

Bush Telegraph

The House Magazine of the Edinburgh Consortium for Rural Research

SCOTLAND'S ENERGY - DID YOU KNOW?

The ECRR Energy Forum, in May 2007, covered the spectrum of energy supply together with some elements of demand. It was successful in bringing together many disciplines, creating new contacts and in sharing and airing the issues across the board. From the well-structured and well-argued presentations of 11 speakers, and the discussion they stimulated, I acquired a set of bullet points that encapsulated many of the statistics and messages from the event.

- Scottish electricity comes 70% from coal and gas and only 0.1% from wind.
 - Overall CO₂ emissions are 30% from power stations, 20% land-use, 10% Transport, 20% domestic and 20% from industry.
 - Longannet, the biggest Scottish coal-power station, is being upgraded to achieve 45% efficiency (from 20% now), and that it can be retrofitted for carbon capture.
 - There will be an electricity gap in Scotland from 2011 unless the Hunterston nuclear license is extended (Torness is due to close in 2023)
 - Carbon capture will cost 2p more per kilowatt.
 - Scotland has the best wind regime in Europe with 40% of the total European wind resource (but less installed capacity than Italy or Germany which have poor wind resources).
 - The biggest wind turbines, with 5MW capacity, could generate 20% of Scotland's electricity with only 600 of them occupying only 0.2% of the land area. There is, however, a distribution issue.
 - Energy pay back time for wind turbines is 3-10 months – demand currently outstrips the ability to supply turbines.
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- Operating and maintaining offshore turbines is only twice as costly as onshore ones.
 - Appropriate siting of turbines dramatically reduces bird impact problems, eg to avoid foraging routes, according to the RSPB.
 - A sensitivity map for Scotland has been produced by RSPB and SNH which shows areas that are more or less at risk in relation to bird conservation.
 - On the social side, NIMBY is not necessarily the norm in the opposition to wind farms; people a long way off are vocal in their opposition.
 - There are some success stories achieved by taking local people on board, listening to their views, and changing the location of turbines where requested; often by only a few fields.
 - The UK leads marine energy research and development in Europe for offshore renewable energy, and has demonstration and deployment infrastructure in place.
 - In Orkney, onshore wind testing and development of turbines started in 1951, with nature conservation, landscape and local economics being addressed in parallel.
 - For the future, in Orkney, it is intended that broader marine developments will follow the model for onshore wind, with habitats, nutrient mix changes, noise disturbance and physical impacts currently

This issue of the Bush Telegraph includes contributions from speakers at the ECRR Climate Change Research Workshop held on 7 November 2007. Slide presentations can be viewed at www.ecrr.org.uk

Speakers' abstracts from the ECRR Energy Forum referred to above can be found at www.ecrr.org.uk/ECRR_energy_abstracts.pdf

being researched, together with novel monitoring and modelling techniques that are being developed to better study impacts, including socio-economics (focused to achieve benefit for local communities through retained profits).

- Biodiesel and bioethanol are growing sources of renewables but can have a negative impact on the cost-effective production of food crops.
- Bioethanol as a transport fuel has some problems; requiring engine modifications, ability to mix with fossil fuels at only low concentrations, and difficulties with its transportation.
- On the other hand, butanol, produced through a fermentation process, offers the possibility of use at 100% in existing

engines, it can be blended with petrol and diesel at high concentrations, and can be transported in pipelines.

- Photo-voltatics offer some possibilities with silicon wafer technology now 20% efficient but the energy pay-back on their manufacture is measured in years rather than the months it takes to pay back a wind turbine (new derivatives in this field which will do much better are, unfortunately, about 20 years from practical application).
- A new technology involving thin film Photo-voltaic material is emerging which could be fitted to buildings without visual impact problems (it can already achieve 15% efficiency).

- Scottish and Southern Energy (SSE) traces its history back to Hydro schemes in Scotland in the Nineteenth Century and, since 1980, its predecessors have been branching out into other energy sources, including sewage, so that SSE is now the largest non-nuclear generator in the UK.

- The biggest impediment to applying investment in renewables and novel power sources is not the availability of money but the lack of clarity on future governmental policy and regulatory measures which are, at present, blocking investments that need to be commercially wise for the long term (SSE has £2 billion to invest in renewables now with £4 billion to follow on).

Chris Browitt

ECRR Scientific Director

British Geological Survey



Christian Wilson

British Geological Survey

Murchison House, West Mains Road, Edinburgh EH9 3LA

Email: ckw@bgs.ac.uk

MARVELLOUS MULTIBEAM

Using state-of-the-art hydrographic surveying equipment, marine geologists from the British Geological Survey (BGS) in Edinburgh have uncovered a long-submerged landscape directly underneath a nominated UNESCO World Heritage Site. The area around the Forth road and rail bridges in Scotland was selected to test the potential of multibeam echosounder surveying for mapping the marine environment. The BGS has recognised the immense value of multibeam data for geology, as well as the wider uses ranging from marine biology to engineering, and has also run surveys in the English Channel, the Bristol Channel, and has recently completed a survey on the Clyde Channel on April 16th. Outlining his vision for the future of BGS marine science, Programme Manager Robert Gatliff said 'There is a real need to coordinate sea-bed mapping in the UK...we need to have a 'collect once, use many times' approach, which would form the basis for a National Sea-bed Survey'. The BGS has invested in this vision and recently purchased a full multibeam system with funding from BGS's parent body, the Natural Environment Research Council. This system is already earmarked for use in a number of projects.

