

Institution: University of East London
Unit of Assessment: 16
Title of case study: Critical assessment of peatlands and carbon management
<p>1. Summary of the impact</p> <p>Research at the University of East London has catalysed action across a wide range of policy, science and practice activities aimed at restoring and conserving peatlands. It has underpinned the development of a government-affiliated body (IUCN UK PP) committed to ensuring effective conservation and restoration of peatlands, and helped shape carbon-management initiatives and policies at national and inter-governmental level, prompting Ministerial commitments and substantial funding for UK peatlands. It has also supported inter-governmental consensus over the sustainable management of peatlands and their carbon stores, and influenced legal decisions about windfarm development on peat. Furthermore, it has enhanced public understanding of important environmental issues relating to peatlands and their ecosystem services, particularly in relation to greenhouse-gas emissions and water management.</p>
<p>2. Underpinning research</p> <p>For almost 25 years Richard Lindsay, who joined UEL as a Principal Lecturer in 1997, was the scientific specialist peatland advisor to the statutory wildlife agencies. In that role he conducted surveys and assessments of peatlands throughout Britain and abroad. For 16 years, he was also Chair of the International Mire Conservation Group (IMCG) - the global network of peatland scientific advisors. Between 2008 and 2009 Lindsay was commissioned by RSPB Scotland to conduct a comprehensive review of the literature on peatbogs and carbon to inform policy development in oceanic peat bog conservation and restoration in the context of climate change. The review, which was supported by funding from Scottish Natural Heritage, Countryside Council for Wales, Natural England and the Forestry Commission, explored the seemingly contradictory scientific evidence relating to peatland carbon flux and management. To the reviewed literature, Lindsay added ecological information and understanding based on his own experience; he also conducted aerial-photo interpretation and field surveys to clarify key issues. In many cases, Lindsay found that a misunderstanding by original authors of the ecological condition of the site under investigation had led to incorrect interpretations of results, and hence to the apparent contradictions in the existing literature. His final report, released in June 2010, highlighted the major climate-change benefits of work to protect and restore peatbogs in the UK [1].</p> <p>Follow-on research funding was provided by the International Union for the Conservation of Nature (IUCN) UK Peatland Programme to support further and more detailed investigation by Lindsay of topics such as drainage effects, burning impacts and ecosystem services. As part of this commissioned research, Lindsay assessed material presented to the IUCN's 2011 Commission of Inquiry into Peatlands, and co-authored the final IUCN Report on that Commission [2]. In June 2012, he was commissioned to take part in Natural England's Upland Evidence Review, which addressed managed burning, one of the most widely-practiced forms of land use in the English uplands [3]. In 2012 Lindsay was invited to assist in the development of a Defra-sponsored Peatland Code, designed to develop funding streams for peatland restoration financed through Corporate Social Responsibility (CSR) mechanisms. Lindsay was a co-author of the Code, which was launched by the Environment Minister in September 2013 [4].</p> <p>In 2004 Lindsay and Dr Olivia Bragg (University of Dundee) were commissioned by Derrybrien Residents' Co-operative (a local community), to undertake an assessment of, and produce a report about, a major bogslide associated with windfarm construction at Derrybrien, Co. Galway. This report considered the probable causes of the slope failure and the consequences (both potential and actual) of the bogslide, including its impacts on carbon stores. On the basis of this work, Lindsay was commissioned to undertake a number of subsequent surveys in 2008-9 and submit several Expert Witness Reports to the High Court in Galway in support of compensation claims being made by the local residents [5]. This led to Lindsay being commissioned to analyse, firstly, a large windfarm proposal for the Isle of Lewis, Outer Hebrides, and, secondly, suspected illegal moorland track construction in the north of England. These both involved survey, analysis and critical review of the official evidence. The final report for the RSPB [6], co-authored with Jamie</p>

Impact case study (REF3b)

Freeman (UEL Environmental Research Group), found that Lewis Wind Power Ltd had substantially underestimated the area of the carbon-rich peatland that could be affected, and that a wind farm could have a major impact on the internationally important peatland site as well as on the wider environment of the island. Lindsay's Expert Witness evidence for Natural England made clear that track construction had caused significant harm to the protected peatland habitat.

