

BUSH TELEGRAPH

The House Magazine of the Edinburgh Centre for Rural Research

Web Watch ...

ECRR

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

Restructuring at EU

Organisational restructuring plans at Edinburgh University are documented at: www.sec.ed.ac.uk/restructuring

Study in depth

The University Marine Biological Station Millport has set up a joint MS degree course in marine biology with Nova Southern University at Fort Lauderdale.

UMBSM has also recently received an investment of £1.5m to build a new research vessel in support of its work. More details at: www.gla.ac.uk/Acad/Marine

Profiting from Research

Scottish Enterprise encourages scientists to exploit their discoveries. See: www.scottish-enterprise.com/businessdev/innov/research/

Science News

www.newscientist.com
www.nature.com
www.sciencemag.org

Inside ...

Beyond Foot & Mouth

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DEAL

The award winning website from the British Geological Survey
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BIOSS -

More money for research
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Fisher Memorial Lecture

by Dr Oliver Mayo, CSIRO, Australia is on 26 June 2002 at the Royal Society of Edinburgh.
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Restructuring is the name of the game!

at Edinburgh and Heriot Watt Universities
See the implications for IERM, Edinburgh's Engineers Heriot Watts Biologists
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ICMB

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Islands, Islands, Islands!

Collaborative research between ICIT in Orkney and researchers in Crete, The Galapagos and San Andras. The perfect PhD !
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NO 42

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Editorial

I attended my first Directors' lunch on 4 March when Forest Research hosted some 15 hungry participants who talked, ate and then listened to two short presentations on forestry. It was an interesting event and enabled new and old faces to exchange some thoughts. It's this sort of cross discipline interaction that science continues to need if current and future research is to be put into context. Having exponents from different fields asking fundamental questions may make scientists think and justify what they are doing. Good ideas also come from interactions which is what happens in the better coffee rooms of research organisations.

This month Peter Wilson has responded to Michael Usher's article in the December issue of BT. This is most welcome in fostering healthy debate amongst colleagues. If **YOU** have a burning issue you want to raise then the editor would be pleased to provide space to express your views. He, of course, reserves the right to edit all articles!

Did you like the colour of the last edition of the *Bush Telegraph*? Pink!
That's what you get when you don't have a strategy!

Mike Steele
Editor

Correspondents for June please note.

Deadline for copy for next issue is
May 24th 2002
All contributions, comments and
suggestions can now be e-mailed to
M.Steele@ed.sac.ac.uk with copies to
m.talbot@bioss.ac.uk please.

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

RESEARCH FUNDING

The last issue of the *Bush Telegraph* had gone to press before the outcome of the 2001 Research Assessment Exercise was known but its publication had been awaited with varying degrees of anticipation by the university community. The RAE is a national quinquennial review of research performance at faculty and departmental levels that results in a progressive rating on a scale of 1 to 5, with an additional 5* for exceptional performance. The 'reward' for those that do well is, putatively, a larger allocation of research funds from the Scottish Higher Education Funding Council and proportionately less for lower achievers. At present, the indications are that the resources available centrally may be inadequate to meet expectations and that few will gain significantly from the outcome. The actual scale and details of SHEFC funding will not be known until March. It has to be emphasised, however, that SHEFC funding is only part of the research income stream achieved by universities as much effort is also put into securing competitive funding from a range of public and private sector grant-awarding bodies and industrial concerns, effort that generates its own success. Nonetheless, it has to be acknowledged that pursuit of funds to carry out high quality research is an unremitting activity for staff in universities and research institutes.

Nor are the financial pressures exclusively on research funding. Member organisations of ECRR are only too aware of the many factors that impact on their abilities to maintain a vibrancy of structure and output and are addressing the challenges in different ways.

However, it is worth noting that the University of Edinburgh, ECRR's patron, is undergoing significant academic restructuring to strengthen its future position. Further information about the changes being put in place will be reported elsewhere.

POST FMD FORUM

As previously indicated the proceedings and discussions at the Forum last October were reviewed by the Organising Committee and a set

of 12 recommendations produced. They are reproduced in this issue. While there could have been more the number selected was considered commensurate with the nature of the Forum and the topics covered. It was also evident that other reports would focus more sharply on specific issues such as future control measures for FMD and other major livestock diseases. Outcomes from the Forum and its recommendations can be expected but ECRR already has in hand a networking meeting in mid May as a first response to recommendation 12.

Interestingly also ECRR very recently has been approached by Yorkshire Forward, the Yorkshire and Humber Regional Development Agency, inviting tenders for two research projects:

- (1) to establish the impact and effectiveness of Yorkshire Forward's response to foot and mouth disease
- (2) to establish an economic baseline : a set of key measures that can be monitored over time in order to evaluate trends in the Yorkshire and Humber rural economy

The request has been passed on to ECRR's member organisations for their consideration and direct response. It is not clear what prompted the original contact but it may well have been publicity about the Forum or records of it on the ECRR web site but the link has been made.

ECRR ANNUAL LECTURE

The lecture on 15th February was an outstanding success and a genuine 'sell out'. The speaker, Professor Steve Jones, is well known as a first rate scientific communicator and his visit to Edinburgh for the ECRR Lecture was noted by a feature article in the *Observer* on Sunday 3rd February which prompted a keen demand for tickets that already had been widely distributed. In the event, all who attended were accommodated even if on temporary seating. The theme of the lecture 'Is evolution over?' was presented with insight and humour, confirming Professor Jones' ability to captivate his audience. Not to be outdone the *Scotsman* carried a light-hearted piece the following week on the lecture recalling some of the highlights and concluding that the event was "almost as good as a night at the opera". Truly, a night to remember.

