

PEATLAND ACTION: LEARNING FROM SUCCESS

20th - 22nd October 2014. Eden Court Theatre, Inverness



INVERNESS LOCATION MAP

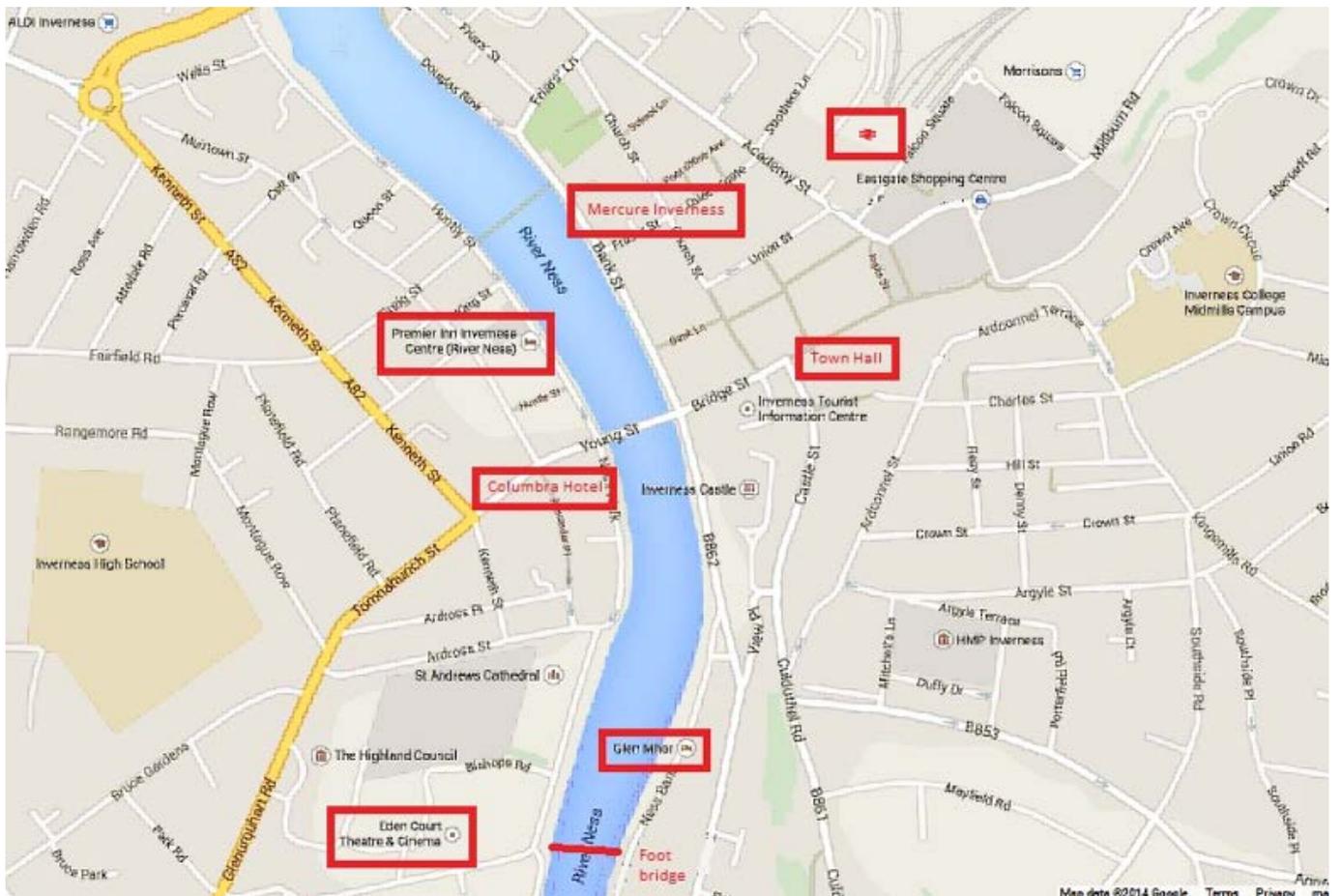


TABLE OF CONTENTS

General Information	4
Monday	9
Tuesday	10
Wednesday	12
Poster Abstracts	13
Speaker Biographies	24
Fieldtrips	31
Acknowledgements	36
Delegate Listing	37

GENERAL INFORMATION

The conference will take place over three days from Monday 20th October 2014 till the afternoon of Wednesday 22nd October 2014.

The Plenary sessions will take place in La Scala Cinema and delegates will be called 10 minutes before the session starts. The Workshop sessions on Tuesday 21st October 2014 will take place in various rooms within Eden Court Theatre and will be outlined in the 'Programme' section. There will be staff on hand to help guide delegates and there are floor plans of Eden Court Theatre in this handbook.

The Registration Desk will be located in the front foyer of Eden Court Theatre before reaching the Box Office and will be set up on the morning of Monday 20th October 2014 and for the remainder of the conference.

Tea, coffee, lunches and poster sessions will be located in the Stalls Foyer on the second floor.

Location Postcodes

Eden Court Theatre address is:
Bishop Road
Inverness
IV3 5SA

Registration

Registration will take place:
Monday 20th October 2014 in the Front Foyer from 12:00 – 13:00
Tuesday 21st October 2014 in the Front Foyer from 9:00 – 9:30
Wednesday 22nd October 2014 in the Front Foyer from 9:00 – 9:30

Meals and Refreshments

- Monday 20th October 2014

12:00 – 13:00 Tea and Coffee and shortbread in the Stalls Foyer

13:30 – Packed lunches for delegates leaving on field trips and buffet menu in the Stalls Foyer for those staying for the research session.

19:30 – Evening Meal at Mercure Hotel (please see map). The Monday night evening meal will be a three course sit down meal with a paying bar.

Dress code: Casual

- **Tuesday 21st October 2014**

9:00 – 9:30 – Tea and coffee in Stalls Foyer

11:25 – 11:40 – Tea and coffee in Stalls Foyer

13:15 – 14:00 – Lunch in Stalls Foyer

16:55 – 17:55 – Tea and coffee in Stalls Foyer

19:00 – Civic Reception at Inverness Town Hall (please see map). The Civic Reception dinner will be a hot buffet dinner with the presence of the Lord Provost and drinks and entertainment.

Dress code: Smart Casual

- **Wednesday 22nd October 2014**

9:00 – 9:30 – Tea and coffee in Stalls Foyer

There is no lunch provided on Day three of the conference, although there is a café in Eden Court Theatre and other options near-by.

Dietary Requirements

If you have any dietary requirements, your name badge will have a sticker indicating as such. Please make yourself known to registration and catering staff and don't hesitate to ask for your meal as you have been accommodated for.

Accommodation

If you have booked accommodation, you will be have been allocated one of the four hotels. For those travelling outside of the Commonwealth countries please make sure you have your passport number with you for checking in. For ease of registration all hotels have been notified that delegates will register from 6pm onwards, therefore please do not try to register before this time.

The conference hotels are:

- **Glen Mhor Hotel**

8-15 Ness Bank, Inverness IV2 4SG

- Free Wi-Fi
- Secure Parking
- Bistro and Bar on site

- **Columba Hotel**

7 Ness Walk, Inverness IV3 5NF

- Free Wi-Fi
- Restaurant, Café and Bar on site
- 24 hour room service

- **Mercure Inverness**

Church Street, Inverness IV1 1DX

- Free Wi-Fi
- Restaurant and Bar on site
- Gym on site
-

- **Premier Inn River Ness**

19-21 Huntly Street, Inverness IV3 5PR

- Free Wi-Fi
- Chargeable parking
- Restaurant on site

Name Badges

Name badges should be worn at all times; it assists with venue security, enables you to get meals and refreshments from catering and enables you to identify fellow delegates.

Fieldtrips

Fieldtrips buses will leave from the Eden Court Theatre. Please ensure you have picked up your pre-prepared packed lunch before boarding the bus. Fieldtrips will finish at 18:00pm and return delegates to their allocated hotels. Please ensure you have picked up your luggage from the cloakroom before boarding the bus. Toilet breaks will be included in the fieldtrips. Outdoor equipment and wellington boots or walking boots are required for all fieldtrips. For more details on fieldtrips please go to page: 31

Internet Connection and WIFI

Wireless is available throughout Eden Court Theatre. Please select Eden Court Public option. All hotels have free wireless, please verify with your hotels for details.

Cloak Room

Eden Court Theatre has a manned free cloak room available to delegates throughout the duration of the conference

Social Events

- Monday 20th October 2014

Welcome Dinner: *Mercure Inverness*

19:30: Our welcome dinner is open to all delegates and is a great way of networking and reconnecting with old friends. The Welcome Dinner is included in the price of registration (except day delegates) which consists of three course sit down meal. A late night bar will be available. Dress code is casual.

- Tuesday 21st October 2014

Interactive Poster Session: *Stall Foyer*

16:55 - 17:55: Active poster session, where poster presenters will be present to answer questions and chance to try conference beer. There will also be six mini-poster presentations.

Civic Dinner at Inverness Town Hall

The Civic Dinner is the more formal event of the conference with a welcome from the Lord Provost. There will be hot buffet with complimentary drinks from the bar, followed by evening entertainment. The Civic Dinner is included in the price of the registration (except day delegates). Dress code is smart casual.

Emergency Service and Fire Procedures

Procedures in the event of a fire or other emergency will be outlined at the start of the meeting. It is your responsibility to read the information provided on evacuation procedures and to pay attention to safety announcements.

Information for Speakers

Please come to the registration desk in the Front Foyer and let us know you have arrived in time for your presentation. If you haven't already sent us your presentation or have a newer updated version to upload, please make sure you bring it on a memory stick ahead of time so we can upload it and check that it works.

Rehearsal times for Speakers, including mic-check are as follows:

- Monday 20th October 2014	12:30 - 12:45
- Tuesday 21st October 2014	8:30 - 9:15
- Wednesday 22nd October 2014	9:00 - 9:15

Workshop Leads – please stay behind for a 10 minute briefing session before lunch on Tuesday 21st October 2014 at 13:05.

Information for Presenters of Posters

Posters will be displayed in Stalls Foyer on the second floor for the duration of the conference. We ask that all presenters attend the Interactive Poster Session on Tuesday evening to discuss their work and answer questions from delegates.

Poster boards are 1.2 metre high x 900 wide Portrait (A0). It is therefore recommended that your poster should be 1 metre high x 800-850 wide. Please bring your own Velcro circles with which to hang your posters. A limited supply of Velcro circles are available. Boards will be labelled according to numbers printed in this programme.

Posters must be removed by the end of Wednesday by 12:00pm; any poster remaining after this time will be disposed of by the poster board hire company. You will be able to store your poster if you so wish in the cloak room.

