

Web Watch ...

ECRR

Links to ECRR members' websites can be found at www.ecrr.org.uk

Scottish Executive

A re-designed website gives better access to information on what government in Scotland is planning and doing www.scotland.gov.uk

Foot-and-mouth crisis

For information about the several government-sponsored inquiries see www.defra.gov.uk/footandmouth/about/current/inquiries.asp

Science News

The Royal Society and the Royal Society of Edinburgh both include scientific news as well as useful links to other sources of useful information www.royalsoc.ac.uk and www.rse.org.uk

To keep up-to-date with recent developments in science and technology go to the *New Scientist* at www.newscientist.com

Inside ...

Science Strategy

Scotland's first science strategy has been unveiled by the Scottish Executive. A summary is provided here. > **Page 7**

Sustainable development

A range of research investigations on environmental sustainability are reported by Edinburgh University's **Centre for Study of Environmental Change & Sustainability**. > **Page 12**

Global biodiversity



The ... amongst the countries that have been helped by teams from the **Royal Botanic Gardens Edinburgh** to develop plans for biodiversity conservation. > **Page 14**

Gene 'lending' libraries

The **Roslin Institute** aims to create a DNA library with more than 1 million clones of chickens, cattle, pigs and sheep. > **Page 17**

And more ...

A living museum



The Museum of Scottish Country Life, which recently opened under the auspices of the **National Museums of Scotland** at East Kilbride, is to include a working traditional farm of the 1950s as well as a striking new exhibition centre. Well worth a visit! > **Page 19**

Timber tigers

British forestry expertise is helping governments worldwide to plan sustainable timber production programmes. Much of the impetus for this effort is channeled through the **Edinburgh Centre for Tropical Forests**. > **Page 21**

Post FMD Forum

ECRR, along with Aberdeen Research Consortium, Institute of Biology (Scotland), Royal Society of Edinburgh and Royal Highland Agricultural Society of Scotland, is organizing a forum to consider ways forward for the Scottish

EDITORIAL

This is a valedictory note. The last 32 issues, over an eight-year period, were not always free of hassle. Things did not always go to plan, and exigencies had to be met. Nevertheless, my retrospective view of my time as Editor is a happy one. I met new friends, I gained new insights into a whole range of activities, and I was the beneficiary of many acts of kindness and support.

Over this time, I worked with two Scientific Directors, Professors Peter Wilson and Ian Aitken, and with three Secretary/Treasurers: the late Murray Black, Lawrence Hodgson-Jones and Mike Talbot. I could not wish for a finer set of colleagues. All of them were immensely supportive. I also appreciate the generous help given, at different times, by Joyce Darling, Gaynor Love and Hannah Baker. I also want to thank all contributors, especially those who responded, usually with good grace, to my requests for material. I wish I could name them all, but sometimes I did not even get to know them. Anyway, we have quite a list of people, without whom there would have been no regular issues of the **Bush Telegraph**. To all, my heartfelt thanks.

I understand that the Executive Committee is now in the process of appointing my successor. I wish I could say more, but I am sure that the magazine will benefit greatly from the fresh impetus that the new editor will bring.

I leave the magazine with my sincere good wishes for its continued development and future success. Science is always on the move, never more so than now. ECRRL plays its part in monitoring and responding to these changes. A good house magazine is essential if members are to be kept informed of what is happening in their place of livelihood - indeed, often, to that livelihood itself.

R C Roberts
Editor

Correspondents please note.

Deadline for copy for next issue

Friday 23 November 2001

ROTA OF SOLICITED CONTRIBUTIONS TO BUSH TELEGRAPH

MARCH

British Geological Survey
Biomathematics & Statistics Scotland
University of Edinburgh, Institute of Ecology and Resource Management
Royal Society for the Protection of Birds
SAC Research Division
University of Edinburgh, School of Engineering
University of Edinburgh, Institute of Cell & Molecular Biology
Heriot-Watt University, Department of Biological Sciences

JUNE

University of Edinburgh, Institute of Cell, Animal & Population Biology
Centre for Ecology & Hydrology
MRC Human Reproductive Sciences Unit
University of Edinburgh Royal (Dick) School of Veterinary Studies
Royal Zoological Society of Scotland
SAC Animal Biology Division
University of Edinburgh, Department of Geography
Napier University, School of Life Sciences

SEPTEMBER

Edinburgh Centre for Tropical Forests
Lasswade Veterinary Laboratory
National Museums of Scotland
Roslin Institute
Royal Botanic Garden Edinburgh
Scottish Natural Heritage
University Marine Biological Station, Millport
University of Edinburgh, Centre for the Study of Environmental Change
& Sustainability

DECEMBER

University of Stirling, Institute of Aquaculture
Moredun Research Institute
Forest Research Northern Research Station
University of Edinburgh, Centre for Tropical Veterinary Medicine
Scottish Agricultural Science Agency
Scottish Centre for Animal Welfare Sciences
Scottish Crop Research Institute
Scottish Vertebrate Wildlife Centre

SCIENTIFIC DIRECTOR'S NOTES

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FOOT-AND-MOUTH DISEASE

For the second issue running FMD has to be the first item of these notes. The disease has continued to command attention over the summer, notwithstanding its removal from front page newspaper headlines at least until the very recent detection of new cases in a hitherto unaffected part of north east England just 40 miles from the Scottish border. Because of a putative risk through human contact a number of farms in the Borders have been placed under restriction while tests are carried out on their livestock. That this should have happened just days before Scotland would have achieved official 'disease-free' status is of great concern and emphasises the need for constant awareness and adoption of security measures and their re-instatement where they have been relaxed.

This development, unwelcome though it is, gives added purpose to the ECRR Forum on *Post-FMD - Ways Forward for the Scottish Economy* to be held in the Edinburgh International Conference Centre on 24th & 25th October. The organising committee has met regularly since April to plan the event and secure speakers. The assembled programme is carried elsewhere in this issue together with a registration form and details are available also at www.ecrr.org.uk

Not unexpectedly, Government has announced three independent enquiries into different aspects of the FMD outbreak which, respectively, will be concerned with

- lessons to be learned from handling the outbreak and recommendations for dealing with any future major animal disease outbreak
- scientific questions concerning transmission, prevention and control of epidemic outbreaks of infectious disease in livestock
- a Policy Commission on the Future of Farming and Food in the UK

Other enquiries and reviews, independent of those initiated by Government, will be undertaken. One of these, by the Royal Society of Edinburgh, will address the social and economic impacts on Scotland. Significantly, the RSE is one of the bodies supporting the Forum in October.

A FORWARD STRATEGY FOR SCOTTISH AGRICULTURE

Published by the Scottish Executive, the Strategy is the outcome of deliberations by a Strategy Steering Group of independent members chaired by Ross Finnie, MSP, Minister for Environment and Rural Development. The Strategy is set against *The Vision* which seeks

“A prosperous farming industry which benefits all the people of Scotland and which should

- *be focused on producing food and other products that the customer wants;*

- *play a major role in sustainable rural development and help to maintain the prosperity of our rural communities;*
- *be a leading player in the protection and enhancement of our environment; and*
- *embrace change and opportunities.*

Rural Scotland is not a single entity and the type of farming varies from place to place. The role of agriculture and the balance of economic, social and environmental benefits expected from it will differ from one part of Scotland to another.”

