	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
1	(Anderson et al., 1995 [1++])	(Anderson et al., 1995)	ANDERSON, A., PYATT, D. G. & WHITE, I. M. S. 1995. Impacts of of conifer plantations on blanket bogs and prospects of restoration. In: WHEELER, B. D., SHAW, S. C., FOYT, W. J. & ROBERTSON, R. A. (eds.) Restoration of temperate wetlands. Chichester: John Wiley and Sons Ltd.	In a study at Bad a Cheo, Scotland, by (Anderson et al., 1995 [1++]) twenty-four 45 by 100m plots received treatments of 30cm deep double-mouldboard ploughing with 90cm deep drains spaced at 9, 14 or 18m at right angles to plough lines, 60cm deep double mouldboard ploughing, 90cm deep single mouldboard ploughing and undisturbed control, with all being planted with Pinus contorta except the control. All ditches were deepened to 90c again, to clear debris and counteract peat shrinkage, 20 years after experiment was established, and control plots were turned into smaller-scale experiment receiving double 30cm deep	Search and Sift

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
2	(Anderson et al., 1995b [2-])	(Anderson et al., 1995b)	ANDERSON, P., TALLIS, J. H. & YALDEN, D. W. 1995b. Restoring Moorland. Peak District Moorland Management Project, Phase III report. Bakewell, Derbyshire.	Multiple studies (Anderson et al., 1995b [2-]) in the Peak District, including a comparison over 10 years of rates of erosion along 8 transects at Harrop Moss in areas supporting bare peat and a range of other moorland vegetation. They also reported, at Peaknaze, a case study in which a forestry "screefing" machine was used in 1992 to turn over parallel lines of turf and introduce heather seed in an area with grazing excluded, compared with an untreated area. At Snake Pass, three small experiments are described in which i) bare peat with transplants of Eriophorum vaginatum, Empetrum nigrum, Deschampsia flexuosa and Nardus stricta were treated with	Search and Sift

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
3	(Anderson et al., 2000 [1++])	Anderson et al., 2000)	ANDERSON, A. R., DAY, R. & PYATT, D. G. 2000. Physical and hydrological impacts of blanket bog afforestation at Bad a' Cheo, Caithness: the first 5 years. Forestry, 73, 467-478.	A later study (Anderson et al., 2000 [1++]) examined the longer term impacts of the later plot experiment described in paragraph 2.3 (Anderson et al., 1995 [1]). Measurements were taken of runoff, using v-notch weirs and tipping buckets, sediment load lost through runoff, changes in peat mass volume, both as surface subsidence and at depth, and peat water content. They found that between 2.5 and 5 years following planting, plots with trees had significantly lower runoff (7%) annually, due to reduced spring and summer runoff, but no difference from unplanted plots in autumn and winter. The peak flow rate from the control, unplanted plots, was significantly lower during less intensive	Search and Sift

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
4	(Anderson et al., 2011a [2-])	(Anderson et al., 2011a)	ANDERSON, P., WORRALL, P., ROSS, S., HAMMOND, G. & A, K. 2011a. United Utilities. Sustaianble Catchment Management Programme.Volume 2. Restoring Drained, Burned and Grazed Moorlands.	A study (Anderson et al., 2011a [2-]) of blanket peatlands in the Forest of Bowland (2 catchments: Whitendale and Brennand) and the Peak District Moors (1 catchment at Goyt Moors) which had been subject to gripping, no gripping (or grips no longer functioning). The studies looked at impacts of grip blocking with plastic dams or peat dams, reductions in (or temporary cessation of) grazing, and cessation (at Goyt) or control (at Whitendale and Brennand) of rotational burning. Comparison is possible for some of the time of the study between two restored and one unrestored catchment. Measurements were taken of vegetation composition and cover, water table	Search and Sift

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
5	(Anderson et al., 2011b [2-])	(Anderson et al., 2011b)	ANDERSON, P., WORRALL, P., ROSS, S., HAMMOND, G. & KEEN, A. 2011b. United Utilities. Sustainable Catchment Management Programme. Volume 3. The Restoration of Highly Degraded Blanket Bog.	A study (Anderson et al., 2011b [2-]) looked at blanket bog sites in the Dark Peak with severe erosion, gullies and bare peat exposure to indicate the impacts of stock removal, gully blocking, and various combinations of peat surface stabilisation. These included geojute and/or heather brash, and seeding with grass, along with fertiliser and lime. The study also compared untreated bare peat areas ("peat pans") with those treated by laying out intermittent barriers between haggs made of coir roll. The study site was described as having intact areas supporting mainly cotton-grass (Eriophorum spp.) with more Vaccinium myrtillus	Search and Sift

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
6	(Ardron, 1999 [3-])	(Ardron, 1999)	ARDRON, P. A. 1999. Peat cutting in upland Britain, with special reference to the Peak District : its impact on landscape, archaeology, and ecology.	A treatment/control comparison study (Ardron, 1999 [3-]) in the field examined blanket peatland (it is not possible to infer the initial state of the vegetation) in the Peak District affected by past peat cutting (removal of peat turves, probably down to the mineral material beneath). The study used a survey-based approach comparing three sets of 8 sample sites (one covering the edge of the peat cutting, one 50m away from this in intact blanket peat and one 50m away from the edge within the cut area). Measurements made comprised estimation of plant cover using the DOMIN scale, species of fungi with visible fruiting bodies, pitfall trapping (1 site, 6	Search and Sift

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
7	(Armstrong et al., 2008 [2-])	(Armstrong et al., 2008)	ARMSTRONG, A., HOLDEN, J., KAY, P., CHAPMAN, P., GLEDHILL, S., FOULGER, M., MCDONALD, A. & WALKER, A. 2008. Grip-blocking in upland catchments: costs and benefits. Final Report. Report to Yorkshire Water.	A study by (Armstrong et al., 2008 [2-])presents details of a national survey of blocked and open grips (drains) across the Scottish Highlands, Pennines Exmoor and North York Moors, along with some repeated measurements on blocked and open grips in Wharfedale. The survey aimed to compare blocked with open grips, success of types of blocking material, whether water was flowing or still, and also made comparisons between catchments with burning (as assessed by aerial photo interpretation) and without burning, and between grazed and ungrazed catchments (assessed by observation of evidence of sheep). The catchment vegetation was	Search and Sift

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
8	(Armstrong et al., 2009 [2+])	(Armstrong et al., 2009)	ARMSTRONG, A., HOLDEN, J., KAY, P., FOULGER, M., GLEDHILL, S., MCDONALD, A. T. & WALKER, A. 2009. Drain-blocking techniques on blanket peat: A framework for best practice. Journal of Environmental Management, 90, 3512-3519.	A field survey (Armstrong et al., 2009 [2+]) at thirty two survey sites, across the Pennines, northern Scotland and Exmoor examined gripped sites that had been blocked using a variety of damming methods. The following interventions were applied. . Measurements were taken of substrate, surface wetness, topography, drain dimensions and shape, type of damming and dam effectiveness, at 278 drain-blocks throughout the sites studied. Dam effectiveness was scored as 1 (total failure), 2 (partial failure), 3 (intact, but not effective at higher flows), 4 intact but not redistributing water, and 5 (intact and spreading water over peat surface). They found that most	Search and Sift

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
9	(Armstrong et al., 2010 [2+])	(Armstrong et al., 2010)	ARMSTRONG, A., HOLDEN, J., KAY, P., FRANCIS, B., FOULGER, M., GLEDHILL, S., MCDONALD, A. T. & WALKER, A. 2010. The impact of peatland drain-blocking on dissolved organic carbon loss and discolouration of water; results from a national survey. Journal of Hydrology, 381, 112-120.	A survey of 320 drains in blanket peatlands across the Scottish Higlands, Pennines and Exmoor (Armstrong et al., 2010 [2+]) examined the impact grip blocking on gripped peatland, with peat ~2m deep where some grips had been blocked at a previous, unspecified time. This study also reported a monitoring site at Wharfedale. The survey recorded location, altitude, orientation of drain, slope, channel width and depth, peat depth, ground wetness, drain class (functioning state of drain), effectiveness of blocks (scored 1-5), blocking method, block spacing, vegetation in channel, vegetation type on slopes nearby (heather, grass, mixed), vegetation around	Search and Sift

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
10	(Bellamy et al., 2012 [2+])	(Bellamy et al., 2012)	BELLAMY, P. E., STEPHEN, L., MACLEAN, I. S. & GRANT, M. C. 2012. Response of blanket bog vegetation to drain-blocking. Applied Vegetation Science, 15, 129-135.	A field comparative survey (Bellamy et al., 2012 [2+]) at Forsinard examined four separate sites supporting low-altitude (100-200m a.s.l.) blanket peatland, comprising two sites where drains had been blocked (3 years previously at 1 site, and 4, 5 and 11 years previously at the second site), and two where drains remained open. Measurements were taken of species identity and percentage cover along 3 transects perpendicular to the drain at 10-20 randomly-selected locations at each site. Data were used to generate Ellenberg moisture values (F index) to indicate drier (F=4 to 7) or wetter (F=8 to 10) habitats, and values also compared to a "bog	Search and Sift

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
11	(Boudreau & Rochefort, 1998 [1++])	(Boudreau & Rochefort, 1998)	BOUDREAU, S. & ROCHEFORT, L. Restoration of post-mined peatlands: Effect of vascular pioneer species on Sphagnum establishment. In: MALTERER, T., JOHNSON, K. & STEWARD, J., eds. 1998 International Peat Symposium, 1998 Duluth, Minnesota. 39-43.	A treatment/control comparison study (Boudreau & Rochefort, 1998 [1++]) in the field examined post-mined (cut-over) peatlands in Riveiere-du-Loup, Quebec, which had been abandoned for 5 years, then had drains blocked for a further 5 years. The experimental sites supported 3 different vegetation types dominated by either ericaceous dwarf shrubs (Ledum groenlandicum, Kalmia angustifolia and Vaccinium angustifolium), or monospecific vegetation of Eriophorum spissum (tussock-forming) or E. angustifolium with covers of 20%, 35% and 80% respectively. For each vegetation type, the site was split into 5 blocks of 6 experimental plots 1.5 by	Search and Sift

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
12	(Bridges, 1985 [2++])	(Bridges, 1985)	BRIDGES, M. K. 1985. Stabilisation and revegation of fire damaged deep peat on Glaisdale Moor. Moorland Management. Helmsley: North York Moors National Park Authority.	A treatment control comparison and monitoring (Bridges, 1985 [2++]) at North York Moors examined upland area formerly vegetated with a varying mixture of mainly Calluna and Eriophorum sp, but following an uncontrolled fire in 1976, bare peat 30cm to >120 cm with varying degrees of wetness, humification and a "crust" of varying thickness and strength and degree of scorching.. The following interventions were applied. 8 replicates in blocks were established to test the impact of grazing exclusion (non randomised), and randomised application of 8 seeding treatments comprising Calluna mulch, Betula sp., Festuca ovina, Agrostis sp., Festuca	Search and Sift