RECOMMENDATIONS

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

24/25 October 2002 Edinburgh

The Forum was remarkable for bringing together, into common discussion, many of the industry, policy and research organisations, which are relevant to rural industries. One of the key themes that emerged from the event was the need to enhance mutual awareness, co-operation and promotion of quality practices and products in and from Scotland. The Forum was probably the first time that such a range of the relevant players was together in such a discussion and this was valued by all of those present. This initiative must not be lost.

It is recommended that:

1. Ways are established to enhance co-operation and regular interaction amongst all of the organisations involved with rural industries:
 - SEERAD and other key organisations sponsor an annual cross-sectoral themed event to promote understanding of the interdependence of rural businesses, and the value of co-operation.
 - Scientific centres with cognate skills are encouraged to liaise, amongst themselves and with industry, to generate information of practical national value. In particular, emphasis should be given to the integration of, and improving access to, the valuable geological and other environmental databases that are available in Scotland.
 - Organisations such as ECRR are used to facilitate relevant interactions.
2. Regional authorities establish an inter-agency emergency response plan and arrange regular personal contact between key staff of the agencies, along the lines developed in Dumfries & Galloway.
3. At the national level, the Scottish Executive promotes co-ordination amongst policy, planning and research organisations, both those receiving direct support and those supported through other channels.
4. Current farm-level and national animal health biosecurity practices are reviewed and standards appropriate to Scotland's diverse farming systems should be developed. Agreed standards should be publicised and compliance with these incorporated in quality assurance schemes.
5. The Scottish Parliament and Executive support measures to improve animal health controls at points of import and to rebuild the depleted state veterinary service.
6. In response to trends in the age structure of the Scottish farming population the Scottish Executive explore ways of rejuvenating the industry by encouraging new entrants to farming, as recommended in the report to the European Parliament's Committee on Agriculture and Rural Development (Report A5-0357/2000).
7. More widely, ways are found to encourage entrepreneurial activity in other aspects of the rural economy.
8. Given the diversity amongst Scotland's rural areas - both in terms of natural resources and the basis of local economies - it is increasingly important that regional solutions are developed. Policy instruments need to be adapted as appropriate to deliver different objectives in different parts of the country.

9. Encouragement of a Scottish brand for products is extended to support for activities that sustain the environmental and amenity value of Scotland as a location to attract visitors and industry to rural areas.
10. Ecotourism is encouraged, as it is potentially important to rural Scotland. Investment is required to capitalise on what is, at present, a small niche market, but one that is ripe for further development.
11. The Scottish Executive actively promotes knowledge transfer between R&D and industry consistent with the aims of its Forward Strategy for Agriculture, and avoiding the discontinuities that have been introduced through non-involvement with near-market activities.
12. A forum is established to permit interaction, on a regular basis, between Parliament and Scotland's strong scientific community. The valued contribution of MSPs to the Forum demonstrated the advantages of such interaction in advancing mutual awareness. A regular forum would enable expertise to be more effectively focused on issues of national importance.

**Additional copies of the Recommendations
& Summary Report are available from
Mike Talbot price £10.
m.talbot@bioss.ac.uk**

DEAL - Digital Energy Atlas and Library

Robert Gatliff

BGS, Murchison House, West Mains Road, Edinburgh, EH9 3LA

The British Geological Survey web site DEAL has just won the 2001 Association of Geographic Information annual award for "Best Practise in Central Government", and was short-listed for the Institute of Petroleum annual IT award. DEAL can be found at www.ukdeal.co.uk.

DEAL is a free-to-user web-based service designed to promote and facilitate access to data and information relevant to exploration and production of hydrocarbons on the UKCS. It provides the definitive quality-assured database of key positional data for the UK offshore petroleum industry and an on-line market place where companies can advertise and sell data via the web.

The DEAL project was developed in response to the need, identified by the Oil and Gas Industry Task Force, for easier exchange of information between companies, for a definitive data set and to encourage exploration and exploitation on the UK Continental Shelf. The project is championed by the United Kingdom Offshore Operators Association (UKOOA), via Common Data Access Limited (CDA). BGS was awarded the contract to design and run DEAL in June 2000 and the website was launched in less than three months, in September 2000.

The site provides definitive information on coastlines, licence blocks, well positions, pipelines international boundaries and other infrastructure information. Hydrocarbon companies post information on 2 and 3D seismic data and well data in addition to other subsurface information. Contracting companies, speculative seismic companies and academic organisations have also added data and environmental information is now being added to the database. In particular the site now includes the Seafish dataset which

provides an onboard warning on the bridge of fishing vessels if they are approaching any submarine obstacle such as a well-head or pipeline.

The DEAL site operates on three levels. A basic information service is given by iDEAL which provides the underlying cultural data with general information on seismic, well and other data. The next level is uDEAL which provides detailed information on the nature and extent of the data and then, at a subscriber only level, data can be sold or exchanged on eDEAL.

The site is an innovative blend of new technology based on ESRI ArcIMS and ArcSDE web-based GIS software database, linked to an Oracle relational database. Products associated with spatial data are linked dynamically to vendor repositories on the Internet. Access to DEAL is operating system and browser independent, and is therefore available on everyone's desktop via the Internet.

All of the key suppliers of geological, seismic and well data are now participating in DEAL, which provides a data market place linking users and vendors. Further plans for new information include historical production figures, basic geological and additional environmental information. DEAL also includes the first comprehensive database of well headers and locations, 3D seismic outlines and licence information available for free download. Additional information, including pipeline data, added to the dataset becomes downloadable once quality is assured.

