scrr
Scottish Consortium for Rural Research

SCRR Newsletter
Issue 90
Spring 2018

www.scrr.ac.uk

PHOTOGRAPH: BO EIDE

Plastic in the marine environment

Prof Stuart Monro, scientific director of SCRR, on a difficult problem of our times

SIR DAVID ATTENBOROUGH'S television series *Blue Planet II* explored the rich diversity of life in the oceans, but also dramatically showed the impact of plastics on the marine environment. The issue involves taking a serious look at how plastics can be used responsibly by society.

In 1907, the Belgian-American chemist Leo Baekeland developed bakelite, used to make products such as radios and telephones. Plastics have since become more sophisticated and are used to protect food on its journey from farm to fork. The challenge facing their use is that these polymers often finally end up in the ocean.

Most importantly, *Blue Planet II* demonstrated the impact on marine organisms. Items like plastic fishing nets and ropes can get entangled around marine mammals, impeding breathing and feeding. These larger items can be seen and are obvious, but smaller pieces of plastic are not so obvious: tiny plastic particles are ingested by a wide variety of organisms and the long-term health implications of this are not yet fully understood. The release of other compounds attached to the polymers may have toxic effects.

Solutions are required, yet food still needs to be protected from contamination. This is an area ripe for innovative thinking. How can we make plastics that can be re-used repeatedly? What foods really need to be protected by plastic packaging? What research is needed to address this issue? The subject of an SCRR seminar, perhaps...

Above: waste plastic collects on a beach

This issue in species

Corsican pine and lodgepole pine can help spread blight to native Scots pines – **page 2**

Whorled Solomon's seal is one of the UK's most endangered plant species – **page 3**

Sitka spruce may become a more valuable forestry crop with genetic improvement – **page 4**

Puffins are now as vulnerable to extinction as giant pandas – **page 8**

Bottlenose dolphins have a stable population of about 200 in the Moray Firth – **page 10**

About SCRR

THE SCOTTISH CONSORTIUM FOR RURAL RESEARCH exists to promote sharing of ideas and techniques among a group of organisations active in research into land, freshwater, coastal and marine resources, and their uses.

Our member organisations have bases throughout Scotland and are at work all over the world: details on the back page.

Members' reports

The University of Edinburgh, SRUC

Blight on Scottish forests

A threat to to native pine from overseas varieties is being assessed by new research at The University of Edinburgh's School of Biological Sciences and Scotland's Rural College (SRUC)

SCIENTISTS FROM Scotland's Rural College (SRUC) and the University of Edinburgh have completed an in-depth study to show how increased numbers of Corsican pine from Europe and lodgepole pine from North America are heightening the risk of disease when planted next to native Scottish pine species.

Plant researcher Peter Hoebe (SRUC) and honorary fellow Richard Ennos (University of Edinburgh) have found the widespread planting of exotic species in dense forests has introduced new races of fungi and raised the threat posed to native Scots pine.

'The widespread planting of Corsican pine and lodgepole pine can place native species at greater risk of disease ... the removal of exotic species and restrictions on the movement of planting material are necessary to minimise its impact'

The scientists studied genes in fungi attacking pine needles from a number of locations, including forests around Aviemore, to determine the diversity and spread of the fungus *Dothistroma septosporum*. This disease is responsible for the current outbreak of dothistroma needle blight (DNB) in native Caledonian Scots pine populations, as well as other species.

Having found that the widespread planting of Corsican pine and lodgepole pine can place native species at greater risk of disease, they have said that the removal of exotic species from the vicinity of Caledonian pine populations and restrictions on the movement of planting material are necessary to minimise its impact.

The project was funded jointly by a grant from BBSRC, Defra, ESRC, the Forestry Commission, NERC and the Scottish Government, PROTREE, under the Tree Health and Plant Biosecurity Initiative.

To read the full report, visit http://onlinelibrary.wiley.com/doi/10.1111/eva.12562/full and for more information, contact tom.maxwell@sruc.ac.uk – 0131 535 4196

To the rescue of one of the UK's rarest plants

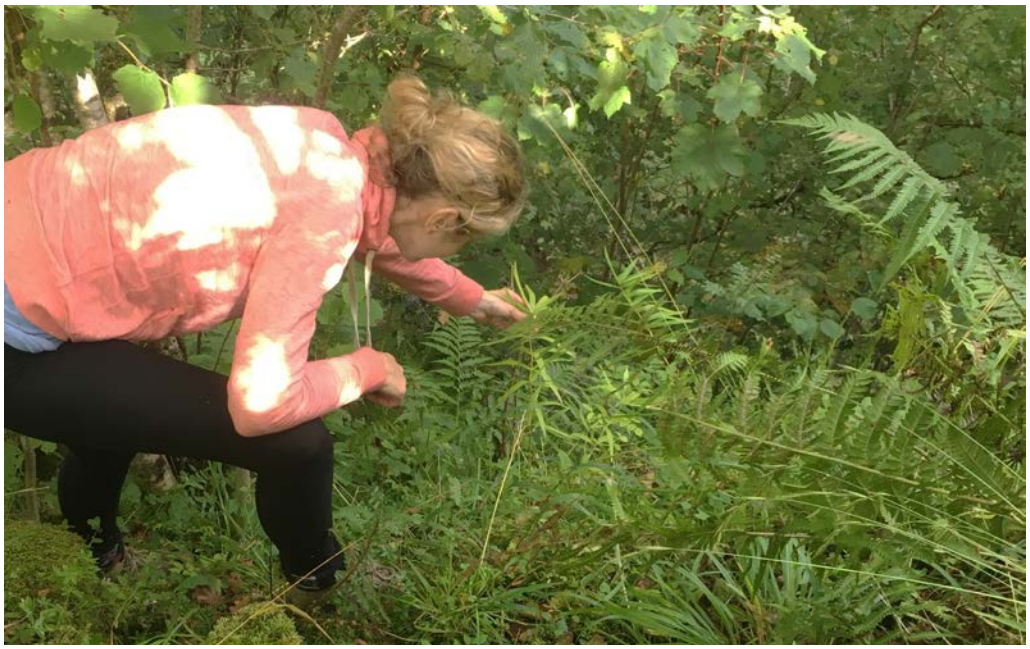
Work is under way in Perthshire to save the whorled Solomon's seal from becoming extinct in this country. Sally Eaton, Scottish plants officer at the Royal Botanic Garden Edinburgh, describes the task at hand

A RARE PLANT in the UK, only found in Perthshire, is being saved from the brink of extinction by scientists and horticulturists from the Royal Botanic Garden Edinburgh (RBGE) and Scottish Natural Heritage (SNH).