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
13	(Buckler, 2007 [2-])	(Buckler, 2007)	BUCKLER, M. 2007. Evaluating Moorland Restoration Techniques: The use of nurse grasses and substrate stabilisation methods in the restoration of bare and eroding peat on Bleaklow in the Peak District National Park.	A field-based-based treatment/control comparison (Buckler, 2007 [2-]) in Bleaklow, the Peak District examined bare eroding peat with pH ranging from 3.5-3.8 within a larger exclosure area from which grazing livestock had been largely removed. The study site comprised three restoration areas on Bleaklow, Shining Clough, Joseph Patch and Sykes Moor and an intermediate non-treatment control. Applications were made of 1 tonne /ha Calcipril granules (equivalent to 1 tonne ha-1 ground limestone) by helicopter followed by 365 kg ha-1 NPK fertiliser, (291 kg follow-up in subsequent years 2 and 3) and a mix of amenity grasses were	Search and Sift

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
14	(Bugnon et al., 1997 [1+])	(Bugnon et al., 1997)	BUGNON, J. L., ROCHEFORT, L. & PRICE, J. S. 1997. Field experiment of Sphagnum reintroduction on a dry abandoned peatland in Eastern Canada. Wetlands, 17, 513-517.	A field-based treatment/control comparison study at Riveiere-du-Loup, Quebec (Bugnon et al., 1997 [1+]) examined post-mined (vacuum-harvested) raised bog peatland, abandoned for 5 years, then with ditches filled for a further 3 years. The experimental sites were sparsely vegetated with dwarf shrubs (Vaccinium spp., Kalmia angustifolium, Chamaedaphne calyculata) or scattered trees (Betula spp.). The following interventions were applied. All areas were first reprofiled to a gentle V shape, to encourage higher humidity and water availability in the centre of these areas, then control areas were reprofiled again, to be flat,	Search and Sift

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
15	(Burke, 1975 [3+])	(Burke, 1975)	BURKE, W. 1975. Effects of drainage on the hydrology of blanket bog. Irish Journal of Agricultural Research, 14, 145-162.	A treatment/control comparison study in Glenamoy (Burke, 1975 [3+]) in the field examined 4m deep peatland on a gentle slope with hummock and tussock microtopography. Upper peat layers were mainly Shoenus nigricans litter (Von Post score 5-6) with lower material more humified (von post 9-10) and 90-95% water content. Six different types of drains (of unspecified spacing and depth) were installed in one 0.35ha plot and compared to a similar-sized plot with no drainage except a 0.15m deep double drain surrounding the plot to intercept runoff. Grass seeds of an unspecified species were sown on the plots during the fourth year of	Search and Sift

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
16	(Burtt & Hawke, 2008 [3-])	(Burtt & Hawke, 2008)	BURTT, R. & HAWKE, C. 2008. Hydrological restoration on intact and eroding blanket bog in the Peak district, Association of Applied Biologists.	A before/after field study in the Peak District (Burtt & Hawke, 2008 [3-]) examined broadly intact peat areas dissected with small gullies with peat at their base and sides and more severely eroded gullies with bases reaching mineral substrate. Regularly spaced plastic piling dams were inserted along the smaller, peat-based gullies, and barriers of wooden planks, stones and pine logs installed across gully bases. Measurements were taken using dipwells to assess water table and vegetation monitored using surveys. They found that the plastic piling dams enabled build up of peat sediment behind them, which were colonised by Eriophorum species, and dipwells	Search and Sift

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
17	(Bussell et al., 2010 [1++])	(Bussell et al., 2010)	BUSSELL, J., JONES, D. L., HEALEY, J. R. & PULLIN, A. S. 2010. How do draining and re-wetting affect carbon stores and greenhouse gas fluxes in peatland soils. Systematic Review CEEE 08-012 (SR49). Centre for Evidence-Based Conservation, Bangor University.	A systematic review of treatment/control comparison studies (Bussell et al., 2010 [1++]) reviewed mainly field studies, but with some laboratory studies, which had measured the greenhouse gas emission or DOC production impacts of long-term re-wetting, or draining of peatlands, or comparisons of peatlands with different long-term hydrological conditions (survey approaches). Measurements were taken of various measures of amount of C stored in peatlands, or greenhouse gases sequestered or released They found five studies which measured all 3 relevant greenhouse gases (CO_2, CH_4 and N_2O) in four Scandinavian	Search and Sift

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
18	(Buttler et al., 1998 [1++])	(Buttler et al., 1998)	BUTTLER, A., GROSVERNIER, P. & MATTHEY, Y. 1998. Development of Sphagnum fallax diaspores on bare peat with implications for the restoration of cut-over bogs. Journal of Applied Ecology, 35, 800-810.	A treatment/control comparison study (Buttler et al., 1998 [1++]) in the laboratory examined five sets of peat core monoliths (45 cm long, by 13.3 cm diameter) representing different levels of disturbance. These comprised peat from an intact bog; peat from a bog with dry heath Calluna vulgaris vegetation following cutting and draining; post cutting surface peat (0-45 cm); post cutting deeper peat (45-90 cm); and cultivated, fertilised peat. The most acidic was under Calluna (pH 4.4), cultivated peat had a pH of 5.3 and the others around 5.1. In all cases surface moss root layers were removed and 12 capitula of Sphagnum fallax were distributed	Search and Sift

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
19	(Campeau & Rochefort, 1996 [1++])	(Campeau & Rochefort, 1996)	CAMPEAU, S. & ROCHEFORT, L. 1996. Sphagnum regeneration on bare peat surfaces: Field and greenhouse experiments. Journal of Applied Ecology, 33, 599-608.	A field-based treatment/control comparison study (Campeau & Rochefort, 1996 [1++]) in Sainte-Marguerite-Marie peatland in the Lac Saint-Jean region, Quebec and laboratory studies examined the impacts of Sphagnum species, species mixes, diaspore collection depth and size, water table and application density on Sphagnum revegetation success. The field experiment was undertaken on formerly block cut peatland where harvesting operations had ceased 2-32 years before the experiment, and where drains had been blocked with peat dams up to 1 year prior to the start of the experiment, raising the water table to within 20-30	Search and Sift

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
20	(Caporn et al., 2006 [2-])	(Caporn et al., 2006)	CAPORN, S. J. M., CARROLL, J. A., STUDHOLME, C. & LEE, J. A. 2006. Recovery of ombrotrophic Sphagnum mosses in relation to air pollution in the Southern Pennines. Report to Moors for the Future.	A repeated survey in the Peak District (Caporn et al., 2006 [2-]) examined an area where Sphagnum had been experimentally reintroduced some 30 years earlier onto an intact peat surface with a high water table at Holme Moss which had been fenced previously to exclude livestock. Original treatments involved application of 30 by 30cm square sections of living Sphagnum plants, representing 6 species (S. papillosum, S. magellanicum, S. capillifolium, S. tenellum, S. imbricatum (=affine), S. fallax) to 1 m2 plots. These plots were revisited and measurements were taken of locations and identities of Sphagnum colonies within the study	Search and Sift

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
21	(Caporn et al., 2007 [1+])	(Caporn et al., 2007)	CAPORN, S., SEN, R., FIELD, C., JONES, E., CARROLL, J. & DISE, N. 2007. Consequences of lime and fertiliser application for moorland restoration and carbon balance. Research report to Moors for the Future.	A field-based controlled before/after study (Caporn et al., 2007 [1+]) at Holme Moss, Dark Peak, Peak District examined lime, fertiliser and seeding treatments on peat biological function and properties. A series of 3m by 3m plots were treated during July with factorial combinations of 3 levels of lime application (1000, 500 and 0 kg ha-1) and NPK (11:32.5/16.5) fertiliser at 3 levels (365, 183 and 0 kg ha-1) and all treated 2 weeks later with application of a grass seed mixture at 171 kg ha-1, comprising Festuca rubra, F. ovina, F. longifolia, Lolium perenne, L. multiflorum and Agrostis castellana. A further set of plots received no seed, lime or fertiliser. In a small	Search and Sift

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
22	(Carroll et al., 2009 [2++])	(Carroll et al., 2009)	CARROLL, J., ANDERSON, P., CAPORN, S., EADES, P., O'REILLY, C. & BONN, A. 2009. Sphagnum in the Peak District:Current Status and Potential for Restoration:Moors for the Future Research Report No 16.	A survey (Carroll et al., 2009 [2++]) in the field examined blanket bog (identified by habitat inventory) in the Peak District, Forest of Bowland and North Pennines. A total of 256 locations were selected for survey across the three study areas, these being stratified to include a range of potentially suitable and unsuitable habitats for Sphagnum , based on information on location, altitude, vegetation types (including bare peat), former Sphagnum records and management (burning, grazing, grips, gullies, blocking, revegetation), and avoiding gullies and pools. At each sample point vegetation composition and cover were identified	Search and Sift

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
23	(Carroll et al., 2011 [2++])	(Carroll et al., 2011)	CARROLL, M. J., DENNIS, P., PEARCE-HIGGINS, J. W. & THOMAS, C. D. 2011. Maintaining northern peatland ecosystems in a changing climate: effects of soil moisture, drainage and drain blocking on craneflies. Global Change Biology, 17, 2991-3001.	A field comparative survey (Carroll et al., 2011 [2++]) at Lake Vyrnwy, South Pennines, North York Moors examined 4 paired blanket bog catchments near Lake Vyrnwy, all drained between 1940 and 1980 and half blocked using heather bales during 2007, and also (in the 2nd year of study) 1 pair of drained (1945-1955) and blocked (peat dams, 2006) catchments in the South Pennines, and a pair of drained (1960's) and blocked (peat dams, 2008) catchments in the North York Moors. Vegetation at Vyrnwy was dominated by Eriophorum vaginatum, Calluna vulgaris, Trichophorum cespitosum with some Molinia caerulea and dry grassland. The South	Search and Sift

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
24	(Chambers et al., 1999 [3+])	(Chambers et al., 1999)	CHAMBERS, F. M., MAUQUOY, D. & TODD, P. A. 1999. Recent rise to dominance of Molinia caerulea in environmentally sensitive areas: new perspectives from palaeoecological data. Journal of Applied Ecology, 36, 719-733.	A field Case Study (Chambers et al., 1999 [3+]) at Exmoor examined 2 moorland vegetation types one dominated by Molinia and the other mosaic Molinia and Calluna vulgaris at the two geographical locations. The authors acknowledge the starting point vegetation differs between the two regions within the broad description.. The following interventions were applied. N/A- peat cores taken for micro/ macro fossil analysis of past vegetation . Measurements were taken of A single peat core was taken at each site. Cores were analysed using radio carbon dating at depths within profile, accelerator mass spectrometry, micro/ macro fossil analysis to	Search and Sift

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
25	(Chambers et al., 2007a [3+])	(Chambers et al., 2007a)	CHAMBERS, F. M., MAUQUOY, D., CLOUTMAN, E. W., DANIELL, J. R. G. & JONES, P. S. 2007a. Recent vegetation history of Drygarn Fawr (Elenydd SSSI), Cambrian Mountains, Wales: implications for conservation management of degraded blanket mires. Biodiversity and Conservation, 16, 2821-2846.	A case study in Drygarn Fawr, Elenydd (Chambers et al., 2007a [3+]) in the field examined blanket peatland strongly dominated by Molinia caerulea (spp. poor M25a), with study site being a 2 m high hagg, vegetated with M. caerulea, frequent but low cover of Vaccinium myrtillus, occasional Calluna vulgaris and Erica tetralix and with no Sphagnum present. Measurements were taken of three peat vertical profile cores 0.15 by 0.15 by 1 m deep, 100 m apart from each other. Plant macrofossil analysis was undertaken on all 3 profiles at 2cm intervals, with 2 having upper 25 cm sampled at 1 cm intervals, along with humification	Search and Sift