The oil industry user community guides development, which is concentrating on improved data quality, regional geological reports and more downloadable high-quality

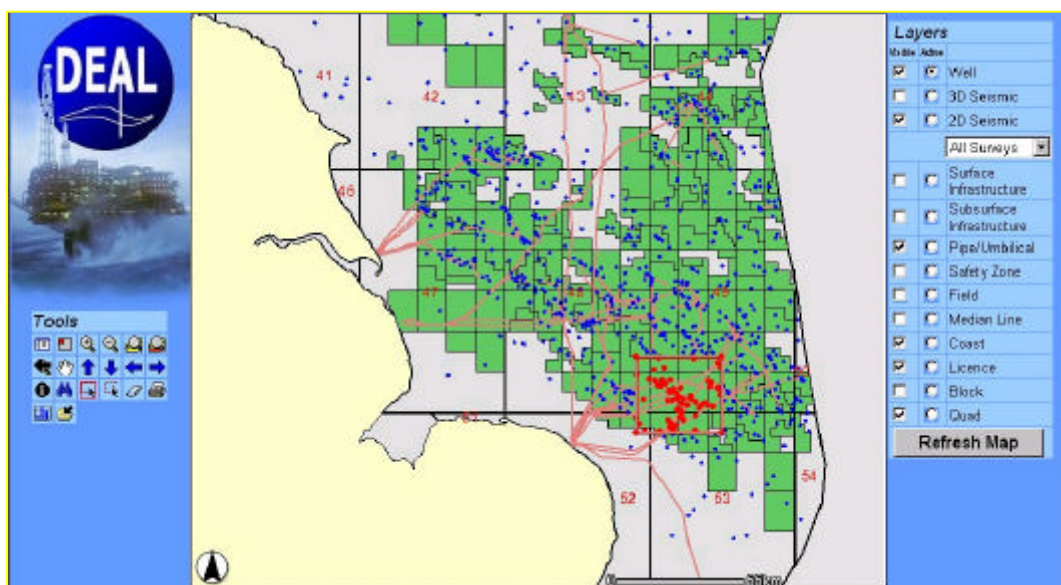
data. There are now more than 70,000 products posted on DEAL and new vendors and products added each month

DEAL won the award for its use of technology and the benefits and savings generated for the oil industry, government and academia. By providing easy access to a reliable and definitive source of public data and data released by the oil industry, savings are made in data management costs, data retrieval costs, and in looking for sources of data for use in new projects. DEAL was

developed for use on the UKCS to boost exploration. It has been immensely successful and now offers a proven system which can be applied, not only to other oil exploration areas, but to any dataset where easy access is required to GIS based information.

The Project Manager is John McInnes, based in BGS Edinburgh, where he is supported by a database team. This works closely with the software development team, lead by Rob Pedley in the BGS Keyworth Office.

A view of the GIS interface showing well locations, fields, 3D seismic survey locations and licensed blocks. The displayed features are listed on the right and tools/functional controls are on the left. An Oracle database of products is linked to items shown on the map. These products may be ordered via direct url or e-mail links to a wide range of vendors.



BIOMATHEMATICS & STATISTICS SCOTLAND

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NEW RESEARCH FUNDING

A competitive review of SEERAD's sponsored bodies has led to BioSS receiving a 20% increase in its core funding from April 2002. The successful bid allows BioSS to develop two new research programmes in bioinformatics and systems modelling. A Bioinformatics Task Force has been established to bring together the work of BioSS researchers, consultants and trainers, and improve the support that can be offered to the SABRI's rapidly expanding genomics programme. Current bioinformatics research in Edinburgh is focused on the development of statistical techniques for analysis of microarrays, work undertaken in close association with the Scottish Centre for Genomic Technology and Informatics. This work will be used in a 5-year, BBSRC-funded study the molecular pathogenesis of sheep scrapie, led by Professor John Hopkins of Edinburgh University, for which BioSS is a funded collaborator. Our new programme in systems modelling is aimed at incorporating variability and uncertainty into existing deterministic models, to provide decision makers with a better indication of the range of possible system outcomes. Probabilistic methods are currently exciting much interest in risk assessment and regulation. Two EU programmes

(<http://www.tchpc.tcd.ie/projects/montecarlo> and <http://www.eupra.com>) are studying how these methods may be utilised for assessing the ecological and human health risks of pesticides. BioSS is also contributing to a Food Standards Agency Working Party reviewing the effects of cumulative and aggregate exposure to pesticides.

NEW APPOINTMENTS

Seven science appointments have been made in the last six months. These include Jill Sales who joined us from Napier University to provide statistical support to Moredun Research Institute and continue a Wellcome project on epidemiology and evolution of *E. coli* O157 infections with CTVM. This project contributes to the newly-formed Edinburgh University Centre for Infectious Diseases. In April, Dr Dirk Husmeier moves to Edinburgh to a senior research post in bioinformatics, while Joanna Wood joins our new programme in risk assessment. Dr Chris Theobald has been appointed to a joint post between BioSS and the Department of Mathematics & Statistics, Edinburgh University, which will strengthen our expertise in Bayesian methods.

XXIVth Fisher Memorial Lecture

R A Fisher (1890-1962) was one of the leading scientists of the 20th century, who laid the foundations of modern statistics and mathematical genetics.

This year's memorial lecture will be held at the **Royal Society of Edinburgh** at 5.30pm on **Wednesday 26 June**. The lecturer will be Dr Oliver Mayo, CSIRO Livestock Industries, Australia, a distinguished geneticist and biometrician who has published widely in the fields of human genetics and animal and plant breeding. Tickets from meetings@royalsoced.org.uk

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Restructuring and the Environmental Agenda

In October 2001 the Principal outlined his plans to restructure the University 'so that Edinburgh can continue to innovate and prosper'. Among the changes, departments as we know them will be abolished and new groupings will emerge. As the University prepares for this process, environmental issues are higher than ever on the political and research agenda. How will this restructuring affect those of us who research and teach in the environmental field, especially colleagues in this Institute?

