity Prize is awarded annually to a member of SAC staff. Its aim is to reward innovation with respect to the transfer of knowledge.

In Brief...

Pollution to rise in mountains

Scotland's mountainous landscape is likely to suffer from increased pollution levels as a result of climate change, according to a new book launched recently at a high level international meeting on biodiversity and

climate change in Aviemore. In *Mountains of Northern Europe: Conservation, Management, People and Nature*, which is edited by **Scottish Natural Heritage** and **Perth College's Centre for Mountain Studies**, research carried out across Northern Europe notes that the increased

precipitation expected from climate change could lead to enhanced levels of pollutants such as nitric acid and ozone. The study explains that the fragile upland environment in parts of Scotland is particularly sensitive to chemical pollutants.



Advances in root and soil science at SCRI

A one day symposium will be held on Thursday 17th November, 2005 at the **Scottish Crop Research Institute**, Invergowrie, Dundee. The organisers invite students or scientists at an early stage in their career to submit abstracts for short talks or posters on any aspect of root or soil science. For further information please contact Tim Daniell at t.daniell@scri.ac.uk

Science into practice

Ardana Bioscience, a pharmaceutical company dedicated to improving reproductive health, has concluded a new agreement with the Medical Research Council which gives Ardana exclusive rights to commercialise selected research areas in the **MRC Human Reproductive Sciences Unit** over the next three years. The contract is a refinement of the five-year agreement that Ardana secured on its inception in 2000. The partnership will afford the Unit additional funding for selected projects and help it to meet the objective of translating basic research on human reproduction into tangible health benefits.

Water Framework Directive

SNIFFER and UKTAG announced the re-launch of the WFD research database. The database has been established to provide up to date information on research supporting the implementation of the Water Framework Directive in the UK. The database holds information on current, completed and proposed projects directly and indirectly related to the WFD throughout the UK and where available, other EU countries. The database is currently available to view, edit and update projects on www.wfddatabase.co.uk or via the UKTAG website www.wfduk.org/r_and_d/wfddatabase/.

New directions for forest sciences

A new joint strategy for publicly funded forest research has been agreed by Ministers in England, Scotland, Wales and Northern Ireland. Among its aims, the strategy sets out to improve the base of scientific evidence for effective policy and practice, with increased emphasis on communications and knowledge transfer. Recent shifts in importance of the social elements of forestry, and of climate change, on the political agenda were reflected in the feedback received from the consultation exercise. This has resulted in a repositioning of major research priorities.

It is expected that Forest Research will continue to provide the bulk of the Forestry Commission's needs for research and scientific advice, although other sources will also be used, including sponsorship of studentships and bursaries.

The publication, entitled "Science and Innovation Strategy for British Forestry", can be downloaded via a link from the following page on the Forestry Commission's website, www.forestry.gov.uk/research.

Livestock left out in the cold – science into practice

It would be true to say that the majority of Scottish farms can grow brassica crops well – however not all can outwinter cattle on them, reports Gavin Inglis of **SAC's** Sheep and Beef Select Group. This is because, for cows to outwinter successfully, their welfare and the prevailing environmental conditions must be considered. Failure to adhere to welfare or cross compliance measures could potentially have an impact on the Single Farm Payment that replaced all production based subsidy schemes in the CAP reforms introduced earlier this year. Looking at the options for outwintering cattle, taking into account all practical aspects including nutrition, health & welfare, as well as environmental issues, is the basis for a demonstration project at Bush Estate, run by **SAC**, which is now in its second year.

In winter 2004-05 the project attracted more than 500 visitors who were interested in whether outwintering could be an option for their livestock. Already this year, in October 2005, around 200 people participated in a beef open day that majored on the project. Information gathered during the first year provided a focus for discussion.

Is it more important for cattle to have a dry area to lie on or to have shelter? These two objectives are often incompatible. Whilst there needs to be a degree of shelter to provide protection during extreme conditions, fields which are too well sheltered may not be exposed to drying winds and can often dry out slowly.

Heavy, poorly draining soils bring immediate welfare problems and problems with regeneration and establishment of crops – and Good Agricultural and Environmental Condition (GAEC) issues in the future. By managing vehicle access ruts formation and consequent run off and damage to the soil structure can be minimised. The use of a strip grazing system has provided an outwintering set-up that adheres easily to the GAEC instruction to rotate feeding sites.

