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| 1 | RPS | Dr. Hugh Cushnan | **Planning and implementation of peatland restoration.**<br>Peatlands cover approximately 3% of the total land across the world, yet store 30% of global soil carbon. They are extremely important resources not only for the unique and rare habitats they contain and species they support, but for their wider ecosystem services benefits. Active peatlands provide a clean and sustainable source of drinking water, they regulate flows in our rivers and act as a sink for greenhouse gases. Due to the increasing recognition of their global importance, a number of major peatland restoration programmes are underway throughout the UK and Ireland across both raised bog and blanket bog sites. It is important that restoration methods are planned effectively and site specifically so that implementation can be performed efficiently. |
| 2 | RPS | Dr. Laura McAnallen | **The impact of restoration of drained blanket bog on raw water quality.**<br>As a result of the Water Framework Directive (Directive 2000/60/EC; WFD) and its target to achieve 'good ecological status' in European water bodies and also to meet local drinking water requirements, many degraded peatland sites are now undergoing catchment management and restoration practices. The potential reduction in water treatment costs is the key driver for water companies to undertake blanket bog restoration, as it is generally anticipated that by restoring peatland catchments through drain-blocking, raw water quality will be improved at source, before treatment. Here we show that restoration of 9% of the catchment area results in improved water quality with respect to Total Organic Carbon (TOC), Colour and Turbidity. However, the impact of peatland restoration on raw water quality can complicate treatment processes by increasing the potential production of Disinfection By-Products (DBPs), particularly Trihalomethanes (THMs). |
| 3 | RPS | Mr. Brendan Quigley | **Do Blanket Bogs Stop Flooding?- Evidence a Relatively Intact Northern Irish Bog.**<br>Widespread, often conflicting, claims exist concerning the capacity of blanket peat covered catchments to dampen runoff from intense of precipitation events in upland areas. Comments abound in scientific and popular literature, despite limited corroborating data and a poor understanding of the mechanisms underpinning associated rainfall-runoff responses. This dearth is particularly lacking for areas displaying little to no impact from human activity.<br><br>Monitoring of rainfall runoff responses, at the outlet of a 140.9 ha, relatively intact blanket peat covered catchment, on the Antrim Plateau, Northern Ireland, during the summer (, June through October,) of 2018, as part of a wider Irish EPA-funded investigation to characterise blanket bog ecosystem services to water, permitted stream discharge to be more holistically evaluated. This was achieved through simultaneous high frequency monitoring of rainfall-runoff responses, stream water quality and groundwater levels.<br><br>Much of the earlier half of the monitoring period (to 27th July) proved exceptionally dry. Stream hydrograph data for the period revealed that base flow recession displayed a broadly log-linear behaviour below 20 litres/sec, although recession proved steeper during higher flows. Over the same period discharge displayed a remarkably strong inverse relationship with the specific electrical conductance of stream water, ranging from approximately 40-70 ?S/cm during high flow, to approximately 300 ?S/cm during the prolonged base flow period, observed to late-July.<br><br>Groundwater level data collected over the monitoring period showed that water tables varied significantly across the catchment, depending strongly on the topographic index of monitoring points. Although levels broadly followed trends observed in stream discharge, groundwater proved more sensitive to rainfall events. This is exemplified by rainfall over an eight day period toward the end of July when 28mm of low intensity prolonged rainfall caused water tables in peat to rise by up to 26cm. Over the same period neither stream discharge nor water quality displayed any significant response.<br><br>By contrast stream discharge and rainfall displayed a much closer relationship during the subsequent latter (and wetter) half of the summer. This corresponded to periods when the water table at monitoring points lay within 20cm of the ground surface. Study results highlight the capacity of blanket peat to store water that would otherwise lead to runoff. However, responses depend strongly on antecedent conditions with the water table depths comparable to those observed in mid-July 2018, observed less than 9.5±4.5% of the time over the three year monitoring period. Results suggest that despite peat's capacity to store significant volumes of water, high water tables limit the capacity of relatively intact blanket bog-covered catchments to buffer against extreme rainfall events and thus prevent downstream flooding. |