In recent times the University as a whole has contained great strength in environmental research, although the relevant staff are distributed among many departments, including Geology/Geophysics, Geography, Meteorology, ourselves, parts of Chemistry and Engineering, and others in the Faculty of Social Sciences. Currently, one finds people working on similar or complementary topics in different departments and faculties. Moreover, some of our best students would like to take courses in other parts of the University but are often excluded because of timetable difficulties.

In the restructuring, the University will be organised into three more-or-less autonomous Colleges, one of them being almost identical in its location and staff complement to the existing Faculty of Science & Engineering. The Colleges will contain planning units called Schools, including an (as yet unnamed) environment School. The new environment School will contain about 80 academics, all from Departments and Institutes that were top-rated (5 or 5*) in the recent Research Assessment Exercise. As many as 19 BSc degree programmes are offered by the three 'core' constituent Departments (IERM, Geography, Geology/Geophysics) with an

overall student intake, including Masters students, of about 370 per year. We would initially consolidate and enrich these degree streams, and then introduce others. The aim will be to establish a reputation as the premier environmental school in UK and Europe, and thus attract more students and research activity. It is likely to become a focus in Europe for advanced studies in all aspects of environmental science.

Actually, this restructuring reflects the way in which science has moved, from being discipline-based to problem-based. So a University ought not to be organised in the traditional way, rigidly discipline-wise, but should be fluid enough to draw together teams of people to work on new programmes of research and new course developments. To achieve this, walls of departments or institutes should be abolished, or they should at least be porous.

Of course, all our new structures need to have porous walls, enabling the flow of ideas and people between Schools and the outside world. Connections with our Associated Institutes at Bush and beyond will be very important. We are fortunate to have developed already very strong European connections and coalitions, and many of us work productively with collaborators in far-flung institutions in Asia, Australia and the Americas.

Making an omelette always involves egg-breaking, so there must be a downside somewhere in this plan. Inevitably making new groupings means setting aside existing groupings. Take ecology as an example - does it belong in biology or environmental science? The truth is, it may end up split between two Schools. Nevertheless, the new

structure will enable the ecology degree programmes to continue and develop further. In Edinburgh, ecology was conceived and initiated as a degree programme in 1968, when it was one of the first such degrees in the UK. Others inevitably followed, but the Edinburgh degree has flourished as Ecological Science, producing 50-70 graduates each year. Masters degrees followed. The 'flavour' of ecology here is distinct: not merely curiosity-driven but applied to underpin the management of natural resources, and it has included *inter alia*, forestry and aspects of agriculture, hydrology, wildlife management and nature conservation. Moreover, our students are taught economics, and some become interested in socio-economic aspects. This approach maps well onto the developing research agendas of Research Councils and the European Commission, and fits comfortably into the framework of environmental science.

Can the new structure accommodate the requirements of ecology and ecological research? The answer is 'yes'. One

requirement of the Principal's plan is a common timetable 'throughout the University'. An outsider might find it astonishing that 400 years of evolution have not already achieved this goal. Now it will really happen. Some ecology students will take combinations of subjects that were hitherto impossible. For example, a final-year student might take Ecological Genetics, Environmental Law, and Environmental Chemistry. It will be a step forward indeed, and a new cadre of graduate will emerge. In a similar way, creative coalitions of researchers will develop, as new valences are discovered and developed; and new funding opportunities will consequently be exploited.

When will it happen? Soon. The Principal hopes to have the main structures in place by August 2002, and fully operational by the following year. In an organisation that is not known for rapid evolution, the plan is bold and brave. It will enable us to remain world-standard in research and teaching for years to come.

ROYAL SOCIETY FOR THE PROTECTION OF BIRDS

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Conservation Science at the RSPB

The RSPB prides itself on using the best scientific evidence available to guide its conservation work. Such evidence is essential, for example in deciding which species we need to be most concerned about, developing prescriptions for agri-environment schemes, or guiding the management of our own land. Only by basing our work on the evidence provided by science, can we be certain that our actions will be of benefit to birds and other wildlife.

Science plays a number of distinct roles in bird conservation (see figure 1). Bird population monitoring tells us how many of each bird species there are and whether their populations are rising, falling or stable. This information is then used to set conservation priorities. We then undertake research to attempt to understand the causes of these species' unfavourable status, and to suggest remedial measures. This research may be autecological (focusing on understanding the ecological requirements of individual species) or may examine the effects of particular ecological processes (e.g. agricultural intensification) on wider bird communities.

Once a reasonable understanding of the cause of unfavourable status for a particular species or group of species has been achieved, further research is then often undertaken to test conservation solutions using field experiments. Testing proposed solutions prior to implementing them more widely allows the likelihood of success to be measured in biological, practical and financial terms. Despite this, there are occasions when expediency requires us to omit this step. This is particularly the case, for example, when working on globally threatened species, where implementing our 'best guesses'

broadly and quickly may be critical. We subsequently help to deliver conservation solutions by disseminating the results of our scientific work and suggesting practical remedial measures to our advisory, land management and policy colleagues. These staff carry out a wide variety of conservation action programmes ranging from influencing government policy to management of our own nature reserves. Finally, of course, we continue to monitor to assess whether conservation action has been successful.

We consider that the publication of our scientific research in the peer-reviewed literature is key test of the quality of the science that underlies our conservation action. Recent publications lists can be found on the RSPB web site at www.rspb.org.uk.