Noting that " *the time is right for a review of the priorities and direction of Scottish agriculture*" the document lays out the themes and actions by which change may be brought about while emphasising that agriculture is an integral but not separate part of wider rural development. Quality of primary production and derivative outputs, targeted to consumer needs and preferences, and sympathetic integration of agricultural and environmental policies and objectives are core targets. On offer is a system of whole-farm Land Management Contracts, modelled on those operating in France, but adapted to the diverse character of the Scottish countryside. Adoption of such a scheme is anticipated in 2-3 years' time to replace production-based support payments. Although attention is given to diversification initiatives, with examples, there is no reference to aquaculture as a component of rural business, particularly in Scotland's less favoured areas. It is to be hoped that the omission is not an oversight but an indication that a separate but complementary strategy for aquaculture is being undertaken.

The *Forward Strategy for Scottish Agriculture* is available from the Stationery Office Bookshop, 71 Lothian Road, Edinburgh EH3 9AZ. Tel : 0870 606 5566. Alternatively, try www.scotland.gov.uk

DEPARTMENT FOR ENVIRONMENT, FOOD & RURAL AFFAIRS

One of the earliest outcomes of the General Election in June was the demise of MAFF and the birth of DEFRA, with a wider spectrum of responsibilities than its predecessor. Whilst its title implies its remit, including responsibility for managing FMD, the new Department now seeks comments on its draft aims and objectives. Though addressed primarily to strategic partners and stakeholders, the invitation is not exclusive to them and views from the wider community are encouraged. While a number of DEFRA's functions and objectives are parallel to the devolved responsibilities of SEERAD others are UK-wide and DEFRA will continue to sponsor research in areas of its interests.

Information on the consultation is available on www.defra.gov.uk or can be had from DEFRA, Nobel House, 17 Smith Square, London SW1 3JR. (Tel : 020 7238 5446 ; Fax : 020 7238 6118).

However, note that responses **must** be received by **Friday 28th September**. Late submissions cannot be taken into account.

SCIENCE STRATEGY FOR SCOTLAND

After a lengthy gestation the Strategy was launched on 27th August by Wendy Alexander, MSP, Minister for Enterprise and Lifelong Learning. Judging from press accounts (the document had not been received at time of writing)), thematically the Strategy is reminiscent of the 1993 Science White Paper 'Realising Our Potential' which placed emphasis on high quality research relevant to the needs of user industries to enhance the UK's competitiveness and quality of life.

A central intent of the new strategy is selective investment in leading edge research coupled with improved mechanisms for successful commercial management of exploitable research outcomes through better academic-business networking. Encouraging greater uptake of science subjects by school pupils and stimulating wider public awareness of the economic and social benefits of science are also key aims.

A Chief Scientific Adviser will be appointed and head a Scottish Science Advisory Committee under the auspices of the Royal Society of Edinburgh. The committee will have a major role in developing the Science Strategy and in contributing scientific advice on policy matters. Together with the earlier announcement of a £75 million spend on science, the new Strategy is a welcome development and its implementation will be followed with keen interest.

POINTS TO PONDER

Developments at the Bush and its immediate environs continue. New building work is progressing in the grounds around Bush House, substantial site preparation is evident on the Biomanufacturing Campus at Bush Loan and later this month the University of Edinburgh will launch the new partnership arrangements for Edinburgh Technopole. These topics will feature in a future issue of the *Bush Telegraph*.

ECRR EVENTS DIARY 2001

September 3	Directors' Lunch	National Museums of Scotland Kittochside, East Kilbride- 12.30pm Hosts : Dr Gavin Sprott & Dr Mark Shaw
October 2	Directors' Lunch	Roslin Institute 12.30pm
	Executive Committee	Host Professor Grahame Bulfield British Geological Survey - 10.00am
October 24/25	Conference	Post-FMD – Ways forward for the Scottish Economy Edinburgh International Conference Centre
November 7	Main Board Meeting and AGM	Raeburn Room, Old College, UoE 3.00pm
	Reception	Raeburn Room 5.30pm
December 3	Directors' Lunch	Royal (Dick) School of Veterinary Studies Easter Bush 12.30pm
	Executive Committee	Host : Professor Richard Halliwell British Geological Survey - 10.00am

A SCIENCE STRATEGY FOR SCOTLAND

The Scottish Executive has published its first integrated science strategy. Reproduced here are extracts from the document *A Science Strategy for Scotland*. A full version of this document is available at www.scotland.gov.uk.

INTRODUCTION

This Strategy sets the framework which will inform the detailed development of policy for the support and use of science to achieve the Scottish Executive's objectives set out in *Working together for Scotland - A Programme for Government*.

VISION

We shall work with others to make science work for the people of Scotland. We shall value science and harness its benefits in Scotland to increase prosperity and safeguard the environment. We shall communicate its potential to improve the quality of life for this and future generations in a way which secures public understanding and engagement. We shall develop our international reputation for the quality of our science and of our skills.

SUMMARY

1. MAINTAIN A STRONG SCIENCE BASE FULLY CONNECTED TO UK AND INTERNATIONAL ACTIVITY AND FUNDING SOURCES

High quality curiosity-driven research will be supported and appropriate breadth maintained. Clear priorities for scientific development will be established. The proportion of targeted science research expenditure allocated to priority areas will be maximised. We will consult with the research community about policy on science. Funders of science will be encouraged to resolve the tension between communicating with the public and the confidentiality associated with exploring commercial potential. We will promote Scotland as a centre of scientific excellence and encourage career development for Scottish scientists.

To maintain a strong science base, fully connected to UK and international activity and funding sources, the Executive will:

- promote Scotland as a **centre of scientific excellence** in which to buy or do science, with particular emphasis on areas where Scotland has a global reputation;
- continue to provide funding to support curiosity driven research, allocated on the basis of quality, to maintain **appropriate breadth**;
- establish a number of **priority areas** that reflect current scientific strengths and future opportunities, to meet our economic needs and maintain our international competitiveness. These will include, but not be limited to, bioscience and genomics, medical research and e-science;
- in discussion with funders maximise the proportion of **targeted science research expenditure** that is allocated to these priority areas, bearing in mind the need to make sure that we invest for the future as well as for current needs;
- consider further how the relationship between the **Scottish Agricultural and Biological Research Institutes** and the **higher education research base** might evolve in the future to enhance the delivery of the strategic objectives for science; and
- encourage and where necessary support participation in **scientific exchange** programmes.

