

# Bush Telegraph

The House Magazine of the Edinburgh Centre for Rural Research

## PROTECTING OUR PRECIOUS WORLD

There is a strong international dimension to the work of most ECRR member organisations but the Royal Botanic Gardens Edinburgh has possibly the longest and best-established histories of working abroad. A recent example of RBGE's work overseas is in helping to create the Lijiang Botanic Garden and Field Station in southwest China.

The flora of China is exceptionally rich and includes 32,000 species (Scotland has a mere 1,200 species), about 12% of all those known on Earth. Over 6,000 are used in traditional medicine and many more are important in agriculture and horticulture.

The Lijiang project capitalises on the experience and expertise of the RBGE both in the cultivation of plants from SW China and their reintroduction into the wild.

During a five-day visit to China in October 2004, First Minister Jack McConnell paid tribute to the joint Scottish and Chinese initiative at Lijiang. He underscored Scottish Executive support of the project by announcing a £60,000 funding package, which will both facilitate research trips to Edinburgh for Chinese botanists and horticulturalists and an ambitious programme of Jade Dragon Seminars.

Designating Lijiang the UK's first Joint Scientific Laboratory in China, Mr McConnell also paved the way for extended research exchanges and an exploratory expedition in the country's remote Yunnan Province.

Speaking at a reception in the British Embassy, Beijing, attended by Regius Keeper, Professor Stephen Blackmore and Deputy Director of Horticulture, David Paterson, the Project Manager at Lijiang, Mr McConnell commented: "The RBGE is one of Europe's most important scientific institutions and we are very proud of it. I am particularly proud of the work that it is carrying out in partnership with the Chinese people. The Lijiang Field Station sits at the centre of one of the world's most important sites for plant life. Scottish scientists are helping China protect its unique environment for the benefit of future generations".

Welcoming the news, Professor Blackmore said: "At the heart of initiatives like the Lijiang Project is the biodiversity crisis and the need to stem the destruction of fragile plant habitats globally. In declaring Lijiang the UK's first Joint Scientific Laboratory in China, the First Minister is providing official recognition of the crucial nature of this externally funded conservation venture and opening the door to new opportunities in developing and diversifying the critical work being undertaken on Jade Dragon Snow Mountain".



RBGE Regius Keeper Stephen Blackmore, First Minister Jack McConnell and Yunnan Government representative Qian Heng Yi (Scottish Executive)



The field station at Lijiang (RBGE)

# University of Stirling Institute of Aquaculture



Dr Gordon Bell & Dr Douglas Tocher

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## Nutritious and Safe Aquaculture Production

Since the inception of intensive aquaculture in Scotland, over 30 years ago, the industry has developed into one of the most successful food exporters in the country. From the outset, aquaculture relied on the use of fishmeals and oils to provide the raw materials for commercial aquafeeds. This practise was sound both scientifically and economically as, in nature, fish tend to eat other fish and these raw materials were plentiful and cheap. However, in recent times the feed grade fisheries, catching small bony fish species not favoured for human consumption, have reached their sustainable limits and so alternative raw materials are required if aquaculture is to continue to expand in a sustainable fashion. While fish is rightly considered as having significant health benefits, due to the high levels of n-3 or Omega-3 essential fatty acids they contain, recent reports regarding the levels of environmental pollutants in farmed fish have tended to detract from its healthy image. The Omega-3 highly unsaturated fatty acids (HUFA) eicosapentaenoic (20:5n-3; EPA) and docosahexaenoic acid (22:6n-3; DHA), found almost uniquely in fish, are vital for normal cellular structure and function in mammals, as well as fish. EPA and DHA have established beneficial effects in cardiovascular, inflammatory and neurodegenerative disorders. Over the past 5 years, considerable research by the Nutrition Group at the Institute of Aquaculture has been conducted with the aim of developing new sustainable aquafeed formulations that preserve the health benefits of farmed fish yet reduce the potential negative impact of environmental contaminants.