3. References to the research

[1] **Lindsay, R.A.** (2010) *Peatbogs and carbon: a critical synthesis to inform policy development in oceanic peat bog conservation and restoration in the context of climate change*. Commissioned Report to the Royal Society for the Protection of Birds (RSPB) (315 pp). [Submitted to REF2] Available from: bit.ly/esCLlv

[2] Bain, C.G., Bonn, A., Stoneman, R., Chapman, S., Coupar, A., Evans, M., Gearey, B., Howat, M., Joosten, H., Keenleyside, C., Labadz, J., **Lindsay, R.**, Littlewood, N., Lunt, P., Miller, C.J., Moxey, A., Orr, H., Reed, M., Smith, P., Swales, V., Thompson, D.B.A., Thompson, P.S., Van de Noort, R., Wilson, J.D. & Worrall, F. (2011) *IUCN UK Commission of Inquiry on Peatlands*. IUCN UK Peatland Programme, Edinburgh (110 pp). [Submitted to REF2] Available from: bit.ly/tzTZTm

[3] Glaves, D.J., Morecroft, M., Fitzgibbon, C., Lepitt, P., Owen, M. & Phillips, S. (2013) *Natural England Review of Upland Evidence 2012 - The effects of managed burning on upland peatland biodiversity, carbon and water*. Natural England Evidence Review, Number 004. Available from: bit.ly/19sjZuj Expert External Review Panel (including **Lindsay**) listed on page i.

[4] Reed, M.S., Bonn, A., Evans, C., Joosten, H., Bain, C., Farmer, J., Emmer, I., Couwenberg, J., Moxey, A., Artz, R., Tanneberger, F., von Unger, M., Smyth, M., Birnie, R., Inman, I., Smith, S., Quick, T., Cowap, C., Prior, S. and **Lindsay, R.A.** (2013) Peatland Code Research Project Final Report, Defra, London. [Submitted to REF2]: bit.ly/1btC8NG

[5] **Lindsay, R.A.** and Bragg, O.M. (2004) *Wind Farms and Blanket Peat – The bog slide of 16th October 2003 at Derrybrien, Co. Galway, Ireland*. (Contract report for Derrybrien Residents' Co-operative.) Stratford, UK: University of East London (135 pp). Available from: bit.ly/1cGAGr8

[6] **Lindsay, R.A.** and Freeman, J. (2008) *Lewis Wind Power EIS – a critical review*. Commissioned Report for RSPB. London: University of East London (531 pp). [Submitted to REF2] Available from: bit.ly/1eIIOR8

Funding for the research (by F/Y)

2004/5 – 2008/9	: £58,185	: Derrybrien Cooperative Report and Compensation Cases
2006/7 – 2008/9	: £22,570	: RSPB Lewis Windfarm Reports (initial, interim, final)
2006/7 – 2008/9	: £8,775	: Natural England Expert Witness, Wemmergill Moor, High Court
2008/9 – 2009/10	: £14,228	: RSPB Peat Bogs and Carbon Report
2012/13	: £3,900	: Natural England Upland Evidence Review
2013/14	: £34,000	: IUCN Peat and Carbon policy guidance booklets

4. Details of the impact

The research outlined above has 'provided an immensely important catalyst in securing action across a wide range of policy, science and practice activities aimed at restoring and conserving peatlands' [a]. These both include and stem from its influence on the **formation of IUCN UK**. Lindsay's research for the RSPB peatbogs review [1] identified ways to help build consensus and stimulated the inception of the *International Union for Conservation of Nature (IUCN) UK Peatland Programme* (IUCN UK PP), set up in 2009 to promote conservation and restoration of peatlands in the UK and its Dependent Territories. The Programme is overseen by a coalition of environmental bodies including the John Muir Trust, Scottish Wildlife Trust, Yorkshire Wildlife Trust, RSPB, North Pennines AONB Partnership, Moors for the Future, Natural England and the University of East London, which is the only academic partner to sit on its Steering Group [a].

Contributions to UK and international policy debate and formulation: The research has also subsequently informed policy discussion, debate and decision-making across the UK, including in Scotland, which supports over 80% of the UK's deepest blanket bog peatlands. At an All Scottish Parliament debate on 4 November 2010 on 'Investing in the future of Scotland's peatlands', members from across the political spectrum cited the work of the IUCN UK Peatland Programme in calling for action to restore Scottish bogs. A subsequent Scottish Government discussion paper

(published December 2010) on the Management of Carbon-Rich Soils also cites [1]. Since then, policy discussion and development has led to allocation of substantial (£1.7 million plus a further £15 million) funding by the Scottish Government to restore Scotland's peatland landscape [b].