OPEN DAY AT MURCHISON HOUSE

The British Geological Survey held their annual Open Day on Saturday the 29th of September 2007, from 10.00 am – 5.00 pm at their offices in Murchison House, West Mains Road in Edinburgh. This is a regular opportunity for members of the public and interested groups to discover the significance of geology and geophysics and to take a look at the work the BGS undertakes. There were a series of lectures and exhibitions and that offered different and entertaining ways of finding out more about geoscience. Information can be found at: <http://www.earthquakes.bgs.ac.uk/openday/index.html> or contact Bennett Simpson or Ted Harris on 0131 667 1000.



Stunning marine landscape imaged by BGS in a recent sea-bed mapping survey.

The University of Edinburgh



Professor Mary Bownes
School of Biological Sciences, University of
Edinburgh,
Michael Swann Building, King's Buildings,
Edinburgh EH9 3JR
Email: mary.bownes@ed.ac.uk

BEACONS OF UNDERSTANDING

A multi-million pound project aims to help people to find out more about the big questions affecting society today. The project, called The Edinburgh Beltane, is part of a nationwide initiative to give the public a chance to quiz researchers about their concerns, and enable people to manage their lives with increased confidence, knowing that they are making informed decisions about their own health and lifestyle. The researchers will also benefit from hearing a wide variety of views on what they do, while at the same time encouraging them to engage more widely with the public.

Beltane is the Celtic word for a Beacon. This is a very appropriate name especially as the original Beltane was a major networking festival, bringing together the wider community and forging new links so that different communities could share experiences and work together.

The UK government recognises that the research activity of Higher Education Institutions is crucial to the economy. Most research grants now come with the requirement that researchers engage with the public about their work. Universities also need the support of the public, allowing people to be confident with the research process, as well as being able to understand and benefit from its advances

As one of six UK-funded Beacons the Edinburgh Beltane project will receive £1.2m from Research Councils UK, The Wellcome Trust and Scottish Funding Council to facilitate researchers engaging with the public.

To deliver our vision, the partners include a mixture of researchers, both basic and applied or translational. We cover a very broad range of disciplines across the sciences,



The wonders of science - a young participant at a University of Edinburgh open day for schools.

engineering and medicine, the professions and the humanities and social sciences.

The Edinburgh Beltane Partners are: the University of Edinburgh, Heriot-Watt University, Napier University, and UHI Millennium Institute, Edinburgh Consortium for Rural Research, National Museums Scotland, Optos plc, Our Dynamic Earth, Roslin Institute, Royal Botanic Garden Edinburgh, Royal Observatory Edinburgh Visitor Centre, SETPOINT Scotland East, The Herald, The Royal Society of Edinburgh, The Sutton Trust, and UK GRAD Scotland & Northern Ireland Hub.

We have some outstanding examples of public engagement activities within the partnership at present and so there are lots of good practice to share and experience to build on.

The wider public doesn't view the world divided into academic disciplines, so to achieve our goals will need many more researchers to work together to ensure that the interactions with the public bring together the expertise of the scientists and engineers and technologists, with those developing new ways forward in medicine along with researchers in the humanities and social sciences who have the expertise to put these developments into a human context

and see how they might affect society and our environment.

It is crucial that whatever we deliver is done a professional, high quality and appropriate way for our audiences and that we learn to listen as well as pass on our knowledge. Working with our partners who have extensive experience in direct delivery to the public, be it in museums, galleries or botanic gardens, in science centres or businesses, or direct to farmers or patient groups is key to achieving our aims.

As the project develops we will welcome participation from students and researchers in all disciplines and at all stages of their careers, throughout the ECRR.

Note: Mary Bownes is Vice Principal of Research Training and Community Relations at the University of Edinburgh, chair of the ECRR Main Board and leader of the successful Edinburgh Beltane bid.

Biomathematics & Statistics Scotland



Professor David Elston & Professor Chris Glasbey
 Director & Head of Research
 BioSS, Aberdeen & Edinburgh
 Email: d.elston@bioSS.ac.uk & c.glasbey@bioSS.ac.uk

BioSS's scientific output has never been so high, with 71 refereed papers appearing in 2006 compared to a mean of close to 50 in past years. Our senior staff continue to achieve recognition, one spending three weeks as a McMaster Visiting Fellow at CSIRO in Australia and others now holding honorary chairs in five universities.