The Lipid Nutrition Group at the Institute of Aquaculture is currently coordinating a major EU Framework V programme "Researching Alternatives to Fish Oil in Aquaculture (RAFOA)". This study involves research groups from Scotland, Norway, France and Spain investigating FO replacement in the four main European aquaculture species namely, Atlantic salmon, rainbow trout, sea bass and sea bream. The feeding trials with salmon, conducted in Scotland and Norway, utilised diets in which the added fish oil (FO) was replaced with either 75 or 100% of a vegetable oil (VO) blend over the whole life cycle from first feeding to harvest at 2.5-3kg. The data from these trials showed that FO can be largely replaced by VO without any loss of growth performance or in the perception of flavour and eating quality of farmed salmon. However, what are the consequences of diets containing VO for the delivery of healthy Omega-3 HUFA by farmed salmon? The International Society for the Study of Fatty Acids and Lipids (ISSFAL; [www.issfal.org](http://www.issfal.org)) recently issued guidelines for recommended EPA + DHA intake of 0.5 g/day (3.5 g/week) in order to maintain cardiac health in adults. A standard 140 g portion, as described by the UK Food Standards Agency (FSA; [www.food.gov.uk](http://www.food.gov.uk)), would provide 2.9 g of EPA + DHA from a salmon grown on the FO diet, or 1.7 g EPA + DHA from a salmon grown on 75% VO. However, the levels of EPA and DHA in fish fed 75% VO can be restored to those in salmon fed FO by careful selection of dietary FO for inclusion in finishing diets fed for 16-20 weeks prior to harvest. The FSA, having recently re-evaluated the benefits and risks of consuming oily fish, has recommended consumption of at least one portion of oily fish, such as salmon, and one portion of lean fish, such as cod, every week. Consumption of 140 g each of farmed salmon and farmed cod per week provides 3.6 g of EPA + DHA which complies with the ISSFAL guideline.

However, while the FSA recommends a maximum intake of four portions of oily

fish per week for adults, the intake for pregnant women and young children is only two portions of oily fish per week. This advice is based on the levels of organic pollutants, principally dioxins and PCBs, in farmed and wild fish. To assess the effects diets based on FO or VO on the accumulation of dioxins and dioxin-like PCBs (DL-PCBs) in farmed salmon, the Nutrition Group conducted a trial funded by the NERC-LINK Aquaculture programme (Project SAL038) and stakeholders in the salmon industry. As all dioxins and PCBs are not similarly toxic dioxin and DL-PCB concentrations are quoted as ng WHO toxic equivalent values (ng TEQ)/kg. The accumulation of dioxins in salmon is correlated to dietary concentrations and the highest value seen in fish fed FO was 0.53 ng TEQ/kg, while the value VO fish was 0.14 ng TEQ/kg. Feeding a FO finishing diet for a further 24 weeks, to restore EPA and DHA levels, only increased flesh dioxin concentrations to 0.54 ng TEQ/kg, in fish fed FO, and to 0.20 ng TEQ/kg in fish fed VO. The EU maximum limit value for dioxins in fish is 4.0 ng TEQ/kg and all values measured in this trial were well within this limit.

Future studies should investigate the use of different VO and FO blends as a means of optimising farmed fish for human health in terms of Omega-3 fatty acids and reduced organic contaminants. To reach this goal, technological advances producing clean, contaminant-free fish oils, will be vital. However, these goals are realistic and, once achieved, will eliminate current fears in recommending increased farmed fish consumption.



# Scottish Crop Research Institute

Scottish Crop  
Research Institute



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## Professor John Hillman to retire

After 19 years as Director, Professor John Hillman is to retire from the Scottish Crop Research Institute on 31st March 2005.

Professor Hillman's expertise in many areas has been sought by scientists, politicians, civil servants, farmers, industrialists and the general public in the UK and overseas. He has served on government advisory bodies such as the UK Foresight Programme and the House of Lords Rural Economy Group as well as advising the Scottish Executive and European Presidencies. He has steered SCRI through countless reviews. Recent awards include Royal Caledonian Horticultural Society's Scottish Horticultural Medal (2003). His annual summary of global agricultural affairs in the SCRI Annual Report has informed its many readers. Recently, as word has got round that he is retiring, he has featured on many platforms. He will be delivering a farewell lecture on March 21st 2005, 2pm, at the Bonar Hall, University of Dundee. The following is the synopsis of one of his recent lectures.



Professor John Hillman

## Science and Agriculture in Modern Scotland

Scotland's achievements in agriculture and horticulture over the past 200 years have echoed around the world, as new types of science, engineering, and technology were introduced to enhance the competitive position of a once-dominant industry. Improved cultivars and livestock breeds, automation, specialist growers and livestock producers, dedicated university departments and research institutes, quality assurance and virus-testing schemes, industrial processing of plant products, sophisticated supply networks, plus a robust regulatory environment associated with a dedicated supportive government department, provided exemplary agricultural systems for other countries. As Scotland's economy expanded and diversified, the relative importance, costs and benefits of agriculture declined.