Polygonatum verticillatum, also known as whorled Solomon's seal, is a rare and endangered perennial plant of steep sided wooded gorges; now only found at nine locations in the UK, all of which lie within Tayside, Perthshire. Blending perfectly into its surroundings, *P. verticillatum* looks like something from the Jurassic period, with tall, arching stems of vibrant green foliage that carry delicate, white, bell-like flowers in late summer.

RBGE and SNH are working to rescue the species, following a survey of the remaining populations in 2016 which found that many had suffered huge declines since the 1990s. Climate change, causing heavy rainfall events that have led to landslips and erosion, and habitat fragmentation, resulting in isolated, genetically depauperate populations, are thought to have contributed to the declines, although the exact reasons are not yet fully understood. As part of an *ex situ* conservation project, RBGE has held living material from these precarious populations in its nursery since the 1990s.

In a race against time to prevent the species from going extinct in the wild, while more work goes on behind the scenes to try and understand why it is in decline, RBGE's team has been out in Perthshire this winter planting specimens back into the wild in an attempt to bolster these fragile populations.



Plants have been successfully transplanted at two sites, the first on the River Isla and the second on the Lunan Burn. In summer the locations will be revisited to check whether any stems have emerged from the transplanted material.

However, it will take several years to determine whether the project has been successful and ultimately whether the extinction of this species from these locations has been successfully prevented.

For further information please contact Shauna Hay, SHay@rbge.org.uk

Raising awareness of Lyme disease and prevention measures

A RECENT PUBLICATION aims to build on Forest Research studies of assessing and communicating animal disease risks in the countryside. The Briefing Note on Lyme disease is aimed at environment sector organisations and how they might raise awareness and communicate to their staff and visitors to their land.

Lyme disease is transmitted by ticks infected with a bacterium, but only a small proportion of ticks carry it. Lyme disease is the most common tick-borne disease in Europe. The ticks are also known as sheep or deer ticks, and are small, spider-like, bloodfeeding creatures. In its early stages, Lyme disease is the most common tick borne disease in Europe. People can be bitten by ticks if they come into contact with vegetation or with animals on which ticks are not yet fully attached. This contact may occur in parks, gardens, woodlands or the countryside – anywhere with dense vegetation.

The Briefing Note primarily focuses on providing a risk communication framework to consider and develop communication on what behaviours and preventative measures can be taken. The framework enables organisations to consider - behaviours, the target audience, where information should be provided and how. It also helps organisations to consider points of intervention for communication and action, for example distinguishing what can be done before, during or after an outdoor visit.

The framework could also be used directly with staff and visitors, involving them in co-creating and co-producing appropriate communication and awareness raising approaches.

The briefing note can be found online at http://bit.ly/BriefNote

Members' reports

Forest Research

Sitka project shows value of long-term experiments and secure records

A new project from Forest Research is aimed at breeding improved varieties of spruce tree using methods inspired by animal genetics

A NEW PROJECT, 'Sitka Spruced', will capitalise on cutting edge science and draw on Forest Research's (FR) long term experiments, highlighting the value of secure records and detailed planning before the material reaches any labs. The Sitka Spruced project aims to develop genomic selection methods for an important species in Scottish forestry – borrowing the latest methodology from the animal breeding world with the aim of shortening the breeding cycle and increase the rate of yield gain. This is a collaborative project between FR, Oxford University and the Roslin Institute (a fellow SCRR member) funded by the BBSRC and several partners in the forestry sector.

Below: trees are carefully numbered after felling

This new research will utilise DNA marker information and precise phenotypic measurements generated from felling 1400 Sitka trees comprised of individuals from 50 families planted at two sites, Kintyre and Brecon. The project's molecular scope is huge with some truly cutting edge science on the cards.

The project has only been possible because FR has the trees in the ground and the expertise to manage all the operations required to process the trees for the research whilst maintaining their individual identity. The fieldwork involved returning to 21 year old trials and identifying the specific trees belonging to specific families earmarked for inclusion.

Not all trees in the plots were to be included, so an initial exercise was identifying and individually labelling trees with unique codes and triple checking everything before tree felling. Wood and foliar samples were carefully acquired and labelled prior to twice weekly dispatches to FR's Northern Research Station where all documentation was further checked.

'The project has only been possible because FR has the trees in the ground and the expertise to manage all the operations required'

The fieldwork was a physical and organisational challenge, with Kintyre in particular hit hard by wind just prior to felling, and so plans and timescales were constantly changing. Now, thanks to the availability of material from FR's Long Term Experiments, the project is moving on to the next stages with confidence.

New centre of expertise in plant health seeks to strengthen Scotland's resilience

SCRR member organisations are integral to the Scottish Government's new centre, reports Chris Quine of Forest Research

PLANTS PLAY ESSENTIAL roles in our lives, from recreation and tourism to the economics of timber and crop production. However, the potential for harm from pests and diseases is ever-present. Besides the many pests and pathogens that currently infect our plants, there are over 900 others that could pose a threat to the UK's arable crops, trees, horticulture and wild plants. This makes it vital to adopt a co-ordinated approach across sectors to monitoring plant diseases, as well as helping stakeholders understand how to improve their own plant health capabilities.