The organisation and management of science in RSPB

Most of the scientific work undertaken by RSPB falls to the Conservation Science Department (often also known as the Research Department), although research on management requirements and monitoring responses to management on RSPB nature reserves is undertaken by the Reserves Ecology section of the Conservation Management Department. Both Departments are within the Conservation Division. Frequently, the two teams work closely together. This has been especially the case, for example, where RSPB reserves have been the best locations for undertaking studies of individual species (e.g. bittern and capercaillie), or ecological processes (e.g. depredation).

The Conservation Science Department

The Conservation Science Department is composed of 40-45 established or long-term contract staff. In addition, short-term contract staff carry out much of the fieldwork. The Department is geographically highly disaggregated, reflecting the nature of its work. Although most staff are based at the RSPB UK headquarters in Sandy, others are based at RSPB Scottish Headquarters in Edinburgh, at the RSPB North Wales Office and in the East Anglia and North Scotland Regional Offices. Several field staff are out-posted close to their study sites, sometimes on RSPB nature reserves, and staff working on international projects may be out-posted abroad, for at least part of the year.

Unlike many government agencies or departments, a substantial proportion of the Society's scientific work is undertaken in-house, with most projects managed and executed by RSPB employees. In some circumstances, however, work is undertaken in partnership, with the partner taking the lead. This is the case for much of our monitoring work. Many projects – even those in which RSPB takes the lead – are partnership funded, often with the statutory nature conservation agencies. A proportion of our work is undertaken through sponsorship of PhD students, often as a CASE partner, and we have developed close working relationships with a number of Universities and Colleges, including Cambridge, Edinburgh, Oxford and Stirling. Increasingly we are tendering for research contracted by Government Department (e.g. DEFRA, SEERAD), where their research aims accord with our conservation priorities. Such work is almost invariably carried out in partnership with other members of a research consortium.

News from Scotland

Research

Like many others, our research programme in 2001 was badly affected by the outbreak of Foot and Mouth Disease with most of our field research programmes postponed or cancelled. A listing of research projects being undertaken by Conservation Science staff and

students in Scotland in 2001 and 2002 follows:

- Ecology and demography of capercaillie
- *Tetrao urogallus* at Abernethy Forest
- Taxonomy and ecology of Scottish Crossbills *Loxia scotica*
- Population dynamic of Scots Pine *Pinus sylvestris* in native pinewoods
- The role of fire, grazing and cutting in managing understorey structure and composition in native pinewoods
- Habitat correlates of decline in black grouse *Tetrao tetrix* populations
- Ecology and cause of decline of ring ouzel *Turdus torquatus* populations (PhD).
- Relationships between land-use change and demography of foxes *Vulpes vulpes* in Northern Ireland. (PhD)
- Declines of ground-nesting birds in the Flow Country blanket bogs.
- The effects of moorland grazing management on bird populations at Geltsdale.
- Predicting the abundance of moorland birds from habitat-derived measures of grazing pressure: testing the generality of models across regions and grazing systems.
- Calibrating remote sensing methods of upland habitat assessment.
- Effects of grazing management on upland bird populations: disentangling habitats structure and arthropod food supply at appropriate spatial scales (with MLURI, SAC and CEH Banchory, under contract to SEERAD).
- Determining environmentally sustainable and economically viable grazing systems for the restoration and maintenance of heather moorland in England and Wales. (with ADAS, IGER, SAC, Newcastle University and CEH, under contract to DEFRA).
- Effects of Foot and Mouth Disease on farming practice on the Solway, and the consequences for wintering Barnacle Geese *Branta leucopsis*. (with Wildfowl & Wetlands Trust under contract to SEERAD).

- Testing the effectiveness of agri-environment measures for corn bunting *Miliaria calandra* populations in Scotland.
- Impacts of arable silage management on machair corn bunting populations.
- Trends in breeding wader populations on the Hebridean machair.
- Impacts of predation by introduced hedgehogs *Erinaceus europaeus* on breeding wader populations on the Uists.
- Testing ecological processes linking lowland farming change, invertebrate populations and birds (PhD)
- Habitat management for red-necked phalaropes *Phalaropus lobatus*
- Factors affecting nest success and adult mortality of slavian grebes *Podiceps auritus*