Working closely with Scottish, UK and European funders, the Executive will also:

- invest in the joint **Science Research Investment Fund** in order to develop our scientific capacity;
- **consult** with the research community about scientific priorities;
- work with the Higher Education Funding Councils, the Research Councils, the Office of Science and Technology and the Departments responsible for higher education across the UK, to implement the review of **transparency in research funding**, and to conduct a critical examination of how to avoid a repetition of previous under-investment in university research infrastructure;
- encourage funders of research to specify clearly the expectations placed on researchers, and resolve any potential tensions that exist in current research funding conditions which require both **communication with the public as citizens and taxpayers** about their work, and a proactive, often initially confidential, approach to exploring **commercialisation**; and
- encourage funders and employers to ensure good **career and staff development for those engaged in scientific research**.

2. INCREASE THE EFFECTIVE EXPLOITATION OF SCIENTIFIC RESEARCH TO GROW STRONG SCOTTISH BUSINESSES AND PROVIDE CUTTING EDGE SCIENCE TO MEET THE NEEDS OF THE PEOPLE OF SCOTLAND

We will seek to ensure the effective transfer of scientific knowledge and skills, supporting science-based innovation and the exploitation of research. We will identify future challenges and opportunities for the development and application of science and take steps to equip Scotland's workforce with the skills it needs. We will attract investment in the development of Scottish science-based innovation and attract high quality scientists to work in Scotland, through investment in world class facilities.

Together with other actions proposed as part of the *Knowledge Economy Cross-Cutting Initiative* the Executive will, with or through other key players in Scotland, the UK and internationally:

- encourage the research community and the Enterprise Network to secure more **effective transfer of scientific knowledge and skills** by developing and supporting initiatives to promote the exploitation of knowledge. A technology transfer office is being established to ensure that innovations arising from NHSScotland will be effectively implemented and exploited. In the short-term we expect promising, relatively new initiatives such as the Proof of Concept Fund to be maintained at least until they can be fully evaluated;
- publish a separate examination of commercialisation in Scottish HEIs, and confirm our intention to work with DTI on a **systematic survey of higher education/business interactions**;
- review and improve schemes (such as SMART, SPUR and TCS - formerly the Teaching Company Scheme) that **promote and support science based innovation**;
- **equip Scotland's workforce with the skills** it needs, with particular emphasis on science and technology including the new information and communication technologies;
- provide opportunities for scientists and potential scientific entrepreneurs to obtain the necessary **management and business skills**;
- take account of UK Foresight exercises to identify **future challenges and opportunities for the development and application of science**; and
- continue to invest in world class facilities and the education of a scientifically literate workforce, highlight areas of science where we already have a critical mass of world class activity, **attract investment** in the development of Scottish science based innovation and **attract high quality scientists** to work in Scotland.

3. ENSURE THAT ENOUGH PEOPLE STUDY SCIENCE TO A STANDARD WHICH WILL ENABLE THE FUTURE NEEDS OF THE COUNTRY TO BE MET

Our aims are twofold: to secure very high levels of achievement by those specialising in science, and to ensure that **all** learners acquire the capacity to cope as citizens and decision makers when dealing with scientific issues. We will support the training and employment of additional science teachers and initiatives to ensure high quality updating of their skills. We will work to ensure the development of materials, accommodation, resources and assessment of school science. We will organise an international conference of science educators to consider innovative approaches at all stages of education.

We will harness the widespread willingness to support science education and promote the understanding of, and enthusiasm for, science as a career. We will ensure there is good, unbiased information about education and career opportunities in science and ask *Future Skills Scotland* to analyse the supply of and demand for people with different levels of science qualifications. The higher education sector will be asked to ensure science courses develop generic skills and that opportunities to acquire business skills and work experience are offered. We will encourage the establishment of courses in science communication.

To ensure that enough people study science to a standard which will enable the future needs of the country to be met, the Executive:

- has asked *Learning Teaching Scotland* to prepare **exemplar material** for teachers of science in primary and early secondary school;
- will develop more rigorous **assessment of science** as part of the development of a coherent assessment system across the 3-14 stages to support learning and teaching and the monitoring of performance;
- is giving Local Authorities resources to employ **additional teachers**, as part of the recent pay and conditions settlement. Together with some additional targeted resources, these will enable education authorities to support the teaching of science in primary schools, and to enable experienced science teachers to undertake sabbaticals;
- will ask the Higher Education Institutions responsible for the delivery of teacher education and training to train **additional secondary science teachers**;
- will consider, as part of more general reviews of **Initial Teacher Education** and **Continuing Professional Development**, what changes are needed to enable delivery of a high quality science

education and will support initiatives to provide teachers of science with **high quality professional updating**;

- will ask the Scottish Qualifications Authority to ensure that **national examinations test candidates' capacity across the full range of knowledge, understanding and skills as specified in the Examination Arrangements**;
- will ask Learning Teaching Scotland to advise on how best to ensure that **all** school pupils have the opportunity to acquire the **capacity to cope as citizens and decision makers** with scientific issues;
- will work with the science community, the network of Scottish Science Centres, and business and industry to harness their willingness to provide **practical support to science education**, and to promote young people's **understanding of and enthusiasm for science as a career**;
- will work with local authorities to consider how to secure the provision of **modern accommodation and resources** for science education; and
- will as part of **Science Year**, organise an **international conference of science educators**, to consider innovative approaches to the teaching of science, at school and post school levels including community education and wider public understanding across society.

The Executive will:

- ask *Future Skills Scotland* to work with others to undertake an **analysis of the supply and demand for people with science qualifications**, with a view to offering advice to education and training providers;
- ask the Scottish Funding Councils and the further and higher education institutions how undergraduate and post graduate science courses might best develop the **generic skills** of communication, decision making and working in teams; and how all science students might have the opportunity to acquire business and entrepreneurship skills, and to undertake work experience;
- encourage the establishment of a range of undergraduate and short courses in **science communication**; and
- ask Careers Scotland to ensure there is good quality, unbiased **information and advice about education and career opportunities in science**.

4. PROMOTE THE AWARENESS, APPRECIATION AND UNDERSTANDING OF SCIENCE ACROSS SOCIETY

We will consult widely with the public on science issues and continue to survey and take account of public attitudes to science. We will work closely with, and support where appropriate, organisations which aim to promote scientific understanding across society. We will encourage scientists to communicate new scientific discoveries, and their implications, to the public. We will support closer working together by the media, scientists and policy makers to promote science to the people of Scotland.

To promote the awareness, appreciation and understanding of science across society, the Executive will, working with funders and other key players:

- continue to take part in UK surveys of, and **take account of, public attitudes to science and technology**;
- work closely with, and provide support where appropriate, to organisations whose aim is to **promote scientific understanding across society**;
- encourage bodies such as the Scottish Science Trust and the Royal Society of Edinburgh to consider how to achieve the best **balance** between promoting the most effective use of resources through co-operation and co-ordination, and getting the full benefits of diversity and local responsiveness;
- provide support in 2001-02 through the Scottish Science Trust to the network of **Scottish Science Centres**, to deliver agreed objectives;
- encourage scientists in Higher Education and Scientific Research Institutions to **communicate with** the public about their work and discuss the implications of their research for society;
- in collaboration with the Scottish Science Trust disseminate information about the availability of and demand for **training and education in science communication**;
- **consult the public on science issues**, through organisations including the Scottish Civic Forum and the network of Scottish Science Centres; and
- support initiatives that enable **the media, scientists and policymakers** to work more closely together to effectively promote science to the people of Scotland.