To tackle these challenges the Scottish Government's Rural and Environment Science and Analytical Services Division (RESAS) has provided funding to bring together a number of Scottish research organisations to establish a new virtual Centre of Expertise for Plant Health.

Working with Professor Gerry Saddler from Science and Advice for Scottish Agriculture (SASA), who was recently appointed Chief Plant Health Officer for Scotland, the Centre will bring together key plant sectors to co-ordinate plant health needs and activities across Scotland.

It will be headed up by the James Hutton Institute (Professor Ian Toth), along with sector leads from Scotland's Rural College (Agriculture – Professor Fiona Burnett), Royal Botanic Garden Edinburgh (Horticulture and environment – Professor Pete Hollingsworth) and Forest Research (Forestry – Professor Chris Quine), together with partners from the universities of Edinburgh, Stirling and Strathclyde; the Centre for Ecology and Hydrology; and Biomathematics and Statistics Scotland. Each of these partners brings with it a range of skills, from understanding public perceptions to long-term disease forecasting.

Of all potential threats to the UK, the Centre will focus on those of highest risk to Scotland, taking into account our climate and the plants of most importance to our economy and social wellbeing. For example, one of our major threats is the bacterial pathogen *Xylella fastidiosa* which is able to infect over 200 plant species worldwide and is currently causing huge economic losses in Italy, killing over a million olive trees and causing damage to other trees and flowering plants elsewhere in Europe.

Pictured above: Fergus Ewing, cabinet secretary, launches the Plant Health Centre during a visit to SASA, where he met Scotland's Chief Plant Health Officer and members of the directorate for the Centre

For this and other threats, the Centre's activities will include a focus on understanding possible routes of entry into Scotland, the ability to spread to and infect our major plant species under our climatic conditions, as well as the best methods for control and when to implement them. In addition, the Centre will work closely with stakeholders to understand and act on their priorities and concerns to protect Scotland into the future.

The Centre of Expertise for Plant Health will complement the existing portfolio covering Animal Health (EPIC) Climate Change (CxC) and Waters (CREW) in which SCRR members are also deeply involved.

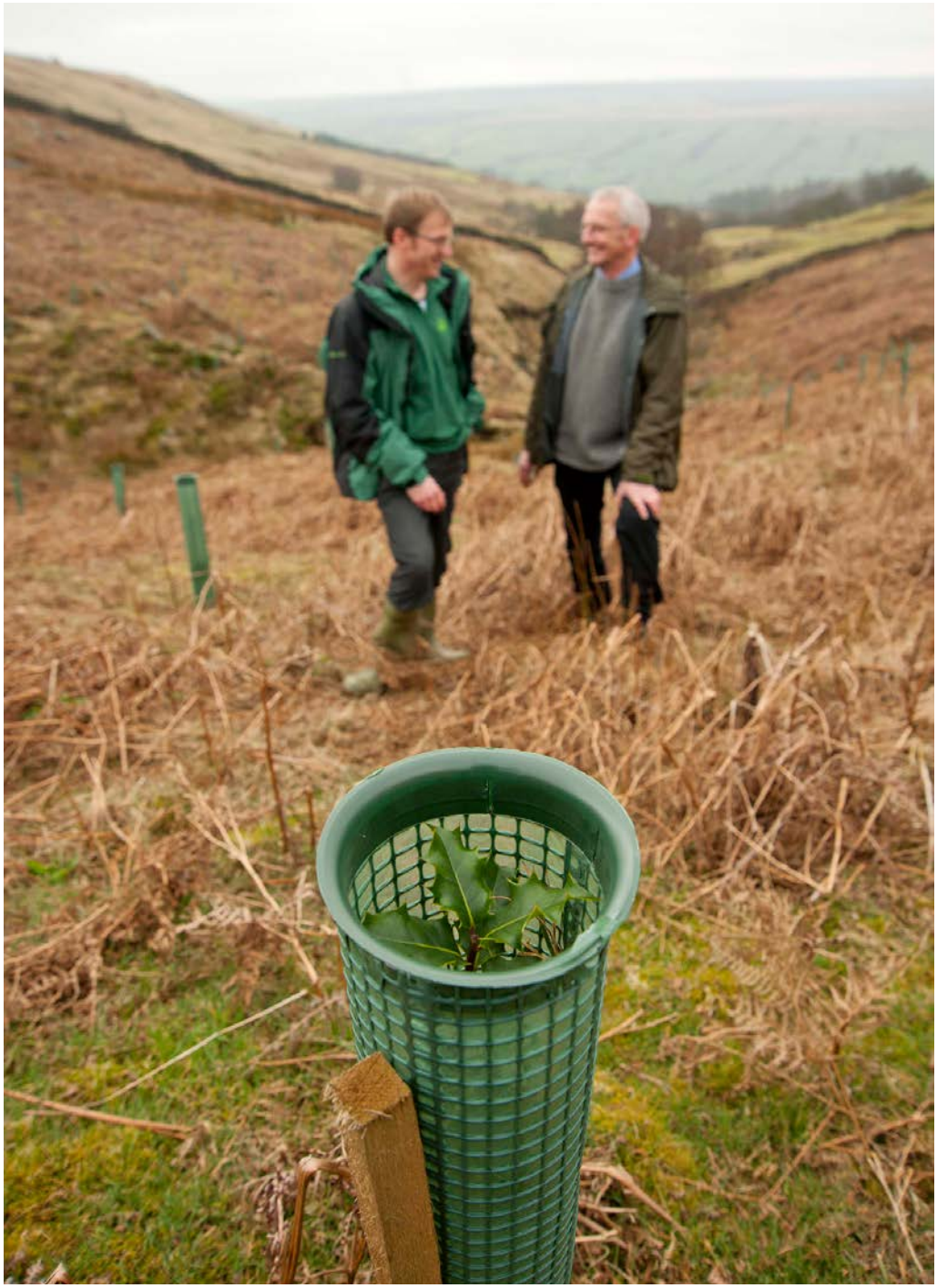
Members' reports

Forest Research

Working with natural processes – the evidence for the natural approach to flood management

Forest Research was part of the core team involved in an important new study for the Environment Agency

THERE IS GROWING interest in working with natural processes (WWNP) to reduce flood risk. WWNP aims to protect, restore and emulate the natural functions of catchments, floodplains, rivers and the coast. It includes, for example, restoring peat moorlands, re-meandering rivers, targeting woodland planting and improving floodplain connectivity to help to reduce the flood risk to communities downstream.