Our main new initiative in the last year has been the Centre of Excellence in Epidemiology, Population Health and Infectious Disease Control (EPIC), funded by the Scottish Executive. This collaborative centre includes three other ECRR organisations, and highlights the strength of the Scottish research base in veterinary epidemiology. BioSS's role in EPIC is to develop, evaluate and apply methods of statistical inference for models of animal infection dynamics.

Many of the projects with which we are involved with our long-term collaborators are making an impact at a national or a European scale: it is particularly satisfying to see our new statistical consultancy support for RSPB already bearing fruit, with a paper assessing the effectiveness of international conservation policy appearing in *Science*.

We have summarised the ambitions of BioSS in a vision statement that encapsulates what we collectively set out to achieve:

"to improve science & society through an understanding of variation, uncertainty and risk"

Dissecting this statement reveals many facets of our work.

- Our *understanding* is enhanced through process modelling and data analysis, as well as through the design of experiments and observational studies;
- the *variation* we study can be of a deterministic nature or partitioned into uncontrolled components that we often think of as being random;

- *uncertainty* refers to our state of knowledge, which is always clouded by both measurement error and natural variation;
- and at a probabilistic level *risk* refers to the integration of variation and uncertainty, with attention often focussing on the chance of extreme events.

Much of our work is directed towards scientific objectives, but with a widening range of outcomes including providing an evidence base for improved policy making and contributing to economic activity through the levy boards and private sector organisations.

Simultaneously, we have developed a mission statement, setting out how we shall achieve our vision:

"to develop and apply quantitative methodologies with a rigorous mathematical and statistical basis"

This makes clear the parallel strands of methodological development and application, with each benefiting from the presence of the other in a single organisation. Implicit but unstated in the mission statement is the enthusiasm with which BioSS has been embracing the massive potential of modern computing technologies, including cluster processors and web services.

The shift in Scottish Executive (SE) funding, from organisation-based to programme-based, has motivated a change in the way BioSS manages its consultancy work. We have replaced our old system of Heads of Groups at the different BioSS centres, with four Principal Consultants, each taking responsibility for a scientific application area that encompasses one of the SE's four research programmes. We have also created a post of External Development Manager in recognition of the need to continue to broaden the funding base on which BioSS draws.

Further details are given in BioSS 2005-07, our Biennial Report.



BioSS modellers, in collaboration with scientists at the Macaulay Institute, have been studying daily flow data for the River Dee dating back to 1929 to look for long-term changes in the distribution of flows, including changes in seasonal patterns and the size and frequency of extreme events.

Scottish Crop Research Institute



Phil Taylor
Information Services Manager
SCRI, Invergowrie, Dundee DD2 5DA

UN YEAR OF THE POTATO

The Scottish Crop Research Institute is to host a conference on global potato production as part of the United Nations' Year of the Potato in 2008.

The main objective of the UN initiative is to promote the sustainable development of potato growing, in particular in the developing world, where annual consumption has more than doubled in the last 45 years.

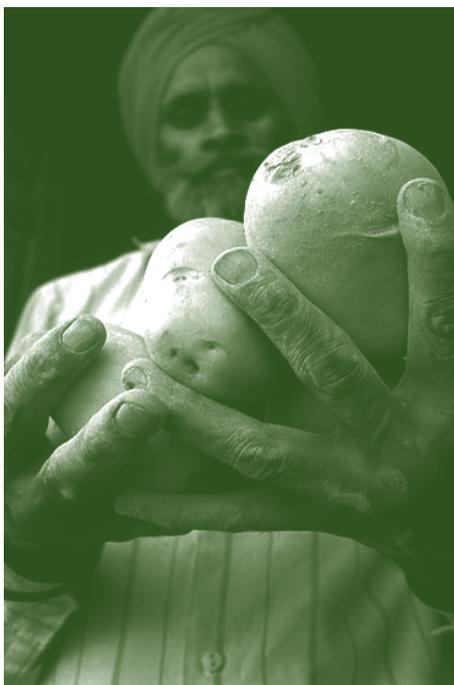
Potato is the fourth most important food crop after wheat, maize and rice. In 2005, for the first time, the developing world's potato production exceeded that of the developed world.

The presence of a high-level Chinese delegation at the conference will emphasise the vegetable's importance to that country's economy. China is the world's largest potato producer, increasing capacity by 30 percent over the past five years. In 2007 SCRI and the Scottish Agricultural Science Agency (SASA) hosted several Chinese government delegations. Beijing has also agreed to allow the import of Scottish seed potato mini-tubers, seen as a major breakthrough.

Richard Lochhead, Cabinet Secretary for Rural Affairs and the Environment said: "I am delighted to hear the news that a major conference on global potato production, hosted by SCRI as part of the UN International Year of the Potato, will be coming to Dundee next August.