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
26	(Chambers et al., 2007b [3+])	(Chambers et al., 2007b)	CHAMBERS, F. M., MAUQUOY, D., GENT, A., PEARSON, F., DANIELL, J. R. G. & JONES, P. S. 2007b. Palaeoecology of degraded blanket mire in South Wales: Data to inform conservation management. Biological Conservation, 137, 197-209.	A case study at Hirwaun Common and Mynydd Llangatwg (Chambers et al., 2007b [3+]) in the field examined Molinia-dominated upland grassland (species-poor M25) on peat <50cm deep at Hirwaun, and blanket peatland dominated by Molinia, Eriophorum or Calluna (M19a, with some similarities to M20 and M17 in places) at Mynydd Llangatwg. Measurements were taken of one peat profile 24 cm deep was taken from Hirwaun common, and subject to analysis for pollen and and spheroidal carbonaceous particle content. At Mynydd Llangatwg, 5 peat cores were taken: one 50cm deep from an eroding peat front, which appeared to have a	Search and Sift

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
27	(Chirino et al., 2006 [1++])	(Chirino et al., 2006)	CHIRINO, C., CAMPEAU, S. & ROCHEFORT, L. 2006. Sphagnum establishment on bare peat: The importance of climatic variability and Sphagnum species richness. Applied Vegetation Science, 9, 285-294.	A field-based treatment comparison study in Lac-Saint-Jean, Quebec (Chirino et al., 2006 [1++]) examined bare "plateau bog" peat 1.2-1.8 m deep, that had been drained, and block-cut by heavy machinery, but where drains had been blocked for 1 year before the start of the study. Replicate blocks of plots were placed across a range of contrasting surface conditions (concave, convex or embanked). Diaspores of Sphagnum of 4 different species (S. fuscum, S. rubellum, S. magellanicum and S. angustifolium) were collected from the top 10 cm layer of an intact bog, and applied to 30 m2 bare peat plots at a rate of 1:15 (collected:applied areas)	Search and Sift

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
28	(Clay et al., 2009 [2+])	(Clay et al., 2009)	CLAY, G. D., WORRALL, F., CLARK, E., FRASER, E. D. G. 2009. Hydrological responses to managed burning and grazing in an upland blanket bog. Journal of Hydrology, 376, 486-495	A field-based treatment control and before and after comparison at Moor House, North Pennines (Clay et al., 2009 [2+]) examined Calluna vulgaris - Eriophorum vaginatum blanket mire (M19), Empetrum nigrum sub-community, with a significant proportion of Sphagnum. Four blocks were delineated and a factorial combination of burning (no burning, every 10 years, every 20 years) and grazing (grazing or no grazing) were applied, with treatments starting in 1954. Only two of these blocks were considered in this study. One of the 10 year burns was applied in 2007 during this study. Measurements were taken of soil water table and samples were taken from	Selected by Author

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
29	(Clymo & Reddaway, 1971 [2+])	(Clymo & Reddaway, 1971)	CLYMO, R. S. & REDDAWAY, E. F. J. 1971. Productivity of Sphagnum (bog-moss) and peat accumulation. Hydrobiologia, 12, 181-192.	A series of field experiments are reported alongside a repeated field survey (Clymo & Reddaway, 1971 [2+]) which was conducted in April 1970 on blanket peatland at Burnt Hill, Moor House NNR, Cumbria. A total of 206 25 x 25 cm quadrats were surveyed for rooted presence/absence of species on 2-3.5 metre deep blanket bog split by 4 microhabitat types: pool, lawn, hummock and 'general BB' where no obvious allocation to the previous 3 could be made. Repeat survey in July showed a few additional seasonally dormant species occur. The area and proportion of each microhabitat were calculated and species	Search and Sift

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
30	(Coulson et al., 1990 [2++])	(Coulson et al., 1990)	COULSON, J. C., BUTTERFIELD, J. E. L. & HENDERSON, E. 1990. The effect of open drainage ditches on the plant and invertebrate communities of moorland and on the decomposition of peat. Journal of Applied Ecology, 27, 549-561.	A field-based comparative survey (Coulson et al., 1990 [2++]) at Moor House, Waskerley, Oxnop and Gunnarside examined blanket peatland at a range of altitudes and rainfall conditions, all with functioning drainage grips, dug between 8 and 30 years prior to the study. Measurements were taken of water table was measured at 2 sites, at 10 points arranged 1.5m above and below 2 adjacent grips, and at the midpoint between the grips. Vegetation cover was estimated from 40 transects of quadrats stretching 9 m above and below grips, spaced at 1.5 or 2 m intervals. Invertebrates were sampled in rows of 5 pitfall traps at the same distance	Search and Sift

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
31	(Evans et al., 2005 [2++])	(Evans et al., 2005)	EVANS, M., ALLOT, T., HOLDEN, J., FLITCROFT, C. & BONN, A. 2005. Understanding Gully Blocking in Deep Peat. Moors for the Future Report No 4. Castleton: Moors for the Future.	Case study comparisons with some controls (Evans et al., 2005 [2++]) in the field examined natural revegetation of bare blanket peat with extensive gullying in Peak District (Kinder) where the following interventions were applied. Grips were blocked with 4 different types of dam construction. Measurements were taken of vegetation survey/composition and sediment movement. They found that high slopes were associated with Eriophorum vaginatum and, to lesser extent, Empetrum nigrum. Low slopes were associated with E. vaginatum and Deschampsia flexuosa. Eriophorum angustifolium was a key species in early stages of re-vegetation	Search and Sift

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
32	(Farrick & Price, 2009 [2+])	(Farrick & Price, 2009)	FARRICK, K. K. & PRICE, J. S. 2009. Ericaceous shrubs on abandoned block-cut peatlands: implications for soil water availability and Sphagnum restoration. Ecohydrology, 2, 530-540.	A detailed case study near Riviere-du-Loup, Quebec (Farrick & Price, 2009 [2+]) in the field and a laboratory study examined lowland (83 m A.S.L.) raised bog which had been drained 65 years previously and peat harvested continuously for 33 years using block cut (baulk and trenches) methods and some vacuum harvesting. The site was then abandoned to natural succession and became dominated (90% cover) by ericaceous shrubs (Chamaedaphne calyculata, Kalmia angustifolia and Ledum groenlandicum) which have left a 0.5-5 cm thick litter layer over the 3-4 m depth of residual peat. Tree cover was low (<20%) but rises around	Search and Sift

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
33	(Fenner et al., 2011 [2+])	(Fenner et al., 2011)	FENNER, N., WILLIAMS, R., TOBERMAN, H., HUGHES, S., REYNOLDS, B. & FREEMAN, C. 2011. Decomposition 'hotspots' in a rewetted peatland: implications for water quality and carbon cycling. Hydrobiologia, 674, 51-66.	A field case study at Plynlimon, Wales (Fenner et al., 2011 [2+]) examined blanket peat (~345m A.O.D, pH 3.9-4.8) dominated by Juncus and Sphagnum communities, at two areas drained by naturally-formed peat pipes and two areas of undrained wet peat. One naturally-drained area was re-wetted for four years by redistributing of water from an adjacent stream onto the surface of the experimental plot as artificial rain. There was then a break of 6 months and the same treatment was reapplied for 5 months during spring and summer 2000 (a wet year), and this short-term rewetting was reapplied six years later during a drought year (2006). A	Search and Sift

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
34	(Ferguson et al,. 1978 [1+])	(Ferguson et al,. 1978)	FERGUSON, P., LEE, J.A., BELL, J.N.B. 1978. Effects of sulphur pollutants on the growth of Sphagnum species. Environmental Pollution, 16, 151-162	An outdoor chambers treatment/control comparison study (Ferguson et al,. 1978 [1+]) at Manchester and Surrey examined Sphagnum taken from clean air sites. Chambers containing Sphagnum species were sprayed with sulphate or bisulphite, immersed in bog water with added bisulphite or sulphate or exposed to gaseous SO2. Measurements were taken of Sphagnum growth (extension) and chlorophyll content . They found that Sphagnum growth extension was sensitive to all three forms of sulphur pollution, bisuphite, sulphate and sulphur dioxide. In solution, bisulphite was more harmful than sulphate and	Selected by External Reviewer

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
35	(Ferland & Rochefort, 1997 [1++])	(Ferland & Rochefort, 1997)	FERLAND, C. & ROCHEFORT, L. 1997. Restoration techniques for Sphagnum-dominated peatlands. Canadian Journal of Botany-Revue Canadienne De Botanique, 75, 1110-1118.	A field-based treatment control comparison (Ferland & Rochefort, 1997 [1++]) at New Brunswick examined cut over raised bog, with moderately low precipitation, and low rainfall, and 40-120cm of residual peat of which 10-30 cm is Sphagnum peat, and where ditches had been blocked 2 years prior to this study.. The following interventions were applied. Plots were established and factorial and partially randomised treatments were applied, these being creation of microrelief by excavator tracks (15 cm deep and 50-80 cm wide and similar distance apart), or no disturbance, all plots received a mixture of Sphagnum magellanicum,	Search and Sift

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
36	(Gibson et al., 2009 [2+])	(Gibson et al., 2009)	GIBSON, H. S., WORRALL, F., BURT, T. P. & ADAMSON, J. K. 2009. DOC budgets of drained peat catchments: implications for DOC production in peat soils. Hydrological Processes, 23, 1901-1911.	A field-based controlled before/after study and treatment/control trial (Gibson et al., 2009 [2+]) in North Pennines (Allendale, Upper Teesdale, Widdybank Fell and Moor House) made a comparison between one catchment drained by moorland grips, one where the grips had been blocked 8 years before the study started, one where the grips were blocked using peat dams during the study, and two where there was no artificial drainage present. Measurements were taken of automatic water sampling, at varying frequencies, with filtered samples analysed for DOC, absorbance (at 400, 465 and 665nm wavelengths), pH,	Search and Sift

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
37	(Glendinning, 2012 [2+])	(Glendinning, 2012)	GLENDINNING, A. 2012. The continued effect of damming moorland drainage channels on Exmoor Mire vegetation. FdSc Countryside Management.	A repeated survey (Glendinning, 2012 [2+]) in the field examined gripped blanket bog in Exmoor where grips had been blocked. Vegetation composition was assessed in quadrats along transects. They found that there was slight evidence (not consistent across all samples) that re-wetting resulted in a change of plant communities to include more plant species with an affinity for wetter ground. The study is not as well written and there may be identification errors between years, certainly in regard to bryophytes, which are not discussed in the results. The approach seems adequate given the objectives.	Search and Sift

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
38	(Gore & Godfrey, 1981 [2-])	(Gore & Godfrey, 1981)	GORE, A. J. P. & GODFREY, M. 1981. Reclamation of eroded peat in the Pennines. Journal of Ecology, 69, 85-96.	A field-based-based control/treatment comparison (Gore & Godfrey, 1981 [2-]) at Moor House, North Pennines examined eroded blanket peatland, either with remnant shallow peat, cultivated to produce a rough even surface, or mineral material (sandstone drift), where livestock grazing had been excluded (within 2 exclosure plots), and which had been seeded with a mixture of Agrostis capillaris, Anthoxanthum odoratum, Deschampsia flexuousa, Festuca rubra, Poa pratensis, and Trifolium repens. Three replicates each received either no addition (control), phosphorus (as $Ca(H_2PO_4)_2.H_2O$) at 40 g m-2, lime ($CaCO_3$) at 250	Search and Sift