Considerable research has taken place to improve our understanding of the effectiveness and wider benefits of WWNP. This has meant that it has been hard for flood risk managers to access up-to-date information on WWNP measures and to understand their potential benefits.

Now, for the first time, the evidence from these studies has been summarised and published in one location as the Environment Agency's Working with Natural Processes – Evidence Directory at http://bit.ly/naturalprocesses.

The Evidence Directory includes a detailed literature review, 65 case studies, 14 one-page summaries of each measure, as well as guidance on how to monitor their impact. It also identifies the research gaps that still need to be addressed.

It is accompanied by open access maps that will help decision-makers to think about the types of measure that may work in a catchment and where to potentially locate them. In turn, a supporting guide explains the types and extent of evidence needed to help make the case for WWNP when developing business cases.

'Natural measures to reduce the flood risk downstream include restoring peat moorlands, re-meandering rivers, targeting woodland planting and improving floodplain connectivity'

Forest Research was part of the core research team undertaking the study for the Environment Agency and reviewed the evidence on the woodland related aspects of WWNP. Chapter Three of the Directory focuses on 'woodland management' and includes, amongst others, sections on catchment woodland, cross-slope woodland, floodplain woodland and riparian woodland.

Find out more about the work on WWNP to reduce flood risk at http://bit.ly/Forestry-Flooding

Fellowship of the hills: breaking down communication barriers in the Highlands

Dr Beth Wells of Moredun Research Institute reports on her recent project in the Cairngorms National Park

I WAS LUCKY enough to be awarded the Scottish Environment Food and Agriculture Research Institutes (SEFARI) and Cairngorms National Park Authority (CNPA) Fellowship: January to April 2017. The fellowship allowed me to spend much of the first three months of 2017 in the Cairngorms.

My time there was spent building relationships and identifying research and knowledge exchange interests with land users including estate owners, managers, gamekeepers and farmers, operating within the Cairngorms National Park.

The fellowship focused on an area of estate management, namely upland moorland management, where best practice conflicts have arisen between land users with different priorities. The main outcomes highlighted a communication gap between researchers and the people managing these upland areas, with a lack of translation of easily accessible and relevant research being a priority to tackle.

Collating the outcomes of discussions with over 80 stakeholders in the CNP, the fellowship report includes a knowledge exchange framework with suggestions of how the main outcomes may be addressed going forward.

Copies of the report can be obtained from beth.wells@moredun.ac.uk

Grant awarded for on-farm mastitis test in cattle

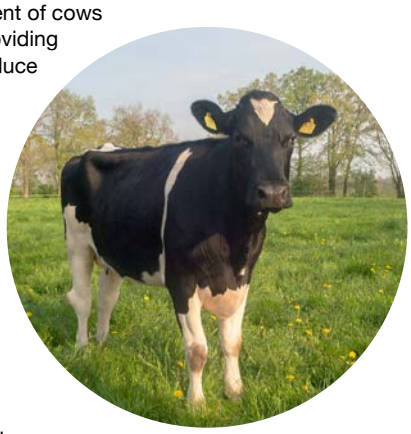
Project builds on a decade of research into biomarkers at the University of Glasgow

THE UNIVERSITY OF GLASGOW, in partnership with Abingdon Health, has been awarded a grant by Innovate UK to develop an on-farm multiplex rapid test for mastitis in cattle.

Mastitis, or udder inflammation, which is a production-limiting disease in cattle and has an estimated £14-23 billion impact on the global dairy industry, is currently detected by a variety of methods, including time-consuming laboratory methods, all of which have limitations.

The project is worth £805K over a 30-month project period. It aims to combine the diagnostic assay development expertise of Abingdon with the University's animal health and biomarker knowledge in order to develop a highly sensitive and specific assay with the ability to stratify mastitis by bacterial class (gram-negative or gram-positive), thus offering fast, on-farm decision making about antimicrobial treatment of cows with mastitis and providing an opportunity to reduce antimicrobial use whilst safeguarding cow health.

The project is the culmination of a decade long research programme where the university's scientists have identified and characterised, in the laboratory, potential biomarkers for this disease. The project will translate the research into technology that can be used on farm and also demonstrate its value in the dairy industry.



PHOTOGRAPH: BAYKEDEVRIES VIA WIKIMEDIA

The University's project lead Ruth Zadoks, Professor of Molecular Epidemiology, said: 'The pressure to reduce the use of antimicrobials in food production is growing rapidly and some countries have already imposed limitations on antimicrobial use, such as quota. We must provide dairy farmers with the tools to minimize antimicrobial use without jeopardizing cow health or food safety.'

Dr David Pritchard, Abingdon's chief technology officer, commented: 'We believe that this test will provide benefits to the dairy industry in terms of milk quality and yield, and to the cattle in terms of animal welfare. In addition, there will be public health benefits from reduced antimicrobial use.'

