

Ebb and “Flows”

Despite a rather cold and wet (and midge-ridden) summer, the Flows have once again attracted the attention of the research community over the last months. A number of projects were wrapping up with a last round of sampling and will now be written up and coming to an end... but some new and exciting ones are also just about to start: the ebb and flow of research in the far north continues. This edition of the Flow Country Newsletter provides updates on progress on various projects and other news, covering July, August and September 2015. We would like to thank everyone for sending contributions and pictures!



Project updates

Peatland Pools research campaign



Amy Pickard, a PhD student from the University of Edinburgh, spent 12 days in late June working at the Cross Lochs site to investigate the effect of sunlight on peatland pool carbon cycling. Water samples containing low concentrations of dissolved organic carbon were exposed to natural sunlight using transparent bags over a nine day period. Bags were removed from the pool system on days 1, 2, 3, 5, 7 and 9 and the water samples were subsequently analysed for bulk organic properties, headspace gas production and various forms of carbon isotopes. Daily experiments were conducted in tandem with the duration experiment to examine the effect of water depth on the impact of light on carbon cycling. An identical field campaign took place earlier in June at a peatland pool rich in dissolved organic

carbon at Red Moss, Balerno, Edinburgh. Data from these contrasting sites will be used to determine the significance of sunlight in aquatic carbon cycling and will feed in to other carbon cycling projects taking place both at Cross Lochs and within the wider peatland science community. *Amy Pickard, U. Edinburgh.*

Bogs and Bugs

I have just finished my first fieldwork season at Forsinard Flows as part of my PhD project looking at how biodiversity responds to peatland restoration. It has been an eventful first season indeed. This summer I have sampled ground beetles and moths, and I am sure their identification will keep me pretty busy during the winter. I set pitfall traps to explore ground beetle assemblage responses in two different restoration treatments; whereas moth traps were set in a chronosequence of restoration areas to see how moth assemblages respond to restoration over time. I have also set water traps to sample macroaquatic invertebrates in natural pools and artificial pools but time constraints did not allow me to set all the traps planned. Data collection will continue next summer to obtain more robust results, but some biodiversity patterns are likely to emerge from this first season. *Ainoa Pravia, PhD student JHI/UHI*



First stage of restoration well under way at Dyke Forest, Forsinard



The restoration work to remove the trees, which started in the Dyke Forest in October 2014, is now nearing completion. No conservation monitoring has been possible during this period with fieldwork concentrating on relocating the dipwells (20 for each group of 4 restoration plots with 7 groups in total) following the activities of much heavy machinery! The proportion found so far is quite good with relatively few replacement dipwells required.

Main drains have been blocked and it is hoped that the furrow-blocking, which is part of the enhanced method, will be underway in the near future. But not all the wildlife is waiting for restoration to be completed. A pair of hen harriers fledged three young from a nest in a furrow located in a restored area within a few months of the trees being felled. *Trevor Smith, Senior Research Assistant RSPB Scotland.*

Pore water chemistry in peatlands around the world

In August, Dr Dominik Zak from the Leibniz-Institute of Freshwater Ecology and Inland Fisheries came up to the Flow Country to undertake sampling as part of a global project on pore water chemistry. Dominik installed three transect of five passive dialysis samplers (peepers) that collected water from the peat around Munsary, Cross Lochs (natural and man-made) pools. The samplers were left in place for a week, after which the collected water samples were sent back to Germany for analysis. The data from the Flow Country will add to a long-term dataset built using the same design in other peatlands around the world and will help unravel global patterns in phosphorus cycling in peatlands. The visit was organised in collaboration with Ed Turner from Leeds and Roxane Andersen and Paul Gaffney from ERI/UHI. *Roxane Andersen, ERI UHI.*



New projects in the Flows

Long-term patterning in peatlands



The team at the Sustainability Research Institute at the University of East London have recently welcomed a new PhD student, Jerushah Jardine. Jerushah completed at Masters by Research in Holocene Palaeoenvironmental Reconstruction at the University of Greenwich, and has a professional background in geography education. She will be researching the potential influence of climate change and land use impacts on the microtopography of peatland vegetation and associated surface pattern changes, under the supervision of Richard Lindsay.