"The aim of this year is to promote the sustainable development of the potato industry and bolster consumers' and producers' well-being. This is in line with the Scottish Government's commitment to supporting healthy, sustainable home grown food and the Scottish food industry.

"The important contribution which SCRI makes through its scientific research is recognised by the international community, helping to put Scottish science on the map. It is also fundamental in achieving the Scottish



UN Year of the Potato 2008

Government's strategic objectives, helping to make Scotland a smarter, greener, healthier and wealthier and fairer place. I look forward to welcoming this international conference to Scotland in the coming year."

MALARIA BREAKTHROUGH

Researchers at the SCRI have discovered striking similarities between potato blight and malaria. Reporting in the journal *Nature*, they say that the microbes that cause both infections use an identical mechanism to "overpower" cells and spread.

The theory is that both parasites – one that costs an estimated £3 billion a year in lost crops, the other that kills more than 1 million people a year – may share a common evolutionary origin.

Dr Stephen Whisson, from the Institute, said: "If we can block the mechanism, we could stop late blight from happening and it could stop malaria in its tracks."

DECODING GENETIC SECRETS

SCRI is joining a consortium of world-leading scientists – including those who helped decode the entire human genome – in a project to sequence the DNA of the potato cyst nematode (PCN). PCN attacks potato crops all over the world and is particularly devastating in developing countries where the potato is a subsistence crop.

The £1.7 million project to sequence the worm's DNA, hopes to shed light on the mechanisms that make it such a successful parasite – and lead to methods to manage this pest in an environmentally friendly way.

The research, funded by the Biotechnology and Biological Sciences Research Council (BBSRC), also includes experts from the University of Leeds, the Wellcome Trust Sanger Institute and Rothamsted Research.

The team hopes to complete the sequencing by 2012.



SCRI and the River Tay from the air.

Scottish Agricultural College



Dominic Moran
SAC Edinburgh
West Mains Road, Edinburgh EH9 3JG
Email: dominic.moran@sac.ac.uk

DIFFICULT DECISIONS

The world is getting warmer and we are going to have to adapt to the changes this brings. But adaptation is not costless and, in an ideal world, we should rationally only spend up to the point that matches the damages we reckon to incur. But climate change is not an ideal-world problem. Indeed, predicting likely climate-related damages is perhaps the ultimate challenge for integrated scientific assessment. Clarifying this picture is the function of the Intergovernmental Panel on Climate Change (IPCC), which has recently shared the Nobel peace prize. Accurate adaptation advice depends on knowing what warming will really result, and how it will play out over different geographies characterised by varying ecological and socio-economic vulnerabilities. This is science in its widest sense.

Signatories to Kyoto are also legally obliged to mitigate greenhouse gases. But how much should countries collectively spend on mitigation? The answer depends on how big we think impacts will be, and our collective perception of the riskiness of the outcome. If we think high-end emissions scenarios are leading to imminent catastrophe, then we should be spending a lot now. For example, policy based on scenario A1FI, (Figure 1) is likely to be more urgent than action predicated on B1. The former leads to a potential global temperature rise of at least 2.3C by 2100, although some suggest 6.5C is possible compared with 1.1 °C in the latter.

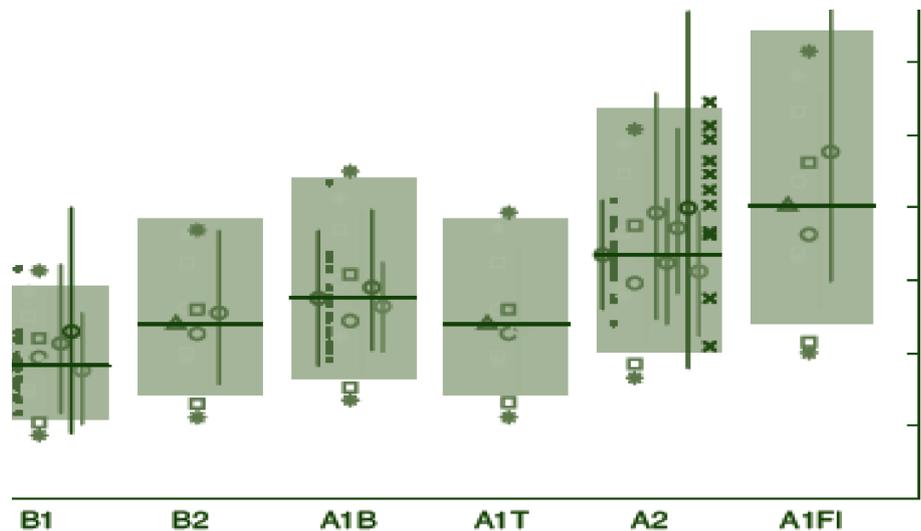
Even if damages are not imminent, it may be that a stitch in time will save nine costly ones in future. This is the main message

of the Stern Review¹, which highlights the unpredictable nature of climate change, and questions whether this undermines our ability to treat mitigation policy like any other public investment decision. Others have likened the decision to a global insurance purchase choice. A small premium now may be the cover we need. Conversely, the costs of inaction could be much higher.

the cheap things first and looking for win-win solutions in such things as household energy efficiency and afforestation.