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
39	(Grayson & Holden, 2012a [2++])	(Grayson & Holden, 2012a)	GRAYSON, R. & HOLDEN, J. 2012a. Hydrological Recovery from Grip Blocking in Upland Catchments: Snailsden Moor, Winscar. Final Report. Report to Yorkshire Water (extension to project A9699, July 2008).	A before/after study (Grayson & Holden, 2012a [2++]) in the field and laboratory examined blanket bog with many grips in Yorkshire where two drainage networks were blocked. Measurements were taken of water table, discharge and DOC/POC. They found that grip blocking changed the way the discharge behaves during a storm event, so that it takes longer between the start of the rain and the peak in discharge, and so that the time taken between the start of the rise in the hydrograph to the peak also takes longer. Additionally, the amount of discharge resulting from a given amount of rainfall also appears to be lower and the amount of	Search and Sift

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
40	(Grayson & Holden, 2012b [2++])	(Grayson & Holden, 2012b)	GRAYSON, R. & HOLDEN, J. 2012b. The impact of grip blocking downstream: Stean Moor update report (draft). Interim report prepared for Natural England, Environment Agency and Yorkshire Water.	A before/after study (Grayson & Holden, 2012b [2++]) in the field and laboratory examined blanket bog with many grips in Edge of Yorkshire Dales where grips were blocked over two years . Measurements were taken of discharge, water colour, DOC and suspended sediment concentrations. They found that there was little evidence at catchment scale that grips had impacted storm hydrographs. There was no indication of significant reductions in suspended sediment and water quality and DOC have not significantly decreased since blocking took place. The study made efforts to remove sources of bias. Atypical weather may have affected this study, which	Search and Sift

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
41	(Green et al., 2011 [2++])	(Green et al., 2011)	GREEN, S., BOARDMAN, C., BAIRD, A. & GAUCI, V. 2011. Investigation of peatland restoration (grip blocking) techniques to acheive best outcomes for methane and greenhouse gas emissions/balance. Controlled Environment (Mesocosm) Experiment. Final Report to DEFRA. SP1202. Leeds.	In a laboratory experiment (Green et al., 2011 [2++]) large monolith peat cores were extracted from a grip-blocking experimental field site at Migneint in North Wales and transported to a climate controlled chamber. Cores were collected from the bases of grips (for experiment 1) and also from between grips under three different vegetation types dominated by Eriophorum, Calluna or Sphagnum papillosum (for experiment 2). Cores from the bases of the grips were subject to simulated grip infills, comprising i) open water ii) heather brash, iii) water with a floating Sphagnum cuspidatum mat and iv) peat and vegetation (simulating reprofiling of the grip with adjacent peat	Search and Sift

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
42	(Groeneveld et al., 2007 [1++])	(Groeneveld et al., 2007)	GROENEVELD, E. V. G., MASSE, A. & ROCHEFORT, L. 2007. Polytrichum strictum as a nurse-plant in peatland restoration. Restoration Ecology, 15, 709-719.	A field-based-based survey and control/treatment comparison (Groeneveld et al., 2007 [1++]) at Lac-Saint-Jean and Riviere-du-Loup, Quebec examined, for the survey, peatlands that had been cut over then abandoned for 10 years, where there was natural revegetation and a nearby undisturbed peatland as a source of propagules. The experiment at Riviere-du-Loup was undertaken on bare peat plots, cleared of any vegetation, roots or debris, at a fomerly vacuum-harvested peatland which had been abandoned for 10 years but was poorly revegetated. Plots received one of 3 treatments of tranplanted	Search and Sift

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
43	(Grosvernier et al., 1995 [1++])	(Grosvernier et al., 1995)	GROSVERNIER, P., MATTHEY, Y. & BUTTLER, A. 1995. Microclimate and physical properties of peat: new clues to the understanding of bog restoration processes. In: WHEELER, B. D. & SHAW, S. C. (eds.) Restoration of temperate wetlands. Chichester: John Wiley and Sons.	In a laboratory study (Grosvernier et al., 1995 [1++]) Sphagnum growth was examined on five different peat subrates. Peat samples were extracted as 45cm monoliths, representing intact, heath-dominated, cut over (2 depths), and agricultural management, with near-surface and low (40cm) water tables, each supporting a surface mat of Sphagnum magellanicum, S. fallax and S. fuscum. A further experiment looked at the same range of peat soils and water table depths, but subject to three different microclimates, using meshes and covers, representing shade, humidity and control conditions, with S. fallax planted as 12 plug plants.	Search and Sift

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
44	(Grosvernier et al., 1997 [1++])	(Grosvernier et al., 1997)	GROSVERNIER, P., MATTHEY, Y. & BUTTLER, A. 1997. Growth potential of three Sphagnum species in relation to water table level and peat properties with implications for their restoration in cut-over bogs. Journal of Applied Ecology, 34, 471-483.	A laboratory treatment comparison experiment (Grosvernier et al., 1997 [1++]) extracted discs of living vegetation dominated by Sphagnum fallax, S. magellanicum and S. fuscum from intact bog vegetation and placed them on top of peat cores 45 cm deep collected from five different locations: undisturbed S. magellanicum bog; dry Calluna heathland; shallow peat from a cut-over peatlands (0-45 cm); deep peat (45-90 cm) from a harvested peatland; cultivated agricultural peatland. Undisturbed, cut-over and cultivated peatlands were pH 5.4, while the dry heathland peat was pH 4.2, and the cut-over and agricultural peats had higher Ca and N	Search and Sift

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
45	(Gunnarsson et al., 2008 [2++])	(Gunnarsson et al., 2008)	GUNNARSSON, U., BRONGE, L. B., RYDIN, H. & OHLSON, M. 2008. Near-zero recent carbon accumulation in a bog with high nitrogen deposition in SW Sweden. Global Change Biology, 14, 2152-2165.	A field survey (Gunnarsson et al., 2008 [2++]) examined an ombrotrophic lowland (60m a.s.l.) bog near Goteborg with >1000mm annual rainfall, and relatively high atmospheric deposition of N (1.25N m-2 yr-1) and S (0.97g m-2 y-1). Vegetation comprised Sphagnum spp. (affine, auriculatum, austinii, cuspidatum, fuscum, majus, magellanicum, molle, papillosum, pulchrum, rubellum and tenellum), Carex spp., Eriophorum angustifolium and E. vaginatum, Molinia caerulea, Calluna vulgaris, Erica tetralix, Empetrum nigrum, Myrica gale, Vaccinium uliginosum, Rubus chamaemorus, Narthecium ossifragum and seedlings of Betula	Search and Sift

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
46	(Hajek, 2009 [2+])	(Hajek, 2009)	HAJEK, T. 2009. Habitat and species controls on Sphagnum production and decomposition in a mountain raised bog. Boreal Environment Research, 14, 947-958.	A repeated short term field survey (Hajek, 2009 [2+]) looked at the differential distribution of 6 Sphagnum species within a raised bog and its lagg and sought to demonstrate differential growth rates/ productivity, litter quality and decomposition rates in Sumava National Park, Czech Republic. Measurements were taken of net primary production, growth and litter decomposition rates by a range of species. They found that growth rates vary between species and season. Biomass and shoot density increased with deeper water tables. Decomposition rates of most Sphagnum were slower than those of cellulose alone. Measurements of growth	Search and Sift

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
47	(Hinde et al., 2010 [2-])	(Hinde et al., 2010)	HINDE, S., ROSENBURGH, A., WRIGHT, N., BUCKLER, M. & CAPORN, S. 2010. Sphagnum re-introduction project: A report on research into the re-introduction of Sphagnum mosses to degraded moorland. Moors for the Future Research Report 18.	A field-based-based and laboratory treatment comparisons study (Hinde et al., 2010 [2-]) in the Peak District examined formerly bare blanket peat that had been subject to revegetation management (unspecified), with haggs, and sparsely vegetated areas, and mobile blanket peat which had been treated with heather brash only. For the first laboratory trial shallow trays were filled with peat of unknown origin, while in the second laboratory trial trays were filled with commercially-extracted Irish peat or peat collected from Holme Moss, Peak District. In the first field study, two treatments of an equal, unspecified, number of beads and strands of Sphagnum	Search and Sift

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
48	(Holden & Burt, 2002 [3+])	(Holden & Burt, 2002)	HOLDEN, J. & BURT, T. P. 2002. Piping and pipeflow in a deep peat catchment. Catena, 48, 163-199.	A field-based case study (Holden & Burt, 2002 [3+]) at Moor House, North Pennines examined an 0.44km2 catchment area of mostly intact blanket peat 1.5-2.5 m deep with mean 1950mm annual rainfall, 570 to 515m A.O.D., with a NE predominant aspect, with only one artificial drain. Measurements were taken of pipe flow at 10 peat pipes (either by insertion of a weir plate into the pipe, or by monitoring pipe outlets), along with flow in 1 grip, 1 gully, 2 flush zones and the main catchment stream outlet. Peat pipes were mapped from stream outlets by following depressions in the ground, and by listening for water movement, and some	Search and Sift

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
49	(Holden et al., 2001 [2++])	(Holden et al., 2001)	HOLDEN, J., BURT, T. P. & COX, N. J. 2001. Macroporosity and infiltration in blanket peat: the implications of tension disc infiltrometer measurements. Hydrological Processes, 15, 289-303.	A field survey at Moor House, North Pennines (Holden et al., 2001 [2++]) examined peat macroporosity at the same site (and same experiment) as reported in for (Holden, 2009a [2+]). In addition to the conditions reported there, the bare peat is described as being eroded, so that it is 50cm lower than surrounding intact peat, and being more highly humified (Von Post scores of H5-H8) over the top 20cm layer, and with bulk densities of from 0.22 g cm-3 at the surface to 0.35 g cm-3 at 20 cm. Water table was 30cm below the peat surface during the measurement period. The study is exactly as described in Holden 2009a [2-] except that this paper	Search and Sift

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
50	(Holden et al., 2006 [2+])	(Holden et al., 2006)	HOLDEN, J., EVANS, M. G., BURT, T. P. & HORTON, M. 2006. Impact of land drainage on peatland hydrology. Journal of Environmental Quality, 35, 1764-1778.	A field-based treatment/control comparison (Holden et al., 2006 [2+]) at Moor House, North Pennines examined four blanket peat catchments, two of which had been drained in 1952 and 1956 and two of which were intact. The 1952-drained catchment represented 2 sub-catchments, one drained and the other extensively gullied. This catchment had also been partially burnt (intensity unknown) in 1950, 52 years before the start of the current study. All catchments were vegetated with a mix (in declining order of dominance) of Calluna vulgaris, Eriophorum spp. and Sphagnum spp., except one undrained catchment dominated by	Search and Sift

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
51	(Holden et al., 2007 [2+])	(Holden et al., 2007)	HOLDEN, J., GASCOIGN, M. & BOSANKO, N. R. 2007. Erosion and natural revegetation associated with surface land drains in upland peatlands. Earth Surface Processes and Landforms, 32, 1547-1557.	A field survey in Upper Teesdale, Upper Wharfedale, Barrhill, and Clar Loch Beag (Holden et al., 2007 [2+]) examined four upland blanket peat catchments, with a range of precipitation conditions (1068-1982mm) with moorland drains (grips) dug in 1952-56 or in the early 1960s. Monitoring of discharge and turbidity was carried out at Ougtershaw in Wharfedale on three separate systems of unblocked grips, two systems blocked with peat dams, and one which had not been drained. 2 systems of grips were blocked prior to monitoring, one by slumping blocks of peat from the side of the drain into the channel and the other by engineered peat	Search and Sift