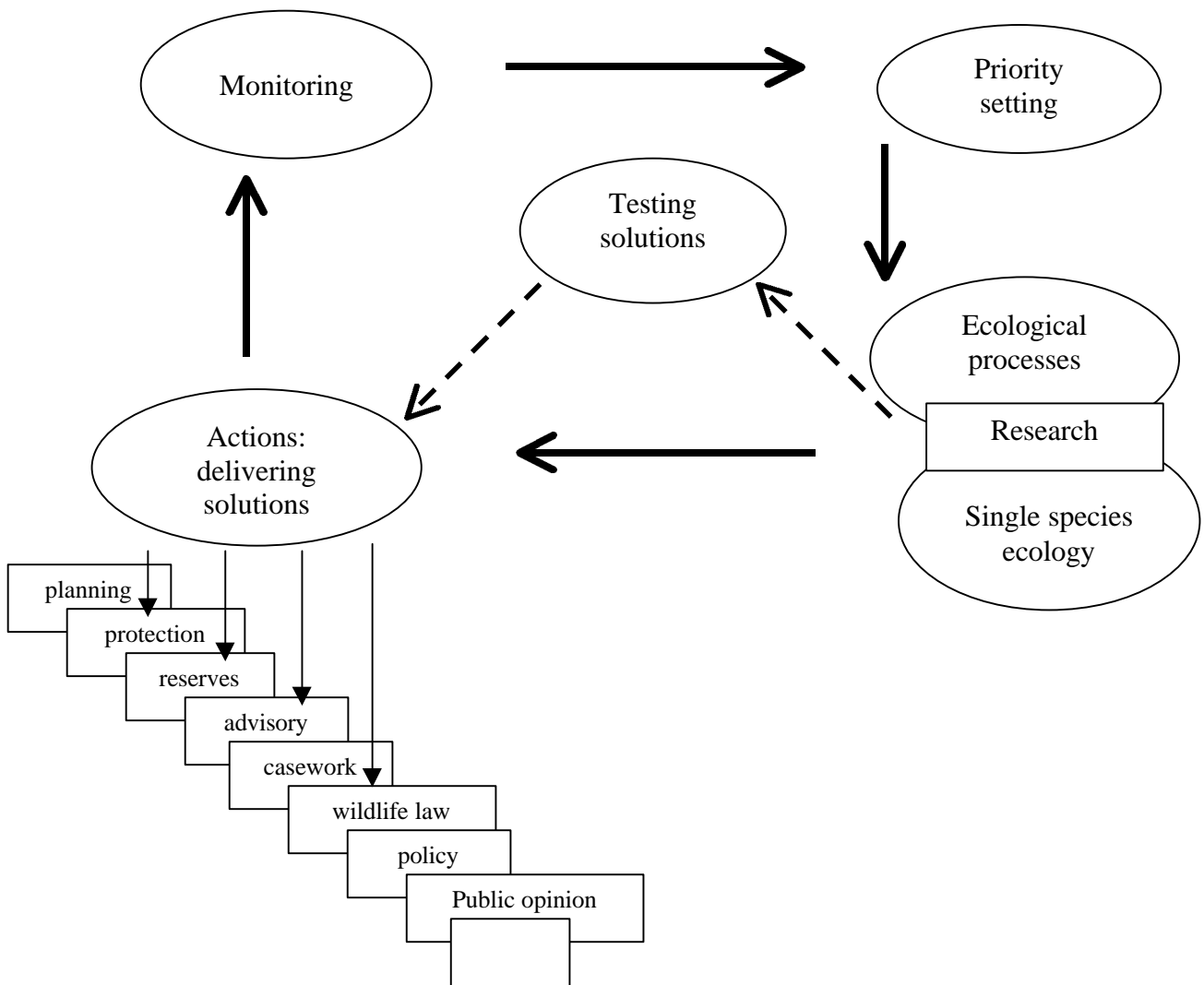
Please contact us for further information about any of these projects.

People

Dr Ian Bainbridge left his post as Head of Research, Scotland in February 2001 to become head of the Ecological Adviser's Unit in SEERAD. Ian's contribution to the research, policy and conservation work of the RSPB was immense and we wish him every success in his new post.

Dr Jeremy Wilson moved from his post as a Senior Research Biologist based at the UK Headquarters at the Lodge, to succeed Ian in May 2001.

Figure 1. Evidence-based conservation; a framework for research at RSPB.



THE UNIVERSITY OF EDINBURGH
School of Engineering and Electronics

Dr George Alder, Head of School of Mechanical Engineering
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The Engineering disciplines at Edinburgh are being reorganised. On 1 August 2002, the School of Engineering and Electronics will come into being, formed from the present Department of Electronics and Electrical Engineering, and the present Schools of Chemical, Civil & Environmental, and Mechanical Engineering. The new School will have 185 salaried staff (70 academic, 70 research and 45 support staff). There will be 840 undergraduate and 105 postgraduate (predominately PhD) students. The current Head of Electronics and Electrical Engineering, Professor Peter Grant, will become Head of School.

The new School gets off to an encouraging start, following recent good reviews of research and teaching. The 2001 RAE outcomes were 5* (Electronics & Electrical), 5 (Civil & Environmental), 4 (Chemical) and 4 (Mechanical). In January, it was learned that the Engineering degree programmes at Edinburgh had achieved the best possible outcomes in the review of teaching by the Quality Assurance Agency which took place in November and December 2001.

The School will be organised around research groupings, with an Engineering and Electronics Teaching Organisation to manage the 30 or so undergraduate degree programmes. Otherwise, academic life will centre on a set of Research Institutes. Details of the Institutes are still being worked out, but there will probably be six, whose provisional titles are listed below along with examples of current work, funded by research grant awards which totalled over £3M in the year 2001:

Digital Communications: personal and mobile communications; radar; remote sensing and control.

Energy Systems: renewables; energy transport and storage; network integration; environmental mitigation; power electronics.

Geo-environmental Management and NDT: environmental modelling; soil-structure interaction; water resources planning; project management; non-destructive testing.

Integrated Micro and Nano Systems: novel devices and processes; micro electro-mechanical systems; system-on-chip devices; neural networks; vision systems.

Materials and Processes: materials under extreme conditions; materials measurement and analysis; sports engineering (including curling!); porous media; biomedical fluid mechanics.

Structures and Fire: structural masonry; silos; combustion; fire modelling.

This institute structure reflects the main areas of active projects. In the future, it is expected that other institutes will evolve as researchers move into new and expanding areas. Three areas where members of the School are already very active, and whose future potential is enormous are: e-engineering (c.f. "e-science"); nanotechnology; and engineering for the life sciences.

Research collaboration with organisations outside the School is of increasing importance. Institute staff are major partners with other departments in the University on initiatives including:

- Centre for Environmental Change and Sustainability
- Centre for Material Science and Engineering
- Centre for Science at Extreme Conditions
- Communication Interface Research Centre

Projects involving other universities include:

- Contaminated Land Assessment and Remediation research Centre (CLARRC)

- Integrated Diagnostics and Environmental Analysis Systems
- Scottish Consortium for Mechanotransduction

Appointments in the School of Engineering and Electronics which have been made so far are:

Head of School: Professor Peter Grant

Director of Research: Professor Chris Hall

Head of Teaching Organisation:

Dr Ewen Macpherson

It is expected that the heads of the research institutes will be appointed by the end of April, 2002.