Scottish agriculture is undergoing profound change as a result of (i) new legislative impositions and modified subsidy arrangements applied unequally

throughout the EU leading to further distortion of the market place; (ii) increased efficiency of agricultural and horticultural production; (iii) a shrinking workforce; (iv) greater levels of competition; (v) the development and influence of supermarkets; (vi) distance from rapidly growing markets; (vii) changing purchasing preferences; (viii) diminished political influence and lack of positive public profile; and (ix) reduced access to competitively valuable intellectual property. Creation of a modern and prosperous agricultural industry is dependent on the degree to which (i) it will be permitted to function as a wealth-creating industry, (ii) attract new entrants and inward investments, (iii) develop the necessary scale of operation to have 'market-muscle' through horizontal and vertical integration; (iv) continue to improve efficiency; and (v) embrace new types of science, engineering, and technology.

Given the variability in operating the emerging Common Agricultural Policy throughout the Member States, global competition, and the massive declines in the EU plant-breeding and agricultural-

chemistry industries, profitability will be difficult to achieve for livestock producers and all but the most efficient cereal producers unless niche markets are captured. Rescue for the inefficient will come through tourism, a complex of well-meaning but sometimes ill-considered publicly-funded environmental schemes, or through alternative activities. New uses and markets for existing crops, new crops and crop products, new types of automation, and a stunning array of new technologies are offering major opportunities for the industry and for users of its products and services elsewhere in the world. A profound change in the agriculturally relevant research environment of Scotland arising from the switch from science-led to policy-led research, could - if not properly managed - impact adversely on the flows and uptake of agriculturally relevant intellectual property, restricting Scotland's role in a global knowledge-based bio-economy based on renewable resources, and consequently diminishing Scotland's involvement in developing the tools to address issues such as the impacts of climate change, improving diets, and revitalising the rural economy.



# Forest Research Northern Research Station

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## New organisational structure

Forest Research underwent an internal reorganisation in July 2004. The changes resulted in the forming of 5 Science Divisions plus a Technical Services Unit. Two of the Heads of the Science Divisions plus the Head of the TSU are based at Northern Research Station and 3 are based at the Alice Holt Research Station in Surrey.

- Head of Ecology Division  
**Dr Chris Quine** (Roslin).
- Head of Forest Management Division  
**Mr Bill Mason** (Roslin).
- Head of Technical Support Unit  
**Dr Janet Dutch** (Roslin).
- Head of Biometrics, Surveys & Statistics Division  
**Professor Sam Evans** (Surrey)
- Head of Environmental & Human Sciences Division  
**Dr Andy Moffat** (Surrey)
- Head of Tree Health Division  
**Dr Hugh Evans** (Surrey).

Professor Jim Lynch, Chief Executive of Forest Research recently received the title of Distinguished Professor at a ceremony at the University of Surrey.

## Fighting *Rhododendron ponticum*

Colin Edwards, of Forest Management Division, has successfully trialled a stem injection control method in Western Scotland and Wales, which is being hailed as a breakthrough in the control of one of Britain's most invasive alien plants, hybrid *Rhododendron ponticum*.

## Awards/Achievements

Forest Research has been short-listed for an award by the National Council for Work Experience. The Council awards aim to recognise, encourage and reward organisations that provide work experience for higher education students and display good practice in work experience.

An excavator bucket designed by Steve Morgan, of Ae's Technical Development team, is one of 28 innovations which have been short listed for the IdeasUK Annual Conference this November.

## Lowland habitat networks

Jonathan Humphrey and colleagues (including Scottish Agricultural College) have won a contract to review the potential for lowland habitat networks for Scottish Natural Heritage.

## *Phytophthora* update

*Phytophthora* are destructive parasitic fungi causing brown rot in plants. There are currently two *Phytophthora* species causing concern over their possible impact on trees in Britain. *Phytophthora ramorum* has caused extensive damage to trees and native plants in parts of the USA and has also been found on plants and shrubs in a number of European countries. The first case on a tree in Britain, a Southern Red Oak in Sussex, was confirmed in November 2003 and further cases were confirmed weeks later in trees in the south west of England. *Phytophthora kernovii* is a more recent discovery. So far it has only been found in Britain and only in a very few cases on trees. It has been found to cause damage to a number of trees species including beech and English oak.

Extensive surveys have been carried out by FR staff. Minimal damage has been detected to date, but work is continuing.