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
52	(Holden et al., 2008 [2++])	(Holden et al., 2008)	HOLDEN, J., KIRKBY, M. J., LANE, S. N., MILLEDGE, D. G., BROOKES, C. J., HOLDEN, V. & MCDONALD, A. T. 2008. Overland flow velocity and roughness properties in peatlands. Water Resources Research, 44, 11.	A field survey (Holden et al., 2008 [2++]) in Upper Wharfedale examined blanket peat, <2 m deep, dominated by Eriophorum spp. and Sphagnum spp., with dwarf shrubs rare, and where water tables were typically within 30cm of the peat surface, and saturation-excess overland flow common in high intensity rainfall events. Both intact areas and drains were examined to compare overland flow velocities. Measurements were taken at 64 0.5 m by 6 m plots for 4 vegetation types (Sphagnum , Eriophorum, a mix of these two, and bare peat) totalling 256 plots on uniform slopes ranging from 0.01 to 0.55 m m-1. On these plots, measurements water was	Search and Sift

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
53	(Holden et al., 2011 [2++])	(Holden et al., 2011)	HOLDEN, J., WALLAGE, Z. E., LANE, S. N. & MCDONALD, A. T. 2011. Water table dynamics in undisturbed, drained and restored blanket peat. Journal of Hydrology, 402, 103-114.	A field-based case study in Upper Wharfedale (Holden et al., 2011 [2++]) examined a catchment with mean annual precipitation of 1774mm, at 379-668m a.o.d. and covered with a typical thickness of 2 m blanket peat. Vegetation is dominated by Eriophorum spp., with moderate cover of Sphagnum spp. and Politrichum. The three study sites had similar slopes (0.082-0.093 m m-1). A proportion of the catchment had open-cut drains installed in the 1960s (approximately 40 years prior to the study), and a sub-set of these were blocked with peat dams in 1999, 6 years before this study began. At each site, 1 transect of 9 dipwells was established	Search and Sift

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
54	(Holden et al., 2012 [2++])	(Holden et al., 2012)	HOLDEN, J., SMART, R. P., DINSMORE, K. J., BAIRD, A. J., BILLETT, M. F. & CHAPMAN, P. J. 2012. Morphological change of natural pipe outlets in blanket peat. Earth Surface Processes and Landforms, 37, 109-118.	A field-based- monitoring study (Holden et al., 2012 [2++]) at Moor House, North Pennines examined a catchment 17.4 ha in extent and 545-580 m a.o.d. 98% of which is covered in blanket peat, typically 3-4 m thick, but up to 8 m thick in places. Slopes are mainly E or SE facing and are mainly 0-5o (max 15o) and vegetation is dominated by Calluna vulgaris and Eriophorum vaginatum with some Empetrum nigrum and Sphagnum capillifolium. Measurements were taken of rainfall, temperature and other climatic data, which were monitored at the nearby Moor House weather station. Three surveys of pipe outlets (where peat pipes meet streams) were conducted	Search and Sift

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
55	(Holden, 2005a [2++])	(Holden, 2005a)	HOLDEN, J. 2005a. Controls of soil pipe frequency in upland blanket peat. Journal of Geophysical Research-Earth Surface, 110, 11.	A field survey (Holden, 2005a [2++]) at 160 sites across Dartmoor, Exmoor, North Wales, South and North Pennines, North York Moors, Ayrshire, the Cairngorms, Skye and Caithness and Sutherland. examined 160 blanket peat catchments between 0.8 and 4.2 ha in extent, selected to represent the main areas of blanket peat within Britain.. The following interventions were applied. . Measurements were taken of GPR surveys of peat pipes were taken in 2 areas of each catchment, usually on opposite slopes, and in 3 plots for each area, at the hill top, mid-slope and footslope. Each plot was surveyed using 6 20m parallel transects along the	Search and Sift

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
56	(Holden, 2005b [2+])	(Holden, 2005b)	HOLDEN, J. 2005b. Piping and woody plants in peatlands: Cause or effect? Water Resources Research, 41, 10.	One study (Holden, 2005b [2+]) included a field survey of blanket peat catchments around the UK, a field-based case study and a before and after laboratory study. The field survey covered 160 sites across Dartmoor, Exmoor, North Wales, South and North Pennines, North York Moors, Ayrshire, the Cairngorms, Skye and Caithness and Sutherland, where six 50 by 20m plots were surveyed in each catchment, in which six parallel GPR transects, 10 m apart, were taken across the slope using 100 and 200MHz antennae. In each plot the presence or absence of certain blanket bog species was noted, these being Calluna vulgaris, Eriophorum spp.,	Search and Sift

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
57	(Holden, 2006 [2++])	(Holden, 2006)	HOLDEN, J. 2006. Sediment and particulate carbon removal by pipe erosion increase over time in blanket peatlands as a consequence of land drainage. Journal of Geophysical Research-Earth Surface, 111.	A field survey (Holden, 2006 [2++]) examined blanket peat slopes on 320 sites in Dartmoor, Exmoor, North Wales, South and North Pennines, North York Moors, Ayrshire, the Cairngorms, Skye and Caithness and Sutherland. A comparison was made between 57 sites with land drains (grips) and 263 sites without drains. A 50m by 20m plot was surveyed by six 20m parallel ground penetrating radar (GPR) transects, 10m apart, and broadly parallel with contours, using 100 or 200 MHz antennae (depending on peat depth), to indicate layers with different reflective properties in the peat and thus detect peat pipes with a minimum cross sectional area of	Search and Sift

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
58	(Holden, 2009a [2+])	(Holden, 2009a)	HOLDEN, J. 2009a. Flow through macropores of different size classes in blanket peat. Journal of Hydrology, 364, 342-348.	A field-based comparative survey (Holden, 2009a [2+]) at Moor House, North Pennines examined Blanket peatland with peat deposits 1-4 m thick overlying glacial till. Peat was poorly humified at the surface 5cm (Von post scores of 2-3, bulk density 0.15g cm-3), and only moderately humified below this (von post 3-4, 0.18g cm-3 at 20cm), gradually becoming more humified with depth (0.27g cm-3 at 50 cm) to become almost fully humified (von post 9) at 1.5m. Total porosity of the peat ranged between 90 to 97%. Vegetation was dominated by Eriophorum sp., Calluna vulgaris, Sphagnum spp. with some areas of bare peat. The study examined a single 100m by 100m	Search and Sift

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
59	(Jonczyk et al., 2009 [3+])	(Jonczyk et al., 2009)	JONCZYK, J., WILKINSON, M., RIMMER, D. & QUINN, P. 2009. Peatscapes: Monitoring of Hydrology and Water Quality at Geltsdale and Priorsdale.	A before/after study (Jonczyk et al., 2009 [3+]) in the field and laboratory examined blanket bog with many grips in North Pennines where grips were blocked. . Measurements were taken of water table, flow, and water chemistry including DOC and E4:E6 ratio. They found that water table remained relatively unresponsive and unchanged on either side of blocked and unblocked grips. There was no significant difference in colour of water between gripped and blocked, but there are differences related to date of sampling. The trend for E4:E6 ratio is of a decline in the values. The study lacked descriptions of statistical tests. A longer	Search and Sift

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
60	(Komulainen et al., 1999a [2+])	(Komulainen et al., 1999a)	KOMULAINEN, V. M., TUITTILA, E. S., VASANDER, H. & LAINE, J. 1999a. Restoration of drained peatlands in southern Finland: initial effects on vegetation change and CO_2 balance. Journal of Applied Ecology, 36, 634-648.	A field-based treatment/control comparison study in Finland (Komulainen et al., 1999a [2+]) examined drained blanket mire used for forestry where trees were cleared and ditches were blocked. In the second year an additional plot was added in the treated and untreated area where all vegetation was removed and the plots kept bare in growing season. Measurements were taken of vegetation cover (seasonal), water table height (weekly), rainfall (weekly), carbon dioxide flux (twice weekly in growing season for year 1, weekly in the growing season for year 2, and every third week in growing season for year 3). They found that water	Search and Sift

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
61	(Lavoie et al, 2005 [2+])	(Lavoie et al, 2005)	LAVOIE, C., MARCOUX, K., SAINT-LOUIS, A., PRICE, J. S. 2005. The dynamics of a cotton-grass (Eriophorum vaginatum L.) cover expansion in a vacuum-mined peatland, southern Quebec, Canada. Wetlands, 25, 64-75.	A field repeated survey and case study (Lavoie et al, 2005 [2+]) at Quebec examined A cut over raised bog formerly dominated by Sphagnum mosses and trees, then subject to peat extraction by block cutting and vacuum harvesting. The study sites comprised 2 180 m by 24 m peat fields had been abandoned since 1993, 10 years before the study began, one of which was wetter and dominated by Eriophorum vaginatum with peat thicknesses ranging from 24 cm to 143 cm, and the other being drier with thicker peat (165-189 cm) and having a low cover of around 10%. Water tables in the drier field were raised (outside of the control of the study)	Re-selected by Author

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
62	(Lindsay et al., 2003 [4])	(Lindsay et al., 2003)	LINDSAY, R. A. Peat Forming Process and Restoration Management. In: MEADE, R., ed. Proceedings of the Risley Moss Bog Restoration Workshop, 2003. English Nature.	A review (Lindsay et al., 2003 [4]) presents a review of research relevant to two primary models of peat formation. It suggests that most UK bog formation is via paludification. It is important that there is a permanently waterlogged and anaerobic zone, the catotelm, and ideally this should lie close to the surface with a thin acrotelm of seasonally fluctuating water levels in which the mosses and vascular plants grow. Conditions suitable for paludification will fluctuate with climate and slope such that there may be natural occurrences of bog loss or gain over more millennial/ geological timescales. The British limit for paludification is	Search and Sift

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
63	(Lindsay, 1995 [4])	(Lindsay, 1995)	LINDSAY, R. A. 1995. Bogs: The Ecology,Classification and Conservation of Ombrotrophic Mires, Battleby, Perth, Scottish Natural Heritage.	A review (Lindsay, 1995 [4]) reported that peat is material of vegetable origin dating back hundreds or thousands of years. Bog formation depends on the dominance of Sphagnum plus paludification as a method of spread for larger raised and blanket bogs. Notes bogs have the potential to occur almost anywhere in Britain c.f remains of Andromeda polifolia and Vaccinium oxycoccus found near Cambridge in 'the dry east' as recently as 1855. The review cites research by Backeus 1998 that the moisture regime conditions of the previous year and August in particular have the greatest impact on Sphagnum growth the following year. Temperature plays little	Search and Sift

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
64	(Mackay & Tallis, 1996 [3-])	(Mackay & Tallis, 1996)	MACKAY, A. W. & TALLIS, J. H. 1996. Summit-type blanket mire erosion in the forest of Bowland, Lancashire, UK: Predisposing factors and implications for conservation. Biological Conservation, 76, 31-44.	A field case study in the Forest of Bowland (Mackay & Tallis, 1996 [3-]) examined upland blanket peat (510m elevation) subject to either "summit type" erosion, leaving isolated haggs on mineral substrate, or "gully erosion" represented by sparsely branched, parallel gullies through the peat. Three sites were examined, representing an area dominated by Sphagnum papillosum and S. capillifolium, an area near gullies dominated by Eriophorum vaginatum, and a large remnant peat hagg dominated by dwarf shrubs and grasses. Surface peat cores 50cm long were extracted from each site and analysed for macrofossil, pollen, trace metals, other cores of	Search and Sift