Directions to Eden Court Theatre

- By Train

There are frequent train services to Inverness via ScotRail service from Glasgow and Edinburgh. There are some direct services to Inverness from London on the main East Coast Line. Those travelling further afield may find it easiest to arrive in either Glasgow or Edinburgh and change rather than trying to find direct services.

It is a short 15 minutes' walk from Inverness train station to Eden Court Theatre, although a taxi rank is available at the station should you wish to use it.

- By Bus and coach

You can reach Inverness by coach from many destinations around the country. The main operator is Stagecoach. The Inverness bus station is in the city centre and is situated a short walk from the train station and main shopping area.

- By Taxi

There is a taxi rank just outside the train station. It can often be just as quick, and significantly cheaper, to walk.

- By Car

Eden Court Theatre has free on-site parking located at the back of the venue. For satnav users, the postcode is **IV3 5SA**

MONDAY **20TH OCTOBER 2014**

Schedule

12:00 - 13:00

Registration

13:00 - Welcome

Jonathan Hughes, Scottish Wildlife Trust

13:30

Explanation of Field Trips and collection of packed lunches and luggage

13:30 - 18:00

Field Trips or Research Meeting

18:00

Delegates return from field trips and check into hotels

19:00

Richard Lindsay Peatland Restoration Briefings side event at Mercure Hotel

19:30

Welcome dinner at Mercure Hotel (please see map)

TUESDAY **21ST OCTOBER 2014**

Schedule

09:00 - 09:30

Registration

Plenary - Session One: What progress is being made towards our peatland goals?

Chair: Jonathan Hughes, Scottish Wildlife Trust

09:30 - Welcome

Ron Macdonald, Director of Policy and Advice Scottish Natural Heritage

09:40 - Overview of Progress under the IUCN UK Peatland Programme

Clifton Bain, IUCN UK Peatland Programme

09:50 - Progress on UK Peatland Action from country levels

Andrew Coupar, Scottish Natural Heritage

**Peatlands for the Future: developing a national programme
for restoring Welsh peatlands**

Peter Jones, Natural Resources Wales

Maggie Charnley, Department for Environment, Food and Rural Affairs (DEFRA)

Martin Bradley, Department of Environment Northern Ireland

**10:30 - EU Perspectives - Pôle Relais Tourbières – Peatland Restoration
work in France**

Francis Muller, Pôle Relais Tourbières

10:40 - Reports on peatland mapping of the resource and its condition in the UK

Steve Chapman, Hutton Institute

Chris Evans, Centre for Ecology and Hydrology

11:05

Global assessment of peatlands

11:15

Panel Discussion

11:25

Refreshment Break

Plenary – Session Two: The New Business and Environment Partnership

11:40 - Key Note Speaker: Business and the Environment.

A Critical Partnership - Not a Nicety but a Necessity

Roddy Gow, The Asia Scotland Institute, Edinburgh Centre for Carbon Innovation

11:55 - In company? Businesses, NGOs and horticultural peat

Olly Watts, Royal Society for the Protection of Birds

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12:10 - Business involvement in peatlands

Graham Manson, Highland Park Distillery

12:25 - Peatland Carbon Code Pilot Phase Update

Mark Reed, Birmingham City University/ IUCN UK Peatland Programme

12:50 - Summary of DEFRA Research to support the Peatland Code

Mary-Ann Smyth, Crichton Carbon Centre

13:00

Concluding Remarks and Panel Discussion

13:15

Lunch

Plenary - Session Three: Learning from Restoration

Chair Rob Stoneman, Yorkshire Wildlife Trust

14:00

Introduction

14:05 - Peatland Restoration: what we know now that we didn't know 10 years ago

Martin Evans, University of Manchester

14:15 - Looking at highly innovative techniques

Penny Anderson, Penny Anderson Associates

14:25

Explanation of workshops

14:35 - Round One of Workshops

- A. Peatland Restoration Guidelines
- B. Peatland Restoration and Forestry
- C. Wet Peatland Agriculture Systems
- G. Innovation in Restoration

15:45 - Round Two of Workshops

- D. Peatland Code Pilot
- E. Coordinating Science, Policy and People
- F. Consequences of Peatland Restorations for Land Managers
- H. Business and private funding for Peatlands

16:55

Interactive Poster Session

18:00 - 19:00

Free time

19:00

Civic Reception at Inverness Town Hall with attendance of Lord Provost.

WEDNESDAY **22ND OCTOBER 2014**

Schedule

09:00 - 09:30

Registration

Plenary - Session Four: What's new in research on peatland ecosystem services

Chair: Stuart Brooks, John Muir Trust

09:30 - Welcome

Stuart Brooks, John Muir Trust

09:45 - Sweden's Admire Restoration Work

Lisa Tenning, Projektledare Life to ad(d)mire

10:00 - Landscape scale research: Flows and South Pennines

Jon Walker, Peak District National Park Authority

Roxane Andersen, James Hutton Institute

10:20 - Five years of greenhouse gas fluxes at a rewetted industrial cutaway Peatland

David Wilson, Environmental Consultant

10:50 - Effects of peatland management and restoration on greenhouse gases and water

Chris Evans, Centre for Ecology & Hydrology

**Mapping and Modelling Peatland Water Resources
(collaboration with University of Exeter)**

David Smith, South West Water

Flood Risk benefits of blanket bog restoration

Martin Evans, University of Manchester

11:40

Panel Discussion

Plenary - Session Five: Looking Forward

11:50 – New Initiatives for Peatlands

Jonathan Hughes, Scottish Wildlife Trust

12:05 – IUCN UK Peatland Programme Review

Rob Stoneman, Yorkshire Wildlife Trust

12:15

Closing Remarks

13:00

Close of conference

POSTER ABSTRACTS

1. Abdassalam Ehbair Bangor University

Rising DOC trends: Implications for the treatment of potable water

In the last two decades the concentration of dissolved organic carbon (DOC) has increased in freshwaters in many parts of the northern hemisphere, particularly in rivers and streams draining peat soils. This has been attributed to reduced acidic deposition and climatic and land use changes. Concentrations of DOC in freshwaters used as sources of drinking water must be reduced prior to the addition of a disinfectant to minimise the formation of potentially harmful carcinogenic compounds (disinfection by-products; DBPs), so the rising DOC trend poses a threat to the human health as it may lead to increased DBP production if treatment processes are not improved. One land use change that has been linked to rising DOC is peatland drainage, undertaken in the UK extensively in the 1960s and 1970s to improve upland areas for agricultural grazing. Recent evidence has demonstrated that this can increase organic carbon losses to freshwaters due to increased decomposition of the peat matrix, however relatively few studies have examined the characteristics of this extra carbon and its likelihood to form DBPs compared to DOC supplied by natural streams. We are testing these impacts by sampling drainage ditches and natural streams in the catchment of Llyn Conwy, an upland reservoir in N Wales, and experimentally exposing peat cores to lowered water tables, and quantifying and characterising the DOC.

2. Rosmarie Katrin Neumann Birmingham City University

Gimme Moor: Adaption and implementation of scientific knowledge into peatland policy - Does it work?

1. Description of the problem: integration of knowledge into decision-making processes; value of peatland ecosystem services; inefficient communication with science-policy interface; need for improved evidence-informed policy decisions. 2. Relevance of the research: improve scienc-policy network structure; ... 3. Research questions: 1. Does the network structure of science-policy interfaces matter for the implementation/adoption of

peatland ecosystem service knowledge into conservation policy? 2. Is knowledge exchange viewed differently from a policy maker perspective compared to other actors in the science-policy landscape of peatland conservation? What are specific needs for each stakeholder group? 3. What role can bridging agents take on to improve international evidence-based peatland policy? 4. Methodology: international case studies, social network analysis, policy analysis, literature reviews, interviews

3. Catherine Farrell Bord na Mona

The Bord na Móna Raised Bog Restoration Project

Since its establishment in 1946, Bord na Móna (the Irish Peat Company) has acquired extensive areas of Irish peatlands to develop for fuel, energy and horticultural growing media. In 2008 the company CEO announced that no new bog areas (i.e. no previously un-drained bog areas) would be developed for peat production. This was followed by a baseline ecological/habitat classification of the full range of the Bord na Móna lands between 2009 and 2011. During the survey, a number of raised bogs partially drained for peat production in the 1980s were subsequently identified as being of high ecological and conservation value, as well as having significant restoration potential. These bogs now form the core of the Bord na Móna Raised Bog Restoration programme (2009 to present) which has been developed as one strand of the company's Biodiversity Action Plan (2010-2015). The standard restoration methodology used in the Bord na Móna restoration work was developed by the National Parks and Wildlife Service under the Dutch-Irish Restoration programme in the 1990s. There are two key elements involved, both centred on ensuring restoration of the appropriate hydrological condition for sphagnum growing conditions (i.e. rewetting). Firstly, a topographical survey is carried out to identify peat dam locations (one for every 10 cm fall in height along open and active drains) and this is followed by a comprehensive drain-blocking programme using a low-bearing pressure excavator. All open and active drains are assessed and surveyed and are only left open where there is incomplete ownership of the site by Bord na Móna. Changes in habitat quality of

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these sites are being monitored to assess the success of the work, both in the short and long term. This involves an initial baseline ecotope survey to be repeated a number of years post-restoration to establish successes in rewetting, as well as monitoring of permanent quadrats. Monitoring of greenhouse gases is also taking place on the restored bogs to assess the potential offset of carbon by rewetting drained bogs. At this stage, it is difficult to make definitive conclusions about the impacts of the restoration but, in general, water levels have been responding quickly and are being maintained very close to the bog surface. Also, in a number of sites there has already been a notable increase in sphagnum cover. In most instances the restoration work and resultant habitat improvement has also served to increase populations of typical peatland species of national conservation interest, such as Curlew and Red Grouse. To date, up to 1,000Ha of raised bog have been restored using this methodology and Bord na Móna will continue the rewetting of other sites with a further 1,000Ha of bog targeted for future work. The work continues to be funded under the Bord na Móna Biodiversity Action Plan (2010-2015) and the average cost is approx. €400/ha (includes all project planning, survey, supervision, machine, driver and overheads). All of the sites restored so far are being considered for designation as part of the NATURA 2000 SAC network and/or as part of the national conservation network as NHAs (Natural Heritage Areas) and Bord na Móna restored bogs will add considerably to the bog conservation and restoration network of peatland habitats in Ireland in coming years.