## IUFRO – Edinburgh 2005

Forest Research is hosting an International Union of Forest Research Organisation (IUFRO) Conference in April 2005 in Pollock Hall, Edinburgh University, entitled "Sustainable Forestry in Theory & Practice".

Following the Earth Summit in Rio de Janeiro, Brazil in 1992, forest management and forest research organisations around the world have been developing and testing new approaches to deliver sustainable forest management in three areas: timber production, environmental and ecosystem management, and social forestry. The subsequent emergence of major international initiatives such as the Montreal Process and the Helsinki Accords and the growing importance accorded to forest certification programs in many countries around the world, attest to international recognition of the importance of sustainable forestry both within the forest sector and for the general public.

The goal of this conference is to demonstrate how scientific knowledge has evolved in recent years to address the challenges posed by sustainable forestry. More details of the conference can be seen on our web page at [www.iufro-edinburgh.org.uk](http://www.iufro-edinburgh.org.uk)

## Tree biomechanics

Alexis Achim, Stephane Berthier and Shaun Mochan (all Forest Management Division) recently spent a week in Isernia in Italy, collaborating with Monica DeIoanni of Molise University on tree biomechanics field work, funded by the British Council.

## WEB Site Development

A new Forest Research web site has been developed – find out more about our activities at [www.forestresearch.gov.uk](http://www.forestresearch.gov.uk).

# Edinburgh Centre for Tropical Forests



Stefanie Halfmann

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ECTF is a high profile partnership of five organisations based in Edinburgh:

- Centre for Ecology & Hydrology
- Forestry Commission
- LTS International
- Royal Botanic Gardens Edinburgh
- The University of Edinburgh.

ECTF is run by a Management Committee with representatives from each partner organisation. ECTF operates in a flexible way with one or more of its constituent organisations acting in concert as appropriate for a particular contract. We also collaborate with other non-member organisations and consultants in situations where external expertise is required.

In June 2004, Julia Wilson (CEH) took up post as the new Chairperson of the Management Committee (MC). Kirsti Thornber will be back as the LTS representative on the MC from December 2004. Stefanie Halfmann has taken over from Sadie Watson in November as the ECTF Co-ordinator and will be working from LTS on a part-time basis.

Please contact Stefanie (email above) if you would like to receive further information about ECTF. If you have recently joined one of the ECTF member organisations, please let Stefanie know if you would like to be included in the ECTF mailing list.

## Darwin Initiative

Since 1992, the Darwin Initiative (<http://www.darwin.gov.uk>), a small grants programme funded by DEFRA, has assisted developing countries that are rich in biodiversity but poor in financial resource to fulfil their commitments under the Convention on Biological Diversity (CBD). So far, over 350 projects have been funded by DEFRA.

ECTF supports DEFRA in monitoring and evaluating the progress of Darwin projects and the Initiative as a whole, to assess whether the Initiative is: a) achieving its objective and meeting its key criteria; b) having a lasting impact and legacy on biodiversity in host countries and helping them to meet their obligations under the CBD; and c) representing value for money. ECTF is now in the second year of its three-year M&E contract, and also continues to manage the Darwin website and the application process for Darwin projects.

A major focus of our M&E programme is the review of Darwin project annual and final reports. We receive and assess an average of 100 project reports each year, with all ECTF member organisations, several associates and some independent groups being involved in carrying out reviews. New groups have been brought on board, complementing existing ECTF expertise, such as BMT Cordah (based at the Pentlands Science Park), and the Royal Zoological Society of Scotland (RZSS, who manage the Edinburgh Zoo).

ECTF also carried out three in-country mid term reviews (MTRs) in 2004, on selected Darwin projects in Tanzania, Chile and Kenya, to assess progress and provide guidance on project implementation where required. We received very positive

feedback from project teams on the usefulness of these visits and the input provided by our reviewers. MTR candidate projects for 2005 have now been selected, with one review in Colombia currently being underway, and the other two planned for early 2005 (in Brazil and Fiji). Bhutan Medicinal Plants Project

ECTF has been awarded a contract to provide Technical Assistance for a four-year EuropeAid funded project whose aim is to enhance the availability of high quality medicinal plant products and traditional medicines for both export and the internal consumption in Bhutan. The partners in this project are the Royal Botanic Gardens Edinburgh, University of Edinburgh, University of Strathclyde, and LTS.