| 4 | North Pennines AONB | Alistair Lockett | **Vegetation change on bare peat following restoration management in the North Pennines**<br>The change in vegetation cover, following restoration management, was monitored between 2010 and 2019 on five blanket bog sites in the North Pennines Area of Outstanding Natural Beauty. The management included addition of heather brash,1t/ha lime; 19.5kg/ha phosphate, coir rolls, stone dams and hagg reprofiling. The results from the five sites are presented as a case study to inform understanding of the effectiveness of these techniques in the medium term. |
| 5 | South West Water | George Kohler | **Landscape Monitoring - use of fixed point photography on Exmoor that has been used to monitoring peatland restoration and its visual impact on the landscape over the last 10years.** |
| 6 | University College Cork | Ms. Kim Davies | **Wetfutures: wetland heritage in contested landscapes** |
| 7 | National University of Ireland Galway | Ms. Kate Flood | **A community-led approach to wetland & peatland conservation in Ireland**<br>This poster provides an overview of research being carried out with the Community Wetlands Forum (CWF), a national network of grassroots community groups involved in peatland and wetland conservation in Ireland. |

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| 8 | Crichton Carbon Centre | Dr. Mas Smyth | **Why isn't more peatland being restored? Opportunities, barriers, and possible solutions: an interactive poster** |
| 9 | The James Hutton Institute | Ms. Gillian Donaldson-Selby | **Pre-restoration carbon dioxide emissions of an upland eroded peatland, Scotland, UK**<br>The carbon emissions from peatlands have recently been estimated at 9.7 Mt CO2 equivalent per year for Scotland, due to the large proportion of peatlands being in a damaged state. The Peatland Action programme aims to help bring 50,000 hectares back on the road to recovery by 2020. This project aims to verify the carbon mitigation potential of restoration activities on eroded upland sites, which are one of the more challenging type of sites to restore. Eroded peatlands cover an estimated 275kha in Scotland, yet data on the carbon losses from such sites are very sparse, in part due to the challenge in instrumenting such remote and complex terrain with eddy covariance equipment. We present a full, pre-restoration, annual carbon dioxide and energy budget from a typical Scottish eroded peatland. Ongoing work aims to assess the hydrological functioning of the wider catchment. |
| 10 | The James Hutton Institute | Mhairi Coyle | **Greenhouse Gas Fluxes Over Scottish Peatlands**<br>Scottish peatlands have recently been estimated to emit ca 6.1 Mt CO2 equivalent per year, much of which is due to extensive areas of peatlands being in a damaged state. From the 1940s and into the 1980s large areas of peatland were converted to plantation forests. With the realisation that this had caused damage to ecosystems and released CO2 from the peat soils, practices were changed and restoration work initiated. One area where considerable restoration efforts have been underway for many years, is the Flow Country of Caithness & Sutherland in the far North of Scotland. Across the Forsinard RSPB reserve, many blocks of trees have been harvested and work undertaken to rewet the peatland and encourage the ecosystem to re-establish.<br>As part of efforts to understand the carbon budgets of ecosystems across the UK, an eddy-covariance tower for CO2 and CH4 (Cross Lochs) was established over and area of undisturbed peatland on the Forsinard reserve, in 2008 (Levy & Gray, 2015). Subsequently additional towers have been added to look at the impact of restoration by measuring over areas at different stages:<br>• Talaheel established 2013; restored in 1997/98<br>• Lonielist established 2014; restored in 2003/2004<br>• Dyke established in 2016; restored in 2017/2018<br>Results to date show that the oldest restoration site, Talaheel is starting to appear more like the undisturbed peatland, Cross Lochs, in terms of its CO2 fluxes while Lonielist continues to act as a net source of CO2 (Hambley et al 2019). This poster presents the most up to date analysis of the measurements, giving a first look at the methane fluxes from the Lonielist site. |
| 11 | School of Chemistry, University of Edinburgh | Dr. Nicholle Bell | **Molecular metrics for assessing the status of peatlands** |