5. ENSURE THE EFFECTIVE USE OF SCIENTIFIC EVIDENCE IN POLICY FORMULATION AND RESOURCE ALLOCATION BY GOVERNMENT

The Minister for Science will work with the Royal Society of Edinburgh to establish a broadly based Scientific Advisory Committee, chaired by an outstanding scientist (who we intend should become the chief adviser on science to the Executive), to provide independent advice on strategic scientific issues. We will identify a set of priority areas for scientific activity in Scotland. We will regularly review the policies and spending of each Scottish Executive Department against the key objectives of the Science Strategy and the priorities identified.

We will adhere to the principles contained in *Guidelines 2000 - Scientific Advice And Policy-Making*. We will maintain close links among scientific policy-makers in the Executive, UK Government Departments and other public bodies and in the rest of Europe, and will make effective use of the UK and European science advisory systems. We will continue to welcome and participate in UK initiatives, taking appropriate account of distinctive Scottish circumstances. We will regularly review and update the Science Strategy.

To ensure the effective use of scientific evidence in policy formulation and resource allocation by Government, the Executive will:

- ensure that a member of the Scottish Cabinet is designated as **Minister for Science** and has responsibility for ensuring that this Strategy is implemented;
- set up a **Scottish Science Advisory Committee**, under the auspices of the Royal Society of Edinburgh, to provide independent advice on strategic scientific issues. It will include members of the scientific community, users of science, and those directly affected by science, and will consult widely;
- appoint an outstanding scientist, with an international reputation, to chair the Scottish Science Advisory Committee who it is intended will become the **chief adviser on science** to the Executive. He/she will provide strategic advice on scientific matters to Scottish Ministers and will be an important voice for Scotland in debates on science beyond the Executive;
- draw on advice from the Scottish Science Advisory Committee to identify, and subsequently develop, a set of **priority areas** for scientific activity, taking account of existing strengths and needs, the best available evidence of what might be required in the future, and priorities for the Scottish economy;
- regularly **review the policies and spending of each Department** against the key objectives laid out in this Strategy and the priorities that are established for science. Where necessary, we will take steps to ensure coherence of approach and of spending. The Scottish Science Advisory Committee will provide advice on the extent to which the Executive is achieving its cross cutting objectives for science;
- ensure consistent adherence to the principles contained in *Guidelines 2000 - Scientific Advice And Policy Making*. As part of this we will secure the best available **impartial scientific evidence** when making decisions, and make that evidence generally available;
- address the issues raised in **Lord Phillip's report**, The BSE Inquiry;
- ensure that Executive **staff are fully briefed** on the implications of this Science Strategy for their work, and receive any support and training that is required to enable it to be effectively implemented;
- **continue to recruit and support scientifically trained staff**, as necessary, to provide specialist support to Departments;
- maintain **close links among scientific policy makers** in the Executive, UK Government Departments, other public bodies and European institutions;
- make effective use of the **UK and European Science Advisory System**, which provides a broader base of specialist advice than is available within Scotland;
- encourage scientists working in Scotland to participate in and contribute to **UK, European and international science advisory committees**;
- welcome and play a proactive role in **UK-wide initiatives**, taking a distinctive Scottish approach as necessary to ensure that outcomes meet particular **Scottish circumstances**;
- **benchmark Scottish science and public science policy**, against other countries; and
- regularly review and update the **Science Strategy**.

PEOPLE

Dr Jeremy D Wilson has become Head of Research at the Royal Society for the Protection of Birds Scotland in place of Dr Ian Bainbridge who is now head of the Ecological Adviser's Unit of the Scottish Executive's Environment Group.

Professor Michael Usher retires on 16th November 2001 as Chief Scientist at Scottish Natural Heritage. Dr Colin A Galbraith, currently Head of Advisory Services at SNH, will take over in the role of Acting Chief Scientist.

Professor David Waugh is relinquishing his role as Director of the Royal Zoological Society of Scotland in order to pursue conservation interests. Mr Henry Elliott is taking over in the role of Acting Chief Executive at RZSS. Dr Mauvis Gore will in future represent the Society on the Board of ECRR.

The Bush Telegraph offers its thanks, and best wishes, to Professor Usher and Professor Waugh and looks forward to welcoming Dr Galbraith, Dr Gore and Dr Wilson.

CENTRE FOR THE STUDY OF ENVIRONMENTAL CHANGE AND SUSTAINABILITY

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RESEARCH ACTIVITIES

CECS has continued a well-established research activity on climate change in Scotland following on from earlier studies. Two reports for the Scottish Executive *Climate Change: Preparing A Strategy for Scotland* and *Climate Change: North Atlantic Comparisons* and a third report *Development of Temperature Indices for Scotland and Northern Ireland* for the Scotland and Northern Ireland Forum For Environmental Research (SNIFFER) were completed during 2000. Two speakers from CECS, Dr Andy Kerr and Dr Ross Purves, presented results from these studies at a recent Workshop on Climate Change in Scotland organised by SNIFFER at the Royal Society of Edinburgh.

CECS has recently undertaken a further study entitled *Potential adaptation strategies for climate change in Scotland* for the Scottish Executive. The final report by Andy Kerr and Andy McLeod was completed in August 2001 and is expected to be available later this year. CECS is also a partner in a project team including Queens University, Belfast and Napier University that is undertaking the regional scoping study of climate change impacts and adaptation strategies in Northern Ireland for SNIFFER. Simon Allen of CECS has undertaken the role of senior advisor to the project that will be completed in September 2001.

CECS managed the £3 million thematic research programme ARCICE (Arctic ice and environmental variability) of NERC from 1997 until Easter 2001. The research programme involved three broad themes: interactions between sea ice, the ocean and the atmosphere; the response of glaciers to climate change; and the history of ocean and ice sheet fluctuations. Results from the Programme were presented at a final conference held in Edinburgh in April 2001.

New Research Projects

CECS has been awarded a number of new research contracts, some of which are currently in progress.

In December 2000 CECS began a project for the Department of the Environment, Transport and the Regions (DETR) entitled *Sustainable Prosperity*. Together with partners from the Universities of Stirling and Glasgow, Simon Allen and Monica Fundingsland completed a review of methods for the assessment of resource use efficiency in the UK. The project was completed in March 2001 and the final report is expected to be available later this year.

Simon Allen of CECS is also contributing to a project led by RSK Environment Ltd to compile a report on biodiversity management in Scotland for the Ministerial Group of the Scottish Executive.