For more information contact ali.howard@glasgow.ac.uk or elizabeth.mcmeekin@glasgow.ac.uk

Members' reports

RSPB, The University of Edinburgh

Protecting the puffins - Project Puffin UK

Georgia Longmoor, RSPB intern and University of Edinburgh PhD student, reports on Project Puffin, which enlisted the help of hundreds of 'citizen scientists' to find out why puffin numbers are declining

PUFFINS ARE NOW as vulnerable to extinction as giant pandas, and Project Puffin was all about finding out why. The scientists carried out the first puffin census in over 15 years in key colonies in Shetland, tagged puffins with GPS trackers to find out where they were travelling to find fish for their growing pufflings, and gathered information about the birds' diet with the help of more than 600 citizen scientists.

The census provided evidence of possibly large and widespread declines in puffin numbers, helping the RSPB to redouble its efforts to bring about the next nationwide census.

Using GPS tracking, Shetland puffins were observed travelling huge distances to find their fish or bringing back smaller fish loads than colonies where breeding success appeared to be higher. To understand more about puffin diet, 602 members of the public were recruited to join the 'Puffarazzi' – citizen scientists who submitted more than 1400 images of puffins carrying fish from 39 colonies from all over the UK. This enabled the first nationwide snapshot of the size and species of puffin prey.

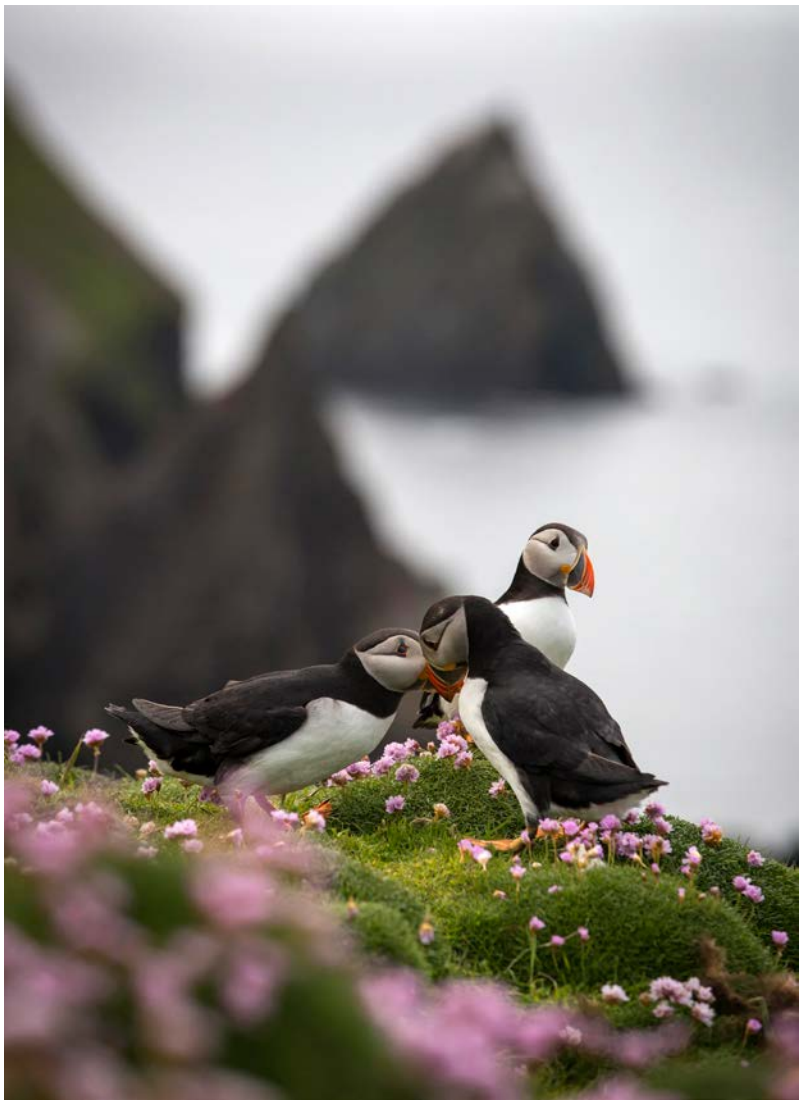
'Scientists carried out the first puffin census in over 15 years in key colonies in Shetland, tagged puffins with GPS trackers to find out where they were travelling to find fish, and gathered information about the birds' diet with the help of more than 600 citizen scientists'

The huge efforts of Georgia and her fellow interns recorded more than 12,000 individual prey items and allowed the identification of colonies where the availability of large, nutritious sand-eels may be compromised.

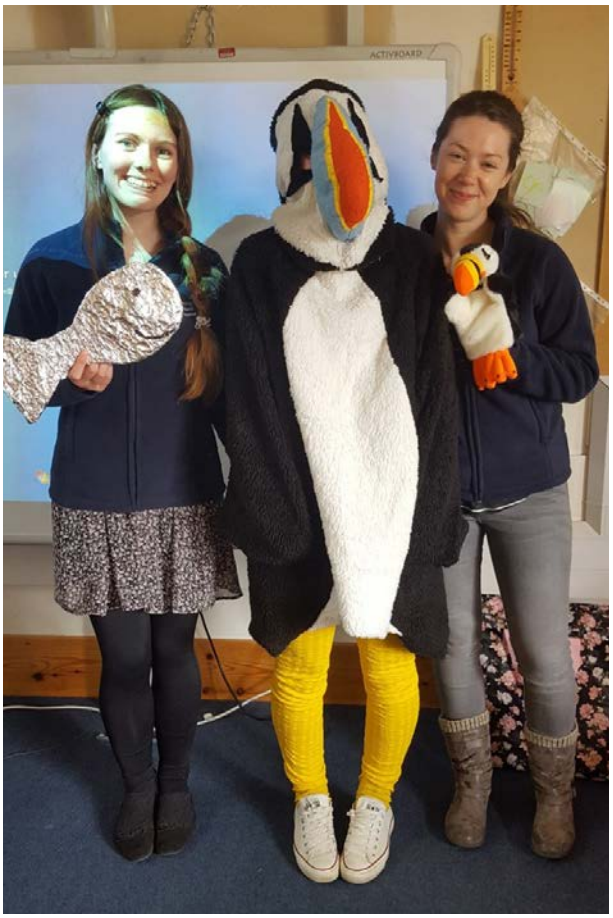
Engaging people with the problems facing puffins and encouraging them to help was an important part of Project Puffin. It reached people of all ages through social media, blog posts and articles, and communicated one-on-one with local school children in its 'name a puffin' competition.