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
65	(Malmer & Wallen, 1999 [2+])	(Malmer & Wallen, 1999)	MALMER, N. & WALLEN, B. 1999. The dynamics of peat accumulation on bogs: mass balance of hummocks and hollows and its variation throughout a millennium. Ecography, 22.	A series of field based case studies/surveys (Malmer & Wallen, 1999 [2+]) in the field examined a raised bog peatland at Store Mosse National Park, Morhult and Akhult bogs in Southern Sweden. Measurements were taken of productivity and decay rates, and net mass balance estimated for four microtopographical zones: Sphagnum Hummocks, lichen hummocks, Sphagnum lawn hollows and bare peat hollows. An addition of labelled C14 material was used to mark a reference layer in the peat. They found that productivity of lichen hummocks and bare peat hollows was negligible and net mass balance was negative. This study is based on other research/	Search and Sift

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
66	(Malmer et al.,1994 [3+])	(Malmer et al., 1994)	MALMER, N., SVENSSON, B. M. & WALLEN, B. 1994. INTERACTIONS BETWEEN SPHAGNUM MOSES AND FIELD LAYER VASCULAR PLANTS IN THE DEVELOPMENT OF PEAT-FORMING SYSTEMS. Folia Geobotanica & Phytotaxonomica, 29.	A review and summary of research findings on mires (Malmer et al.,1994 [3+]), especially bogs, from 1960's to 1990s across much of the Northern Hemisphere reported that nutrient supply is limited on ombrotrophic bogs. Mosses control the supply of most nutrients esp. atmospheric inputs at natural or even slightly enhanced levels, whilst vascular plants depend on mineralisation of organic matter within the substrate (or very high levels of additional input). Mosses/Sphagnum are not essential to peat formation but certainly facilitate and enhance it . Historically Sphagnum has formed the bulk of most blanket bog peat. High water table and anoxic conditions are	Search and Sift

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
67	(Marrs et al., 2004 [1++])	(Marrs et al., 2004)	MARRS, R. H., PHILLIPS, J. D. P., TODD, P. A., GHORBANI, J. & LE DUC, M. G. 2004. Control of Molinia caerulea on upland moors. Journal of Applied Ecology, 41, 398-411.	A field-based-based treatment/control comparison (Marrs et al., 2004 [1++]) at Northern Peak District and Mossdale, Upper Wensleydale, Yorkshire Dales examined two moorland areas, one dominated by Molinia and the other mosaic Molinia and Calluna vulgaris, at each of the two locations. Two large plots were established at each site, one of which was subject to a burning regime, the other left unburnt. An additional sub-experiment was carried out on the Molinia-dominated "white moor" plots looking into the effect of raking off Molinia litter and seeding heather by applying brash. Grazing regimes were manipulated (no grazing,	Search and Sift

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
68	(McHugh et al., 2000 [2+])	(McHugh et al., 2000)	MCHUGH, M. M. et al. 2000. Research on the quantification and causes of upland soil erosion. Ministry of Agriculture Fisheries and Food, Reserach and Development Final Project Report SP0402.	A field-based repeated survey and aerial photo analysis (McHugh et al., 2000 [2+]) sampled unenclosed land over 200m a.s.l. at 5 km grid intersections across England and Wales over 2 years. In the survey, measurements were taken of estimates of area and missing volume of eroded soil at 399 field sites, within concentric 10 m and 50 m radius circles. Short term loss or deposition rates in erosion gullies was measured using vertical measurements to tapes stretched between fixed pins at the gully sides. The study found that an estimated 18,025 ha of erosion driven by water (including gullying and hagging in blanket peatlands), and 0.242 km3	Re-selected by Author

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
69	(Milligan et al., 1999 [1+])	(Milligan et al., 1999)	MILLIGAN, A. L., PUTWAIN, P. D. & MARRS, R. H. 1999. A laboratory assessment of the relative susceptibility of Molinia caerulea (L.) Moench and Calluna vulgaris (L.) Hull to a range of herbicides. Annals of Applied Biology, 135, 503-508.	A laboratory treatment/comparison study (Milligan et al., 1999 [1+]) examined Plants of Molinia caerulea were collected and Calluna vulgaris were obtained from a nursery, transplanted into nutrient rich acid compost. The following interventions were applied. Molinia and Calluna plants were sprayed with one of seven different graminicides at 8 different doses. Sprayed plants were grown on in glasshouses in three randomised blocks. Initial measurements were taken of tiller numbers, length of longest leaf and total shoot length. Following treatment, measurements were made of tiller number, leaf number leaf length, number of seed	Search and Sift

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
70	(Milligan et al., 2003 [1++])	(Milligan et al., 2003)	MILLIGAN, A. L., PUTWAIN, P. D. & MARRS, R. H. 2003. A field assessment of the role of selective herbicides in the restoration of British moorland dominated by Molinia. Biological Conservation, 109, 369-379.	A field-based-based control treatment comparison (Milligan et al., 2003 [1++]) examined Molinia and Calluna dominated areas, probably overlying shallow peat. For each vegetation type, three replicate blocks of plots received fully factorial randomised treatments in July of five different herbicides at two application rates, and were compared with 2 untreated control plots. Measurements were taken of species composition of the vegetation was assessed after 4 weeks 1 year and 3 years, along with sward height in the Molinia-dominated area. They found that In the Molinia-dominated plots different herbicides had different effects, with	Search and Sift

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
71	(Milligan et al., 2004 [1+])	(Milligan et al., 2004)	MILLIGAN, A. L., PUTWAIN, P. D., COX, E. S., GHORBANI, J., LE DUC, M. G. & MARRS, R. H. 2004. Developing an integrated land management strategy for the restoration of moorland vegetation on Molinia caerulea-dominated vegetation for conservation purposes in upland Britain. Biological Conservation, 119, 371-385.	A field-based-based control treatment comparison (Milligan et al., 2004 [1+]) at North Yorkshire examined Molinia-dominated moorland, probably over shallow peaty soils (not true blanket peat). The experiment comprised random, factorial application of two grazing treatments (1.8 ewes ha-1 or no grazing) in 2 replicated plots, combined with four cutting treatments (uncut; cut in December in year 1; cut in December year 1 and June in year 2; cut in December year 1, and June and July in year 2) and treatments of quizalofop-ehtyl heribicide, Calluna brash or no addition. Measurements were taken of plant	Search and Sift

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
72	(Murphy, 2008 [3-])	(Murphy, 2008)	MURPHY P. 2008. Restoring Active Blanket Bog in Ireland, Technical Final Report, LIFE project Number LIFE02 NAT/IRL/8490, Coillte Teoranta, Mullingar, Westmeath.	Restoration monitoring in 14 SACs throughout Kerry, Clare, Galway, Mayo, Sligo, Donegal and Laois/Offaly (Murphy, 2008 [3-]) examined in 1989 ha of afforested blanket bog where the following interventions were applied. Trees were felled and removed or chipped or placed into windrows of unwanted timber, drains were blocked using plastic piling or peat dams and regeneration of conifers was suppressed. Measurements were taken of assessment of vegetation composition and cover in 4 m2 quadrats, and monitoring of water table in dipwells using WALRAGs. They found that there were differences in the	Search and Sift

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
73	(O'Reilly, 2008 [2++])	(O'Reilly, 2008)	O'REILLY, C. 2008. Peatscapes Project: Sphagna as management indicators. Final report to North Pennines AONB Partnership.	A field survey (O'Reilly, 2008 [2++]) examined the relationship between Sphagnum and land management in the North Pennines. Measurements were taken of pH, peat depth, altitude, aspect, slope, conductivity and a range of vegetation data. They found that there were significant correlations between: vegetation height and overall plant diversity; altitude and overall plant diversity; peat depth and Sphagnum species diversity; peat depth and abundance of seven Sphagnum species. The study was not a comparison of restoration of sites but a useful identification of important species for restoration.	Search and Sift

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
74	(Phillips et al., 1981 [2+])	(Phillips et al., 1981)	PHILLIPS, J., YALDEN, D. & TALLIS, J. 1981. Peak District Moorland Erosion Study Phase 1 Report. Peak Park Joint Planning Board, Bakewell.	A repeat field survey (Phillips et al., 1981 [2+]) examined the entire gritstone moorland area of the Peak District National Park and also made more in depth studies of various locations of bare and eroding peat, with some comparative study sites elsewhere in the country. A mapping exercise was carried out in 1979 of moorland vegetation and land cover on the gritstone areas of unenclosed moorland of the National Park, assigning vegetation at a landscape scale, by visual estimation, to 6 main categories (Heather, Cotton-grass, Crowberry, Bilberry, Acid Grassland and Bracken), as dominant or co-dominants, also noting "Juncus spp." to indicate flushes and	Search and Sift

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
75	(Phillips, 2008 [2-])	(Phillips, 2008)	PHILLIPS, H. 2008. Management of moorlands for Red Grouse: Investigating the case for grip blocking.	A field-based-based case study (Phillips, 2008 [2-]) at North Yorkshire examined an open grip and a grip blocked within the previous year with peat dams on blanket peatland. The following interventions were applied. Measurements were taken of invertebrate abundance and species in pitfall traps at 36 points arranged over a 6m by 6m square positioned over the grips and in sweep net samples. Broad information on vegetation community composition and incidence of grouse faeces were also recorded. Sampling took place in July and traps were left for 10 days, collecting samples in ethylene glycol, before collection and identification to family, genus or species	Search and Sift

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
76	(Ramchunder et al., 2012 [2++])	(Ramchunder et al., 2012)	RAMCHUNDER, S. J., BROWN, L. E. & HOLDEN, J. 2012. Catchment-scale peatland restoration benefits stream ecosystem biodiversity. Journal of Applied Ecology, 49, 182-191.	A survey and treatment/control comparison study (Ramchunder et al., 2012 [2++]) in the field examined blanket bog with many grips in North Pennines where grips had been blocked. . Measurements were taken of macroinvertebrate abundance and richness, and stream water concentrations of SO4, particulate organic matter, suspended sediment and aluminium. They found that mean concentrations of SO4, particulate organic matter, suspended sediment and aluminium were all highest in drained streams. Mean invertebrate abundance and richness was highest in drain-blocked and intact sites and lowest in drained	Search and Sift

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
77	(Richards et al., 1995 [1+])	(Richards et al., 1995)	RICHARDS, J. R. A., WHEELER, B. D. & WILLIS, A. J. 1995. The growth and value of Eriophorum angustifolium in relation to the revegetation of eroding blanket peat. In: WHEELER, B. D., SHAW, S. C., FOJT, W. J. & ROBERTSON, R. A. (eds.) Restoration of Temperate Wetlands. Chichester: John Wiley and Sons Ltd.	A study by (Richards et al., 1995 [1+]) looked at Eriophorum angustifolium establishment on bare peat. The study employed non-factorial combinations of introduction of E. angustifolium plants (as directly collected shoots with 2.5cm of rhizome or as plants propagated in pots of moss peat or ericaceous compost), fertiliser (NPK or seaweed-based) and/or lime, and inside and outside of a single fenced plot. Further laboratory experiments examined root and shoot growth responses in solution cultures at different levels of Ca and pH. The field study area in the Peak District was bare peat, with scattered residual vegetation of Eriophorum vaginatum, E.	Search and Sift

