

Action packed spring in the Flows

New faces, new projects and a lot of activity in the Flows this spring! This edition of the newsletter provides a quick update on projects between April and June, and highlights upcoming opportunities. Thanks to all who provided short articles and pictures!



Project updates & New faces in the Flows

Welcome to Wouter Konings

My name is Wouter Konings, 27 years young and I study Applied Biology at the HAS university of applied sciences in Den Bosch, the Netherlands. During this year, students of the HAS are being released into the world to find an internship. Whereas most students travelled towards the sun and white beaches with palm trees. I decided I wanted to go the other way, where Scotland was one of my first thoughts of going. Up in the north, the ERI sparked my interest. Not only with what they are doing, but also its location. Remote with stunning landscapes all around and of course the real pubs. Since the beginning of March, I am working on a project that contains finding and testing different methods to measure various plant traits of peatland vegetation. In the end, the larger goal is to compare the vegetation from different sites of various stages of peatland restoration with each other. This should give some insight into what effects the previous forested areas have on growing peatland vegetation. I will be enjoying this work until somewhere half August. *Wouter Konings, ERI/HAS*



The Forest-to-Bog Restoration Project (RSPB Conservation Science)



April saw the resumption of full monitoring (hydrology, birds, invertebrates and vegetation). For most of the research plots, this will collect the first post-restoration data following the felling and blocking of drains and furrows carried out between 2014 and 2016. Monitoring will continue until the end of March 2018.

Two full-time staff joined the Project in April: Noah Greaves for a year and Shona Ruesch for 6 months. Both have “previous” at RSPB Forsinard and are very welcome and essential additions to the team. *Mark Hancock, RSPB*

New project: Dung fungi as a long-term peatland grazing indicator



Large animals take centre-stage in debates on rewilding and extinction, but we know remarkably little about the role of herbivores as ecosystem engineers on the long timescales over which their impacts interact with the effects of climate. This is an important knowledge gap on peatlands, due to their sensitivity to disturbance and long timescales associated with carbon sequestration. Analysis of spores from fungi with an affinity for dung (coprophilic fungi) has emerged in the palaeosciences as an important proxy for understanding grazing dynamics, but has yet to be tested on peatlands. This project will assess the efficacy of fungal spores as a grazing proxy in order to develop more robust methods for reconstructing long-term herbivore impacts on peatland systems. It also represents a novel use of long-established experimental sites as a bridge between ecological and palaeoecological timeseries. I will be analysing fungal spores and pollen records from surface samples and short peat cores spanning recent decades and centuries at sites with known grazing histories. Study sites include experimental and managed grazing sites at Moor House (N Pennines, part of the UK Ecological Change Network), Flanders Moss (C Scotland) and Invercauld (NE Scotland, part of the Moorland Colonisation (MOORCO) experiment). The project is funded by the Ecological Continuity Trust and Quaternary Research Association. *Althea Davies, U. St Andrews*

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The wooden snake of Forsinard

This spring a large team of volunteers from ERI-Thurso, RSPB-Forsinard and Glasgow, Flows to the Future Project and JHI (The James Hutton Institute in Aberdeen) helped us construct a boardwalk at the Lonielist Flux Tower, battling chilly April temperatures, snow and winds. Our windy beast is almost half a km long (1/3 of a mile) and takes about 4 minutes to walk from one end to the other. The main purpose of the new boardwalk is to avoid the researchers and visitors to the site trampling all over the peat vegetation under restoration. It also makes life easier for our researchers on their way to the tower and the new Skyline instrument, especially when loaded with a bunch of equipment. A huge THANK YOU to everyone who came out to help – for your enthusiasm and hard work! Well done! –

Myroslava Khomik (JHI)



Flows to the Future Artists workshop

At the end of April, a group of artists from all around Scotland were invited to attend a workshop jointly organised by the Flows to the Future Project and Creative Carbon Scotland. The objective was to introduce the Flow Country peatlands and open a conversation to inform and shape the engagement of the project with the creative arts. The artists were encouraged to keep an open mind about potential collaborations across disciplines, but also with researchers working in the Flows. The workshop included plenty of time in the bog and an introduction to *Sphagnum* dances as well as enthused discussions about the Flows' potential to support a thriving artistic community. *Roxane Andersen, ERI*