Institute of Cell and Molecular Biology
University of Edinburgh

Professor Graeme Reid
Head of Institute
Darwin Building, Mayfield Road, Edinburgh EH9 3JR
Tel: 0131 650 5361 email: graeme.reid@ed.ac.uk

Rutherford Refurbishment

Anyone passing the Mayfield Road end of King's Buildings will have noticed that the Daniel Rutherford Building (the former Botany Department) has become a building site and will undergo major refurbishment to produce modern research and teaching facilities. The major funding for this came from a successful JIF bid prepared by our plant scientists and they are looking forward to being re-installed early next year. In the meantime most have taken up residence in the Darwin Building but Nick Read can be found in the Agriculture Building and the electron microscopy facility is now in the Waddington Building. With the developments in the Rutherford Building now underway our eyes are turning to the longer term and how to develop or replace the Darwin Building.

People

We have seen the retirement of four distinguished Professors in the past two years, though they are still to be seen regularly within the Institute. A symposium in recognition of the careers of Noreen Murray, Willie Donachie, Brian Kilbey and Ian Sutherland will be held on 27th May and this will be publicised shortly. The contributions of these senior members of staff to teaching and research will be greatly missed. Noreen's outstanding contributions to science were recognised in the New Year Honours list with the award of a CBE.

Garry Blakely has recently been appointed to a lectureship in Molecular Genetics in the Institute. He has been running his own research programme in ICMB for the past two years supported by a fellowship from the Wellcome Trust. We will also be joined in the summer by Andreas Hofmann who will

take up a lectureship in Structural Biology. This position has been made possible by a major contract with the Dundee-based Biotechnology and Drug Discovery company, Cyclacel, which has been won by Malcolm Walkinshaw, Paul Taylor, Paul Barlow and colleagues from the Department of Chemistry. This exciting collaboration focuses on novel approaches to intelligent drug design based on knowledge of molecular structures. Robin Allshire has been awarded a Wellcome Trust Principal Fellowship and is moving his research group from the Human Genetics unit at the Western General Hospital.

Developments in research

The cell biologists in the Michael Swann Building have been awarded major funding associated with the establishment of the Wellcome Trust Centre for Cell Biology, directed by Adrian Bird. The core funding for the Centre provides several support positions and will allow the development of a major new facility for optical imaging. The Edinburgh Protein Interaction Centre (EPIC) is now up and running and will be formally opened by the Princess Royal on 11th March. EPIC provides a range of equipment for biochemical and biophysical studies of proteins and was funded by a Wellcome Trust JIF award to ICMB, the Chemistry Department and Biomedical Sciences. ICMB is also substantially involved in other major projects with external funding, notably COSMIC (Collaborative Optical Spectroscopy, Micromanipulation and Imaging Centre) and CSEC (the Centre for Science at Extreme Conditions). All of these new facilities are developing science in new directions, particularly at the boundaries of biological and physical sciences.

Developments in teaching

The number of honours students based in ICMB has risen to around 100 this year. The increase is due in part to the transfer of Biochemistry honours teaching from the Medical Faculty but Genetics in particular has seen a substantial increase in student numbers. Bruce Ward has developed plans for a new honours course in Biotechnology to

be introduced in October 2003 and this will replace the current Microbiology honours course. With six different honours courses being taught in ICMB, but with some common areas between them, we are looking for ways to increase efficiency in our teaching. Jean Beggs is coordinating efforts to integrate the courses into a more homogeneous structure.



**Department Of Biological Sciences
HERIOT-WATT UNIVERSITY**

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THE DEPARTMENT OF BIOLOGICAL SCIENCE
BECOMES
A SCHOOL OF LIFE SCIENCES

Heriot-Watt University is currently reorganizing its faculties and academic departments into five new multidisciplinary Schools situated on the Riccarton Campus; the Schools of Life Sciences, Built Environment, Engineering and Physical Sciences, Maths & Computer Science and Management & Languages. There will also be two postgraduate institutes, the Edinburgh Business School and the Institute of Petroleum Engineering. These multi-disciplinary Schools have been designed to provide new, exciting degree programmes and flexible, innovative approaches to research.

The School of Life Sciences, which will operate from August 2002, will encompass the existing Department of Biological Sciences and some staff from the Department of Civil and Offshore Engineering with expertise in environmental science and technology. This will enable us to expand our activities in marine biology, with the inclusion of pollution biology and chemistry, geology and aspects of sustainable technology. A major addition to our facilities and range of activities will be the International Centre for Island Technology based on the University's Orkney Campus. In this issue of *Bush Telegraph*, we have decided to provide a brief description of the activities taking place in this unique field station.



**INTERNATIONAL CENTRE FOR
ISLAND TECHNOLOGY (ICIT)**

In 1989 the ICIT was opened in the Old Academy in Stromness. It has since become established at the forefront of international research on island and coastal management and has championed a number of developments with a “sustainability” theme, ranging from wave and tidal power in Scottish islands to investigations of waste and energy policies. ICIT has worked with the oil industry, for example, on the incorporation of sustainable development into company decision-making.



A winter view of the Orkney Campus

Marine biodiversity and fisheries are major areas of research for the centre's staff, usually as part of a wider research programme on environmental conflicts in remote communities. At the present time an EU fifth framework project is enabling collaborative research between ICIT in Orkney, the Institute of Marine Biology in Crete, the Charles Darwin Research Station in the Galapagos and CORALINA on the San Andres island archipelago. This project is focused on finding means of stakeholder participation in resolving conflicts, particularly with regard to fishing, and is working closely with the stakeholder forums that have been established in these areas. Much of the scientific research on fisheries and marine biodiversity, for example, also involves other stakeholders in addition to the scientific staff working on the project.