Together with the Policy Studies Institute, London and the University of Westminster, CECS is undertaking the establishment of the *UK Sustainable Development Research Network (SDR-Network)* for the Sustainable Development Unit of the new Department of the Environment, Food and Rural Affairs (DEFRA). This project involving Andy McLeod and Kate Corcoran in CECS will cover the period 2000-2003. It includes the establishment of a database of research organisations and projects involved in sustainable development research, the creation and maintenance of a web site, holding an annual conference and user forum and identifying research gaps and opportunities for DEFRA. CECS will focus on organisations and projects in Scotland, Northern Ireland and the north of England and take a lead role in ecological aspects of sustainable development. The SDR-Network web site is already available at www.sd-research.org.uk. A seminar on the SDR-Network will be held at CECS on Friday 2nd November 2001 at 1300 in the John Muir Building.

POSTGRADUATE COURSES

CECS continues to offer a one-year full-time postgraduate Masters or Diploma programme (MSc/Dip) in Environmental Sustainability. Staff from a number of ECRR organisations have contributed to our teaching and seminar programme. Our fourth cohort of 22 students all successfully completed their examinations in July 2001 and a class of similar size will commence studies in October 2001. The course is increasingly popular and admissions for October 2002 have already been processed.

The items described above highlight the role that CECS undertakes in co-ordinating interdisciplinary teams from within Edinburgh University and beyond in order to address complex environmental problems through research and postgraduate teaching. Further details of CECS activities, including a regular seminar programme, can be found on the CECS website at www.cecs.ed.ac.uk or contact cecs-office@ed.ac.uk.

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SCIENCE AT RBGE

Documentation, description and classification of plant and fungal biodiversity are the essential components of systematic research at RBGE, together with practical application for conservation and sustainable development, as well as fundamental research in plant evolution and development. Science is organised into six sections; Herbarium; Library and Archives; Scientific, Technical and IT Services; and three research sections: Systematics and Evolution; Biodiversity and Conservation; and Cryptogamic Plants and Fungi; in addition we have a major commitment to post-graduate education.

Herbarium

The herbarium collections at RBGE are an important national and international resource that we maintain and make accessible on behalf of the nation. These collections are rich in type specimens - the unique specimens on which scientific names are based - reflecting the long history of the collections and their international coverage. They form an essential resource for our research and we also encourage other scientists to visit RBGE to work on the collections.

Access to the collections is increased through the loan system, with some 5,000 specimens loaned each year to other botanical institutes. We plan to make more information on the collections available through web access. The Garden also has an extensive living plant collection, much of it collected specifically for research by RBGE staff.

Library

We hold an extensive botanical library and archive that is available for consultation on weekdays. The library catalogue will be web accessible early in 2002.

Scientific, Technical and IT Services (STIS)

These include a wide range of laboratory services, microscopy, cytology, molecular techniques, photography, IT management and support. Staff of the STIS section are important collaborators in the research programme.

Systematics and Evolution:

The work of this section is based largely in the tropics, where plant biodiversity is highest, and basic taxonomic work is urgent in the face of rapid habitat loss. RBGE scientists have expertise in the floras of the three main tropical regions in Latin America, Africa and Asia. In all these regions, for specific plant families, we are contributing vital taxonomic

accounts that define species, provide keys for their identification, and summarise all that is known about their uses, distribution and ecology.

We focus on plant genera and families that have large numbers of species – for example Gesneriaceae, Leguminosae, Sterculiaceae, Zingiberaceae and *Vireya* Rhododendrons – and combine information from molecular phylogenies with morphological and geographical data. A further area of evolutionary research that is rapidly expanding at RBGE, is evolutionary plant development. Our research so far has focussed largely on Gesneriaceae, where we have isolated and characterised many developmental genes and shown that the important character of flower tube shape is linked to one of these genes. This research is now being extended to further projects on *Begonia*, Leguminosae and Solanaceae.

Biodiversity and Conservation

This section aims to contribute to the development of sound national and international programmes for the use and conservation of plant biodiversity, through the provision of accurate and reliable data derived from our floristic, ethnobotanical and population biology research. This research is collaborative and inter-disciplinary, and spans a range of activities from field and herbarium botany, conservation biology, horticulture, genetics and information technology. Within the section, two broadly defined research themes can be identified: the Biodiversity Group, and the Conservation Biology and Population Genetics Group. The remit of the Biodiversity Group is to describe and catalogue botanical diversity, rarity and plant use, to develop improved systems for storage, management and transfer of botanical data and to disseminate floristic data to specialist and non-specialist audiences. Some of the research projects demand long term commitment and investment. The Flora of Bhutan project, now nearing completion, was initiated in 1975 and will be the first flora for this country. It is used by foresters and conservationists in Bhutan and provides essential information to enable Bhutan meet its obligations under the Convention on Biological Diversity. A five-year GEF-funded project has developed a plan for conservation and sustainable use of the biodiversity of the Soqotra Archipelago. An important legacy of this project was RBGE's contribution to the Yemeni Government's *Master Plan for the Development of the Soqotra Archipelago*. The RBGE team devised a two-tier system of Sites of Special Scientific Interest and larger Biodiversity Reserves based on detailed analysis of the flora and traditional management practices. This contribution underlined the necessity for taxonomic and floristic studies to be integrated into development planning for the Islands.



Araucaria Araucana - the Monkey puzzle Tree

Population biology and conservation research is conducted on species in Scotland, the UK and abroad. Research on the British flora has a heavy focus on those species recognised in the UK Biodiversity Action Plans as priorities for conservation. In genera such as *Epipactis* and *Euphrasia*, molecular markers have been used to clarify the taxonomy of these complex groups and to assess the distinctness of putative endemic species. In addition, the population genetic processes underlying the morphological complexity in these genera are being examined to try to devise process-orientated conservation programmes. The goal here is to capture the dynamics of taxon diversification, rather than just focussing on conserving the current extant diversity.

Outside the UK, conservation and population biology research has been undertaken on plants from locations as diverse as Chile, Peru, New Caledonia, Soqotra, South Africa, China and Iceland. This work has involved population surveys, genetic studies, collecting seed material, establishing and maintaining *ex situ* populations, assessing the effects of agroforestry strategies on plant genetic resources, and developing and promoting *in situ* conservation strategies.

Cryptogamic Plants and Fungi

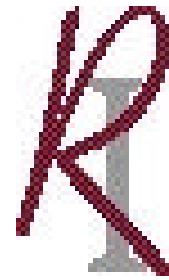
These organisms have great importance in biodiversity, ecology and for their economic importance yet still present challenging taxonomic problems of identification and classification. RBGE is the only UK botanical research institute with taxonomic expertise across a wide range of these organisms and we seek to maintain, extend and communicate this knowledge, and continue active research on these groups in systematics, floristics, population genetics and conservation.