4. Stéphanie Boudreau Canadian Sphagnum Peat Moss Association

St-Fabien-sur-Mer peatland: a Canadian example of a peatland restoration project

St-Fabien-sur-Mer peatland (Quebec, Canada) is a good example of restoration project that integrates the characteristics of the landscape, the conservation of biodiversity, the participation of stakeholders as well as the communication with local communities. The project was initiated in summer 2011, with the participation of various stakeholders. A first part included the collection of data for

site characterization, the development of a restoration plan, its implementation and monitoring. The objectives of the restoration plan were: 1) to prioritize ecological restoration (i.e. restoring the functions of a peatland ecosystem), taking into account the existing vegetation, and 2) to make a demonstration site showcasing different restoration / reclamation options after peat harvesting. The restoration plan includes six options: A) Restoration of bog (by the moss-layer transfer technique); B) Restoration of fen (by rewetting); C) Management of a swamp area (by creation of microtopography in a forested area); D) Creation of pools; E) Tree planting; and F) Plantation of berry shrubs. A second part in development is focusing on conservation and communication. Interpretation trails and panels will be installed across the site and will highlight various topics related to the project: peatland ecology and formation, history of the peat industry in the region and importance of the industry to local communities, restoration aims and methods, outcomes on biodiversity, hydrology and greenhouse gas emissions, etc. Eventually, the site will be annexed to the Bic National Park for long-term conservation.

5. Lisa Tenning County Administrative Board of Jämtland

Life to a(d)dmire; mire restorations in Sweden

LIFE TO AD(D)MIRE; MIRERESTORATIONS IN SWEDEN

L. Tenning County administrative board of Jämtland, A. Lundgren County administrative board of Östergötland, F. Lundin County administrative board of Dalarna, J. Rova County administrative board of Jönköping, S. Lamme County administrative board of Kronoberg, K. Lindström County administrative board of Västernorrland and T. Hansson County administrative board of Skåne The Life to ad(d)mire project will restore 35 Natura2000 sites from the North to the South of Sweden. The project aims at stopping the decrease of habitats and species at these sites through hydrological restoration and vegetation measures. The project is funded by Life and the Swedish Environmental Protection Agency. Life is EU 's financial instrument supporting Nature and Environmental conservation projects, the main goal is a

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decreasing loss of biodiversity within Europe. Life Nature supports projects within Natura 2000-sites. Natura 2000 is a network established for EU's most threatened species and habitats. Life Nature supports projects that contribute to the implementation of the EU's Birds and Habitats Directives. Ditches draining the mires are filled to restore the hydrology; most of these restorations are done by excavators. Peat is used for filling the ditches and logs are used as plugs to stabilize the structure. In other parts of the mires the ditches are given a more natural appearance by meandering morphology. Overgrown wetlands are being cleared and former haymaking mires are being prepared for mowing. Monitoring is done before, during and after the restorations. Vegetation monitoring and bird monitoring are done with the national Natura 2000 mire methodology. Ground water pipes are placed inside and outside the sites. Aerial photos are taken before the restorations started and will be taken the last year of the project. Contact Information: L. Tenning Länsstyrelsen Jämtlands län, Residensgränd 7, SE-831 86 Östersund, Sweden. Phone: +46722-160 825, Email: lisa.tenning@lansstyrelsen.se

6. Mary-Ann Smyth Crichton Carbon Centre

Peatland Code Metrics: Emission Factors

People involved in peatland restoration projects are interested in quantifying the consequences of restoration on greenhouse emissions. This project developed protocols for field surveys to establish baseline conditions and potential emission savings following restoration under the Peatland Code. These emission factors can be used on their own (as a guide to the potential climatic value of the project), or with the financial decision tool to help compare restoration costs, tonnes of greenhouse gas saved, and potential revenues. by Mary-Ann Smyth (mas@carboncentre.org), Emily Taylor (e.taylor@carboncentre.org), Chris Evans (cev@ceh.ac.uk), Rebekka Artz (rebekka.artz@hutton.ac.uk), Dick Birnie (richardvbirnie@gmail.com), in collaboration with Stephen Prior (sdp@forestcarbon.co.uk) and Andrew Moxey (apmoxey@pareto-consulting.co.uk)

7. Emily Taylor Crichton Carbon Centre

Peatland Action in the South of Scotland

A presentation of Peatland Action projects in Dumfries and Galloway and the Scottish Borders

8. Neil Harnott Cumbria Wildlife Trust

For Peats' Sake

Case studies from Cumbria

9. Simon Thomas Cumbria Wildlife Trust

Restoring Upland Fens in the English Lake District

Case studies of how blanket bog restoration techniques can be successfully adapted to restore the hydrology of soligenous and topogenous mires.

10. Fernando Fernandez Department of Environment, Heritage and the Gaeltacht

Overview of successful raised bog habitat restoration projects in Ireland

National Parks and Wildlife Services (NPWS), Department of Arts, Heritage and Gaeltacht, Republic of Ireland
Introduction Restoration works on Irish raised bogs have been undertaken since the 1990s mainly by NPWS. Although the majority have taken place on the high bog, some were also undertaken on adjacent cutover areas. Most successful restoration works involve two techniques: a) blocking of high bog and cutover drains with peat dams and b) construction of small (<1m high) barrier dams on the cutover bog margins with peat and impermeable plastic sheeting. The objective of the first technique, which has already been employed in over 40 sites in Ireland on the high bog and over ten sites on cutover areas, is to slow the flow of water off the bog and to raise water table levels to allow the development of active raised bog vegetation. According to Kelly & Schouten (2002) for active raised bog, mean water levels need to be near or above the surface of bog lawns for most of the year. Seasonal fluctuations should not exceed 20cm, and water level should be within 10cm of the surface, except for very short

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periods of time. The objective of the second technique, only implemented thus far in Killyconny Bog SAC, is to increase the extent of the surface rewetted (water depth <50cm) within the cutover to promote the restoration of peat forming vegetation (e.g. active raised and/or lagg). This technique, where deemed necessary, also allows controlling water levels to avoid impacts on adjacent land by discharging into boundary drains. Further monitoring, particularly on restored cutover areas, is needed to assess the response of cutover areas to restoration works and to assess the period of time needed for the development of active raised bog within these areas. Both techniques are the most common restoration methods proposed in the site specific restoration plans currently being produced by NPWS for the National Raised Bog SAC Management Plan, which is part of the National Peatlands Strategy (both documents are available at <http://www.npws.ie/peatlandsturf-cutting/nationalraisedbogsacmanagementplan/>)

11. Alison Whalley Environment Agency

Pennine Peat Partnership

A working strategic partnership across the Pennines.

12. Marie Ferre ETH

Sustainable management of organic soils in Switzerland

Agricultural use of peat soils leads to severe forms of degradation of this natural resource in many regions of the world. The impacts of the agricultural practices are not restricted to the field but concern the whole of the surrounding environment and ecosystem. Furthermore, the continuing degradation of these soils challenges the future of production activities at these places. This study aims at analyzing from a production system perspective the mechanisms which could on the one hand prevent long-term disappearance, and on the other hand maintain long-term productivity of these agriculturally utilized peat soils in Switzerland. It aims at developing an indicator or a set of indicators able to capture the farming system performance on managed peat soils in an encompassing way. The analysis will account for "traditional" agricultural

inputs (including factors of production characteristic to peatlands and differentiating pollution-causing inputs from non-pollution causing inputs) and outputs, as well as undesirable outputs (e.g. greenhouse gas emissions) and ecosystem services provision (e.g. soil water retention capacity). Productivity and efficiency analysis will be applied on the farms operating on peat soils using a multiple-inputs multiple-outputs model. Two complementary techniques will be used for this analysis: data envelopment analysis (DEA) and stochastic frontier analysis (SFA). Based on this, indicators will be designed as reflecting the farm performance at both agricultural/farm and environmental/landscape levels (particularly from the peat soil resource perspective in this case). This indicator or set of indicators should enable the assessment and comparison of land management options (e.g. intensive versus extensive peat soil uses). Economic data concerning the farming production system will be obtained from secondary data and data relative to undesirable outputs and positive externalities provision will be obtained from the analysis of primary data collected in a companion PhD project. At a broader level, the objective of this project is to build a conceptual framework in farm performance analysis applied to specific natural resource management (using the example of peat soils) that considers the complete farming system, enables accounting for farm factors which are relevant at a landscape or regional level and are inter-dependent between farms, and allows the design of an indicator facilitating the comparison between different land uses.

13. Morag Angus Exmoor Mires Project

Demonstrating restoration best practice on shallow marginal peatlands: the case of Exmoor

Peatland restoration has been extensively practiced throughout the UK to address various degrees of damage, but with the same goal of restoring some of the ecosystem services provided by these environments, namely to enhance water storage, improve water quality, biodiversity and carbon storage. The restoration of deep peat has been widely studied, but shallow peatlands are rarely mentioned, despite their large spatial extent, in both

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lowlands and uplands. In many cases, projects working on shallow peatlands have called upon past experience from deep peat and developed their own restoration approaches. The methods and lessons learned by the Exmoor Mires Project for the restoration of the shallow blanket and valley mires on Exmoor National Park are presented here. During the planning stage, various stakeholders, as well as a range of physical and legal factors (e.g. biodiversity, landscape, public access, current management strategies, historical environment, statutory obligations), were incorporated into the management plans. This holistic approach was found to be essential to avoid conflicts between parties, increase support for restoration, and further ensure its success. A new blocking technique was also developed, thereby avoiding the use of bales: dams made out of a combination of wood and peat were found to be both more efficient at reducing and diverting the flow, but also longer lasting than bale dams. Overall, it was found that local differences in peat depth and ditch characteristics (i.e. length, depth and width) between sites impact significantly on both the cost of restoration and its feasibility. Finally, with an average cost (£ 306 ha⁻¹) below the median national value across the whole of the UK, the restoration of shallow peatlands was found to be technically and financially viable. The work presented here demonstrates best practice techniques that are more widely applicable in other marginal and damaged peatlands.

14. Madeline Davey Exmoor Mires Project

Coordinating science, educational outreach and volunteering to achieve biodiversity monitoring on Exmoor. The Exmoor Mires Project, The Heart of Exmoor (HLF) Project and First Ecology have been working together since 2010 to deliver a broad range of peatland-based educational activities, training events and opportunities, practical volunteering and restoration monitoring on Exmoor. This has included participation in the MICCI programme, our yearly Bogtastic Day event, and over 4000 educational or volunteering day visits. This work has helped to embed an understanding of the aims of the Exmoor Mires Project within the local community on

Exmoor, leading directly to a greater participation in the Project's volunteering programme. These volunteers have been engaged in practical restoration maintenance tasks and through the education programmes they have been equipped with the skills to assist with the ongoing vegetation monitoring programmes. In a unique combination of ecology professionals (First Ecology Consultants, part of Somerset Wildlife Trust), dedicated volunteers and the two Projects, a programme of vegetation monitoring has developed. The results of this work have been reported at the recent "In the Bog" conference (Sheffield, Sept 2014) and further publications are to follow which will include 2014 data. The headline results from 2013 are that at five of the seven sites re-surveyed by the team, restoration has led to a change in NVC type to a wetter, more acidic and nutrient poor vegetation. This confirms that the restoration has been successful on these five sites and that further work may be needed on the remaining two.