Georgia summed up her experience: 'As part of a team of six interns on the project, and as an aspiring conservation scientist, I feel I was given an amazing opportunity to develop skills which will help me to make a difference to conservation now and in the future.'

PHOTOGRAPH: OLIVER PRINCE



Below: three of the Project Puffin interns engaging primary school children near our fieldwork site in Shetland. Left: puffins display bill-tapping behaviour



PHOTOGRAPH: GEORGIA LONGMOOR

'Scotland's land: failures and successes, challenges and opportunities'

2018 Peter Wilson Lecture by Professor Roger Crofts, sponsored by the Scottish Consortium for Rural Research and the Royal Society of Edinburgh

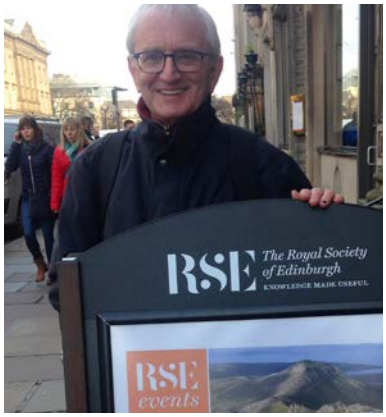
PROFESSOR ROGER CROFTS delivered the 2018 Peter Wilson Lecture to a packed lecture theatre at the RSE in Edinburgh on Tuesday 27th February 2018. It was a stimulating and thought provoking presentation from someone passionately committed to ensuring the future wellbeing of Scotland's land.

Scotland is approximately 400 million years old with a great diversity of rocks and soils reshaped by the pre-glacial and glacial periods. There are roughly 600 different soil types and a large variety of habitats overlaid by the results of human activities in the last few millennia. As a result Scotland is the most naturally diverse small country in the world.

In his talk Professor Crofts aimed to celebrate this diversity, confront some challenges and provide some possible solutions. The key messages of his talk were:

• Recognise past realities and mistakes to work for a better future

• 'One size fits all' uniform approach to managing land issues for the whole of Scotland defies 'natural common sense' given the natural diversity of the country



• We cannot turn the clock back to some idyllic past. Let's learn from the past and use our current knowledge to test new futures

• It's how the land is looked after now and in the future that counts more than who owns it

'Reward all owners, tenants and managers for good stewardship of the land'

• We are not clever enough to 'future proof' so let's 'plan with the future in mind'

• Reward all owners, tenants and managers for good stewardship of the land

• Public money for public goods

• Silos of decision-making are alive and well, and it is time they were demolished

• Integrated approaches to resolve ongoing conflicts in land use are essential

• Let's get away from the 'not invented here' and 'blame somebody else' thinking to more collaborative thinking and action

• Commitment to move from comfort zone to new neutral middle ground is only way forward out of land use conflict

You can listen to the lecture at https://youtu.be/fbq4EbOT55E and read Professor Croft's Agenda for Scotland's Future on the SCRR website

New director for BioSS

Dr Mark Brewer has been appointed as the new director of Biomathematics and Statistics Scotland

DR MARK BREWER has been appointed the new Director of Biomathematics and Statistics Scotland (BioSS). BioSS is based within the James Hutton Institute and works collaboratively with the other Scottish Environment, Food and Agriculture Institutes (SEFARI), specialises in quantitative methods and operates at the interface between mathematically-based disciplines and applied sciences covering agriculture and the rural economy, the environment, food and health.

Mark has worked for BioSS since February 2001, and since February 2006 as Principal Statistician for Ecology and Environmental Science based at the James Hutton Institute's Aberdeen site. After completing his PhD in Edinburgh (PhD), he held a post-doctoral position at the University of Aberdeen then spent five years at the University of Exeter before moving back north to join BioSS.

Mark becomes the third Director of BioSS, after Rob Kempton and David Elston.

With research interests covering Bayesian statistics, species distribution modelling, compositional analyses and structural equation modelling, Mark has brought statistical insight to projects in ecology, hydrology, soil science, analytical chemistry, product authenticity, socio-economics and forensic science.

Mark's national and international collaborations include work with Scottish Natural Heritage and the Joint Nature Conservation Committee on topics such as herbivore grazing and marine protected areas. He has also worked on statistical methodology with the University of Valencia and the Autonomous University of Barcelona, and he recently worked with New Zealand's Ministry for Primary Industries on a project to create a scientific definition for manuka honey.

He was elected to the Board of the International Biometric Society for the term 2017-2020.

Members' reports

Scottish Natural Heritage; Forest Research

Study shows bottlenose dolphin population in north-east Scotland remains stable

The Moray Firth is home to around 200 dolphins but numbers vary, according to new data from SNH

THE NUMBER OF bottlenose dolphins using the Moray Firth Special Area of Conservation (SAC) off the coast of Scotland remains stable, according to a report by Scottish Natural Heritage (SNH). This is the most northern resident bottlenose dolphin population in the world, and recognised as a major tourist attraction along Scotland's north-east coast, generating upwards of £4m per year for the local economy.

Around 200 bottlenose dolphins call the coastal North Sea near Scotland home. More than half of these dolphins frequently use the Moray Firth, part of which is an EU-classified SAC to help protect these marine mammals.

The new report indicates that, although there is some variability in the numbers of dolphins using the Moray Firth SAC each year, the numbers appear to be generally stable over the long term. Additional monitoring indicates there is an overall increase in dolphin numbers on the east coast. The research, commissioned by SNH and carried out by the University of Aberdeen, also suggests dolphins use the SAC outside the summer months more often than was previously thought.