Identification is a critical area of research. With funding from EU a bioinformatics research programme has been established that uses digital imaging, image databases, and contents-based image retrieval systems for algae. We are now collaborating with the University of Cardiff on the development of a visual indexing system for taxonomic identification with support from BBSRC. Molecular phylogenetic research explores the relationships of major lineages of diatoms and species relationships in the thalloid liverwort genus *Asterella*. Conservation research focuses on the Priority Lower Plants of Scotland that are listed in the UK Biodiversity Action Plan, with particular emphasis on lichens, bryophytes and ferns. For many of these rare cryptogamic plants basic information on taxonomic identity, current distribution and habitat requirement is lacking.

The Science Division makes a major commitment to the training of the taxonomists both at PhD level, with students registered at the Universities of Aberdeen, Edinburgh, Glasgow, Heriot-Watt and Oxford, and through a MSc course on Biodiversity and Taxonomy of Plants in collaboration with the University of Edinburgh. Currently we have 16 PhD students and look forward to enrolling at least 12 MSc students for the next academic year. Our student population comes from the UK and overseas, and a high proportion of students move on into employment in systematic research, floristics and conservation.

ROSLIN INSTITUTE

Roslin Institute
Roslin, Midlothian EH25 9PS
Tel: 0131 527 4200



UK CENTRE FOR FUNCTIONAL GENOMICS IN FARM ANIMALS

Microarray is the buzzword for the new tool in the gene expression analysis toolkit. The concept of binding small quantities of DNA to a glass slide where it can be interrogated by labelled nucleic acids is straightforward. It is a logical extension of established hybridisation techniques for studying gene expression and genetic variation. However, it has taken a fusion between technologies from the electronics industry and biological sciences to realise the quantum leap in the density and scale of gene expression studies brought about by microarrays. These allow the expression of 10,000 genes to be investigated simultaneously, compared to the 10 or so possible previously. The disadvantages of these tools are that they are expensive to produce and require adaptations to scale beyond that normally found in an academic research environment. One solution is to set-up strategically placed core facilities, which can provide expertise in specialised areas of the academic research industry. This has been the concept behind the BBSRC's Investigating Gene Function Initiative, launched in 1999 to fund consortia to develop access to high throughput genomics and associated resources.

Roslin Institute is home to the BBSRC funded UK Centre for Functional Genomics in Farm Animals (**ARK-Genomics**). The centre provides collaborators in the farm and veterinary animal field with access to microarray fabrication and hybridisation facilities. The Centre has begun a program of cDNA library construction. By early 2002 we will be able to provide free access to more than 1 million clones from over 30 tissue specific libraries covering the four main species of interest; chickens, cattle, pigs and sheep.

The facility has resources to routinely pick and archive 5000 colonies per day, which can be scaled up to 20,000 colonies per day on a batch basis. For medium throughput sequencing, an ABI3700 capillary sequencer provides the capacity for 600 sequences per day. Three robotic liquid handling devices will provide the reaction set-up capacity to meet the needs of the sequencer and that of the 5000 PCR reactions per day, which feed into the microarray manufacturing process. Both solid and split pin arrayers can produce up to 200 slides per day in various formats with up to 10,000 features per slide. The hybridisations themselves are performed in Genomic Solutions HybStations, which provide precisely controlled hybridisation and wash environments, yielding consistent day-to-day results beyond that readily achieved by hand. Both confocal and CCD laser scanners read the two/three colour output at the end of the "wet" process and input the data to a restricted access central database. The internet will be the main means of communicating results to collaborating groups throughout the UK and beyond.

One of the main criticisms of core microarray providers in the past was that a researcher was provided with one million or so data points and then left to "get on with it". This has been addressed within the **ARK-Genomics** project by entering into a collaboration with the Bioinformatics Dept in Manchester University, which will provide bioinformatics support and training in their data mining and visualisation package Max-D. The Bioinformatics group at Roslin, headed by Dr Andy Law, provides database management, sequence



A scanning microarray facility

analysis, clustering and software support. Computing Support, headed by Dr Robert Findlay are installing a Storage Area Network and upgrading Roslin's internet links to meet **ARK-Genomics** data storage and transfer requirements.

The Centre is committed to an open approach to the research in which it participates, while allowing principal investigators to benefit from any IP generated. To this end, all data produced will be stored according to international annotation standards, with the majority reaching the public domain as soon as is practical.

The **ARK-Genomics** facility will allow the UK to retain its place as one of the world's foremost contributors to farm animal research.

If you require more information about **ARK-Genomics**, please visit our website at www.arkgenomics.org. We encourage interested parties to register with us to be kept up-to-date on the progress of the **ARK-Genomics** Facility. We will be holding a one day Workshop/Open Day on 25th Sept 2001. If you would like to attend, please contact info@arkgenomics.org. Numbers are limited, so please register early. For those familiar with the Roslin Institute, the Facility is located in the extension to the Old Wing. Visitors are always welcome.

ARK-Genomics Contacts: Dave Burt (Joint Program Manager)
 Alan Archibald (Joint Program Manager)

Dr Mark R. Shaw
Keeper of Geology & Zoology
National Museums of Scotland
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Tel: 0131 247 4246 E-mail: m.shaw@nms.ac.uk

Institutional News/Upcoming Public Events

After almost a decade at NMS, Director Mark Jones left at the end of April 2001 to take up the post of Director at the Victoria and Albert Museum in London. NMS advanced enormously under his direction, and his will be a hard act to follow. Dale Idiens has taken over as Acting Director until a new Director is appointed. She was formerly Depute Director and before that Keeper of History and Applied Art.

One project that was very much of Mark's time, though it came to final fruition a couple of months after he left when it opened on 2 July, is the new Museum of Scottish Country Life at Kittochside near East Kilbride. This is the first major National Museum in the west of Scotland, and it came about through a unique partnership between the NMS and the National Trust for Scotland, to which Mrs Margaret Reid, following also the wishes of her late husband, had donated the farmhouse and 170 acres of land that they had worked in the manner of the 1950s until recently. The complex now comprises a large new exhibition building designed by Page and Park of Glasgow that houses the NMS collections through which Scotland's rural past can be experienced and understood, the original farmhouse a short walk away that tells its own particular story of domestic farm life in the 1950s, and a working traditional farm which – once it is again feasible – will also be stocked. A large programme of outdoor and indoor events will keep the site busy throughout the year. A lunch for ECRR Directors is being hosted there on 3 September, which we hope will encourage further contact.



A view of the Museum of Scottish Country Life's farm at Kittochside

Current temporary exhibitions at the main NMS exhibition site are “Serizawa, Master of Japanese textile design” (until 4 November), our Edinburgh International Festival Exhibition and major contribution to “Japan 2001”. This is the first European exhibition of work by the great Serizawa Keisuke (1895-1984) for 25 years, and is astonishing for its flair and variety.

Also on show (until 22 September) is the annual touring exhibition that results from the “BG Wildlife Photographer of the Year Competition” – as diverse and worth seeing this year as ever.