Beyond the more straightforward mitigations, science must start to think not just about what is possible, but also how much it will cost. This includes financial and social costs. Ultimately, low cost mitigation solutions may lie in options that are otherwise socially unpalatable. For example, genetic

Figure 1 – Temperature predictions across the range of IPCC emissions scenarios



But buying insurance normally means we have some notion or control over the expected damage. This is not the case with climate change. Moreover, it's one thing to buy insurance for ourselves, our children, our even grandchildren; it's another to buy it for unknown future generations or even other life forms that share our planet. Thus the urgency of the investment decision can be lessened by a view of whom or what we think we are protecting. This throws up challenging ethical dilemmas about the standing of non-human life, and about how we discount the welfare of future generations.

If we are more sanguine about the eventuality of climate chaos then we can be more measured about our responses. We may have more time to think about prioritising mitigation expenditures. This means doing

modification opens up a range of mitigation possibilities, but may not as yet be acceptable to the public.

Ultimately, there are no easy solutions to the problem of climate change. Questions about mitigation and adaptation options open up a wider scientific research agenda, and, by extension, the need for research prioritisation. Whether society chooses to fund this research now or postpone it till later reveals much about whether we really care about the potential threat posed by rising temperatures.

¹ Stern Review on the Economics of Climate Change
http://www.hm-treasury.gov.uk/independent_reviews/stern_review_economics_climate_change/sternreview_index.cfm

Royal Society for the Protection of Birds



James Pearce-Higgins
RSPB Scotland
Dunedin House, 25 Ravelston Terrace,
Edinburgh EH4 3TP
Email: james.pearce-higgins@rspb.org.uk

EFFECTS OF CLIMATE CHANGE ON UPLAND BIRDS

Assessments of species' sensitivity to climate change based on predictions from climate envelope modelling suggest that species occupying high latitudes and altitudes are likely to be most vulnerable to climate change. It is important to understand the mechanisms through which such impacts will occur, to assess the potential for adaptive management to increase the resilience of vulnerable populations to future change. We present an analysis of the likely impacts of climate change on golden plover *Pluvialis apricaria*, a northerly distributed wader which is located at the southern edge of its global range in the UK.

Previous work has shown how changes in the timing of breeding of golden plovers, and emergence of their crane-fly prey, may result in some reduction in breeding success as a result of phenological mismatch under future climate change scenarios (Pearce-Higgins et al. 2005). Here we examine whether direct effects of climate change on crane-fly abundance may be more severe.

Data on crane-fly abundance were obtained from two upland Environmental Change Network (ECN) sites in Scotland from 1995–2005; Glensaugh (55°54'N, 2°33'W) and Sourhope (55°29'N, 2°13'W). Annual variation in abundance in May and June was correlated with August temperature in the previous year at both sites, although the form of the relationship differed between both sites. Additional data from the Pennines provide an independent test of these relationships, and highlight a significant negative effect of previous August temperature on crane-fly abundance (Figure 1).

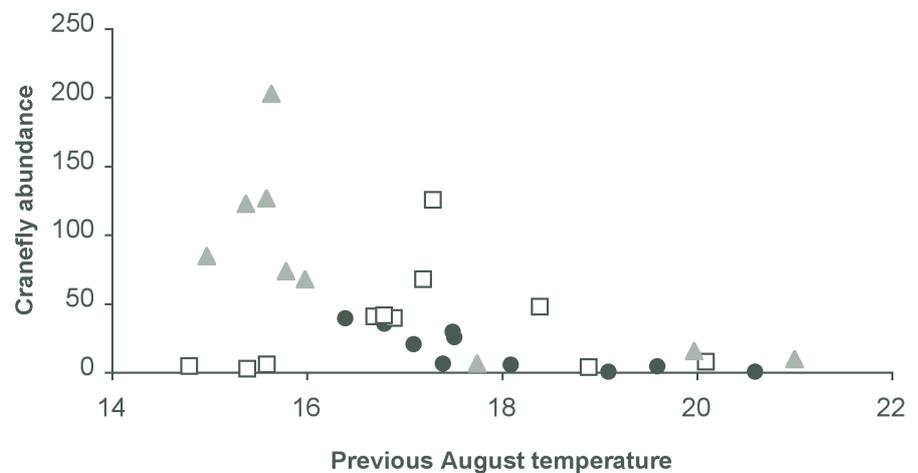


Figure 1. Correlation between Previous August temperature and the annual abundance of tipulids at Glensaugh (filled circle), Sourhope (open square) and the Pennines (Grey triangle).