Despite these positive results, the North Sea's only resident bottlenose dolphin population is still considered to be vulnerable, though no change is suggested to their current favourable and recovered condition status.

PHOTOGRAPH: NASA VIA WIKIMEDIA

Moray's dolphins are the only population in the North Sea

Stretching from the Moray Firth to Fife and further south, the population is relatively small and dolphins reproduce slowly. While many of the dolphins travel along the coast between these different areas, the population remains isolated.

Morven Carruthers, SNH Marine Policy & Advice Officer, said: 'This is great news for the dolphins and for Scotland in general. We have been monitoring dolphins in the Moray Firth SAC for many years and it has been wonderful to see stability in their numbers.'

The Moray Firth SAC was designated in 2005 under the European Habitats Directive for bottlenose dolphins. It extends from the inner firths to Helmsdale on the north coast and Lossiemouth on the south coast.

SNH Commissioned Report 1021: 'Site Condition Monitoring of Bottlenose Dolphins within the Moray Firth Special Area of Conservation: 2014-2016' can be viewed at: https://www.nature.scot/snh-research-report-1021-site-condition-monitoring-bottlenose-dolphins-within-moray-firth-special

New publications from the Forestry Commission include advice on woodland creation

RECENT PUBLICATIONS FROM the Forestry Commission include Forestry Facts and Figures 2017, a Pest Alert on pine pitch canker, a Research Note on investment returns from timber and carbon in woodland creation projects, a Research Note discussing choice of silver birch stock for productive woodlands, and a Plant Health Guide outlining the requirements for importing wood and wood products.

http://bit.ly/New-publications-Feb18

Field Studies Council at Millport – the past, the present and the future

More than 120 years since it was founded, Millport is still playing an important role in biological recording

THE FIELD STATION at Millport has a long and distinguished history, with the original building being constructed in 1897 with the passionate support of David Robertson - the Cumbrae Naturalist. From the beginning, a core aim of the researchers and lecturers at the station was to establish which species are present within Firth of Clyde marine habitats and their distribution.

An early landmark was the production of the Fauna, Flora, and Geology of the Clyde Area (1902) as a result of the Meeting of the British Association for the advancement of science in conjunction with Glasgow Natural History Society in 1901. Updates to the original records started to be made by researchers in the 1960s - 1980s and were presented in occasional publications produced by the station in a still useful, but hard to obtain series.

This information and the research conducted at the station over the decades typically resided in hard copies and was relatively inaccessible, so in 2010 relevant data-sets, which fulfilled the criteria, were added to Medin (Marine Environmental Data & Information Network) via DASH (Archive for Marine Species & Habitats Data). As technology has progressed, it has made it easier for everybody to get involved in biological recording. All of our courses at FSC Millport involve some form of recording from professional development courses to primary schools and family groups.

'We host workshops and conferences for bodies such as the RSPB, Biological Recording in Scotland, the Pan European Duck Symposium and the Porcupine Marine Natural History Society'

At the centre, we encourage all groups who visit us to record their sightings and place their records on iRecord – marine, freshwater and terrestrial! We also have a wildlife sightings board for visitors to update which is then uploaded weekly on to iRecord.

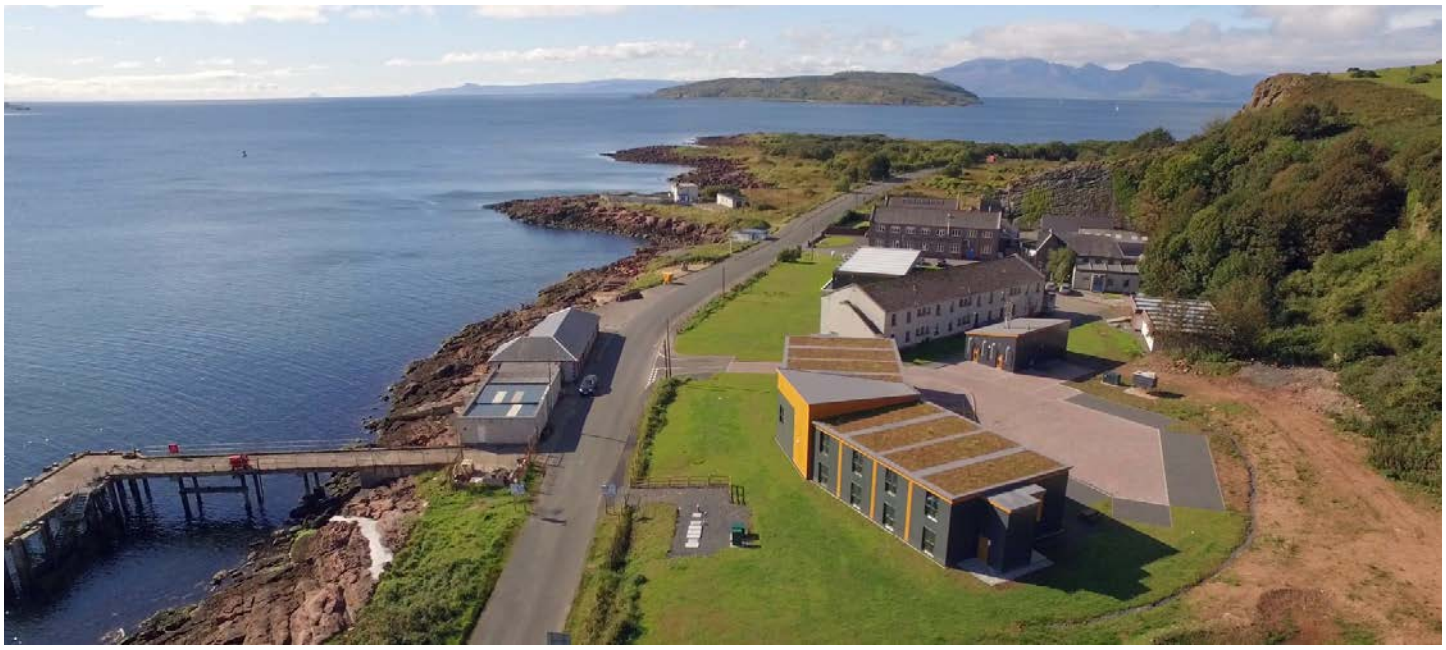
The aim is to have 1000+ records of the area within the next three years - with the help of all our centre visitors. Trained staff also contribute data to several ongoing biological recording programmes including the Wetland Bird Survey (WeBS) run by the British Trust for Ornithology.