Initially, Jerushah will be completing a study of current and historic aerial photographs in order to identify areas of peatland which display patterning. This catalogue of patterned sites in Britain will then form the basis for more detailed time-series mapping of pattern change on selected sites, together with detailed palaeoenvironmental analysis of peat cores taken at these sites – including sites in the Flow Country. This research will be undertaken in collaboration with the Environmental Research Institute (UHI). *Jerushah Jardine, UEL.*



Seeing the woods for the trees

We are delighted to announce a new PhD studentship in collaboration with the Scottish Forestry Commission (SFC) that will focus on reconstructing Scotland's Natural Woodland in areas of the Highlands. Joining us from Leiden University in the Netherlands to take up the studentship is Jasmijn Sybenga who will be getting underway in the New Year. The project will be using palaeoenvironmental techniques (including pollen and fungal spores) to reconstruct long-term record of vegetational change in areas of land under the care of the SFC in the Highlands to investigate what forms of woodland were present in these areas in the past, what happened to them (e.g. demise through hydrological change or human action) and whether these woodlands would flourish or perish if reintroduced to these areas today. The results of this project will act as a feasibility study for the SFC in decisions regarding the reinstatement of Natural Woodland within the study area and beyond. This PhD topic we hope will be the catalyst for further work between the SFC and UHI and also provides a fantastic opportunity for different parts of the UHI, in this case the Archaeology Institute, Environmental Research Institute and Inverness College, to come together on a research project that I'm sure will produce interesting results. We all welcome Jasmijn in joining this team and I'm sure it won't be too long until she is sharing the results of her work with all of you. *Scott Timpany, Orkney College UHI.*

Other news and announcements

Flow Country Publication

We would like to highlight a recent publication presenting GHG from the Cross Lochs Eddy Covariance Flux Tower in Forsinard. The paper, authored by Pete Levey and Alan Gray from CEH, provides a useful reference against which other GHG estimates from the restored and afforested blanket bogs in the Flows (and beyond) can be compared.

- Levy, P. E., & Gray, A. (2015). Greenhouse gas balance of a semi-natural peatbog in northern Scotland. *Environmental Research Letters*, 10(9), 094019.

National Peatland Plan

Scotland's National Peatland Plan was published by Scottish Natural Heritage (SNH) on 28 August 2015. With a Foreword written jointly Minister for Environment, Climate Change and Land Reform Dr Aileen McLeod and SNH Chairman Ian Ross it identifies the wide range of benefits provided by healthy peatlands, including a rich biodiversity, good water quality and carbon storage.

Developed by a stakeholder group representing a wide range of interests, the Plan emphasises that managing and restoring our peatlands to get the best we can from them requires a joint approach involving land owners and managers, scientific and technical expertise, together with the necessary policies, guidance and appropriate levels of funding. Implementing the Plan will be the responsibility of a newly established National Peatland Group, advised and supported by a Research and Monitoring Group. The National Peatland Plan can be found [here](#). For further information contact Andrew Coupar (andrew.coupar@snh.gov.uk or tel. 01738 7711200).

Invitation to attend the Peatlands Forum 2015

The Peatlands Forum 2015 will be held on **Tuesday the 27th of October at Ferrycroft, in Lairg (Sutherland)**. The Forum is being held as part of the 2015 Sutherland and Caithness "Peatlands Week" to celebrate the International Year of Soils. The forum will provide a general update on current management, funding, research and other relevant issues related to Scottish Peatlands. It is being organised by SNH in collaboration with the Environmental Research Institute's Peatland and will be followed by the Research Conference in Thurso, from 27 to 30 October. The Peatland Forum is free and open to anyone who wishes to attend. For more details, contact Roxane Andersen (roxane.andersen@uhi.ac.uk).

PhD opportunity in the Flow Country

The University of York is currently recruiting a student for a PhD project on "Quantifying carbon accumulation and loss in afforested peatlands". The project, led by Richard Payne (U. York) is fully funded through a Leverhulme Large Grant, and will involve collaboration with Roxane Andersen (ERI), Dmitri Mauquoy (U. Aberdeen) and Russell Anderson (Forest Research). Please circulate the [advert](#) or, for more information, please contact Richard Payne (richard.payne@york.ac.uk).

Flow Country Research Conference: last chance to register!

The third **Flow Country Research Conference: taking stock** will be held in Thurso from the **27th-30th of October 2015**. The conference is only a few weeks away and preparation is well underway. The conference will be held in [Caithness Horizons](#) and in the NHC ETEC building (poster session). The field trip, sponsored by the Peatland Partnership, is organised by the Flows to the Future team in collaboration with ERI. It will take participants to peatland sites in the Welbeck estate near Berriedale, and will include a restoration demonstration and a chance to meet and discuss with landowners, land managers and contractors. Details about the conference programme and the field trip will be updated regularly on the [webpage](#). For any information, contact conference.flows@uhi.ac.uk.

The next edition of the newsletter will come out in December, please email your contributions to Roxane Andersen (roxane.andersen@uhi.ac.uk) before the Friday 11th of December 2015.