Scottish Geology Week (14th-23rd September) is a biennial festival aimed at popularising geology. Over 100 events across Scotland have been organised by the partnership (in no particular order National Museums of Scotland, Hunterian Museum, Dynamic Earth, British Geological Survey and Scottish Natural Heritage), many of which offer real practical and technical experiences under expert guidance in addition to lectures, guided walks and so on. The Royal Museum in Chambers Street is a key daily venue, hosting numerous events. For the full Scottish Geology Week programme see www.scottishgeology.com/rock-on

The Chambers Street complex now gives free admission (though a charge is made for major temporary exhibitions such as Serizawa) and it is good to see such a strong return of visitor numbers as a result.

Geology and Zoology Departmental News

New staff to join the Geology and Zoology Department since the last report are Dr Lyall Anderson (Curator of Invertebrate Palaeontology), Dr Jason Hilton (NERC Research Fellow: will become fully on NMS’s staff at the conclusion of his Fellowship in December 2001, as Curator of Palaeobotany – when a review of collection responsibilities will probably result in a transfer of non-arthropod fossil invertebrates to his section as well), Diane Mitchell (Geological Outreach), and Fiona Ware (Assistant Curator of Marine Invertebrates).

NMS has recently acquired a CamScan MX2500 SEM + NORAN Vantage EDX system, which will be invaluable for the analytical and imaging needs of the Museum as a whole.

Most sections of the Department engage extensively in international collaborations, and we undertake significant fieldwork and collecting abroad. Excluding mere conference attendance, during 2001 fieldwork has included (or is scheduled for)

- the seas around Antarctica (Dr Louise Allcock, collecting octopuses),
- Mexico and Costa Rica (Dr Graham Rotheray, hoverflies),
- Hungary and Corsica (Dr Mark Shaw, parasitic wasps),
- Borneo, Costa Rica, Vancouver Island, California, Belgium, Saudi Arabia and Siberia (Dr Andrew Kitchener and bird/mammal section staff, including taxidermists, largely to collect or prepare donated corpses – particularly for our forthcoming exhibition “Cats!” which will explore the natural history of the group and feature virtually all of the world’s species),
- China, Ohio and France (Dr Jason Hilton, early evolution of seed plants),
- Australia and Tasmania (Brian Jackson, minerals),
- and South Africa, Swaziland and Lesotho (Dr Suzanne Miller, ultrabasic igneous pipes).

Much of this is externally funded.

Further information on our research programmes will soon be found at www.nms.ac.uk/about



*Pentland Science Park
Bush Loan, Penicuik EH26 OPH
Tel : 0131 440 0400 Fax : 0131 440 4141
Email : mail@ectf-ed.org.uk*

REPORT

You may know that the Edinburgh Centre for Tropical Forests is a partnership between five Edinburgh organisations:

*Centre for Ecology and Hydrology
Forestry Commission
LTS International Ltd.
Royal Botanic Garden Edinburgh
University of Edinburgh*

Our united aim is to support sustainable management of forests and their contribution to society throughout the world. The partnership was formed in 1990 and since then ECTF has become a leading UK research, training and consultancy organisation representing a unique concentration of complementary expertise in forestry here in Edinburgh.

News

With a new programme of activities beginning in October 2000, ECTF continues to build on its strengths. We are delighted that our efforts have been rewarded with three new projects, see next page. Other highlights from the past year or so include:

- ❑ another successful international conference last October entitled 'the Role of Science in Forest Policy Development' focussing on Indonesia and Malaysia
- ❑ a strong ECTF presence at the Commonwealth Forestry Conference in Australia in April this year where our members gave papers, presented our new marketing ECTF display and made many new international contacts
- ❑ production of a new general marketing brochure
- ❑ production and dissemination of a client brochure highlighting our wide experience focussing on the Indonesia UK Tropical Forest Management Programme
- ❑ a successful visit and guest lecture on Community Forestry by Dr VK Bahuguna from the Indian Ministry of Environment and Forests
- ❑ wide ranging business development activities and trips with a special focus on Japan and New Caledonia

To continue raising Edinburgh's profile as a centre of expertise, encouraging internal collaboration and expanding our portfolio, the future will see a continuation of this type of mix of activities.

Staff

The ECTF membership consists of all those within the five member organisations working in relevant fields. Representatives from each organisation form our Management Committee who direct ECTF and play a key role in developing and supporting activities. These activities are mostly implemented by our permanent Marketing and Administration Executive based in the Pentlands Science Park, Bush Estate.

Congratulations to Kerry McKay, our Marketing and Administration Executive, who will be taking a break from her ECTF duties when she goes on maternity leave this October. We are currently recruiting a temporary replacement for Kerry so that our programme of work can continue unchanged.

Roger Leakey, one of our key management committee members from Centre for Ecology and Hydrology has taken a fixed term post as Professor of Agroecology at James Cook University in Cairns, Australia. We wish him luck and look forward to Roger resuming his ECTF role on his return.

Projects

We are delighted to have been awarded funding for three new projects:

'Preservation, rehabilitation & utilisation of Vietnamese montane forests' - this project won support in the latest round of funding from the DETR UK Darwin Initiative for the Survival of Species. It aims to support local partners in conserving biodiversity and sustainable use of their forests. The proposal was developed by Centre for Ecology and Hydrology and Royal Botanic Garden Edinburgh as a result of an ECTF project development trip by Jan Dick. Contact: m.gardner@rbge.org.uk

'Regulation of Sustainable Timber Production by Community & Industry in Tropical High Forests' – DFID funded. Building on previous Growth and Yield work in Indonesia, this project aims to develop methods on the regulation of sustainable timber production focusing Indonesia and Guyana. It was developed, and is now led, by the University of Edinburgh Institute for Ecology and Resource Management. Contact: p.vangarding@ed.ac.uk

UK Darwin Initiative Monitoring & Evaluation Project - in June 2000, ECTF was awarded a 2.5 year contract to monitor and evaluate current DETR UK Darwin Initiative projects to assess whether the Initiative is achieving its objectives. As in the case of our recently completed Joint Funding Scheme project for DFID, we are required to conduct desk reviews and a number of field reviews each year. However, whereas the DFID programme supported UK-based NGOs, the Darwin Initiative draws on British scientific expertise to assist developing countries with the conservation of biological diversity and implementation of the Biodiversity Convention.

As part of this contract we have set up a UK Darwin Initiative Website at www.nbu.ac.uk/darwin The site provides a range of information including Darwin project details, a news page, links to the DETR site and other relevant biodiversity sites. It will eventually include a database of project publications and possibly a discussion forum. We welcome any relevant contribution to this site which should be sent to kerry-mckay@ectf-ed.org.uk.

ECTF Events

ECTF usually organises at least one international conference per year plus other smaller ad hoc events. In October we were delighted with the success of our international conference entitled 'the Role of Science in Tropical Forest Policy Development: Indonesia and Malaysia' chaired by Penny Davies, Senior Forestry Advisor for DFID. Around 60 delegates from the UK and abroad heard eight speakers give different view-points on how research and monitoring can be used to shape forest policy. The Outputs document is available on our website <http://www.nmw.ac.uk/ectf/pastevnt.htm>

Plans are afoot for several future meetings including a large conference in Spring 2002 focussing on the relevance of forests to development. Confirmed forthcoming events include:

EuroWorkshop on Functional Groupings of Tropical Trees, 10-14th December 2001

A core team from Centre for Ecology and Hydrology and University of Edinburgh have won a grant from the EU for this ECTF workshop. The aim is to gather those working in this field to collate the current state of knowledge, compare approaches, develop applied models and discuss the way forward.