The University Hyperbaric Chamber

Staff from these centres have travelled to Orkney and Crete for training, and some students on ICIT's MSc courses in *Marine Resource Management and Environmental Economics, Policy & Risk* have undertaken their dissertation research in Galapagos and San Andres, or in Malaysia where ICIT has been working with the Fisheries Research Institute on the taxonomy of sea cucumbers and management of the local fishery.



A view from Galapagos

ICIT is also very active in Orkney and provides secretariat facilities for Orkney's Marine and Coastal Forum, as well as the Orkney Renewable Energy Forum. The University's diving activities are also located on the Orkney Campus. The diving unit covers professional and recreational training, supports a hyperbaric treatment facility and provides for the University's scientific diving. Orkney research projects include work on the inshore creel fisheries, on environmental, community and economic indicators for sustainable development and research on the Loch of Stenness (a candidate Special Area of Conservation) for Scottish Natural Heritage. Orkney provides a unique living laboratory for the study of sustainability and coastal and marine resource management and one that is highly valued by both staff, and MSc and PhD students. For more information on postgraduate study, ICIT research, and facilities at the Orkney Campus visit our web site (www.icit.demon.co.uk) or contact Professor Jon Side Director of ICIT. (j.c.side@hw.ac.uk)



Sea cucumbers in a Malaysian market

Dear Editor

Research strategy and all that! - the response

The article by Michael Usher in the December and number of Bush Telegraph was interesting and thought-provoking. However, was the author perhaps exaggerating, not from the point of deception but to give greater emphasis to his argument?

Strategies may appear to be unnecessary and no doubt, in many cases, they are not worth the paper they are written on. However, the basic reason for producing a strategy is, as Michael Usher admits, not only sensible but also useful.

Strategies come into their own in times of war, when it was found that the best battle plans needed to be based on a sound strategy, followed up with well thought out tactical 'orders'. With such strategic planning, it is possible for a small army to win against superior odds; without such preparation logistical dominance could be defeated by a more intelligent and properly trained enemy.

After the last World War many barons of industry introduced these concepts into the drawing up of business strategies, often designed to question 'what sort of business are we really in?' The answers were illuminating, often causing business to undertake major changes of direction to keep abreast of developments which had important effects on their operations. For instance, shipping lines were originally developed to transport business people and products across the world's oceans as quickly as possible. With the coming of the aeroplane the whole rationale was changed and many shipping lines went out of business. It was not until the new strategy of aiming primarily at the holiday market rather than the industrial market that the shipping lines of the world once again made money.

Now it is obvious, as Michael clearly states, that strategy itself is no substitute for innovation and ideas. Research directors who think that, having written a sound stretchy, good research will automatically follow will have a rude shock awaiting them! However, there are few research workers, and still fewer research institutions, who can ignore the fact that their work is being paid for by a third party, and they do well to remember the adage that 'he who pays the piper calls the tune'. It is the job of research directors to assist the payer to spell out clearly what tunes he wants played and, if he is clever, he will assist the payer to devise a sensible repertoire. The director must then conduct the music, and ensure that the tune is known, understood and perfectly played by all the members of his team.

We live in an age of greater accountability to the paymaster. The hazy, crazy days of complete academic freedom have long since gone. There are few privileged folk around like Gilbert White, Gregor Mendel or John Lawes who could conduct whatever research they wished with their own money. Whether employed by a University or a Research Institution, the research workers of today rely on public or charitable money or else money received from industry, and all these providers have a right to decide the aim and purpose of the research they are funding.

The most significant quotation in Michael Usher's article is that of the head of the Commonwealth University Department who stated clearly that his strategy was to get as much research money as possible! This makes good sense, but it would be wise to find out exactly what the providers of the research money expect as return on their investment, and then plan a sound internal strategy to achieve this end. If the players are not quite sure what they want, then it is entirely fit and proper for the researcher to make suggestions, skilfully giving the kudos to the organisation providing the money rather than claiming all the credit himself.

Yours truly

Professor Peter N Wilson, CBE, (Professor Emeritus, University of Edinburgh)

People and Events

Professor Willie Donachie, Deputy Director of Moredun Research Institute, has been awarded the Royal Agricultural Society of England award for 2002 for the work of his team in inventing and developing new pasturella vaccines.

Professor Mark Woolhouse of the Centre for Tropical and Veterinary Medicine, was awarded the OBE in the New Year's Honours List for his contribution to fighting the Foot & Mouth outbreak last year.

Professor Noreen Murray of the ICMB was awarded the OBE for her outstanding contribution to science in the New Years Honours List.

ECRR EVENTS 2002

Apr 9	Executive Committee	British Geological Survey, Murchison House, West Mains Road 10.00 Host : Dr Chris Browitt
Apr 16	Directors' Lunch	Centre for Ecology & Hydrology Edinburgh - 12.30 Host: Prof Melvin Cannell
	Main Board Meeting	Centre for Ecology & Hydrology Edinburgh, Bush Estate 14.15
May 14	Summer Meeting	Edinburgh University, John Macintyre Centre, Pollock Halls 17.00
Jun 5	Directors' Lunch	Institute of Aquaculture, University of Stirling Host : Prof Randolph Richards
Oct 7	Directors' Lunch	SAC Animal Biology Division, Bush - 12.30 Host: Prof John Oldham
Nov 4	Directors' Lunch	Institute of Ecology & Resource Management University of Edinburgh 12.30 Hosts: Prof John Grace & Prof Keith Smith
Dec 2	Directors' Lunch (tbc)	MRC Human Reproductive Sciences Unit Little France Host : Prof Robert Millar