| 12 | Cumbrian Bogs LIFE+ Project | Ms. Arlete Barneze | **Carbon fluxes and carbon storarage, before, during and after restoration at 3 rlowland raised bogs as part of the Cumbrian Bogs LIFE+ Project.**<br>Projections using the Durham University model looking at Carbon sequestration over the next 100 years. |
| 13 | Pennine PeatLIFE | Alistair Lockett | **Pennine PeatLIFE**<br>Pennine PeatLIFE is a four-year peatland restoration project run in partnership by the North Pennines Area of Outstanding Natural Beauty (AONB) Partnership, Yorkshire Wildlife Trust and the Forest of Bowland AONB Partnership. It aims to restore damaged peatlands across three protected landscapes in the North of England. |
| 14 | North Pennines AONB | Alistair Lockett | **Lime and phosphate quantities for use in bare peat restoration on blanket bog:** Successful revegetation of bare peat on blanket and raised bogs is enhanced by the use of brash, lime, phosphate, grass seed and Sphagnum clumps. In the North Pennines Area of Outstanding Natural Beauty, 1t/ha of lime and 19kg/ha phosphate are typically used. Use of phosphate and lime has cost and environmental implications, therefore this replicated block study aims to ascertain whether lower amounts can be applied without compromising the revegetation and the establishment of Sphagnum transplant clumps. |
| 15 | NPWS | Mr. Ronan Casey Casey | **Restoring Active Raised Bog in Ireland's SAC Network 2016 – 2020**<br>The Living Bog is Ireland's largest single raised bog restoration project. It is restoring 12 raised bogs across 7 counties and engaging with many stakeholders and local communities to assist with the project actions. |
| 16 | Natural Resources Wales | Mr. Patrick Green | **LIFE Welsh Raised Bogs Project** |
| 17 | LIFE Welsh Raised Bogs Project | Dana Thomas | **New LIFE for Welsh Raised Bogs Project**<br>The four-year LIFE Welsh Raised Bogs project aims to restore seven of the most important raised peat bogs in Wales.<br>All seven of the raised peat bogs in the project are designated as Special Areas of Conservation (SAC) and are environmentally sensitive sites legally protected by the European Union (EU) for their environmental interest.<br>Healthy bogs bring great benefits to the environment, wildlife and people. They help tackle climate change by storing vast amounts of carbon, they provide a home to rare plants and animals, and they are great places for people to visit and enjoy the outdoors.<br>Restoration work will include, improving wetland management methods, cutting invasive species, removing scrub and introducing light grazing – all in partnership with local communities, landowners and contractors. |
| 18 | Fieldfare Ecology Ltd | Dr. Michael Meharg and Sam Millar | **Peatlands Around Lough Neagh - A 'natural asset' for the future?**<br>Environmental Farming Schemes, around Lough Neagh (funded by the RDP) are stimulating the delivery of management prescriptions on peatland habitats. Targeted financial support is providing an opportunity for farmers to take remedial management action on areas often seen as wastelands and unclassified within traditional farm holdings. The scattered peatlands around Lough Neagh make up a significant resource and could well provide alternative farm income as the UK targets 'Net Zero' carbon immissions. Could the careful management of these Natural Assets provide an additional source of income for farmers struggling to remain economically viable in this marginal High Nature Value landscape? |

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| 19 | Forest Research | Mr. Russell Anderson | **Policy implications of current forestry GHG-balance knowledge**<br>Despite the importance for policy-making of knowing the net greenhouse gas balance of afforested peatlands, evidence is currently very limited. It indicates that they can be either sinks or sources, depending on their productivity. This is flimsy evidence on which to base multi-million €/£ restoration programmes. There is a strong and urgent need for more studies combining eddy covariance flux measurements above the tree canopy with fluvial flux measurements from afforested peatlands. Ideally these need to cover different stages of the forestry cycle, including the second or a subsequent rotation, for the main afforested peatland types. |
| 20 | South West Water | Morag Angus | **Valley mires restoration - techniques to use, consideration of fish and eels; hydrological consideration** |
| 21 | Bord na Mona | Dr. Mark McCorry | **The Bord na Mona Littleton Bog Group Rehabilitiation Programme.**<br>This poster will outline some of the key objectives and progress so far of the Littleton Bog Group peatland rehabilitation programme. |
| 22 | CAFRE | Mr. Bryan Irvine | **The Glenwherry Hill Regeneration Partnership**<br>The Glenwherry Hill Regeneration Partnership has been working together through habitat management and predator control to achieve an increase in biodiversity, climate change resilience, and carbon sequestration within a commercial hill farm. |