Private & Community Forestry Study Tour to Europe, September 2001

Places have been snapped up for this excellent tour covering the social, political, economic and land use history of Europe lead by Pat Hardcastle. It is being run under the ECTF banner for the second year. <http://www.nmw.ac.uk/ectf/studytor.htm>

LASSWADE VETERINARY LABORATORY
SCOTTISH NATURAL HERITAGE
UNIVERSITY MARINE BIOLOGICAL STATION, MILLPORT

Nil return

Beyond Foot-and-Mouth - Ways Forward for the Scottish Economy

Edinburgh International Conference Centre

24-25th October 2001

A Forum Organised by

Edinburgh Centre for Rural Research

In association with

Aberdeen Research Consortium

Institute of Biology (Scotland)

Royal Highland and Agricultural Society of Scotland

Royal Society of Edinburgh

This Forum focuses on how best, after FMD, to restore and enhance the Scottish economy, drawing on the individual and collective views of participants. Over the two days, separate sessions, introduced by key speakers, will consider generic issues and those specifically relevant to agriculture, other rural enterprises, tourism and urban initiatives. Attention will be given to meeting societal concerns, encouraging economic diversity, the associated challenges for science, together with appraisal of what might be achievable politically.

The outcome of the meeting will be a report suggesting future actions. The report should help industry and policy formulators plan effectively for the future.

Registration

To register please complete the [registration form](#) which follows and return with the registration fee to:

ECRR, BSAS Conference Management, PO Box 3, Penicuik, Midlothian EH26ORZ

Tel : 0131 445 4508 Fax : 0131 535 3120 Email : bsas@ed.sac.ac.uk

The registration fee for the Forum, which includes the cost of lunches, refreshment and reception, is :

- Registration before 15th October - 145 pounds
- Registration after 15th October - 165 pounds
- Day rate - 24th October - 90 pounds
- Day rate - 25th October - 90 pounds

On the evening of the 24th October a dinner is being held for those attending the Forum at the Roxburghe Hotel, Charlotte Square, Edinburgh commencing at 8pm. The cost of the dinner is 35 pounds per person.

BEYOND FOOT-AND-MOUTH - WAYS FORWARD FOR THE SCOTTISH ECONOMY

PROGRAMME

Wednesday 24th October

0930-1000 : Registration & refreshments

Session 1 : 1000-1230 : Introduction and Position Statements

Chair : Professor I D Aitken ([Edinburgh Centre for Rural Research](#))

- 1000 : Welcome
- 1005 : Opening address - Ross Finnie MSP, Minister for the Environment & Rural Development
- 1015 : Past and Future - a personal view - Sir William Stewart, Royal Society of Edinburgh
- 1045 : What questions should be addressed? Position statements/points of view (each circa 5 minutes) from special-interest/ delegate groups
- 1200 : Discussion

Lunch

Session 2 : 1330-1500: The Livestock Industry

Chair : Professor J D Oldham (Scottish Agricultural College)

- 1330 : What is needed for recovery? - Donald Biggar, Livestock farmer
- 1400 : What are the economic realities? - Dr Peter Cook, SAC
- 1430 : Discussion

Break (Tea/coffee)

Session 3 : 1530-1730 : Small Businesses and Tourism

Chair : Andrew Bachell (National Trust for Scotland)

- 1530 : Andrew Campbell, Convention of Scottish Local Authorities
- 1550 : Willie McLeod, VisitScotland
- 1610 : Sandy Dear, Tourism & Environment Forum
- 1630 : Ivan Broussine, Scottish Tourism Forum
- 1700 : Discussion

1730 : Reception at EICC

2000 : Dinner at Roxburghe Hotel, Charlotte Square, Edinburgh

Thursday : 25th October

Session 4 : 0900-1030 : Role of Alternative Enterprises & Diversification

Chair : Professor John Hillman (Scottish Crop Research Institute)

- 0900 : Aquaculture - Brian Simpson, Scottish Quality Salmon
- 0920 : Organic production - John Hamilton, Scottish Organic Producers Association
- 0940 : Special initiatives :
 - Ecotourism - Dr Kathy Velander, Napier University
 - Novel products - Martin Gibbs
- 1000 : Discussion

Break (Tea/coffee)

Session 5 : 1100-1230 : Environmental & Social issues

Chair : Professor Maggie Gill (Macaulay Institute)

- 1100 : Controlling pollution - Rob Morris, Scottish Environment Protection Agency
- 1120 : Rural sustainability – Professor John Milne, Macaulay Institute
- 1140 : Food quality & marketing - Neil Kilpatrick, Scottish Quality Meat
- 1200 : Discussion

Lunch

Session 6 : 1330-1500 : Challenges for Science

Chair : Professor John Dale (Institute of Biology)

- 1330 : Animal & human health - Professor Hugh Pennington, Aberdeen University
- 1350 : Consumer confidence - Fordyce Maxwell, Rural Affairs Editor, Scotsman Newspaper
- 1410 : Integrating the science - Professor Peter Wilson, Royal Society of Edinburgh
- 1430 : Discussion

1500-1530 : Tea/coffee

Session 7 : 1530-1700 : Challenges for Society

Chair : Ken Collins (Scottish Environment Protection Agency)

- Brief contributions from the political parties in Scotland
 - Robin Harper MSP - Green
 - Alex Johnstone MSP - Conservative
 - George Lyon MSP - Liberal Democrat
 - Kenny MacAskill MSP - Scottish National Party
 - Dr Elaine Murray MSP - Labour
- Concluding remarks: Des Truman (Assistant Principal, Edinburgh University)

REGISTRATION FORM

To register, please complete the following, take a copy for your records, and forward with payment to:

**ECRR, BSAS Conference Management,
PO Box 3, Penicuik, Midlothian EH26 0RZ,**

Tel: 0131 445 4508 , Fax: 0131 535 3120 Email: bsas@ed.sac.ac.uk

Personal Details (Please use block letters)

FamilyName..... Title.....

First name (for badge).....

Address.....

.....

.....

Phone..... Fax.....

Email.....

Organisation (for badge).....

Special requirements (e.g. dietary).....

Registration Fee (including lunches, refreshments, reception)

Forum - Registration before 15th October £145
 Registration after 15th October £165
 Day rate - 24th October £90
 Day rate - 25th October £90
 Dinner Roxburghe Hotel 24th October £35

Total payment

Payment

- Please invoice me.
- By cheque made payable to ECRR
- [] Visa [] Mastercard [] Eurocard [] American Express

Card numberExpiry date...../.....

Name on card.....

Signature