Sowing kale directly into an existing grass sward was a major factor in the success of the outwintering trials on the kale crop in year one, as the cows were able to graze the crop on very firm unploughed ground. As a result, ploughing has not been used to establish any of the systems for the winter 2005/2006 demonstrations. Many arable farmers have been delighted to see the negligible levels of soil damage, and are considering taking cows and stocking them extensively over a large acreage whilst keeping their ground in GAEC.

Having cattle outside in the right conditions has advantages in minimising the health and welfare problems associated with housed cattle. The trial has shown no significant difference at calving between any of the outwintered groups and the group housed all winter.

People & Events

ECRR DIARY

2005/06

Nov 23	Main Board meeting	University of Edinburgh, Crew Building, King's Buildings	15.00
	Winter reception	SAC, Peter Wilson Building, King's Buildings	17.00 -19.00
Dec 5	Directors' lunch	Forest Research, Roslin Host: Dr Chris Quine	12.30
	Executive Committee	SAC, Peter Wilson Building, King's Buildings	10.30
Feb 6	Director's Lunch	Mountain Centre, UHI Millennium Institute, Perth Host: Prof Martin Price	12.30
Feb 17	Annual Lecture	RSE, George Street, Edinburgh "Social justice in rural areas" Prof Mark Shucksmith	17.00

ECRR ANNUAL PETER WILSON LECTURE 2006

Professor Mark Shucksmith, School of Architecture, University of Newcastle upon Tyne, will give the ECRR Peter Wilson Annual Lecture on the 17th February 2006. The title of his talk is "Social justice in rural areas".

Social justice is as much an issue for rural communities as it is for urban people. Poverty affects a substantial minority. During 1991–1996, for example, one in three people in rural Britain experienced low income at some time. A growing body of research has documented people's experiences of social exclusion in rural areas and, to a lesser extent, the forces which lie behind exclusion and inclusion. This lecture reviews this evidence, touching on incomes and employment, housing affordability and civic renewal, as well as the particular circumstances of young and old.

The lecture will be given at the Royal Society of Edinburgh, George Street, Edinburgh. Tickets can be obtained from the ECRR Secretary (email: m.talbot@bioss.ac.uk).



ECRR Member Organisations

University of Edinburgh	www.ed.ac.uk
College of Science & Engineering	
College of Medicine & Veterinary Medicine	
College of Humanities & Social Science	
Scottish Agricultural College	www.sac.ac.uk
Research & Development	
Education & Training	
Heriot Watt University, School of Life Sciences	www.sls.hw.ac.uk
Napier University, School of Life Sciences	www.napier.ac.uk/fhls/lifesciences
University of Stirling, Institute of Aquaculture	www.aquaculture.stir.ac.uk
UHI Millennium Institute	www.uhi.ac.uk
University Marine Biological Station Millport	www.gla.ac.uk/centres/marinestation
Moredun Research Institute	www.mri.sari.ac.uk
Forest Research, Northern Research Station	www.forestry.gov.uk
Roslin Institute	www.roslin.ac.uk
Biomathematics and Statistics Scotland	www.bioss.sari.ac.uk
British Geological Survey	www.bgs.ac.uk
Centre for Ecology & Hydrology Edinburgh	www.ceh.ac.uk
DEFRA Lasswade Veterinary Laboratory	www.defra.gov.uk/vla
MRC Human Reproductive Sciences Unit	www.hrsu.mrc.ac.uk
National Museums of Scotland	www.nms.ac.uk
Royal Botanic Garden Edinburgh	www.rbge.org.uk
Royal Society for the Protection of Birds – Scotland	www.rspb.org.uk
Royal Zoological Society of Scotland	www.edinburghzoo.org.uk
Scottish Agricultural Science Agency	www.sasa.gov.uk
Scottish Crop Research Institute	www.scri.sari.ac.uk
Scottish Natural Heritage	www.snh.org.uk
Scotland & N. Ireland Forum for Environmental Research	www.sniffer.org.uk
Edinburgh Centre for Tropical Forests	www.nmw.ac.uk/ectf
Scottish Centre for Animal Welfare Sciences	

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