Demonstrating peatland restoration for land managers in Caithness and Sutherland

Forestry Commission Scotland (FCS) in partnership with the Flows to the Future (FTTF) Project held a successful demonstration day to showcase various methods to restore damaged blanket bogs in Dalchork Forest. This event, which was held on the 9th of June, brought together over 20 people representing crofting, sporting, forestry, consultancy, conservation and regulatory interests in the region. The event began in the FCS office in Lairg where FTTF peatland advisory officer Gearóid Murphy gave an overview of the ecosystem services provided by bogs, the different methods used to restore damaged bogs, and the funding available to land managers to carry out this work on their ground. Then Neil McInnes, the Environment Manager for North Highland Forest District, spoke about how changing policies have resulted in a shift in the management of restorable blanket bog in the north highlands, from replanting the peatlands with trees to felling and restoring them.



The group viewing a mulched barash road in the Dalchork Forest. Credit: Roxane Andersen

The group then jumped in a minibus for a tour of Dalchork Forest led by Neil. Parts of the forest were planted on deep peat from the 1960s onwards. These crops, mainly Lodgepole pine, are often in check, heavily affected by tree health issues and subject to early wind-throw. Where areas have been identified as a priority for restoration, FCS has utilised a variety of techniques to remove trees and to raise the bog's water table to a more natural level. Once this has been achieved plants such as cotton grasses and the peat forming *Sphagnum* moss can colonise the peat surface. This benefits downstream water quality and wildlife, as well as

allowing carbon to be locking up in the growing peat, a plus in the fight against climate change.

The restoration techniques on show included bunding, drain blocking, mulching of smaller trees and also flipping the tree stumps to give a smoother peatland surface. This part of the event generated much discussion amongst the participants including what were the best techniques to use in each situation and how long it would take for a restored site to be colonised by bog vegetation. Garry MacKay, of John Mackay & Son a contractor working in the

forest, was on hand to explain how these methods are implemented using low ground pressure vehicles. Later on in the trip whole tree mulching was demonstrated using a modified excavator. The visit concluded with a hot lunch provided by the Pier Cafe in a marquee in forest, giving the attendees a welcome respite from the rain outside.

For more information on funding for moorland management and peatland restoration on your land please contact Gearóid on 07766500364 or gearoid.murphy@rspb.org.uk.

Update from the Skyline team

A new project funded by the University of Aberdeen and Forest Research has recently started in RSPB's Forsinard Flows. It aims to investigate the inter-annual climatic variability of carbon dioxide (CO₂) and methane (CH₄) exchange dynamics on peat soils by using a novel system called SkyLine, developed by the University of York. The skyline allows a continuous sampling of these two component fluxes along a transect in which several vegetation types and micro-topographic features are represented. The project will provide important data that will lead to a comprehensive assessment of the balance of GHG fluxes in forest-to-peatland restoration. Another part of the project will inform the impacts of wind farm development through refinement of the existing Scottish Government life-cycle assessment tool, which is underpinned by the application of the ECOSSE soil model. The project has been funded by Forest Research and the University of Aberdeen and the team includes; Dr. Mike Perks and Dr. Georgios Xenakis from Forest Research, Dr. Jagadeesh Yeluripati and Myroslava Khomik from The James Hutton Institute of Aberdeen and Prof. Jo Smith and Valeria Mazzola (PhD student) from the University of Aberdeen.



SkyLine transect and the trolley with suspended chamber and the portable LGR

setting the installation. It is the first time that such an instrument is used in an open bog in Scotland. It will be a challenging experience due to the extreme weather conditions of the site. It is an automated chamber-based system that allows continuous measurements of CO₂ and CH₄ fluxes (night and day, minimizing the time of fieldwork), consisting of a single chamber suspended from a motorised trolley mounted on a 2 m high Kevlar rope and held by two iron trellis (above, left). The trolley contains the LGR Ultra-Portable Gas Analyser, which is able to measure instantly CO₂ and CH₄ concentrations at the same time (above, right).