15. Rebekka Artz James Hutton Institute

Peatland restoration success monitoring in the Flow Country

A short overview of our ongoing work to assess restoration success from a vegetation, soil microbiological, emissions, and invertebrates

16. Johan Rova Jönköping County Administrative Board

Restoring raised bogs and rewetting drained forests - LIFE to ad(d)mire in Jönköping County

As part of a LIFE+ project, about 600 hectares of raised bog and wet coniferous forest in Jönköping County, Southern Sweden, were restored from impacts of draining and peat harvesting during 2010-2014. The aim was to restore favorable conservation status for wetland species and habitats within the Natura 2000 network. Dry ridges were removed from 200 hectares of former peatery at Store Mosse National Park, and over 100 km of ditches were blocked at another site. Methods used for blocking ditches and removing dry ridges are described. At a third site, 40 hectares of wet forest and fens were restored by

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blocking of ditches in nitrogen rich peat soil, and the effect on greenhouse gas balance from this action was calculated. Calculations showed that total greenhouse gas emissions were reduced by rewetting due to declines in CO₂ and N₂O emissions.

17. Chris Miller Lancashire Wildlife Trust

The Chat Moss Project – Raised Bog Restoration in Manchester's Big Sky Country
Situated just 10 miles to the West of Manchester, the Chat Moss area at 3569ha was England's fifth largest raised bog. However, peat extraction, agriculture and development have led to the destruction of 95% of this habitat. The remaining habitat is highly fragmented, in poor condition, or is currently being peat extracted. The Chat Moss Project is working to restore and reconnect these fragments including work on SAC designated sites and former peat extraction workings, as well as reconnecting local communities with their peatland heritage.

18. Simon Caporn Manchester Metropolitan University

Sphagnum restoration using Beadamoss in the Peak District
S. Caporn (MMU), S.Hinde (MMU), J.Riggs (MMU), A. Rosenburgh (MMU), J.Walker (Moors for the Future), N. Wright (Micro-propagation Services Ltd) Micro-propagated Sphagnum moss, encapsulated in gel based beads 'Beadamoss', were planted on degraded peatland surfaces in the first full trials in the English Peak District in 2008-9. Different peat surfaces, treatments and planting months were compared. During summer 2014, after 5-6 years, the plots were re-surveyed. Planting on bare peats even with brash protection gave very poor results due to the mobile surface and exposure. Planting on revegetated surfaces was much better but the outcome depended on local site soil moisture; the wetter peats supported much greater establishment and growth than the on drier sites. Brash covering also improved success.

19. Sally Hall Masterpile

Masterpile
Specialists in Plastic Piling for peatland restoration

20. Matt Barney Micropropagation Services

Successful re-introduction & establishment of Sphagnum using Plug grown plants
Prof. Simon Caporn (Manchester Metropolitan University, MMU), Dr. Neal Wright (Micropropagation Services), Chris Miller (Lancashire Wildlife Trust, LWT), Anna Keightley (LWT), Steph Hinde (National Trust), Josh Riggs (MMU). Sphagnum plug plants were planted for the first time this spring at sites in the Peak District (blanket bog) and in the Manchester Mosslands (raised bog). Results show that Sphagnum introduced in this way can be highly successful and potentially be a way to introduce Sphagnum with rapid results. Sphagnum plugs plants were grown from Micropropagated Sphagnum of mixed species. On blanket bog they survived and grew substantially in wetter areas and the majority grew even in dry areas. On Raised bog over 97% survived with considerable growth, up to 3 times the size at planting.

21. Neal Wright Micropropagation Services

Sphagnum carpet produced by growth of SoluMoss in 16 weeks on re-wetted raised bog
Prof. Simon Caporn (Manchester Metropolitan University, MMU), Dr. Neal Wright (Micropropagation Services), Chris Miller (Lancashire Wildlife Trust, LWT), Anna Keightley (LWT), Josh Riggs (MMU). SoluMoss (large Micropropagated Sphagnum plantlets in a liquid gel) has been developed for rapid establishment and dense cover under the more favourable conditions of lowland raised bog with high water table. SoluMoss™ was planted in June '14 onto bare peat and a partially vegetated (Common cotton grass) site and covered with a thin layer of straw. By October '14 both sites had produced a carpet of Sphagnum covering an average of over 60% of the peat surface.

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22. Barbara Wright Micropropagation Services

Sphagnum - BeadaMoss® & Beyond

Dr. Neal Wright, Barbara Wright, Matt Barney (Micropropagation Services) BeadaMoss® was developed to restore Sphagnum to the harsh moorland environment. In more favourable areas (lowland raised bog with high water table) a fast establishment and denser cover is desirable and is possible under these more favourable conditions. SoluMoss™ has been developed to achieve this. It consists of much larger Micropropagated Sphagnum plantlets in a liquid gel for faster establishment.

23. Laura King Moors for the Future Partnership

Sphagnum Reintroduction - current peatland restoration works and monitoring

A poster presenting the outcomes of the Moors for the Future Sphagnum Seminar, providing the following information. - An update on Sphagnum application at a landscape scale, best available techniques, lessons learnt and future options. - What monitoring is taking place, what we know, where there are gaps in our knowledge and when will we be able to draw conclusions from current works.

24. Rachael Maskill Moors for the Future Partnership

A carbon audit of the MoorLIFE Project

The carbon storage capacity of peatlands is an important reason to protect and restore peatland habitats. However, the carbon impact of undertaking such work is not often taken into account. The MoorLIFE project aims to protect 1600 ha of active blanket bog. Over four years, the greenhouse gas emissions have been calculated for the most important activities – including helicopter applications of treatments. This poster will present the first findings of the MoorLIFE carbon audit and will place these in the context of the carbon benefits of peatland restoration.

25. Alasdair Brock Natural England

Restoration of degraded Lowland Raised Bogs in Cumbria. The last 10 years.

Methodology/photos/case studies

26. Justin Hanson Natural Resources Wales

Angle and Llyn Fens LIFE Project - Restoration Techniques Details and Lessons learned from lowland peatland fen restoration techniques

27. Alistair Lockett North Pennines AONB Partnership

Peatland Restoration Techniques in the North Pennines AONB

Bare peat restoration techniques used by the North Pennines AONB Partnership Peatland Programme.

28. Mark Harrison Orangutan Tropical Peatland Project

Lessons from peatland management and restoration efforts in Borneo

Increasing our capacity to sustainably manage and restore tropical peatlands is a priority, given the paucity of information available and high importance of these habitats for carbon storage, biodiversity and ecosystem service provision. We present an overview of the lessons learnt from the work of OuTrop and partners in the peat-swamp forests of southern Borneo, which includes hydrological restoration, reforestation efforts and accompanying monitoring research. This forms the basis of an ongoing and developing programme to conserve these valuable peatlands.

29. Andrew Moxey Pareto Consulting

Peatland Code Metrics: Financial Decision Tool

As part of the "Metrics" project to further develop the Peatland Code, a spreadsheet tool has been designed to support financial decision making in restoration projects.

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30. Penny Anderson Penny Anderson Associates

The SCaMP project

Results of grip blocking, bare peat restoration, gully damming, grazing management on biodiversity, blanket bog biodiversity and water quality

31. Lydia Cole Rezatec

Peat Spotter: Mapping, Measuring and Monitoring Peatland Assets

Using earth observation techniques, coupled with ground-data, we have developed a service to map peatland extent, its carbon content and integrity, and how these factors change over time. This information will be published in an interactive dashboard, which can be used for ongoing monitoring and assessment of peatland assets, and to support restoration planning and other components of peatland management.

32. Olly Watts RSPB

Peat push partnership statement

33. Norrie Russle RSPB Scotland

RSPB Forsinard Flows - 20 Years of Restoration

RSPB's Forsinard Flows nature reserve lies at the heart of the Flow Country of Caithness & Sutherland, the UK's largest area of blanket bog. RSPB's largest UK nature reserve it's 21,000 hectares is predominantly Natura designated peatland and was purchased in 1994. Over this time management works have included removal of over 2,500 hectares of forestry and installation of 24,000 blocks on drains to restore bog habitat and hydrology. Vegetation, bird, deer and habitat monitoring has taken place across the reserve throughout this period and the reserve has become a major focus for peatland management research with long term studies underway by CEH, JHI and various universities. From 2014 it also becomes the main focus for the £9 million Flow to the Future project under the auspices of the Peatland Partnership and will see a further massive area of forestry restored back to bog, building of a field

centre with researcher accommodation, research platform through the Environmental Research Centre, Thurso along with a wide range of interpretation, community and education activities across the Flow Country.

34. Anne Elliott Scottish Natural Heritage

Peat restoration trial using seeding at Monadhliath

Information about a current trial to restore high altitude eroding peat at Monadhliath using seeding

35. Estelle Gill Peatland Action - Scottish Natural Heritage

Which upland peatland stabilisation or restoration methods will work best in Scotland?

Approximately one third of blanket bog in Scotland is affected by erosion and this is generally most severe above altitudes of 600m. Upland restoration projects and/or trials of techniques are being funded by Peatland Action; however, it may be several years before we know which techniques have been most effective. We have had the opportunity to learn from the extensive upland peatland restoration projects carried out in Northern England, where various bare peat stabilisation and re-vegetation techniques have been tested, as well as ditch and gully blocking methods. Although the land-uses, vegetation and climate in Northern England are generally similar to those present in upland Scotland, there are some subtle differences which need consideration. These include differences in soils, climate, levels of accessibility, availability of local donor material, arrangements for drinking water supply and the increased difficulties in maintaining upland fencing. Here we consider some instances where restoration methods may require modification to be effective in the Scottish uplands.

36. Christina Wood Scottish Natural Heritage

Peatland ACTION: kick-starting the restoration challenge

The emphasis on peatlands in climate change accounting has already produced increased funding for peatland management. As lead advisor to the Scottish Government

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on peatland restoration, Scottish Natural Heritage was allocated a total of £5.7 million to restore 6500 ha of degraded peatland by March 2015 through the 'Peatland ACTION' project. The project has made swift progress in kick-starting Scotland's peatland restoration challenge as outlined in the Draft National Peatland Plan. With a total of 105 sites across the country set to benefit from on-the-ground Peatland ACTION funded restoration work, the project anticipates full-spend. Peatland restoration at a National level is far more than an exercise in raising water levels; raising the profile of peatlands and the multiple benefits they bring is a key part of the project's challenge, and one that we are working with others to achieve. Our team of 7 Project Officers (plus 4 Scottish Water Secondedees) based around the country in SNH and host organisations have been instrumental in identifying opportunities - their combined efforts reflected in the wide geographical spread and varied mix of grant recipients. Restoration funded includes forestry to bog restoration, grip blocking, bunding, scrub clearing, re-profiling and trialing of upland restoration techniques. Some projects demonstrates synergies between restoring peatlands and achieving wider ecosystem health; the Allt a' Marcaidh river restoration venture highlights an important role for peatland restoration in re-establishing a natural and productive river system. Working in partnership across different land management sectors to promote the benefits of healthy peatlands ensures that remaining barriers to peatland restoration are identified and addressed. As such, we hope to be successful in securing a milieu for peatland restoration in Scotland to continue long after the Peatland ACTION project has ceased in 2016.