## Developing collaborative proposals

We organised a training workshop in June 2004 at Forestry Research (Northern Research Station), with the aim to build skills amongst members in putting together collaborative bids. Focus of the workshop was on sharing members' recent experiences and identifying lessons learned from planning, writing, and the evaluation of collaborative proposals.

## Project development fund

ECTF supports members wishing to develop ideas for collaborative projects through its Project Development fund. These funds are available for members who would like to put together a funding proposal, do a scoping study or develop a collaborative piece of work. Contact Stefanie with your ideas and she will help you to access the fund.

## ECRR Scientific Director's Notes

The ECRR Board, at its AGM on 4 November, ratified our new name as the Edinburgh Consortium for Rural Research, which was overwhelmingly supported through a referendum of members earlier in the year.

To complement our publicity material that is embodied in the "new-look" Bush Telegraph and the new flier, an ECRR PowerPoint presentation is in preparation. It will be 'topped and tailed' with general information about ECRR, and have a core of images supplied by members. It is anticipated that ECRR will hold a significant number of these images for the core team and members to pick from in order to customise the presentation for any occasion. We see this as a potentially valuable tool as we move to greater connectivity in our science, and to a greater demand for institutional linkages

by the Scottish Executive and funding agencies. Draft material and many images already contributed by members, can be made available now should there be an immediate requirement. When the presentation is more complete it will become available on a CD. In the meantime, please email me.

The proposal to hold a meeting of the Scottish Science Advisory Committee meeting at an ECRR location during 2004 has now been postponed until June 2005. We will be seeking a host organisation in the New Year.

The **Earth Observation Forum**, to be held at SNH Battleby on 11 May 2005, will review present capabilities in the use of satellite and airborne EO in pursuit of our research and applied goals. A horizon-scanning introduction by the

European Space Agency will reveal future potential, with current practice presented by invited speakers under the themes: Climate Change, Forest and Landscapes, Food Security and Crop Monitoring, Health, Hazards. This one-day event is sponsored by ECRR, the Edinburgh Earth Observatory (EEO), the Aberdeen Research Centre (ARC) and SNH.

In addition to these firm events, the ECRR Executive is exploring the potential for two half-day seminars or workshops covering ECRR activities related to developing countries, and in the social and human aspects of science integration. Provisional dates are early June and early September, respectively.

**Chris Browitt**  
ECRR Scientific Director  
December 2004

### Annual ECRR Peter Wilson Lecture 2005

**Professor Ian Wilmut,**  
OBE FRS FRSE  
Roslin Institute

25 February 2005  
17.30 hours  
at

Royal Society of Edinburgh  
George Street  
Edinburgh

#### *To clone or not to clone?*

*Biological research has revolutionised agriculture and medicine and still has more to offer. The production of offspring by transfer of the nucleus from a somatic cell of an adult to an enucleated secondary oocyte created significant new opportunities. Somatic cell cloning helped to show that mammalian development is far more plastic than had been imagined. Present methods of nuclear transfer are very inefficient. Improvements will depend upon understanding the molecular mechanisms involved and developing intervention techniques. During this research period, each society should seek to make informed judgements as to which applications are acceptable.*



Professor Ian Wilmut and Dolly

Owing to the worldwide profile enjoyed by Ian and the Roslin Institute, we anticipate a high demand for tickets which can be sought from the Royal Society of Edinburgh and from the ECRR Secretary, Mike Talbot.

## In Brief . . .

### Scottish Science Advisory Committee

The SSAC, which advises Scottish Executive Ministers on strategic scientific issues, has recently published two reports [<http://www.scottishscience.org>].:

*Investing in Scientific Talent:* The recommendations are aimed at creating an environment that will "attract, retain and develop the very best, internationally competitive scientists and technologists, who will be magnets for the growth of clusters of international scientific excellence."

*Knowledge transfer: Science to Scottish business:* The SSAC believes there is a need to create discussion between the key stakeholders, in which the role of the science base in knowledge transfer can be examined in relation to the range and effectiveness of initiatives that are underway in Scotland and elsewhere.

### Elusive plants in focus

The fascinating – and often intrepid – work of a botanical photographer is the focus of attention in *A Life Behind the Lens*, a "best of" compilation of shots from Sidney J Clarke's 15-year career as principal photographer at the Royal Botanic Garden Edinburgh, which runs in the Garden's Exhibition Hall, from 27 November until 23 January.