Findings from the 2011 IUCN UK PP's Commission of Inquiry of Peatlands [2] were launched at the Scottish Parliament (by Rob Gibson MSP on 16 November 2011), at the House of Lords (by Lord Lindsay on 13 March 2012) and at Stormont (20 March 2012 by Willie Clarke MLA and Danny Kinaham MLA). Coupled with the research published in Lindsay's earlier Peat and Carbon Report, the Commission's findings prompted a joint statement of commitment to peatland conservation and restoration from all four UK Government Environment Ministers [c]. Meanwhile, Lindsay's contribution to Natural England's Upland Evidence Review [3] has informed that body's policy development for the English uplands: as Natural England's Head of Profession for Climate Change has acknowledged, the Review set out evidence in an authoritative way on the controversial issue of managed burning, influencing their advice to land managers, approach to sites protected under law, delivery of agri-environment schemes and management of their National Nature Reserves [d].

Lindsay was able to extend the reach of his impacts on policy makers' awareness and understanding of issues relating to his research during a two-month Visiting Professorship with the Graduate School of Agricultural and Life Sciences at the University of Tokyo. In August 2011 he delivered a major keynote speech to around 50 key researchers, agricultural engineers and policy makers about the conflicts arising from agricultural drainage of peatlands, carbon management, soil degradation and biodiversity loss. This has stimulated an entirely new debate among practitioners and policy makers about agricultural use of peatlands in northern Japan [e].

Contributions to global biodiversity and climate change policies: The impacts arising from Lindsay's research have been extended through his work in relation to the Strategic Plan of the Convention on Biological Diversity (CBD), a global agreement addressing all aspects of biological diversity. In 2010, Lindsay was commissioned by the IUCN UK PP to run a Defra-sponsored side event for contracting parties (government delegations) and official partner NGOs at the 10th Conference of Parties (COP10) of the CBD in Nagoya, Japan. Here, Lindsay set out the need for increased conservation and wise use of peatlands to some 30 key delegates from various governments and policy-making organisations. Peatlands, and the importance of their carbon management, were subsequently highlighted within of the Aichi Targets of the CBD Strategic Plan for 2011–2020, which provide the overarching framework for the development of global biodiversity policy. Contracting Parties, including the UK Government, are now seeking to honour these new obligations by developing programmes to achieve these new Aichi Targets [f].

Lindsay's work has provided valuable background for UK scientists who are developing the Intergovernmental Panel on Climate Change (IPCC) guidance on peatland rewetting, helping the interpretation of the variety of carbon metrics arising from peatlands which will enable agreed values that could have huge benefits in securing carbon funding for peatland restoration. The 2013 Wetland Supplement to the 2006 Kyoto Guidelines, approved by the IPCC in October, specifically includes peatlands as part of the reporting process for National Greenhouse Gas Inventories [g]. Meanwhile the UK's Climate Change Committee has drawn on Lindsay's work to inform its deliberations about the role of peatlands in relation to climate change in the UK [h].

Contributions to the development of peatland carbon codes, UK and Germany: Between 2012 and 2013 Lindsay contributed to the production of the Defra-sponsored UK Peatland Carbon Code, intended to support markets to pay for the restoration and re-wetting of degraded peatlands across the UK. The development of such a Code was identified by Defra's Ecosystem Markets Task Force and the UK Climate Change Committee as a key priority for the UK Government. Lindsay is a co-author of the underpinning Defra Research Report [4], and of the Code itself, which was launched by the Environment Minister, Mr Richard Benyon, on 10th September 2013 [i].

In January 2013, Lindsay participated in a joint workshop in Berlin to support the development of MoorFutures, a similar investment instrument for climate and nature conservation set up in March 2011 by the Minister of Agriculture and Environment of the German federal state of Mecklenburg–Western-Pomerania. The workshop, which involved more than 50 specialists from a range of EU countries, helped to clarify and strengthen the science underpinning the UK and German Codes.