Annual fluctuations in golden plover abundance at Snake Summit (53°26'N, 1°52'W) in the Pennines were modelled from 1972–2007 as a function of a number of key climate variables. The only significant correlate of annual changes in plover population size was a negative effect of August temperature two years previously ($F_{1, 19.5} = 5.81$, $P = 0.026$). Increasing late summer temperatures will reduce the abundance of emerging crane-flies, and hence chick survival in the following year, resulting in fewer golden plover recruits a year later. Demographic modelling of these effects on future golden plover population trends suggest a high probability of decline to extinction of the Snake Summit population should the current trend of increasing summer temperatures continue. Future research into the potential for management to increase the resilience of crane-fly populations to climate warming, for example through blocking existing drains on peatland, should therefore be a high priority.

This research was conducted with Peter Dennis (Aberystwyth University), Mark Whittingham (Newcastle University), and Derek Yalden (University of Manchester).

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Scotland & N. Ireland Forum for Environmental Research



Marion Mulholland
SNIFFER/SCCIP
25 Greenside Place, Edinburgh EH1 3AA
Email: marion@sniffer.org.uk

PARTNERSHIPS FOR CLIMATE CHANGE

Local Authorities in Scotland are set to benefit from a recently completed Scottish Climate Change Impacts Partnership (SCCIP) research project, 'A Review of Climate Change Tools for Scottish Local Authorities'. This Scottish Government funded research has produced a database of Climate Change Tools, together with supporting guidance for Local Authorities on 'Choosing the Right Tools for the Right Jobs'. The guidance and database are now available on the Sustainable Scotland Network (SSN) website (<http://www.sustainable-scotland.net/climatechange/>).

The research identifies the strengths and limitations of a range of tools currently available for Local Authorities. It evaluates the tools against their ability to help Local Authorities meet Scotland's Climate Change Declaration commitments, thereby helping to meet the needs and capacities of Local Authorities. The full project report is available from the SCCIP website (<http://www.sccip.org.uk/Projects/Default.aspx?pid=39&tid=0>).

This project was managed by the Scotland & Northern Ireland Forum for Environmental Research (SNIFFER), on behalf of SCCIP. Steering Group members for the project included representatives from Scottish Government, SEPA, COSLA, Perth & Kinross and Stirling Councils and SNIFFER.

Nineteen tools were evaluated, using information collated from those involved in developing and managing the tools. A selection of Local Authority officers attended

a workshop to understand their needs, views and experience in using these tools.

The research highlighted ways in which policy makers, tool providers, researchers and Local Authorities could strengthen the development of tools to address climate change. SCCIP anticipates that this research will also be of value to a wider range of practitioners, beyond Local Authorities.

Why not log on and find out more about the tools for yourself? See how they could help you take action towards reducing emissions and adapting to the impacts of climate change.

We welcome your feedback on this research, to help us refine our future work in this field. Please send your comments to marion@sniffer.org.uk

WHAT IS SCCIP?

SCCIP is a Scottish Government funded initiative that brings together stakeholders in Scotland to collectively address and prepare for the impacts of climate change. SCCIP was established to "increase the resilience of organisations and infrastructure in Scotland to meet the challenges and opportunities presented by the impacts of climate change".

SCCIP Development Group members include representatives of the Scottish Government, SEPA, SSN and UKCIP. SCCIP will soon be contacting stakeholders to inform proposals for the next phase of the SCCIP Programme, from 2008/2011. Find out more at www.sccip.org.uk

SCCIP scottish climate change impacts partnership

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Climate change is happening now...

Climate change is one of the most serious threats globally. In Scotland, we are already feeling the effects with rising temperatures and more frequent winter storms impacting on our lives, our environment and the economy. Much of the change in climate over the next 30 - 40 years is already determined by our past and present emissions. Scotland will be increasingly affected by climate change in the future and it is essential that we act now to adapt sustainably and reduce our emissions.

The Scottish Climate Change Impacts Partnership (SCCIP)

The Scottish Climate Change Impacts Partnership (SCCIP) was established to "increase the resilience of organisations and infrastructure in Scotland to meet the challenges and opportunities presented by the impacts of climate change".

On this site you will find:

- » data on climate trends and impacts in Scotland
- » latest research and project information including sharing best practice
- » tools and resources to support action in adapting to and mitigating climate change
- » training and support events

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Forest Research



Duncan Ray
Forest Research, Ecology Division
Northern Research
Roslin, Midlothian EH25 9SY
Email: Duncan.ray@forestry.gsi.gov.uk

LIKELY CHANGES IN SCOTLAND'S CLIMATE

The concentration of carbon dioxide (CO₂) in the atmosphere is rising steeply due to emissions from human activities. The concentration in the earth's atmosphere, currently at 380 ppm, is now higher than at any time in the last 400,000 years (Petit et al., 1999). The burning of fossil fuels is thought to be the main cause for this rapid increase, and greenhouse gas concentrations (which include CO₂) are expected to rise further throughout this century (Anon, 2000). Atmospheric greenhouse gases trap energy in the atmosphere and this is thought to have caused global surface temperatures to rise. The warming is also causing changes in other climatic variables such as rainfall, humidity and wind speed.