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
78	(Robinson, 1985 [2+])	(Robinson, 1985)	ROBINSON, M. 1985. The Hydrological Effects of Moorland Gripping: a Re-appraisal of the Moor House Research. Journal of Environmental Management, 21, 205-211.	A field-based survey (comparative monitoring) (Robinson, 1985 [2+]) at Moor House, North Pennines examined two blanket peat-covered catchments with artificial drainage (gripping) and two with natural drainage. One artificially drained catchment was described as "bare", having experienced a severe fire in 1950, and the others were dominated by heather with fairly abundant Sphagnum . Catchments ranged from 3.8 to 8.8 ha in size. Measurements were taken of flow rate at V-notch weirs, rainfall and other climatic data from a nearby (1.6 km max.) weather station supported by readings from rainfall collectors at the weirs.	Re-selected by Author

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
79	(Robroek et al, 2010 [3+])	(Robroek et al, 2010)	ROBROEK, B. J. H., SMART, R. P., HOLDEN, J 2010. Sensitivity of blanket peat vegetation and hydrochemistry to local disturbances. Science of the Total Environment, 408, 5028-5034.	A field-based case study (Robroek et al, 2010 [3+]) at Moor House, North Pennines examined two tracks which had received approximately 30 tramplings a week for ~1year, and then abandoned for either 1 or 2 years. The tracks are located in a 20 ha headwater catchment with blanket peat deposits 1-4 m thick at 545-580m a.s.l., 2063 mm of rainfall, 6o average annual temperature and 244 rain days a year. Vegetation is dominated by Calluna vulgaris, Empetrum nigrum, Eriophorum vaginatum, E. angustifolium, Sphagnum spp., Pleurozium schreberei and Hypnum jutlandicum. The tracks were compared with a line	Re-selected by Author

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
80	(Robroek et al., 2009 [1+])	(Robroek et al., 2009)	ROBROEK, B. J. M., RUIJVEN, J. V., SCHOUTEN, M. G. C., BREEUWER, A., CRUSHELL, P. H., BERENDSE, F. & LIMPENS, J. 2009. Sphagnum re-introduction in degraded peatlands: the effects of aggregation, species identity and water table. Basic and Applied Ecology, 10, 697-706.	A field-based treatment comparison (Robroek et al., 2009 [1+]) at Clara Bog in the Irish Midlands, and Mannikjarve Bog, Central Estonia, examined two raised bog peatlands, both with low mean annual rainfall (675 and 804mm) dominated by Sphagnum magellanicum, with S. cuspidatum, S. rubellum, S. fuscum, Rhynchospora alba, Andromeda polifolia and Oxycoccus palustris.. Four small or one large intact surface plugs of Sphagnum cuspidatum, S. rubellum and S. fuscum were transplanted into existing bog vegetation at 2 different water tables (-5 and -20cm), in a replicated randomised block design, and plots were kept clear of vascular plants by clipping. Measurements	Search and Sift

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
81	(Rochefort & Campeau, 2002 [1++])	(Rochefort & Campeau, 2002)	ROCHEFORT, L. & CAMPEAU, S. Recovery of donor sites used for peatland restoration. In: SCHMILEWSKI, G. & ROCHEFORT, L., eds. Peat in horticulture - Quality and environmental challenges. A joint symposium of Commission II (Industrial utilization of peat and peatlands) and Commission V (After-use of cut-over peatlands) of the International Peat Society, 2002 Parnu, Estonia. International Peat Society.	A field-based-based control treatment comparison and monitoring (Rochefort & Campeau, 2002 [1++]) at Sainte-Marguerite-Marie peatland in the Lac Saint-Jean region, Quebec examined bog donor site recovery in two raised bog peatlands, one dominated by Sphagnum fuscum and the other by Sphagnum capillifolium, which had had the surface layer of Sphagnum removed (for the purposes of restoring bare peatlands elsewhere). On each peatland type, 3 replicated plots received treatments of straw mulch, split-plot reintroductions of Sphagnum (S. Fuscum, S. magellanicum, S. capillifolium or a mix of these) with straw mulch, or	Search and Sift

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
82	(Rochefort et al., 1995 [1-])	(Rochefort et al., 1995)	ROCHEFORT, L., GAUTHIER, R. & LEQUÉRÉ, D. 1995. Sphagnum regeneration - Towards an optimisation of bog restoration. In: WHEELER, B. D., SHAW, S. C., FOYT, W. J. & ROBERTSON, R. A. (eds.) Restoration of Temperate Wetlands. Chichester: John Wiley and Sons.	A field experiment (Rochefort et al., 1995 [1-]) explored the size of fragments from which four species of Sphagnum could regenerate, and the impact of water table, fertiliser regime and type of introduction (plugs or scattered fragments). Another field experiment explored the impact of addition of lime, Sphagnum magellanicum or Polytrichum strictum fragments on Sphagnum revegetation of a cutover, drain-blocked peatland, along with later application of 40% shade fabric. The experiments were established on cut over raised bog peatland, with bare peat, and drains blocked in spring 4 months prior to treatment. Measurements were taken	Search and Sift

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
83	(Rochefort et al., 2003 [1++])	(Rochefort et al., 2003)	ROCHEFORT, L., QUINTY, F., CAMPEAU, S., JOHNSON, K. & MALTERER, T. 2003. North American approach to the restoration of Sphagnum dominated peatlands. Wetlands Ecology and Management, 11, 3-20.	A series of treatment/control comparison experiments (Rochefort et al., 2003 [1++]) in the field and laboratory were described which explored the practicalities of using Sphagnum diaspore harvesting, processing and introduction to restore bog vegetation to cut-over bogs. The field study site was a cut-over raised bog peatland, with bare peat, drains blocked year prior to treatment, and some areas harrowed to remove hydrophobic crusts and any topographic variation due to areas of block cutting. The experiments comprised introduction to bare peat of propagules derived from three 10 cm depth increments collected from three monospecific	Search and Sift

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
84	(Ross, 2011 [2+])	(Ross, 2011)	ROSS, S. 2011. United Utilities. Sustainable Catchment Management programme. Volume 4. Restoration of Upland Vegetation.	A field-based-based monitoring study (Ross, 2011 [2+]) at the Peak District and Forest of Bowland examined two monitoring plots in each of three blanket-bog dominated areas, and two dry heath areas. The results for the two dry heath sites are not presented here. The blanket bog areas were: Lamb Hill (Bowland) where 450ha of blanket peatland, 39% "degraded" (cause not specified), had been subject to reduced grazing levels, away-wintering of stock, and implementation of a burning plan; Sykes (Bowland) where 575 ha of blanket peatland (mostly "degraded") and dominated by dwarf shrubs subject to reduced stocking levels, indoor	Search and Sift

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
85	(Sheppard et al, 2011 [2++])	(Sheppard et al, 2011)	SHEPPARD, L. J., LEITH, I. D., MIZUNUMA, T., NEIL CAPE, J., CROSSLEY, A., LEESON, S., SUTTON, M. A., VAN DIJK, N. AND FOWLER, D. 2011, Dry deposition of ammonia gas drives species change faster than wet deposition of ammonium ions: evidence from a long-term field manipulation. Global Change Biology, 17: 3589–3607. doi: 10.1111/j.1365-2486.2011.02478.x	A field-based treatment/control comparison study and controlled before/after study (Sheppard et al, 2011 [2++]) in the Southern Uplands examined peat 3-6 m deep, dominated by Calluna vulgaris, Eriophorum vaginatum, Sphagnum capillifolium, with patches of Cladonia portentosa, Sphagnum fallax and Sphagnum papillosum, with frequent Erica tetralix, Hypnum jutlandicum and Pleurozium schreberi. Ammonia gas treatment was delivered via free air release over one, unreplicated, transect to provide a high to low concentration gradient Wet N treatments were supplied automatically at	Selected by External Reviewer

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
86	(Sheridan, 2008 [1++])	(Sheridan, 2008)	SHERIDAN, S. 2008. Restoration of blanket bog vegetation as a habitat for red grouse following clearance of immature Sitka spruce forest on the west coast of Scotland [electronic resource], Newcastle upon Tyne, University of Newcastle upon Tyne.	A field-based-based monitoring survey and treatment control comparison study (Sheridan, 2008 [1++]) at Kintyre examined an area of deep blanket peatland 280ha in extent, which had been drained, ploughed (double mouldboard, 50cm deep) and planted with Picea sitchensis during the 1980s, which were then clearfelled during 1999-2001. Drains had mostly naturally revegetated, and were not blocked. Felled trees were not removed, but were either chipped in situ, felled and cut up in situ, or trunks removed and used to make a corduroy trackway. The study area also included 170 ha of unplanted blanket peatland. Site elevation is ~300m a.s.l.,	Search and Sift

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
87	(Shotbolt et al, 1998 [2++])	(Shotbolt et al, 1998)	SHOTBOLT, L., ANDERSON, A.R. & TOWNEND, J. 1998. Changes to blanket bog adjoining forest plots at Bad a'Cheo, Rumster Forest, Caithness. Forestry, 71, 311-324.	A field-based repeat survey (Shotbolt et al, 1998 [2++]) at Bad a Cheo, Caithness examined a 50 ha blanket peatland 90m a.s.l. With 930mm annual rainfall, 233 rain days per year, on 3.5-5.5m of peat, with a fibrous (H4) surface layer and oligofibrous (H6-H9) deeper layers. Unaffected blanket bog vegetation is predominantly Sphagnum papillosum and Trichophorum cespitosum. The following interventions were applied. Five 0.6 ha plots were subject to drainage and various ploughing treatments and planted with Pinus contorta and Picea sitchensis in 1968. A further control plot within each block had been since planted with lodgepole	Re-selected by Author

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
88	(Skeffington et al., 1997 [1+])	(Skeffington et al., 1997)	SKEFFINGTON, R., WILSON, E., MALTBY, E., IMMIRZI, P. & PUTWAIN, P. Acid deposition and blanket mire degradation and restoration. In: TALLIS, J. H., MEADE, R. & HULME, P. D., eds. Blanket mire degradation: Causes, Consequences and Challenges., 1997 University of Manchester. Mires Research Group.	A study (Skeffington et al., 1997 [1+]) explored revegetation of peat spoil following engineering works in the Dark Peak, southern Pennines. The areas studied represented eroding peat, sloping eroding peat, disturbed peat (tipped in lagoons) and sloping rocky areas. Treatments included introduction of propagules from Calluna vulgaris and Deschampsia flexuosa seed, or from application of chopped vegetation, and sowing of companion grass species (Agrostis castellana 85%, Festuca rubra 7.5% and Lolium perenne 7.5), application of fertiliser (17:17:17 at 10g m-2) and ground limestone (250g m-2), which was repeated after 1 and 3 years..	Search and Sift

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
89	(Sliva & Pfadenhauer, 1999 [1++])	(Sliva & Pfadenhauer, 1999)	SLIVA, J. & PFADENHAUER, J. 1999. Restoration of cut-over raised bogs in southern Germany - a comparison of methods. Applied Vegetation Science, 2, 137-148.	A field-based treatment/control comparison (Sliva & Pfadenhauer, 1999 [1++]) at Alpine foothills examined a cut-over raised bog complex where cutting ceased in 1986, the site was reprofiled into terraces where water levels were raised and surfaces sown with Carex rostrata and Eriophorum spp.. The following interventions were applied. in the first experiment random plots were assigned treatments of diaspores of Calluna vulgaris, Eriophorum angustifolium, E. vaginatum, Carex rostrata and were covered with either fleece (shade fabric), geojute or Calluna brash, then coverings removed after 1 and 2	Search and Sift