| 23 | Jacobs | Mr. Alexander Bellis | **Dualling the A9**<br>The A9 trunk road provides the strategic link between the Scottish Highlands and the Central Belt; vital to the economy and communities in the north of Scotland. The Scottish Government has committed to dualling the A9 between Perth and Inverness.<br><br>The CH2M Fairhurst Joint Venture (CFJV) has provided environmental, design and management services to Transport Scotland for three dualling projects between Glen Garry and Kincraig, in areas where one of the principal environmental challenges is the presence of peatland, including extensive blanket bog within the Drumochter Hills and other designated ecological conservation sites in the Cairngorms National Park.<br><br>Our poster will outline the work Transport Scotland and CFJV have undertaken, in consultation with SNH, SEPA and the Cairngorms National Park Authority, to understand the extent and character of peatland in the vicinity of each project and to assess potential peat landslide risks. It will also summarise the best practice design development and outline peat management planning work completed, which has sought to avoid or reduce impacts on peatland and, where excavation of peat is likely to be unavoidable, has identified and proposed a range of environmentally beneficial and sympathetic re-uses of that peat in the vicinity. |
| 24 | Micropropagation Services | Mr. Neal Wright | **BeadaMoss®**<br>BeadaMoss(R) micropropagated Sphagnum extensively used in peatland restoration as BeadaHumok(TM) in Uplands. Also working in lowland peatlands, cut-over bogs and agricultural peatlands. |
| 25 | Moors for the Future Partnership | Mr. Christopher Dean | **Connecting People with Nature** |
| 26 | Northern Ireland Forest Service | Dr. Liam Donnelly | **Forest Service Northern Ireland - A Revised Strategy for Restoring Peatland Habitats**<br>Forest Service Northern Ireland has recently initiated a revised strategy for restoring peatland habitats to reflect Northern Ireland's forestry and biodiversity strategies. Underpinning this revised strategy has been the development of a planning tool to support the management of afforested peatlands.<br>This planning tool uses national soil survey data and a digital terrain model to allow areas of flat deep peat to be mapped. Once areas are mapped they can be prioritised for restoration and additional criteria, including proximity to designated areas (e.g. SAC/ASSI), areas of poorly growing trees, and areas which have become forested through colonisation from adjacent planted areas, can then be included to rank sites to determine where restoration efforts should be focused to maximise benefits.<br>To gauge the success of this approach long-term monitoring and a strategic review of restoration projects are included in the revised strategy. |
| 27 | Forestry and Land Scotland | Mr. Ian McKee | **Restoration of afforested land in Scotland**<br>Forestry and Land Scotland has carried out almost 6k hectares of restoration so far so this poster would outline some of the lessons learned in refining restoration methods. |
| 28 | Falkland Islands Trust/SAERI | Prof. Jim McAdam | **Mapping the peatland resource in the Falkland Islands (UKOT)**<br><br>UK Overseas Territories and Crown Dependencies support some large areas of peatlands, with the greatest area of overseas peatland being found in the Falkland Islands. Although the Falkland Islands (52°S) are relatively small (12,163km2, around 90% of the land area of Northern Ireland) they are an important peatland resource. Most of the soils are classified as peat which has been formed under a unique set of climatic conditions and location-specific circumstances. Climate change predictions for the Falklands- warmer and drier summers, leading to increased soil moisture deficit- pose a significant threat to the sustainability of peat cover in the archipelago, which could be exacerbated by land-use activities, notably sheep grazing. The Falklands' prioritised climate change mitigation action plan considers soil erosion, soil carbon content vulnerability and climate change assessments at policy level as high to medium priorities. To support these mitigation policies we report on a baseline survey of the peatlands to quantify erosion extent/risk and how the results will be conveyed on an online data system to assist policy makers, conservation officers and land managers in deciding which actions are needed for long term mitigation measures against climate change effects. |