Climate change will have a significant effect on the climate of Scotland, in particular:

- Summers will become warmer and winters will become milder
- The rainfall distribution will change: drier summers in eastern Scotland, particularly the eastern and south eastern lowlands; wetter winters in eastern Scotland
- Increased frequency of very dry summers in eastern Scotland leading to drought depending on soil and site conditions
- Increased frequency of high intensity rainfall leading to wetter soils, slope failure, soil erosion
- Winters will become milder, and the frequency of frost days will reduce
- The wind climate is likely to change with more frequent strong winds.

SOME IMPACTS ON FORESTS TREES

A warmer climate will improve forest productivity for many tree species. A general increase in growth has been observed over the last 40 years (Cannell, 2002). The growing season will lengthen and for some species of tree bud burst will occur earlier and dormancy later, and the warmer autumns will increase late season growth (lamm growth). With milder winters, some tree species may not enter full dormancy leading to the possibility of damage during cold periods of winter. The suitability distribution of Sitka spruce (and some other species) will change in Scotland, becoming less suitable in eastern Scotland, as a result of the impact of more frequent summer drought. Figure 1 shows the development of longitudinal cracks along the stem of Sitka spruce as a result of drought.



Figure 1: Damage to Sitka spruce in Durriss forest (Grampian) following the 2003 drought (Photo: Bill Rayner © Forestry Commission)

Not all impacts are apparent, and as a result it will be important to spread risk in managing forests. This will involve using a variety of tree species, and increasing the structural, and genetic diversity of forests.

SOME IMPACTS ON FOREST PESTS

A number of pests and diseases will become more prevalent in Scotland. Milder winters will increase the size of over-wintering populations. For some species longer and warmer growing seasons will increase the number of life cycles per year, and warmer conditions and higher CO₂ will provide more food – often shortening time to maturity.

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In Brief. . .

NEW ECRR MEMBER ORGANISATION

The **University of St Andrews** is welcomed as the most recent ECRR member organisation. At the November 2007 meeting of the ECRR Main Board Professor John Harwood outlined some of the research at St Andrews relevant to ECRR interests. The Centre for Research into Ecological & Environmental Modelling (CREEM) combines expertise from the Schools of Biology, Mathematics & Statistics and Geography & Geosciences. The St Andrews Sustainability Institute (SASI), a "virtual" research group, has contributors from 12 schools across the University. There is also a strong focus within the University on marine issues, principally through the Sea Mammal Research Unit and the Gatty Marine Laboratory.

EASTER BUSH RESEARCH CONSORTIUM



Professor David Hume

The new Consortium continues to evolve both as a physical and organisational entity under the leadership of its director, Professor David Hume. Finalising the design requirements for the laboratory/office complex to house the Consortium has been a major task over the summer. Another task has involved clarifying the scientific activities of the new **Roslin Institute** which, along with teams from the **Moredun** and **SAC**, will comprise the Consortium. The new Roslin will be an amalgamation of the old Roslin, the Neuropathogenesis Unit, together with research groups from **Edinburgh University's Vet School**. It will be an embedded institute within Edinburgh University, having a status similar to a school. Updates on EBRC developments can be found at <http://www.mvm.ed.ac.uk/News/EBRCNewsOct07.pdf>.

NEW CHAIR OF SAC BOARD



Lord Jamie Lindsay

Lord Jamie Lindsay became Chairman of the **SAC** Board in October. Lord Lindsay, will be supported in his new role by Donald Biggar and Professor Bill Stevely, the joint Vice Chairmen. Jamie Lindsay's career has seen him serve in a number of senior Government posts and on Government advisory committees. He was Under Secretary of State for Scotland; Minister for agriculture, environmental protection, countryside, rural affairs, food and food safety, forestry and culture from 1995-1997.

HIDDEN HEROES OF THE PLANT KINGDOM

The challenges - and magnitude - of protecting diverse species of mosses, ferns, lichens and liverworts while also raising public awareness of the aesthetic and conservation values of these lower plants and fungi has been tackled during a high-level PlantNetwork conference in September 2007 under the auspices of the **Royal Botanic Garden Edinburgh**, at Benmore Botanic Garden, near Dunoon.

Britain and Ireland, despite their relatively small number of native flowering plants, have a remarkable array of these lesser known species. But, how do garden owners go about surveying their own areas of land to discover which species occur and whether or not they are rare or threatened? How can habitats be managed to encourage diversity of these, often microscopic, plants? And, how do we even start to engage the interest of garden staff and the public? These were some of the issues discussed.