37. Amanda Hutcheson Scottish Water

Peatland restoration in Scottish drinking water catchments

Many of our drinking water catchments contain peat soils. When large areas of these soils are present it can result in high colour and organic carbon levels in water supplying our water treatment works. This affects the water treatment process, making it more costly and energy intensive to treat. We have set up a project to survey and monitor a number of catchments where the level of organic

carbon is increasing. This will help us identify appropriate mitigation measures to improve source water quality.

38. David Smith South West Water

Assessing the impact of mire restoration on agricultural productivity

As peatlands are often used for grazing, it is important to be able to provide accurate information on the way in which restoration work will affect livestock. This study aims to determine how livestock are affected by rewetting work on sites within the Exmoor Mires Project restoration area. Here we focus on post-restoration changes in sward quality; a key aspect of agricultural productivity. Short term changes in sward quality following restoration work are presented and discussed. Furthermore, we describe the methods involved in work being undertaken on other crucial components of agricultural productivity, including parasite prevalence and cattle movement, and we outline the future aims of the study.

39. Donna Carless Swansea University

Carbon storage in Organic Soils (CO₂S): Quantifying past variations in carbon accumulation in peatlands of South Wales, UK.

Globally, peatlands comprise a vital terrestrial carbon sink, currently estimated to be around 500 PgC (Yu et al., 2011, Gorham, 1991). Within the UK, peatlands represent the single most important terrestrial carbon store (IUCN, 2011). In particular, blanket and raised bogs account for around 23,000km² or 9.5 percent of the UK land area, with current estimates indicating that they store approximately 3.2 PgC (IUCN, 2011). Recent studies suggest that carbon-sequestration rates have been highly variable during the Holocene (Frolking & Roulet, 2007). Reconstructing these past fluctuations is essential to assess how peatlands will respond to future climate change, particularly the possibility that large amounts of respired below-ground carbon will be released as a result of enhanced rates of decomposition, causing positive climate feedback. Quantitative estimates of past variations in carbon accumulation provide valuable insights into the

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factors controlling carbon budgets. Recent developments have illustrated how ground-penetrating radar (GPR) can improve constraints on peat thickness (Holden et al., 2002, Warner et al., 1990), facilitating site-specific peat-volume estimates for carbon quantification. We shall present initial results from the CORs project, which brings together a novel combination of geophysical and proxy techniques to reconstruct variations in long-term carbon accumulation in 6 ombrotrophic peat bogs, located across the Brecon Beacons National Park (BBNP), South Wales, UK (51°55'30" N, 3°29'18" W). Detailed GPR surveys are being used to provide comprehensive estimates of total peat extent and thickness at these sites. Combined with surface-elevation data from LiDAR imagery, 3D models are being created, from which total peat-volume estimates will be extracted. Carbon-accumulation rates will be inferred from these bog-volume estimates, coupled with total organic carbon (TOC) measurements and high-resolution radiocarbon dating. In addition, long-term environmental changes are being identified through the use of humification and plant-macrofossil analyses to reconstruct past variations in bog vegetation and surface wetness. This ensemble of techniques will permit direct comparisons to be made between records of carbon accumulation, palaeoclimate and vegetation, and hence will allow the factors influencing long-term carbon storage to be determined.

40. Ian Johnson Terra Firma Environmental Ltd

41. Doug Gilbert Trees for Life

Mire Restoration Project, Dundreggan Conservation Estate
Trees for Life were successful bidders to the Peatland Action Fund and are currently in the delivery phase of the project, using local contractors to mulch c27 hectares of Sitka and Lodgepole on deep peats.

42. Adam McAleer University of Bristol

Assessment of CH₄ fluxes from mires in Exmoor National Park

This poster will present findings from a study of soil to atmosphere emissions of gaseous methane from various mire sites within Exmoor National Park.

43. Emma Byrder University of Dundee

Freshwater Carbon Fluxes in Glenfeshie Moine Mhor: Field Methods and Strategy

Catchment characteristics -Erosion -Current status of bog
-Hydrology -Presentation of results collected so far on spectro:lyser data -Deer impacts

44. Naomi Gatis University of Exeter

Does ditch blocking affect CO₂ fluxes from a *Molinia caerulea* dominated bog in the short-term?

The shallow marginal peatlands of Exmoor, southwest England, have historically been subject to extensive drainage, which has altered the balance between primary productivity and decomposition compromising their ability to sequester carbon. Currently the Mires-on-the-Moors (www.upstreamthinking.org), funded by South West Water is attempting to restore the eco-hydrological functionality to over 2000 hectares of drained mire by April 2015. We hypothesised that such mire restoration will return these upland mires to peat forming/carbon sequestering systems. Here we present the effect of restoration on CO₂ fluxes (photosynthesis, ecosystem respiration and below-ground total and heterotrophic respiration) for the growing seasons at two critical stages in the restoration process: (a) immediately pre-restoration and (b) immediately post- restoration, and discuss the spatially variable processes driving below-ground CO₂ fluxes with a particular focus on the role of drainage features.

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45. Harriett Richardson University of Glasgow

Effects of Energy in our Environment: Peatlands and Wind Farm Microclimates

Ensuring the supply of energy, in the context of a changing climate and increasing land use pressures, is one of the largest challenges faced by the world today. Wind power is the fastest growing renewable source of energy in Scotland, the UK and worldwide. Benefits of wind farms for future energy security are clear, and impacts of their construction on land have been considered. Little is known however, about how the environment responds to hosting wind farms during their operational lifetime. In particular, effects of wind farms on microclimate conditions (i.e. changes in climate at a wind farm) are poorly understood. Air and soil temperature and soil moisture drive important ecosystem processes and services such as soil carbon storage. Given wind farms in Scotland are largely deployed in carbon-rich landscapes such as peatlands, an understanding of wind farm effects on microclimatic conditions in these landscapes is required. Research experiments examining how small changes in climate affect greenhouse gases produced by peat have shown that small rises in temperature and changes in soil moisture can boost the release of these gases into the atmosphere. Findings suggest that stores of carbon in peat will respond to changes in microclimate caused by wind farms. This research has the potential to promote best practice for future wind farm developments and improve calculations of the carbon 'cost' of building wind farms on peatlands.

46. Åsa Kasimir University of Gothenburg

Soil and abiotic factors affecting N₂O emissions from Spruce forest on drained Histosols and sandy soils in South-West Sweden

This work was conducted to study the N₂O emissions dynamics from drained organic and sandy soils forested with 60 year spruce (*Picea abies*), during three years.

47. Astrid Hanlon Yorkshire Peat Partnership

Geospatial analysis of degraded peat bog habitats utilising high resolution datasets captured using Unmanned Aerial Vehicle (UAV) Technology

YPP first started trials with UAV technology after finding limitations with commercially available aerial imagery and elevation data. The poster showcases the detailed analysis that UAV technology has enabled YPP to develop. Analyses include surface, hydrological, 3D visualisation, automated mapping of exposed peat, cross sectional profiling, 3D modelling of peat reserves and peat depth and volume loss quantification.

48. IUCN Peatland Programme Peat Compendium and Peatland Alliance

SPEAKERS **BIOGRAPHIES**

Penny
Anderson

Founder and retired Director of Penny Anderson Associates Ltd., one of the leading ecological consultancies in the UK. They have been advising organisations on ecological issues since the 1970s and have built up a reputation of integrity and quality.

Roxanne
Andersen

Dr. Roxane Andersen is a Research Fellow based at the Environmental Research Institute in Thurso, Scotland, part of the University of the Highlands and Islands. She has more than 10 years of research experience in peatland restoration and has been working in a range of sites in different countries including Canada, Scotland and Russia. Since 2012, Roxane has been coordinating the "Flow Country Research Hub", a network of researchers and stakeholders involved in peatland research in the North of Scotland. She is also the vice-chair of the Commission on restoration (V) for the International Peat Society. She currently supervises 7 post-graduates students, and her research focuses on the impact of disturbance and restoration of peatlands on biodiversity, microbial processes, and carbon biogeochemistry. Affiliation: Dr. Roxane Andersen, Environmental Research Institute (University of the Highlands and Islands)

Rebekka
Artz

Rebekka Artz is a Senior Researchers at the James Hutton Institute (Aberdeen) and the Environmental Research Institute Thurso (University of the Highlands and Islands), respectively. Along with Roxanne Andersen, she has over 10 years of experience in peatland and restoration ecology, starting out from a similar point of interest in peatland microbiology and vegetation succession.

Clifton
Bain

Clifton Bain is the Director of the IUCN UK Peatland Programme, based in Edinburgh, which is raising awareness of the multiple benefits of peatlands. Currently on secondment from RSPB, Clifton is a Zoology graduate of Aberdeen University with over 25 years' experience in wildlife conservation. For the last ten years has been based in the RSPB Scotland headquarters, in Edinburgh, as senior policy officer, covering biodiversity and climate change advocacy.

Martin
Bradley

Martin has worked for Northern Ireland Environment Agency since 1984. He currently co-ordinates peatland conservation issues involving policy, research, stakeholder engagement and site management. He has a wide range of previous experience in habitat surveying, species management and site management.

Stuart
Brooks

Stuart studied geography at Newcastle University where he was introduced to upland and peatland ecosystems. Stuart joined the Scottish Wildlife Trust in 1995 as a field officer supporting an EU peatland conservation project. It was there that Stuart co-authored The Bog Management Handbook and was involved in a large range of habitat and species conservation initiatives in Europe, eventually leaving the Trust in 2009 as their Director of Conservation. Stuart joined the John Muir Trust as its Chief Executive in 2009. He has held various positions on conservation and land management bodies and is currently the Chairman of the IUCN United Kingdom National Committee and has been a member of the IUCN UK Peatland Project steering group since its inception.

Matt
Buckler

Programme Manager – Conservation and Land Management for Moors for the Future.

Maggie
Charnley

Maggie Charnley is Head of the soils and contaminated land team, in the Department for Environment, Food and Rural Affairs (Defra). Maggie has responsibility for England's policy on peatland and horticultural peat, agricultural soils, contaminated land (Part 2A), and represents the UK's soil and contaminated land interests in the EU. Previous roles have included leading UK government policy on nanotechnology, taking part in negotiations of the recently agreed UN Minamata Convention on Mercury, and the setting of domestic, EU and international policies to enhance the development of energy efficient and sustainable energy-using products.