Contributions to windfarm and track debate, and influence on legal cases: Lindsay's research and provision of specialist advice on windfarm and related impacts, indicating the actual and potential damage caused when windfarm or other access roads are constructed on peatland ecosystems, has influenced the outcome of several legal cases. His 2004 report on the bogslide at Derrybrien, Co. Galway, was cited in 2008 by the Irish High Court, finding in favour of the local community. It formed part of the evidence to the European Court of Justice (ECJ) by the European Commission in its successful 2008 prosecution of the Irish Government [5]. All individual Derrybrien landowner compensation claims supported by Lindsay's research have been successful in the Irish High Court [j]. His 2008 report on the very large windfarm proposed for the Isle of Lewis [6] formed part of the RSPB's 2008 objection to the Scottish Minister, who subsequently rejected the proposal. Lindsay's evidence for Natural England in relation to a moorland track constructed illegally on peat led to a successful landmark prosecution in the High Court [k].

Impacts on public awareness of and engagement with environmental issues relating to peatlands: As the Chair of IUCN UK National Committee has noted, 'the apparent contradictions in the science [previously] made it difficult to convey a compelling case for peatland conservation and restoration'; Lindsay's work has helped overcome such confusions [1]. His research has also underpinned – and improved the accuracy of – popular media coverage of peatland-related issues. He has drawn on it to contribute directly to coverage of windfarm development in *The Daily Mail* (25 Feb 2013; average daily readership 4.25million), *Sunday Telegraph* (24 Feb 2013, 1.38million readers); *Telegraph* (23 Feb 2013, 1.35million readers) and *Yahoo News* (700million users per month). Lindsay has also been interviewed about his peatland-carbon work by BBC Radio *Farming Today* (2010), BBC Manchester Radio (2010), and National Geographic Radio (2008) [i].

5. Sources to corroborate the impact

[a] Testimonial from Chair of IUCN UK National Committee: bit.ly/19OHbFy The IUCN Programme and UEL's role is also described here: bit.ly/PE6H2y

[b] Transcript of 'Investing in the future of Scotland's peatlands' debate: bit.ly/1ga0iPx. Reference to Output 1 in the Scottish Government's discussion paper on Management of Carbon-Rich Soils: bit.ly/18Y55qu p.24; Scottish Government announcements of peatland funding: bit.ly/RXb6my and bit.ly/1dLuGLO

[c] The impacts of 2011 IUCN UK Commission on UK policy to protect and enhance peatlands are confirmed in the Joint Ministerial letter on peatland initiatives. Available at <http://bit.ly/GTjh1d>

[d] Testimonial from Head of Profession for Climate Change, Natural England acknowledging UEL's contribution to Natural England's Upland Evidence Review: bit.ly/17UMymg

[e] Poster advertising Lindsay's public lecture at the University of Hokkaido; subsequent follow-up by key NGO in northern Japan: <http://bit.ly/1jdRZhG>

[f] CBD Strategic Plan 2011–2020 including peatland protection measures, reflecting findings of Lindsay's research and Lindsay's recommendations made at the side event for contracting parties and official partner NGOs: bit.ly/1fsLIRU clause 24; bit.ly/1bmtMDB clause 5(b); bit.ly/1fsLKZS clauses n, s and t. For UK's commitment to the Aichi Targets: bit.ly/1eIE9nf

[g] For the Kyoto Protocol Wetland Supplement including peat in national carbon accounting see http://www.ipcc.ch/meetings/session37/Doc_8b_Rev_2_Accepted_Report_Wetlands.pdf

[h] The UK Climate Change Committee (CCC) Report, Chapter 4, cites [1]: bit.ly/12XWLLC. See also testimonial from Dr Andrew Moxey (freelance economist working for CCC) acknowledging Lindsay's contribution to the CCC's thinking: bit.ly/18qScLS

[i] See [4] and pp. 37 & 48: <http://bit.ly/GRDpAp> The Ministerial launch of the Code is described at: <http://www.iucn-uk-peatlandprogramme.org/news/248>.

[j] For the European Court of Justice Ruling on Derrybrien, Co. Galway (Case No: C-215/06): <http://bit.ly/19tZrBP> For High Court Ruling on example landowner case: bit.ly/1h7IlyQ

[k] For rejection of the proposed Lewis Wind Farm: bit.ly/H1FGcd

[l] Examples of media coverage cited here: bit.ly/H1FGcd; and <http://bit.ly/1fsLtWJ> (readership figures from the National Readership Survey); and at bit.ly/H1FGcd