RECOGNISING EXCELLENCE



Cathy Dwyer

SAC Behavioural Scientist, Dr Cathy Dwyer has been awarded a Readership of SAC in recognition of her work on the welfare of sheep. Cathy has become an acknowledged international expert on lamb survival. In particular she has used a range of scientific approaches to better understand ewe and lamb behaviour and their relationship to lamb mortality. A particular achievement has been her use of embryo transfer to illustrate the importance of a lambs' behaviour to its own survival. This finding not only altered the direction of her own research but has become one of the most widely disseminated aspects of **SAC's** livestock research programme on animal behaviour and welfare.

ANIMAL HEALTH – A GLOBAL PROBLEM

Professor Julie Fitzpatrick, the director of the **Moredun Research Institute**, said in her annual report published in December 2007: "There can be no doubt about the threat of infectious diseases to Scotland and the UK, and their impact on the livestock industry, parliamentarians, policymakers and the general public. The list of diseases which reached our shores in recent months includes foot-and-mouth, Newcastle Disease, avian influenza and bluetongue. We have to be ... prepared for any eventuality."

Professor Fitzpatrick said: "The risk of avian influenza to humans remains of great concern. Moredun has the facilities to work with dangerous pathogens. We have an application lodged to develop facilities which would allow handling of avian influenza for research purposes on our site."

ECRR DIARY 2008

Jan 14	Executive Committee	SAC, Peter Wilson Building, King's Buildings, Edinburgh	10.30
	Directors' Lunch	SAC, Peter Wilson Building, King's Buildings, Edinburgh	12.30
Feb 12	Annual ECRR Lecture	"Science, Innovation, Education: the Challenge to Society", RSE, George St., Edinburgh	17.30
Mar 3	Executive Committee	Venue	10.30
	Directors' Lunch	Venue	12.30
May 1	Directors' Lunch	Venue	12.30
	Main Board Meeting	Venue	14.00
Jun 11	Executive Committee	Venue	15.00
	Summer reception	Venue	17.00

LAUNCH OF EASTER BUSH RESEARCH CONSORTIUM

In April 2008, the **Roslin Institute** will become a part of the **University of Edinburgh**, and will form a new organisation within the University that will include much of the research of the **R(D)SVS**.

The EBRC is a consortium that includes the new **Roslin Institute** along with the animal science researchers of **SAC** and **Moredun Research Institute**. Together, the EBRC will form one of the largest groups focussed on the biology of companion and production animals in the world.

These new organisations will be officially launched in at a scientific meeting on 7 & 8 April 2008 featuring a number of key speakers from the forefront of international science. The scientific programme will comprise a series of colloquia across the core focus areas of the Institute: Genetics and Genomics, Developmental Biology, Neuroscience, Immunity and Translational Animal Sciences.

Researchers in ECRR-member organisations are encouraged to register and submit abstracts through the web pages <http://ebrc-launch.org/>.

ECRR ANNUAL PETER WILSON LECTURE 2008

Professor Geoffrey Boulton OBE FRS FRSE, Vice-Principal and Regius Professor of Geology and Mineralogy, University of Edinburgh, will give the ECRR Peter Wilson Annual Lecture on Tuesday 12 February 2008 at 5.30pm at the Royal Society of Edinburgh, George Street, Edinburgh. The title of his talk is "Science, Innovation, Education: The Challenge to Society"



The annual ECRR Peter Wilson Lecture has, in the past, attracted many of the key figures of the science world including Professor Ian Wilmut, Steve Jones and Sir John Krebs. The lecture is named after Professor Peter Wilson, former Professor of Agriculture and Rural Economy at the University of Edinburgh, who had a pivotal role in the emergence of ECRR in 1989 as an outward-looking voluntary association of science-based organisations linked by an involvement in one or more aspects of 'rural research'.

Open to all and free to attend. Tickets can be obtained from the RSE, or from the ECRR Secretary [email: m.talbot@bioss.ac.uk] until 31 January 2008. This is a joint lecture with the RSE and the Institute of Biology

ECRR Member Organisations

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College of Medicine & Veterinary Medicine	
College of Humanities & Social Science	
Scottish Agricultural College	www.sac.ac.uk
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Moredun Research Institute	www.mri.sari.ac.uk
Forest Research, Northern Research Station	www.forestresearch.gov.uk
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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
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
Scottish Agricultural Science Agency	www.sasa.gov.uk
Scottish Crop Research Institute	www.scri.sari.ac.uk
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CONTACTING ECRR

Scientific Director:	Dr Chris Browitt	Email: cbrowitt@staffmail.ed.ac.uk
Secretary/Treasurer	Mike Talbot	Email: m.talbot@bioss.ac.uk
Bush Telegraph Editor	Mike Steele	Email: mike.steele@sac.ac.uk

ECRR, University of Edinburgh, Room 3618, JCMB, King's Buildings, Edinburgh EH9 3JZ
Tel: 0131 650 4890 Fax: 0131 650 4901

FUTURE ISSUES

Contributions to the Bush Telegraph are welcomed. All contributions, comments and suggestions can be emailed to Mike Steele at mike.steele@sac.ac.uk.

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ON THE WEB

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COPY DEADLINE

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