Clarke worked closely with botanists and travelled several hundreds of thousands of miles to capture a diverse range of plants in their wild habitats, with much of his photography providing records crucial to research and conservation work. *A Life Behind the Lens* encapsulates that multiplicity, with images ranging from rare mosses surviving Scotland's windswept terrain to delicate Alpine flowers clinging on to cliff faces – with Clarke often requiring either remarkable logistical planning or painstaking patience to attain the desired shot.

### Heriot Watt student tricks bacteria

A Heriot-Watt student may have discovered a way to beat deadly bacterial infections – such as the MRSA superbug – using a slime. Charlotte Hamilton believes she has found a way to trick bacteria resistant to antibiotics into weakening their first line of defence. She was studying a protective slime surrounding bacteria, known as biofilm, which prevents antibiotics from reaching the organism. Her studies are part of an on-going research project at the laboratories of Dr Grant Burgess.

Despite working on a budget of just £100, Charlotte discovered that bacteria are able to release compounds, which disperse the slime of rival bacteria.

### Business development initiative

Funding has been provided by Scottish Enterprise and the University of Edinburgh to launch a new business development initiative: GTI – Business Connections. The aim is to maximise the economic impact of the post-genomic revolution in Scotland, directly linking academic innovation with business enterprise. The project will be led by GTI's newly appointed Business Development Manager, Deborah Spencer, previously the coordinator of BioDundee, Dundee's life sciences network. To find out more, view <http://www.gti.ed.ac.uk>.

### Pay-off for spin-off

ARDANA, a 'spin-off' from ECRR member, the MRC Human Reproductive Sciences Unit, was awarded the title of Biotech firm of the year for the second year running at the Deloitte Fast 50 awards. The Edinburgh-based pharmaceutical company discovers, develops and markets products to promote better reproductive health.



*A lone desert rose (Adenium obesum subsp. sokotranum) in the windswept, parched landscape of a plateau in the Socotra Archipelago in the Arabian Sea. This endemic plant has developed a swollen trunk to store water. [Credit: Diccon Alexander]*

For more information on the photographer and his exhibition, or for images, please contact Shauna Hay on 0131 248 2900 or Ellie Cooper on 0131 248 2991.

# 'Eureka' moments not on the agenda

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*[Editor's note: The following is the text of an article published in The Scotsman Newspaper and reproduced here by kind permission]*

Good farmers and good research workers have one thing in common - there is seldom a "Eureka!" in their working lives. For both, it is more a case of consistent, steady, effort to prise out results.

Professor Julie Fitzpatrick, director of Moredun Research Institute since June, accepts that.

It doesn't stop her being as big a scientific research enthusiast as her immediate predecessor, Quintin McKellar, or Moredun stalwarts such as Willie Donachie and Hugh Reid. Their work, and that of dozens of others, have kept Moredun a world leader in sheep disease research since it was founded in the early years of last century.



Professor Julie Fitzpatrick

The institute also has what she considers a unique two-way link with a membership of several thousand farmers. Two of the most prominent ones - John Ross, former NFU Scotland president, and John Jeffrey, Scottish rugby's "White Shark" - recently became chairmen of the Moredun Foundation and Moredun Research respectively.

Directing a multi-million pound world leader in animal research was not what she had in mind when she graduated from Glasgow 23 years ago. But she sees her first five years as a farm vet as invaluable. She found she could talk easily to farmers, find out what they thought and how they related to their stock.

She then did a PhD and returned to Glasgow Veterinary School, specialising in mastitis in cattle. From a professorship there, she succeeded McKellar this year.

"Moredun just has such an international reputation for animal science. We're a medium sized rather than big centre - but our impact outweighs our size." That, she said, is due to the work and reputation of Moredun's scientists and the fact that so much of that work has practical effects on farms. "Our work doesn't stay in the lab - it's molecular science that ends up in practice in the field. Staff here have always had a good relationship with farmers. If you don't speak to the end users you can easily go in the wrong direction.

"What we hear from them, through meetings and the questionnaire on sheep ailments sent out recently, keeps us focused. Not just on what is a problem now, but looking five or ten years down the line."

In turn, that encourages the big players in farm pharmaceuticals to keep close contact with Moredun. Half of the institute's funding is directly from the Scottish Executive's environment and rural development department, the other half from commercial contracts.

But Moredun is not alone. She believes that the decision of the then chairman and directors in the mid-1990s to move the institute from Edinburgh to the Pentlands Science Park was a master-stroke. "It would not have been possible now. But we own the site and the buildings and we're at the epicentre of animal bioscience work, close to the Royal (Dick) Vet School, the SAC, Roslin."

