

## THE FIRST EDITION OF THE FLOW COUNTRY RESEARCH HUB NEWSLETTER!

We are delighted to present the first of many updates on peatland research in the Flows, presenting some of the projects and researchers involved up here in the North of Scotland. The aim of the electronic newsletter is to help researchers and stakeholders communicate, to increase awareness, to highlight what is happening now and in the future in Flow Country Peatland Research. We welcome you to forward the newsletter to colleagues and students with an interest in the Flows, or in peatlands in general.

The success of the Newsletter will depend on everyone contributing. We look forward to receiving updates, stories, conference reports, news and photographs from your work. Any contribution, comments and suggestions for the content for the next issue can be sent to [Roxane Andersen](#) before the 20<sup>th</sup> of May. Please also contact her if you want to be added to the mailing list.

## NEW FACES AND PROJECTS FOR 2013

*Researchers, students and staff at RSPB are preparing for another field season in the Flows, with exciting projects about to start. If you are up North in the summer, here are some of the people you will likely meet!*



I am **Paul Gaffney**, a PhD student at the ERI since September 2012, researching the effects of forest-to-bog restoration on water quality and aquatic carbon fluxes. My project is based in the Flow Country's RSPB Forsinard Reserve. I'll be working in the Dyke Forest where restoration management is being carried out by RSPB in winter 2013/14 and across a chronosequence of previously restored sites on the reserve. I'll be determining water quality in peat pore waters and streams (important for decomposition processes, vegetation, aquatic life) by measurements of pH, oxygen, conductivity, temperature, DOC quality and quantity, base cations and some trace metals. Aquatic carbon fluxes will be calculated from DOC concentrations, stream flow and hydraulic conductivity within peat. In the Dyke forest different restoration methods employing combinations of enhanced and standard felling and drain-blocking will be used. Replicated comparisons of water quality and carbon fluxes before and after the different restoration management and with that of open bog and remaining forest control plots will be made. I will be sampling soil and stream water across a chronosequence of previously restored peatland sites to look at the effect of time since restoration. Additionally I will be measuring Biogenic Volatile Organic Compounds (BVOCs) a lesser known product of the peatland carbon cycle. I will be using a novel sampling technique to measure BVOCs from restored, open bog and afforested peatland sites to complement measures of DOC.

I am **Renée Hermans**, I just moved to Scotland from the Netherlands for this PhD based in Stirling University. I have done both my BSc and MSc degree at Wageningen University (NL), BSc in Forest- and Nature conservation and MSc in Climate Studies. During my masters I went to Winnipeg, Canada for a four month internship in different kind of greenhouse gas research, and I did a six month greenhouse gas balance study at a salt marsh in the north of the Netherlands. All this was a perfect training for this PhD research in measuring greenhouse gas fluxes from the restored peat after tree felling. In this research I will concentrate on the small scale differences in greenhouse gas fluxes by using chambers to measure them. I will look at felled sites with different ages, so at a chronosequence, and I will look at the difference between different felling and drain blocking techniques. Furthermore, I am interested in the changes in the fungal and bacterial species composition in the soil following tree felling, and their contribution to carbon cycling.





I am **Graham Hambley**, and started my PhD at the University of St Andrews in September 2012 researching the impacts on the carbon cycle of forest-to-bog restoration in the Flow Country and what effect this may have on climate change. I have been working in the Flow Country since spring 2011 when I was employed as a research technician on a project based at St Andrews looking at small-scale Greenhouse gas fluxes from the forest-to-bog restoration. My PhD research will extend this previous work to larger areas whilst investigating the controls on the carbon balance of the system in more detail. This project will utilise two state of the

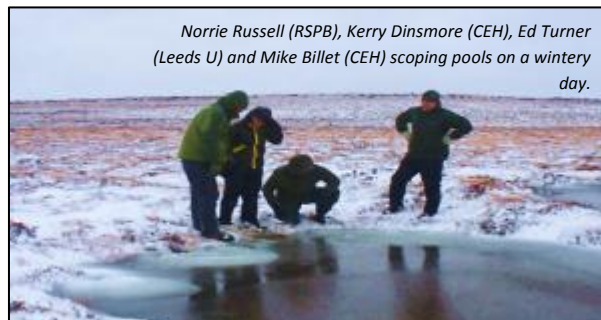
art micrometeorological systems measuring wind and carbon dioxide in the atmosphere, this will allow me to look at the minute-by-minute “breathing” of the whole ecosystem. One system will be used as an unmanaged bog control for two years. The other system will be used at two different sites; initially at a 10-year-old restored site before being moved to a newly felled site. This will allow me to determine how restoration affects the uptake and release of carbon and if, after 10 years, the restoration is successful and the site is beginning to behave more like a blanket bog again.