Steve
Chapman

Steve Chapman has over 35 years of experience in research in soil microbial ecology/soil science at the (now) James Hutton Institute. His particular expertise lies in determining the role of microbial processes in the cycling of elements (particularly carbon) within the plant-soil-microbe ecosystem. He has led a research program evaluating the effect of global warming on soil respiration, methanogenesis and methane oxidation in deep peats. He was European coordinator of a EU-funded project on peatland restoration and biodiversity in peatlands - RECIPE. He was Scientific Coordinator of the IUCN UK Peatlands Programme, Commission of Inquiry. Ongoing research is concerned with characterising carbon stocks in Scottish peatlands, peatland restoration and the impact of restoration on carbon fluxes.

Andrew
Coupar

Andrew manages Scottish Natural Heritage's Geodiversity, Uplands & Peatlands Group. His research at Dundee University focused on the vegetation and hydrology of the mires at Rannoch Moor in the south-west highlands. After various unrelated activities he started working for the Nature Conservancy Council in 1989, as part of a team surveying the Flow Country and designating qualifying areas as Sites of Special Scientific Interest, now combined as a single Natura site. Recent activities include working with the Flow Country Peatlands Partnership to oversee revision of their Management Strategy and to develop the Technical Evaluation as a precursor to a potential bid for World Heritage Site status for the Flow Country. He's also involved in drafting Scotland's National Peatland Plan.

Rea
Cris

Rea Cris trained as an art historian but has a personal interest in the written and visual communication of climate change to the public. She is the Communications Coordinator for the IUCN UK Peatland Programme and in her other role she works for Scottish Environment LINK in the parliamentary office.

Ian
Crosher

Ian Crosher started his career in Environmental Education teaching geography and ecology field courses. Before becoming an ecologist for agri- environment schemes across Cumbria. Since the formation of Natural England in 2006 his work has been more focused on how climate change will affect the natural environment, initially on a project looking at the Cumbria High Fells NCA, then within the NW region and presently at a national scale.

Since 2011 working within the Biodiversity 2020 Team, initially on Landscape Scale Delivery through the ecosystem approach with the development of NIA's and Outcome 1C criteria. More recently on developing outcome 1D around climate change adaptation and mitigation through restoring functional ecosystems.

Peatlands have been part of his role on and off for many years initially through restoration at a site level but more recently at a larger landscape scale. Work on Carbon emissions and developing the adaptation and mitigation agenda including peatlands, within the new environment land management scheme.

Susan
Davies

Susan Davies is the Deputy Director Rural & Environment Science & Analytical Services Division at Scottish Government.

Chris
Evans

Chris Evans is a biogeochemist working for the Centre for Ecology and Hydrology in Bangor. He has worked a range of issues affecting upland and peatland ecosystems, including carbon and nitrogen cycling, and the impacts of climate, land-management and atmospheric deposition on water quality and greenhouse gas fluxes. He has particular interests in the causes of rising DOC concentrations in surface waters, and the effects of peatland restoration on methane emissions and fluvial carbon loss. He currently leads several peatland-related projects, including CEH's Conwy Carbon Catchment and a Defra-funded consortium studying the effects of management on the greenhouse gas balance of lowland peats. He is a lead author on the IPCC 2013 Wetland Supplement.

Martin
Evans

Martin Evans is Professor of Geomorphology and Head of Geography at the University of Manchester. He has worked for over 15 years on eroding and restored peatlands studying their hydrology, geomorphology and carbon balance. He was member of the expert panel for the IUCN peatland commission of enquiry and contributed to the National Ecosystem Assessment on Mountains and Moorlands. In Manchester he leads the Upland Environments Research Unit and works closely with Moors for the Future on projects assessing the impacts of blanket peat restoration.

**Roddy
Gow OBE**
Chairman and Founder

Roddy is the founder of Canongate Partners, an international executive search consulting firm specialising in solving challenges for clients seeking to enter Asia and the Emerging Markets. He was previously Chief Executive of Asia House in London, where he drove its mission to educate and inform the people of the UK about a region extending from the Gulf in the West to Japan in the East.

During a career spanning service as a British Army officer, several years as a banker in the UK and US, and more than 30 years working at the highest levels of global executive search, Roddy has always been interested in the challenges of understanding and embracing the skills needed to function effectively across national boundaries.

Awarded the OBE in 2002 for services to British Trade, he is a member of the Business Advisory Council of the Saïd Business School, Oxford University, a Visiting Professor at London Metropolitan University, and a member of the Welsh National Opera's Advisory Council. He holds an MA degree from Trinity College, Cambridge University.

**Jonathan
Hughes**

Jonathan Hughes is CEO of the Scottish Wildlife Trust, Scotland's leading environmental charity. Before being appointed Chief Executive, Jonathan was the Trust's Director of Conservation and Deputy CEO. Jonathan is also an elected global Councillor of the International Union IUCN) for the Conservation of Nature (IUCN), the world's oldest and largest conservation organisation. Other positions held by Jonathan include board member of the government agency Architecture and Design Scotland and scientific advisor to the European Outdoor Conservation Association. In his spare time, Jonathan enjoys playing tennis and football, and most of all, table football. He is also a knowledgeable field naturalist.

**Peter
Jones**

Peter is lead peatland ecologist for Natural Resources Wales, the new Welsh Government sponsored body responsible for all aspects of environmental management, protection and regulation in Wales. Peter has worked in wetland ecology and conservation since 1985 and as the national peatland specialist for Wales since 1996.

Richard
Lindsay

Richard Lindsay is Head of the Environmental Research Group (ERG) at the University of East London (UEL). For almost 20 years prior to joining UEL he was Senior Peatland Specialist in the Nature Conservancy Council and subsequently in Scottish Natural Heritage. For 16 years he was also Chairman of the International Mire Conservation Group (IMCG) which is the international network of peatland specialists who advise their respective governments about peatland conservation issues, and he was awarded Honorary Life Membership in 2000. Through his work with the IMCG, Richard has visited and been involved with peatland conservation issues throughout northern Europe, Canada, Japan, China, Tierra del Fuego and Australia. Richard has recently produced a major review of peatbogs and carbon, and is currently specialist advisor to the IUCN UK Peatland Programme, on whose behalf he attended COP10 of the Convention on Biological Diversity in Japan. In 2011 he was appointed Visiting Professor by the University of Tokyo. He is based within the Sustainability Research Institute of the University of East London.

Graham
Manson

Chemical engineer, Graham Manson, with 30 years of experience in the Scotch Whisky industry, has been Distillery Manager at Highland Park Distillery in Orkney since March 12. One of only a handful of distilleries still manufacturing their own malt on site, Graham will discuss the vital importance of Orkney peat to the Highland Park Brand and the partnership that exists to promote regeneration of habitat on Hobbister Moor.

Francis
Muller

Obtained doctorate from the University of Nancy, Lorraine, France in 1987 with chosen thesis on the care for wild animals and the French wildlife rehabilitation centres. Was Conservation Officers at Conservatoire des Sites Lorrains, Lorraine, France from 1992-2001, covering inventories of natural areas in two French Départements, coordination of "LIFE" programmes about dry grasslands, fish ponds, bats, etc, and other conservation operations. From 2001-2014 was the Senior Officer at Fédération des Conservatoires d'espaces naturels (FCEN), and from 2003 on, Director of the French Mire Resource Centre (Pôle-relais tourbières), Besançon, France, created by the Ministry of Ecology and operated by FCEN. Since 2010 has been the Treasurer of the International Mire Conservation Group (IMCG)

Sarah
Proctor

Sarah Proctor is a Science Project Manager for the Moors for the Future Partnership, based in the Peak District National Park with field research experience in Sumatra, Madagascar and the UK. Sarah manages the Dark Peak Nature Improvement Area as well as science projects evidencing the multiple benefits of peatland conservation. Sarah is a Zoology graduate from Edinburgh University and a Master of Research in Ecology and Environmental Management from the University of York focussing on employing scientifically

Mark
Reed

Dr Reed is Professor of Interdisciplinary Environmental Research at the Centre for Environment & Society Research in the Birmingham School of the Built Environment, Birmingham City University. He is also Research Manager for IUCN's UK Peatland Programme. He is an interdisciplinary researcher specialising in knowledge exchange, stakeholder participation and the value of nature, with extensive experience working in UK peatlands. He has played a leadership role in research worth £9.5M, and been a funded member in teams that have secured a further £2M since completing his PhD in 2005. He has >50 peer-reviewed ISI-listed journal articles, in addition to book chapters and other publications (H index: 20). He is currently writing a book on land degradation and climate change (with Lindsay Stringer, Earthscan). His work has been covered by the Guardian, Radio 4, Radio Scotland and international media.

In 2008, Mark became the first UK researcher to be awarded a joint fellowship by the US Social Science Research Council and ESRC, and in 2009 he was awarded the ESRC's Michael Young Prize. In 2011, the Sustainable Uplands project (that he has co-ordinated since 2005) was voted "best example of impact" at the Rural Economy and Land Use programme's final conference – one of only two projects receiving awards out of over 100 investments. In 2011, he became a member of the Programme Advisory Group for NERC's Biodiversity, Ecosystem Services and Sustainability programme. He was a contributing author to the upland chapter of the UK National Ecosystem Assessment and is co-leading one of the Work Packages for the follow-on to the National Ecosystem Assessment. He was on the Roster of Experts in the second phase of DEFRA's Ecosystem Markets Taskforce. He has led teams contracted to provide input to the UK Government Commission for Rural Communities' Uplands Inquiry, the uplands review for the Government Office for Science Foresight Land Use Futures project, and the policy review for IUCN's Commission of Inquiry on Peatlands.

David
Smith

David Smith is South West Waters Peatland Manager, responsible for delivery of the Exmoor Mires Project and SWW's peatland monitoring programme on both Exmoor and Dartmoor. He has been working on the Exmoor Mires Project since 2006 and before then he worked for the PDNPA as an ecologist, responsible for the Eastern Moors Estate. He has a PhD on peatland regeneration from the University of Ulster.

Mary-Ann
Smyth

Dr Mary-Ann Smyth, Director of Crichton Carbon Centre. Mas is a field scientist with pragmatic experience of peat bogs and peat rewetting, and of developing the relevant greenhouse gas metrics and protocols. Originally a geomorphologist, then an environmental consultant (RSK Group), she is also a founder director of Crichton Carbon Centre, and now specialises in sustainable development using carbon as a proxy, and peatland restoration using vegetation and ecosystem condition as a proxy.

Rob
Stoneman

Rob has been Chief Executive of Sheffield and Hampshire & Isle of Wight Wildlife Trusts and now runs the Yorkshire Wildlife Trust. Currently, Rob chairs the Yorkshire Peat Partnership and the IUCN UK Peatland Programme, but his interest in peatlands stems from his time studying as a student with a PhD study on climate change from peatlands and work on conserving raised bogs.