As a Field Studies Council centre with over 20 centres nationwide, data is stored from taught biology courses for future analysis, these include our rocky shore transects. Many of our leisure learner courses are run by professional ecologists and county recorders in their fields, leading to more of our courses' records being forwarded to appropriate data banks. In addition, moths are sampled regularly by staff and the results contribute towards the National Biodiversity Network's distribution maps. Millport's grounds host a Climate Station for the Met Office which automatically collects long-term environmental variables which can then be used to address any ecological trends observed, such as moth declines.

We also host several workshops and conferences for bodies such as the RSPB, Biological Recording in Scotland, the Pan European Duck Symposium and the Porcupine Marine Natural History Society.

These are just some of the developments and partnerships implemented at FSC Millport –why not come along to one of our excellent biological recording trainings, wildlife courses or attend one of our 'Bioblitzes' and help contribute to the Firth of Clyde's species list!

For more information contact Dr Phillip Cowie and Jack Lucas, 01475 531420, email: enquiries.mil@field-studies-council.org



The original building at Millport was completed in 1897

SCRR member organisations

The University of Edinburgh	www.ed.ac.uk
Moray House School of Education	www.ed.ac.uk/schools-departments/education
Royal (Dick) School of Veterinary Studies	www.ed.ac.uk/schools-departments/vet
School of Biological Sciences	www.ed.ac.uk/schools-departments/biology
School of Engineering	www.see.ed.ac.uk
School of GeoSciences	www.ed.ac.uk/schools-departments/geosciences
School of History, Classics and Archaeology	www.shca.ed.ac.uk/Research/
School of Social and Political Studies	www.sps.ed.ac.uk
Biomathematics and Statistics Scotland	www.bioss.ac.uk
British Geological Survey, Edinburgh	www.bgs.ac.uk
Centre for Ecology & Hydrology, Edinburgh	www.ceh.ac.uk
Edinburgh Napier University, School of Applied Sciences	www.napier.ac.uk/fhlss/SLSSS
Field Studies Council, Millport	enquiries.sco@field-studies-council.org
Forest Research, Northern Research Station	www.forestry.gov.uk/forestresearch
Heriot Watt University, School of Life Sciences	www.sls.hw.ac.uk
James Hutton Institute	www.hutton.ac.uk
Moredun Research Institute	www.moredun.ac.uk
National Museums of Scotland	www.nms.ac.uk
Roslin Institute, University of Edinburgh	www.roslin.ed.ac.uk
Royal Botanic Garden Edinburgh	www.rbge.org.uk
Royal Society for the Protection of Birds - Scotland	www.rspb.org.uk/scotland
Royal Zoological Society of Scotland	www.rzss.org.uk
Science & Advice for Scottish Agriculture	www.sasa.gov.uk
Scotland's Rural College (formerly Scottish Agricultural College)	www.sruc.ac.uk
Scottish Association for Marine Science, Oban	www.sams.ac.uk
Scottish Natural Heritage	www.snh.gov.uk
SNIFFER	www.sniffer.org.uk
Society, Religion and Technology Project	www.srtp.org.uk
University of Glasgow	www.gla.ac.uk
College of Medical, Veterinary and Life Sciences	www.gla.ac.uk/colleges/mvls/
College of Social Sciences	www.gla.ac.uk/colleges/socialsciences/
University of the Highlands and Islands (UHI)	www.uhi.ac.uk
Agronomy Institute, Orkney College	www.agronomy.uhi.ac.uk
Centre for Mountain Studies, Perth College	www.perth.uhi.ac.uk/specialistcentres/cms
Centre for Remote and Rural Studies, Inverness College	www.crrs.uhi.ac.uk
Environmental Research Institute, North Highland College	www.eri.ac.uk
Lews Castle College, Stornoway	www.lews.uhi.ac.uk/research
NAFC Marine Centre, Shetland	www.nafc.ac.uk
West Highland College, Fort William	www.whc.uhi.ac.uk
University of St Andrews, Earth and Environmental Sciences	www.st-andrews.ac.uk/gg
University of Stirling	www.stir.ac.uk
Institute of Aquaculture	www.aquaculture.stir.ac.uk
Biological & Environmental Sciences	www.stir.ac.uk/natural-sciences/about-us/bes/

Events

www.scrr.ac.uk/events

Please see the website for announcements.

PEOPLE AT SCRR

Scientific Director:
Prof Stuart Monro
Stuart.Monro@blueyonder.co.uk

Secretary/Treasurer:
Prof Willie Donachie
willie.donachie@moredun.org.uk

CONTACT SCRR

SCRR, 18 Hoghill Court, East Calder,
West Lothian EH53 0QA
01506 880929 or 07990 595217

COPY DEADLINE

The deadline for copy in the next issue is Friday June 29th, 2018

DISTRIBUTION

For all queries about distribution, please contact the Secretary/ Treasurer by email.

FUTURE ISSUES

Contributions to the SCRR newsletter are welcomed. All contributions, comments and suggestions should be emailed to the Secretary/Treasurer as above.

ON THE WEB

Back issues: www.scrr.ac.uk/newsletters

Printed in Scotland on recycled paper (100% post-consumer waste) by The Jane Street Printing Company, Leith, Edinburgh.

Designed in East Lothian by mobo media