I am **Dr Ed Turner**, Research Fellow University of Leeds, and our three year project examines the role pool systems play in the carbon (C) cycle in peatlands. This is a collaboration between the University of Leeds and the NERC Centre for Ecology and Hydrology, Edinburgh and is funded by the Natural Environment Research Council.



Peatland pools are known to emit significant amounts of the greenhouse gases methane ( $\text{CH}_4$ ) and carbon dioxide ( $\text{CO}_2$ ), but the reasons for this are unclear. This study will focus on two pool types: natural pools, and those that have been created through peatland restoration through the damming of drainage ditches. We will quantify C flows and fluxes to and from pools via continuous monitoring and periodic sampling. The study examines the controls on C cycling in both types, with particular emphasis on the role of natural underground ‘peat pipes’ and aquatic vegetation.

We expect to find that natural pools have a greater connectivity to carbon sources through the pipe network than grip-blocked pools, and subsequently natural pools act as ‘sumps’ of dissolved organic carbon (DOC) produced in surrounding peat. We hypothesise that pools are strong radiative energy absorbers and are warmer than adjacent land. Thus, they may act as ‘bioreactors’, processing DOC into a range of products including  $\text{CO}_2$  and  $\text{CH}_4$  through increased microbial activity and photodegradation. Manipulative experiments will be conducted on waters collected from our study area to test the effects of temperature and solar radiation.



*Norrie Russell (RSPB), Kerry Dinsmore (CEH), Ed Turner (Leeds U) and Mike Billet (CEH) scoping pools on a wintery day.*

This work is fundamental to our understanding of the role of peatlands in the global carbon cycle, and will build on existing work that is examining how different peatland restoration methods affect peatland carbon balance and global warming potential.

### WINTER ACTION IN THE FLOWS

A key part of the RSPB's work at the Forsinard Flows reserve is the restoration of afforested blanket bog – with the Dyke and Forsinain plantations being the most recent acquisitions. As well as benefiting wildlife and protecting the carbon stored in the peat soils this has provided an excellent opportunity for the development of a large-scale, long-term research project comparing the principal restoration techniques.

Study plots have been set up at both Dyke and Forsinain, accompanied by control-plots on the open bog and in areas that will remain in commercial forestry. A total of 270 dipwells were installed by October 2012 and since that time the research team have been hard at work, enduring the rain and snow to measure the water table at each point every month. This data will be used to provide a baseline against which changes can be compared once felling and restoration work has begun. With the first signs of spring preparations are now being made for the summer ahead, which will include a broader range of biological monitoring across the plots. *Paul Stagg, RSPB.*



### ARTISTS AND SCIENTISTS TO COLLABORATE IN A CELEBRATION OF LEWIS PEATLANDS

An exhibition of contemporary visual art called **Sexy Peat**, celebrating the ecology and heritage of the Lewis blanket bog and highlighting the significant role that peat plays in global climate regulation has been awarded funding as part of Year of Natural Scotland 2013, an initiative supported by Creative Scotland and SNH (Award: £45,200). The project will also celebrate the Gaelic heritage relating to the bog and the significance of the bog to the people who have lived with it. [Highland Print Studio](#) will work in partnership with [Cape Farewell](#) to deliver the project. For more information, contact **Alison McMenemy** ([alison@highlandprintstudio.co.uk](mailto:alison@highlandprintstudio.co.uk)), Director, Highland Print Studio, or see full story [here](#).

### FUNDING OPPORTUNITIES

#### Announcement of Opportunity: Doctoral Training Partnership (DTP) competition

Proposals are invited for the new NERC Doctoral Training Partnership (DTP) competition. It is expected that 10-20 DTPs will be funded from this call. Funding for 240 studentships will be awarded per annum, and each DTP award will provide funding for five years of new student intake; i.e. nine years of funding in total.

Deadline for proposals: **1 May 2013**

Please see the full [Announcement of Opportunity](#) on the NERC website for further information.

*The next edition of the newsletter will come out in June, please email details about grants, student progress, field work, publication or any other news to Roxane Andersen ([roxane.andersen@uhi.ac.uk](mailto:roxane.andersen@uhi.ac.uk)) before the 20<sup>th</sup> of May 2013.*