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| 29 | Queen's University of Belfast | Miss Claire McVeigh | **Inorganic fluxes in runoff from three Irish blanket bog catchments: Influence of Groundwater Flow.**<br>Recent work has suggested that stream flow in blanket bogs is influenced, not only by flow through the peat, but significantly, by groundwater flow through underlying substrate in these environments. This study investigated hydrological pathways through three relatively intact Irish blanket bogs, located throughout Ireland, each underlain by a different bedrock type. Research aimed to characterise the influence of substrate groundwater discharge on a streams base flow regime. Water samples taken monthly throughout 2018 were analysed for major ions, ammonium, TOC and DOC. Continuous monitoring of EC and flow at the catchment outlet complemented these data. Significant correlation has been found between the continuously monitored EC and water sample concentrations of some major ions. This, in conjunction with flow data for each site, has allowed an estimation of the annual output of major ions to be modelled. Results suggest that stream chemistry in these blanket bogs is highly influenced by the underlying substrate geochemistry. These results will be built upon to attempt to determine weathering rates of underlying substrate in these environments. |
| 30 | Yorkshire Peat Partnership | Mr. Lyndon Marquis | **Give peat a chance:**<br>In March and April of 2019, Yorkshire Wildlife Trust ran a public facing appeal – Give peat a chance – to raise funds for Yorkshire Peat Partnership. The appeal spoke to its audience in a language they could understand and functioned across multiple channels. The duration of the appeal gave the Trust the opportunity to monitor donation data and adapt its focus accordingly; underperforming messages or channels were discarded and resources redirected down more productive avenues. This has been the Trust's most successful appeal to date and will form the model for future appeals. |
| 31 | Broads Authority | Andrea Kelly | **Creating A New Approach to Peatland Ecosystems**<br>CANAPE is a project co-funded by the North Sea Region Programme 2014 - 2020.<br>Fenlands and Bogs used to be a major part of the landscape in the low lying areas around the North Sea. Over time these flat landscapes covered in moss, grasses, reeds and sedges, broken up by shallow lakes and rivers, have lain down layer after layer of partially decomposed organic matter called peat.<br><br>For centuries peat has been an important resource, as people have drained the fens and bogs for land to produce food, and used the dried peat as a fuel. This leads to releases of CO2 from the dried peat, and a reduction in capacity of the land to store water leading to reduced protection from floods.<br><br>The project Creating a New Approach to Peatland Ecosystems responds to these issues by restoring wetland areas to reduce their CO2 emissions and improve their capacity to store water, and by aiming to develop the markets for products produced from wetland ecosystems - a type of farming known as Paludiculture. |
| 32 | Queen's University of Belfast | Rory Doherty | **Multi-disciplinary approaches to monitoring and understanding mechanisms at active, degraded and restored blanket bog locations.**<br>Here we use a variety of methods to build a conceptual understanding of processes that occur at active, degraded and restored locations on a blanket bog. The Garron Plateau contains the most extensive area of intact blanket bog in Northern Ireland, with an area of over 4650 ha. Stable isotope analysis in the solid, liquid and gas phases indicates that the active location suggests a closed system with limited isotopic fractionation, limited water movement and decomposition. The degrading location has a lower level of humification, and is depleted in 13C in the solid phase due to ingression of vascular plants. The restored location has high humification and enrichment of 13C and 15N in the solid phase, and D in the liquid phase. 13C and 18O in the gas phase and 18O in the liquid phase are depleted, as a result of microbially mediated gas production and rewetting. Principal component analysis of the chemistry also helped define processes at each location. Geo-electrical profiles at each location determined the normalized chargeability (ratio of resistivity and chargeability) and was compared with organic composition analysis of the solid and liquid phases. Results show that the degrading location is undergoing high rates of decomposition and loss of organic matter into the interstitial water, whereas the opposite is true for the active location. |
| 33 | Peatland Action | Emily Taylor | **Peatland restoration and peat stability in Scotland: developing a risk-based approach** |
| 34 | Peatland Action | Emily Taylor | **Putting our data to work** |
| 35 | Lough Neagh Partnerhip | Siobhan | |
| 36 | Trinity College Dublin | Dr. Mary Bourke | |