Links with these, and others including several universities, are getting closer. The Scottish Executive is encouraging that - see last week's revelation that the SAC and three research institutes, including Moredun, are considering forming a federal organisation with a £28 million research budget - and she thinks it is a good idea.

She said that overlapping research work was not one of the reasons for developing closer links. "We already talk a lot and have links. If you do that, you don't get research overlap. SAC focus on some things, we focus on others. What working more closely together could do is cut costs."

She does have concerns. One is that research workers are relatively poorly paid and short-term research projects are no way to attract senior staff. There could also be, as the British Veterinary Association has been predicting, a shortage of on-farm vets. That, she said, could affect government's strategy for better animal health. "Surveillance is a vital part of animal health and most farmers in my experience are good at spotting problems. But it's a brave government that would rely on that without vets."

Another concern is that research into exotic diseases, such as foot-and-mouth, and zoonotics, such as E coli and salmonella, are, rightly, well funded. But that leaves a hole in funding for endemic, every-day, ailments which matter most at farm level: "If you could ask the animals they would say what about their sore foot, pneumonia or mastitis."

Moredun has big role to play in the long term: "I wish we were in the 'Eureka!' business. But research isn't like that. As a practising vet I knew that it would be good or bad quickly, but with science it's a slow build up of knowledge." That is why getting that knowledge out to farmers as it develops is important. It will become more important in a future of, she is fairly certain, fewer farmers and fewer vets. It is a challenge. She's taking it in her stride.

# Earth Observation Forum

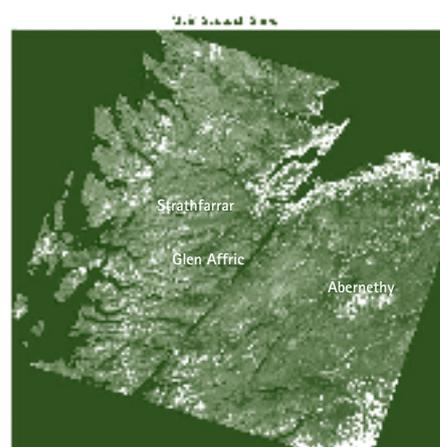
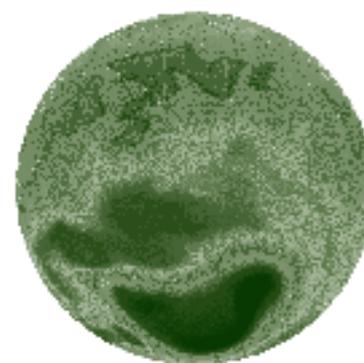
The **Earth Observation Forum**, to be held at the Scottish Natural Heritage's Battleby Conference Centre, near Perth, on 11 May 2005, will review present capabilities in the use of satellite and airborne EO in pursuit of our research and applied goals.

This one-day event is sponsored by ECRR, the Edinburgh Earth Observatory, the Aberdeen Research Consortium, and Scottish Natural Heritage.

If you would like further information about the forum, or to register interest, please contact the ECRR Secretary (email: [m.talbot@bioss.ac.uk](mailto:m.talbot@bioss.ac.uk)).

## Draft Programme:

	Topic	Speaker
08:45	Registration, Welcome and Introduction	Chris Browitt
09:15	Keynote Lecture - Horizon Scanning	TBC
<b>Session 1</b>	<b>Climate change</b>	
10:00	Landcover Map 2000	TBC
10:20	Coastal impacts/Habitat	Alistair Rennie
10:40	Conservation	Clifton Bain/Noranne Ellis
11:00	Coffee/Tea	Juan
<b>Session 2</b>	<b>Forests and Landscapes</b>	
11:20	Forestry applications	Juan Suarez
11:40	Landscape change impacts	David Miller
12:00	Use of RADAR	Iain Woodhouse
12:20	Discussion	
12:40-13:40	Lunch	
<b>Session 3</b>	<b>Food Security/crop monitoring</b>	
13:40	Plant Cover for Deer Management	Duncan Robertson
14:00	Validating Farm Subsidy Payments	Mike Wooding
14:20	Famine Prediction	TBC
<b>Session 4</b>	<b>Health</b>	
14:40	Overview	TBC
15:00	Insect Borne Disease (China)	TBC
15:20	Parasitic Disease Control (Africa)	Eric Le Fevre
15:40	Coffee/Tea	
<b>Session 5</b>	<b>Hazards</b>	
16:00	Ground Movements	Chris Browitt
16:20	Meteorological Impacts	TBC
16:40	Environmental Monitoring in Ayrshire	Martin Smith
17:00	Discussion	
17:30- 18:30	Reception	