Lisa
Tenning

Master in Biology at University of Kristianstad 2003, Wetland expert at County administrative board of Jämtland, Project Manager for Life to ad(d)mire 2010-2015.

Pat
Thompson
Senior Uplands Policy
Officer, RSPB

I have a life-long interest in the uplands stemming from my upbringing in the Highlands of Scotland. Since 1995, I have worked for the RSPB in a number of roles including as Conservation Officer in Caithness & Sutherland where I was involved in the peatlands of Caithness and Sutherland (Flow Country). In my current role as Uplands Policy Officer, I work across the UK with researchers, policy-makers, land owners/managers and those that represent their interests.

Jon
Walker

Jon Walker is the Science Programme Manager at the Moors for the Future Partnership. He oversees the delivery of a multidisciplinary programme of research and monitoring projects that evidence the conservation and sustainable management of upland peatlands.

Olly
Watts

Olly has worked on horticultural peat issues for almost 20 years, addressing both peat extraction and damage to peatland sites, and the drive to replace peat in growing media by more sustainable alternatives. He is also working on peat restoration policy in the English uplands, leading a partnership of organisations calling to triple the area under restoration. Olly works as senior policy officer in the RSPB's Climate Change Policy and Campaigns team, leading the RSPB's climate change adaptation policy work.

David
Wilson

David is an environmental consultant specialising in the measurement and modelling of greenhouse gas fluxes in organic soils. He has worked on a range of EPA Ireland and industry funded projects investigating fluxes in intact, degraded and restored peatlands in Ireland. He was a Lead Author of Chapter 3 (Rewetted organic soils) in the IPCC 2014 Wetlands Supplement where he specifically focussed on developing the methodology for the derivation of emission factors for carbon dioxide. He was also a Reviewer for Chapter 2 (Drained Inland Organic Soils) of the Wetlands Supplement. His current research is aimed at progressing Ireland's inventory reporting of drained organic soils to the Tier 2 level.

FIELDTRIPS

Fieldtrips buses will leave from the coaches bay at the front of Eden Court Theatre on Monday 20th October 2014 at approximately 13:30.

Please ensure you have picked up your pre-prepared packed lunch before boarding the bus. Please ensure you have loaded your luggage onto the bus as delegates will be deposited back at their allocated hotels. Fieldtrips will finish at 18:00pm and return you to the conference hotels. Toilet breaks will be included in the fieldtrips. Outdoor equipment and wellington boots or walking boots are required for all fieldtrips. The sites are VERY wet, therefore delegates are asked to please wear wellington boots or other suitable footwear. A walking pole may also be useful as the site is very uneven.

Allt a'Mharcaidh Peatland Restoration

The peatland restoration site is a 5 minute walk from the forestry track (location NH861042).

Inshriach and Invereshie National Nature Reserve

Inshriach was acquired by the Forestry Commission in 1954, and lies on the eastern flank of Strathspey at the entrance to Glenfeshie on the western boundary of the Cairngorms SAC. It forms part of the Invereshie and Inshriach National Nature Reserve (NNR) lying to the north-western edge of the Cairngorm mountains, close to the village of Kincaig and within the Cairngorms National Park.

The forests and hill ground wilderness of Invereshie and Inshriach are a glimpse of the Cairngorms National Park in miniature. From Caledonian pinewoods and bog woodlands to the dramatic ice-sculpted carved slopes swathed with heaths and blanket bogs culminating in the Arctic-alpine environment of the high mountain plateau.

The Reserve is owned and managed in partnership by Scottish Natural Heritage (SNH) and Forestry Commission Scotland (FCS). It is forms part of the larger Cairngorms Site of Special Scientific Interest (SSSI), Cairngorms Special Area of Conservation (SAC), River Spey SAC and Cairngorms Special Protection Area (SPA).

The Inshriach forest itself is largely composed of young Scots pine plantation with some non-native conifers (most of which have been removed) and significant remnants of bog woodland.

The NNR is a special place with a mosaic of habitats that merge from one to another. This relatively small area supports some of Scotland's most iconic species of plants and animals: capercaillie and juniper, golden eagle and twinflower, Northern damselfly and arctic saxifrage. For more information about the Reserve please read the "Story of Inshriach and Invereshie"

Allt a'Mharcaidh

The Allt a'Mharcaidh catchment is a modest burn dropping down from the high plateau and through the forest area. On the flatter ground quite extensive areas of bog woodland and wet heath formed on either side of the burn. However, the burn was heavily modified in the early 19th century, being canalised and dammed to allow timber extraction. The area along the Allt a'Mharcaidh was planted up with conifers (native and non-native) in the 1960's and 1970's for a commercial crop. Much of this planting was on deep peat or bog woodland, and involved extensive drainage.

LIFE Wet Woods Project

In 1999-2000 under the EU LIFE Wet Woods Project, FCS set about restoring 52 ha of wet woodland in the Inshriach Forest adjacent to the Allt a'Mharcaidh. The restoration project included the removal of non-native trees, heavy thinning of planted Scots pine, and the blocking of key drains (using peat dams). The majority of the brash was raked into heaps and burned, but some heaps were left to encourage invertebrates and to act as cover for birds and animals. The restoration project has been a success, the ground is considerably wetter and the area now attracts a variety of damselfly and dragonfly. A further 15 ha were restored in 2002. The peat on the site was surveyed in 1999 and in areas is nearly 5 metres deep. Further information about this project is available on the LIFE Wet Woods website: <http://wetwoods.org/>.

Peatland Action

The site was identified for restoration under the Peatland Action project following discussions with local staff and recommendations in a report by the FCS Ecologist. While the Wet Woods project was a success some of the drainage ditches are still functioning and there are areas that were ploughed for forestry that are acting as drains taking water off the site. There is also an area (3.4 hectares) of bare peat, possibly the result of a historic fire (it was present in aerial photography from the 1940s) which is slowly expanding. Regenerating non-native conifers are present on the site (covering around 10 hectares) and there is a small area of plantation (3 hectares) on the site that is in an area of peat and bog, with fully functioning drains.

The peatland restoration work on the site will involve the restoration of the area of bare peat, ditch blocking and tree removal. The bare peat is to be covered with a moss-rich brash with a mix of dry heath and wet heath species including sphagnum mosses. This material will be sourced locally. This proven technique should stabilise the peat and create a micro-habitat for regenerating plants, especially sphagnum species. Ditches will be blocked using peat dams and some re-profiling of the forestry furrows undertaken to create shallow scrapes. Regenerating non-native conifers will be removed and the small area of Scots pine plantation harvested to allow restoration of this bog area. All this work should see the bog woodland habitats of the site enhanced further.

It is hoped that restoration work will have commenced prior to the site visit and attendees will be able to see the work in progress. Representatives from Barker & Bland (the Contractors undertaking the work) will be on site during the visit.

Allt a'Mharcaidh River Restoration

The Allt a'Mharcaidh was a naturally meandering burn in an area of forestation according to the Roy Military maps of 1752. However, by 1873, when the first edition six inch Ordnance Survey maps for this area were published, a section had been replaced with a 1150m long artificially straightened channel which is how it remains to this day. Over time it has incised, undercut its banks, been scoured of much of its sediment and the water table has lowered. Many of the in stream features such as pools and riffles and associated habitat diversity that are important to juvenile salmon have been morphologically affected and diminished.

A re-naturalisation project was initiated this year on the back of the peatland restoration project. This work has involved the placement of wood debris in-stream to create natural meanders, riffles and pools. These basic physical actions will kick start the natural processes that will then 'let the river and nature do the work' and improve the in-stream habitat.

If time permits, attendees will have the opportunity to see the habitat enhancement work on the burn that was completed last month.



- Stephen Corcoran, Cairngorms Peatland Restoration Officer

Pitmaduthy Moss

Pitmaduthy Moss in Easter Ross, northern Scotland, lies in a shallow depression 4km south of the town of Tain and to the west of the A9 trunk road. It has, unusually, developed under comparatively dry climatic conditions. It is relatively undamaged, with an estimated 20 hectares of bog woodland habitat within a wider area of semi-natural habitats. A mixture of poor fen and bog communities which have strong affinities with wooded Scandinavian bogs occur here.



The Moss consists of a series of pools in a hollow bounded by drier ridges. Scattered stunted Scots pine *Pinus sylvestris* are present on the slightly drier areas within the hollow, and they have the slow growth pattern characteristic of bog woodland. The trees become more abundant and attain greater size on the drier ridges, where downy birch *Betula pubescens*, rowan *Sorbus aucuparia* and willows *Salix* spp. also occur. Willow scrub is found to the west of the site where there is a degree of nutrient enrichment. Of particular interest at Pitmaduthy Moss is the presence of white beak-sedge *Rhynchospora alba*, at its only Easter Ross location.

A total of 19 species of *Sphagnum* have been recorded here, including two species of national importance, *S. imbricatum* and *S. fuscum*.

Peat stratigraphy shows evidence of truncation in the peat layers at Pitmaduthy Moss, which suggests that there may have been a history of peat cutting at the site.

The area is important breeding area for moorland and woodland birds, including osprey *Pandion haliaetus*. The variety of habitat across the whole site has encouraged the development of a diverse invertebrate fauna, which includes several nationally rare species such as the northern damselfly *Coenagrion hastulatum*.

Targets

At the outset of the Project, there were two main threats perceived to the bog woodland at Pitmaduthy Moss. The site was considered to be under a degree of threat of drying out from the adjacent plantation of lodgepole pine *Pinus contorta*, and this plantation also appeared to be a seed source for invasion of the site.

Fertiliser spray drift and run-off from agricultural land directly adjacent to the northern margin of the site was thought to be causing nutrient enrichment. It was believed such enrichment could significantly increase the growth of existing trees, encourage tree regeneration and alter the vegetation structure typical of nutrient-poor bog woodland.

The hydrological survey of the site carried out in June and July of 1999 concluded that there was already a healthy semi-native pinewood buffer zone between the plantation and the bog and there was no evidence of any negative effect. Thus, it was advised that tree removal should not be an objective on this site.

The hydrological survey did, however, point to a nutrient enrichment issue caused by agricultural run-off on the north side of the site. The survey recommended that a feasibility study be undertaken to present a series of costed options as to how the problem could be mitigated. Thus the objectives for Pitmaduthy Moss were:

- The production of an Enrichment Mitigation Feasibility Study to present a series of costed options for actions aimed at alleviating the nutrient enrichment of the bog woodland.
- The protection of the site from nutrient enrichment by implementing the recommendations of the Feasibility Study.

Management

No physical restoration work was carried out at Pitmaduthy as the hydrological survey commissioned by the Project had shown that the felling work originally proposed was not necessary. Thus Project funds for this output were diverted to other sites.