The installation has been a challenge due the difficult condition of the ground: the lack of bedrock, and so the inability to properly anchor the trellis below the ground, implied the use of two water tanks (500 litres each), which have been placed at each side of the transect in order to prevent the collapse of the system (fig 2). The installation ended with the insertion of 30 plastic collars (20 cm diameter) into the soil across the 40 m transect, including areas with water pools (implying the use of floating collars). To minimize the impact of the installation and to prevent future damages to the vegetation and the soil during fieldwork, a new boardwalk was constructed (as described above).



The SkyLine installation took place in May, directly involving Ben Kean, James Morison and Sylvia Toet from the University of York plus other technicians and members from Forest Research and The James Hutton Institute. It took the team two days of hard work for



In April, 6 squared static chambers were installed near the Skyline transect in order to collect air samples into vials every month. The aim is always to compare the concentration of CO₂ and CH₄ using the Gas Chromatography from these chambers to the concentrations obtained with the SkyLine. Now that everything has been set, all we have to do is start measuring! *For more info please contact valeria.mazzola@hutton.ac.uk*

Other news and announcements

News from IUCN UK Peatland Programme

Following discussions with numerous stakeholder groups an updated version of the Peatland Code (Version 1.1) was launched in March of this year. Also published were a range of supplementary resources which can, as a first step, help landowners determine both the current condition of their peatland and the potential GHG savings that could be achieved by implementing restoration activities. If you have a restoration project that could potentially benefit from carbon funding please get in touch. The IUCN UK Peatland Programme team will be able to discuss with you in more detail the Peatland Code eligibility requirements and the validation process.

Email: jillian.hoy@iucn.org.uk or call 0131 312 4730. The Code and supporting resources can be downloaded from www.iucn-uk-peatlandprogramme.org/peatland-code.

Funding secured for Flow Country

You may remember in March [we asked for your support](#) for a peatland restoration project at RSPB Scotland Forsinard Flows nature reserve, which was in the running to receive funding from the [European Outdoor Conservation Association](#) (EOCA). With the results counted and verified the project finished in second place in the nature category; however despite not winning the vote RSPB Scotland were awarded €30,000 in funding anyway! The full amount asked for.

After the voting period finished and the initial funding was allocated to the winners the [EOCA members](#) sat down to decide which of the remaining nominated projects they would like to make happen too. RSPB Scotland were successful at this stage, along with projects by two other organisations. It just goes to the show that the work being done to restore this important landscape is really impressive.

A huge thank you to everyone who took a moment to vote for this project, which was nominated by [Mountain Equipment](#). RSPB Scotland were absolutely overwhelmed by the support received, which they are sure impressed the EOCA members and helped secure this funding. This money will enable tree removal and drain blocking over 3.64 ha of the Dyke plantation. *Ruth Carruthers, RSPB*



Sundew © Ben Andrew (RSPB)

New look for the Forsinard Flows Visitor Centre

The RSPB Forsinard Flows Visitor Centre has now been refurbished and is open to the public for the season. The new refurbishment includes the Flows to the Future exhibition. As well as the visitor centre, additional displays have now been included in the Strathnaver museum (Bettyhill) and in Caithness Horizons (Thurso). In addition, the Flows to the Future project launched a traveling exhibition at the Royal Botanical Gardens of Edinburgh on the 15th of June. Details about the exhibition can be found [here](#). For more details about the Visitor Centre: Paul.turner@rspb.org.uk and for more details about the other exhibitions: Caroline.eccles@rspb.org.uk.



IPS Alan Robertson Awards: Congratulations to Paul Gaffney!



Paul receiving the award from Prof Sue Page, Chair of the UK Peatland Society

The Alan Robertson Awards, supporting early career peatland researchers and practitioners was awarded for 2017 at the International Peatland Society Convention in Aberdeen in May. Paul Gaffney was one of the 8 recipients of this award of 500 Euros, which allowed him to pay for his participation to the conference. Following the successful defense of his PhD in March, Paul is now working as a hydrochemist with the ERI. This involves water quality analysis for wind farm developments, along with interpretative reporting of these results in the context of assessing land management effects and water quality targets. You are most likely to see him again if you come via ERI during your travels in the Flows! *Roxane Andersen, ERI*

The next edition of the newsletter will come out in September, please email your contributions to Roxane Andersen (roxane.andersen@uhi.ac.uk) before the Friday 15th of September 2017.