ROYAL  
BOTANIC  
GARDEN  
EDINBURGH



## Flora Celtica

Ellie Cooper  
Royal Botanic Garden Edinburgh  
Email: e.cooper@rbge.ac.uk

### Background

William Milliken and Sam Bridgewater, from the Royal Botanic Garden Edinburgh, having spent a lot of time studying plants and their uses overseas (e.g. Brazil, Indonesia, New Guinea) felt that they were ignoring what was going on in their own back yard. They decided to set up an initiative researching and raising awareness of the ongoing relationship between people and plants in Scotland. The project, began in 1999 and its outputs included, among other things, a schools roadshow (still running), a touring exhibition that was on the road for two years, a website ([www.floraceltica.com](http://www.floraceltica.com)) and interpretation in the Scottish Heath Garden at the Botanic. The RBGE were also commissioned by the Scottish Executive to produce a review of the commercial use of native plants in Scotland. This book is the final project output.

*It is a piece of weakness and folly merely to value things because of their distance from the place where we are born: thus men have travelled far enough in the search of foreign plants and animals, and yet continue strangers to those produced in their own natural climate.*

*Martin Martin, 1698. A Late Voyage to St Kilda.*

The material in the book comes from a wide range of sources, from contemporary accounts to obscure texts and research papers. This is not intended as an historical document but rather a living account of the continuously developing relationship between people and plants in Scotland. They went out interviewing in the remotest parts of the country, and received many letters in response to requests for information published in local and national newspapers and magazines. Information on the past use of plants was gathered from a very wide range of accounts and papers including the writings of early travellers and the great Statistical Accounts of Scotland.

They were shown tremendous hospitality and helpfulness during our fieldwork. They employed the technique known as 'snowballing', whereby you turn up in an area with a few key contacts but afterwards rely on being given further leads by the people you're meeting.

*Wild iris at the shore of Culduie*  
Photo: William Milliken

## People & Events

### ECRR DIARY

#### 2005

Feb 25	Annual Lecture	Royal Society of Edinburgh Professor Ian Wilmut, Roslin Institute	17.30
Mar 7	Directors' lunch	RSPB Scotland Host: Dr Jeremy Wilson	12.30
Apr 4	Directors' lunch	Royal Botanic Gardens Edinburgh Host: Professor Stephen Blackmore	12.30
	Main Board meeting	Royal Botanic Gardens Edinburgh	14.00
May 11	Forum: Earth observation	SNH Battleby Centre, near Perth	9.00-18.30
Jun 1	Summer Reception	Edinburgh - Venue TBA	17.30-19.30

## New Director for SCRI

Professor Peter Gregory has been appointed Director of the Scottish Crop Research Institute and will take up post on 1 April 2005 on the retirement of Professor John Hillman.



Professor Peter Gregory

Peter is currently Professor of Soil Science at the University of Reading and was previously Head of Department of Soil Science from 1994 to 1996, Dean of the Faculty of Agriculture and Food from 1996 to 1998 and Pro-Vice-Chancellor, with special responsibility for research activities at The University of Reading from 1998 to 2003.

Following his PhD, Professor Gregory was employed as a soil physicist in a government funded research group at The University of Nottingham investigating the microclimatology of tropical crops. He moved to a lectureship at Reading in 1980 where he taught soil physics and plant/soil interactions and built up a research team investigating root growth and the uptake of water and nutrients by crops. In 1988 he went to CSIRO Division of Plant Industry in Perth, Western Australia, as a visiting scientist, returning there in 1990 for 4 years as a principal research scientist to work on the chemical and physical limitations imposed by soils on crop production. He returned to a professorship at Reading in 1994. Amongst his many international roles he serves as chair of the Global Environmental Change and Food Systems initiative, which is developing strategies to cope with the impacts of global environmental change on food provision.

# ECRR Member Organisations

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

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## FUTURE ISSUES

Contributions to the Bush Telegraph are welcomed. All contributions, comments and suggestions can be emailed to Mike Steele at [m.steele@ed.sac.ac.uk](mailto:m.steele@ed.sac.ac.uk).

## DISTRIBUTION

For queries about Bush Telegraph distribution please contact Mike Talbot at [m.talbot@bioss.ac.uk](mailto:m.talbot@bioss.ac.uk).

## ON THE WEB

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## COPY DEADLINE

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