Achievements

Completion of the Enrichment Mitigation Feasibility Study. The study recommended that the best way to prevent nutrient enrichment of the bog woodland would be to introduce a low nutrient management system for the adjacent area. Subsequently, after discussion with the landowner, a Rural Stewardship Scheme application was made to manage the area as lowland grassland for the benefit of birds. Specifically the application outlined plans to create 26 hectares of species-rich grassland and manage a further 4 hectares as extensive cropping. The presence and importance of the adjacent cSAC was a contributory factor in winning approval for the scheme. Positive feedback was received from the owner and tenant farmer for this initiative.

ACKNOWLEDGMENTS

UK peatland restoration is made possible by thousands of enthusiastic individuals – restoration project staff and volunteers, private landowners and land managers, contractors, teams in government departments, agencies and non-governmental organisations as well as business and academia, who all care about healthy peatlands. All should be commended for putting ambition into action and delivering results.

IUCN UK Peatland Programme would like to extend a special acknowledgement to our event partners for their invaluable support towards this event;



Scottish Natural Heritage Peatland Action



Highlands and Islands Enterprise

We would also like to thank Alan Tait for the excellent design of the conference handbook

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.....
a creative graphic design service
.....

say hello via alan@ajtait.co.uk

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**PEATLAND ACTION:
LEARNING FROM SUCCESS**

20th - 22nd October 2014. Eden Court Theatre, Inverness

38

Maggie	Charnley	Head of Soils and Contaminated Land	Defra
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Catherine	Duggan	Soils Policy Advisor	Defra
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Fernando	Fernandez	Provision of Scientific Support on Raised bog Conservation to National Parks and Wildlife Service (Republic of Ireland)	National Parks and Wildlife Service
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Richard	Findon	UK Lead for LIFE	Defra

**PEATLAND ACTION:
LEARNING FROM SUCCESS**

20th - 22nd October 2014. Eden Court Theatre, Inverness

39

Claire	Foot	Assistant Warden	RSPB
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PEATLAND ACTION: LEARNING FROM SUCCESS

20th - 22nd October 2014. Eden Court Theatre, Inverness

40

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**PEATLAND ACTION:
LEARNING FROM SUCCESS**

20th - 22nd October 2014. Eden Court Theatre, Inverness

41

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Bill	Stalker	Head Forester	Bowlts Chartered Surveyors
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Emma	Stewart	Environmental Forester	Forestry Commission
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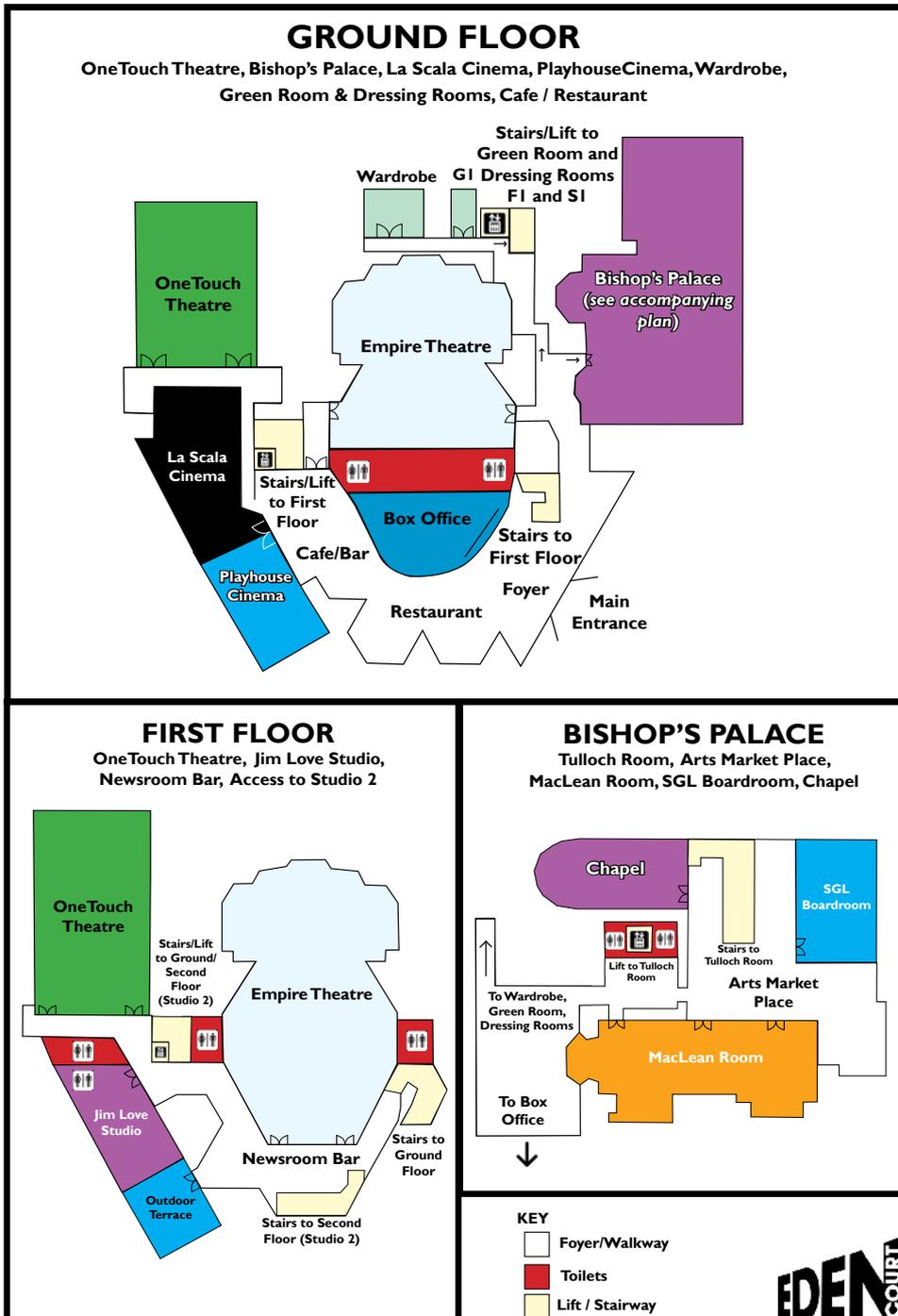
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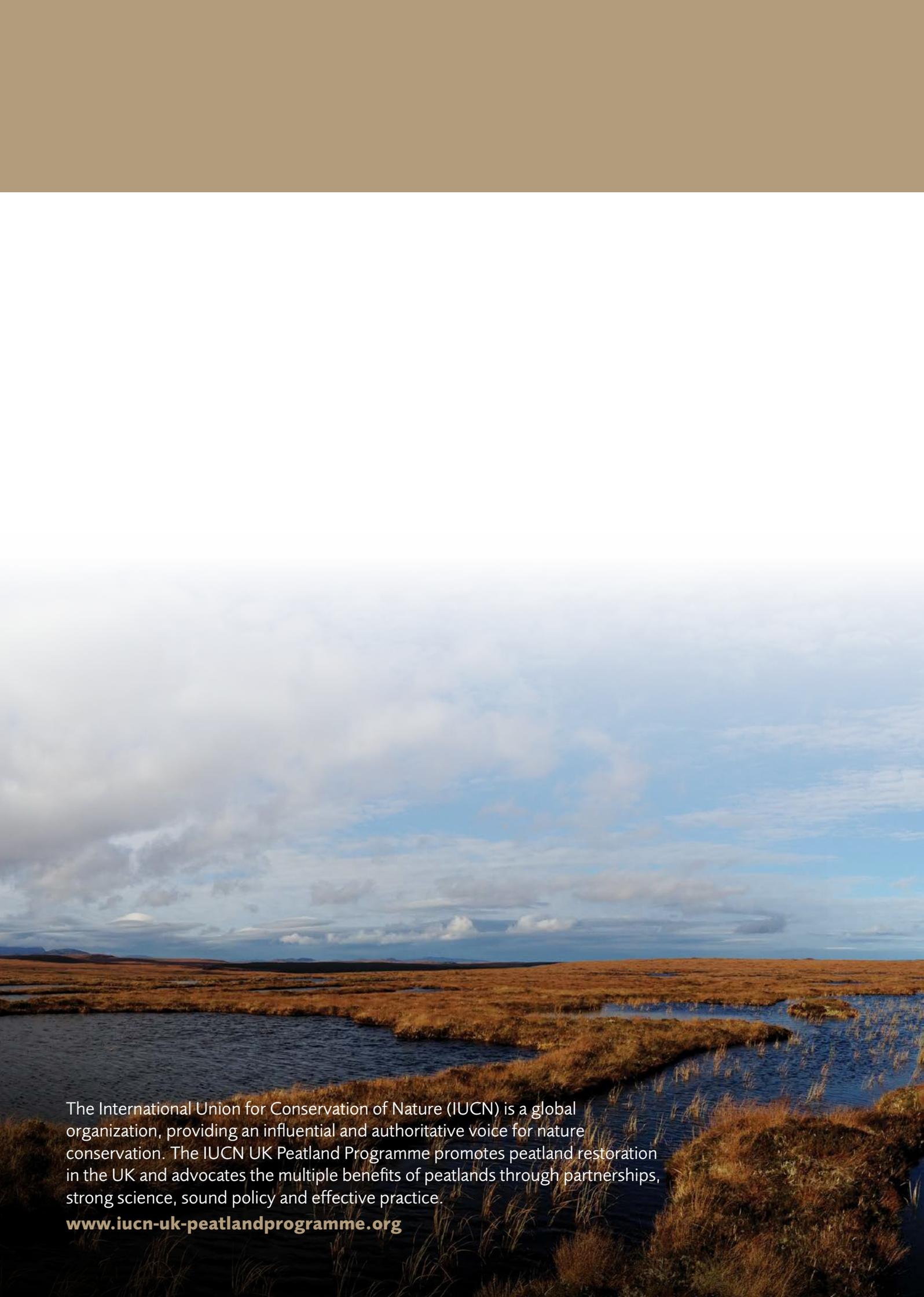
42

Olly	Watts	Senior Climate Change Policy officer	RSPB
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Jonathan	Wildman	Contract Administrator	Dinsdale Moorland Services
David	Wilson	Research Scientist	Earthy Matters Environmental Consultants
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Christina	Wood	Peatland Action Communications lead	Scottish Natural Heritage
Neal	Wright	MD	Micropropagation Services
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EDEN COURT HOTEL

FLOOR PLAN





The International Union for Conservation of Nature (IUCN) is a global organization, providing an influential and authoritative voice for nature conservation. The IUCN UK Peatland Programme promotes peatland restoration in the UK and advocates the multiple benefits of peatlands through partnerships, strong science, sound policy and effective practice.

www.iucn-uk-peatlandprogramme.org