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
90	(Stewart and Lance, 1991 [2++])	(Stewart and Lance,1991)	STEWART, A. J. A. & LANCE, A. N. 1991. Effects of moor-draining on the hydrology and vegetation of Northern Pennine blanket bog. Journal of Applied Ecology, 28,1105-1117.	A field-based survey (Stewart and Lance, 1991 [2++]) at North Pennines examined various blanket bog catchments across the North Pennines, ranging from 390-730 m a.s.l., with mean slopes between 1o and 8o, and drained by moorland grips spaced at 15-35m, with varying types of grazing and burning management. In most cases the vegetation was dominated by Calluna vulgaris, Eriophorum vaginatum, with some Sphagnum capillifolium and/or Deschampsia flexuosa. A special case study was made of the Burnt Hill catchment, which had been drained in 1952 (27 years before this study), and the Bellbeaver site, which was drained 1 year before this study. At	Re-selected by Author

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
91	(Stroud et al. 1988 [4])	(Stroud et al. 1988)	STROUD, D. A., REED, T. M., PIENKOWSKI, M. W. & LINDSAY, R. A. 1988. Effects of afforestation on the ecosystem. In. Birds, Bogs and Forestry: The Peatlands of Caithness and Sutherland Eds. Ratcliffe D. A. & Oswald, P. A. Nature Conservancy Council, http://www.jncc.gov.uk/page-4322.	A review of the impacts of afforestation on blanket bog birds (Stroud et al. 1988 [4+]) at Caithness and Sutherland reported that afforestation of blanket bog peatlands replaces bog bird assemblages with forest bird assemblages of lower conservation value. Birds are displaced initially to adjacent bog, but the resulting higher populations here are not maintained. There are also likely to be deleterious impacts on birds adjacent to forestry due to the cessation of incompatible management (burning, grazing) causing changes in vegetation structure and due to increased predation of moorland birds by woodland or woodland edge species such as	Selected by Assurance Group

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
92	(Tallis & Yalden, 1983 [2-])	(Tallis & Yalden, 1983)	TALLIS, J. H. & YALDEN, D. W. 1983. Peak District Moorland Restoration Project. Phase II Report: Re-vegetation Trials. Bakewell, Derbyshire.	A study of revegetation approaches for bare and eroding moorland (Tallis & Yalden, 1983 [2-]). Interventions included stock exclosure and application of Calluna brash as a seed source, and their interaction with soil/peat surface stabilisation using bituminous stabiliser or larch brash. The initial conditions of the study site are difficult to assess from the report; several sites are described as having deep or shallow peat over "mineral rubble" but the depth associated with these terms is not given. Sites included a range of altitudes and soil types and so represent a wide range of soil conditions. A description of "former vegetation" is also given,	Search and Sift

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
93	(Tallis, 1998 [4])	(Tallis, 1998)	TALLIS, J. H. 1998. Growth and degradation of British and Irish blanket mires. Environmental Reviews, 6, 81-122.	A review (Tallis, 1998 [4]) of blanket peatland formation and processes reported that blanket bog covers at least 22,500 km² of the British Isles, which represents an internationally important proportion of this habitat. Whilst the bulk is found over 450-500 metres the lower limit ranges from sea level in the far North and West rising south and eastwards to around 350 metres in the South Pennines. The upper limit in the Highlands is approximately 1070 metres. Bog formed on even terrain rarely exceeds 3.5 m in depth, on uneven terrain 5-6 metres over hollows is not unusual but peat over 7m thick is an exception. Sphagnum is often a major	Search and Sift

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
94	(Todd et al., 2000 [1++])	(Todd et al., 2000)	TODD, P. A., PHILLIPS, J. D. P., PUTWAIN, P. D. & MARRS, R. H. 2000. Control of Molinia caerulea on moorland. Grass and Forage Science, 55.	A field-based-based treatment/control comparison (Todd et al., 2000 [1++]) at Exmoor, North Peak and the Yorkshire Dales examined areas of moorland dominated by Molinia caerulea ("white moor"), or by a mixture of M. caerulea with Calluna vulgaris and Vaccinium myrtillus ("grey moor"). Fully factorial randomised treatments were applied to 18 plots in 2 replicate blocks at three moorland sites. Treatments were burned (5 months before measurements) or not burned; unrestricted grazing (with sheep, but also ponies and cattle at Exmoor), summer-only grazing (15 Apr to 15 Oct) or no grazing; application of glyphosate at 0, 0.27	Search and Sift

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
95	(Tuittila et al., 2003 [2+])	(Tuittila et al., 2003)	TUITTILA, E. S., VASANDER, H. & LAINE, J. 2003. Success of re-introduced Sphagnum in a cutaway peatland. Boreal Environment Research, 8, 245-250.	A field treatment comparison (Tuittila et al., 2003 [2+]) at Aitoneva examined a cut over raised bog with low rainfall (700mm annually) and short growing season, drained in 1938, block cut from 1944 and milled from 1951 until 1975, leaving approximately 1m thickness of residual peat. The site was re-wetted by blocking drains in 1994 and re-routing water from the surrounding areas. Small plots were established in areas with low and high water tables due to a natural gradient, where shallow cuttings 10cm deep were made and Sphagnum angustifolium, comprising either stem or capitulum only material, was introduced as an even	Search and Sift

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
96	(Vasander et al., 2003 [2-])	(Vasander et al., 2003)	VASANDER, H., TUITTILA, E. S., LODE, E., LUNDIN, L., ILOMETS, M., SALLANTAUS, T., HEIKKILA, R., PITKANEN, M. L. & LAINE, J. 2003. Status and restoration of peatlands in northern Europe. Wetlands Ecology and Management, 51-63.	A series of field case studies at Vanneskorpi, Kuru and Aitoneva, Kihnio (Vasander et al., 2003 [2-]) examined instances of peatland restoration and their carbon and fluvial impacts. Case study 1 reported on an afforested peatland, which had been treated with phosphorus fertiliser, and case study 2 described a cut over raised mire exactly matching the description given in Tuittila et al. (2003). In case study 1, trees were felled, leaving brash on the surface, and drainage ditches were blocked, restoring a zone between an afforested block and a stream. Measurements were taken of , in the first case study, suspended solids, COD, total P, and N concentrations in drainage	Search and Sift

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
97	(Wallage & Holden, 2011 [2+])	(Wallage & Holden, 2011)	WALLAGE, Z. E. & HOLDEN, J. 2011. Near-surface macropore flow and saturated hydraulic conductivity in drained and restored blanket peatlands. Soil Use and Management, 27, 247-254.	A field-based-based comparative survey (Wallage & Holden, 2011 [2+]) at Oughtershaw Moss, Yorkshire examined three blanket peatland catchments with similar slope aspect and peat depth, and all within 400 m of each other. One catchment was intact, undisturbed peatland, the second had been drained (15 m intervals) and at the third, drains at the same intervals had been blocked 6 years before the study, with peat dams every 10 m. Measurements were taken of flow through different-sized pores, using tension disc infiltrometers and 3 different water tensions, at 42 points sampled during July. Sampling points were arranged upslope and	Search and Sift

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
98	(Wallage et al., 2006 [2+])	(Wallage et al., 2006)	WALLAGE, Z. E., HOLDEN, J. & MCDONALD, A. T. 2006. Drain blocking: An effective treatment for reducing dissolved organic carbon loss and water discolouration in a drained peatland. Science of the Total Environment, 367, 811-821.	A treatment/control comparison study (Wallage et al., 2006 [2+]) in the field and laboratory examined drained and undrained blanket mire in Yorkshire Dales where grips were blocked and these compared with drained and undrained areas. Measurements were taken of water table height, pore water pressure and soil water solution chemistry including DOC and E4:E6 ratio. They found that there were significant differences in DOC concentrations and water colour values. DOC concentration values from drained peat were significantly greater than intact peat and those from Intact peat were significantly greater than	Search and Sift

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
99	(Warburton, 2003 [2+])	(Warburton, 2003)	WARBURTON, J. 2003. Wind-splash erosion of bare peat on UK upland moorlands. Catena, 52, 191-207.	A field-based single site monitoring study (Warburton, 2003 [2+]) at Moor House, North Pennines examined blanket peatland 615 m a.s.l., overlying till, with peat depth varying between 1-3m and composed of by Eriophorum, Calluna and Sphagnum remains, with a prevailing SW wind. Around 17% of the peat is eroded with type 1 gullying on flatter areas and type 2 on steeper slopes, with occasional bare peat flats. Monitoring took place on an area of relatively flat, sparsely vegetated peat. Measurements were taken of wind-blown sediment (termed horizontal flux) using fixed position bottles extending 30 cm above the peat surface with a	Re-selected by Author

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
100	(Wilson et al., 2010 [2++])	(Wilson et al., 2010)	WILSON, L., WILSON, J., HOLDEN, J., JOHNSTONE, I., ARMSTRONG, A. & MORRIS, M. 2010. Recovery of water tables in Welsh blanket bog after drain blocking: Discharge rates, time scales and the influence of local conditions. Journal of Hydrology, 391, 377-386.	A before/after study (Wilson et al., 2010 [2++]) in the field and laboratory examined blanket bog with many grips at Lake Vyrnwy where grips were blocked. Measurements were taken of water table and discharge. They found that water tables recovered in all catchments but at different rates. Physical factors, such as slope and peat depth, influenced water table recovery. Overall, there was a strong increase in surface water in response to blocking. At both drain and stream levels, average discharge rates were significantly lower after blocking. The study had no serious shortcomings.	Search and Sift

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
101	(Wilson et al., 2011 [2++])	(Wilson et al., 2011)	WILSON, L., WILSON, J., HOLDEN, J., JOHNSTONE, I., ARMSTRONG, A. & MORRIS, M. 2011. The impact of drain blocking on an upland blanket bog during storm and drought events, and the importance of sampling-scale. Journal of Hydrology, 404, 198-208.	A before/after study (Wilson et al., 2011 [2++]) in the field and laboratory examined blanket bog with many grips near Lake Vyrnwy where grips were blocked. Measurements were taken of water table, water colour, DOC, POC and discharge. They found that dipwell data was very variable so no overall trend was detected. Drain blocking appeared to result in more stable and higher flow rates during droughts, and slower declines in flow rate during first 5 days of drought periods. Stream discharge followed the same pattern as drain discharge, with flow rates across all catchments being higher and hydrograph recession rates generally slower after blocking. Accounting for	Search and Sift

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
102	(Wilson et al., 2011b [2++])	(Wilson et al., 2011b)	WILSON, L., WILSON, J., HOLDEN, J., JOHNSTONE, I., ARMSTRONG, A. & MORRIS, M. 2011b. Ditch blocking, water chemistry and organic carbon flux: Evidence that blanket bog restoration reduces erosion and fluvial carbon loss. Science of the Total Environment, 409, 2010-2018.	A before/after study (Wilson et al., 2011b [2++]) in the field and laboratory examined drained blanket bog at Lake Vyrnwy where grips were blocked. Measurements were taken of pH, conductivity, dissolved oxygen and DOC/POC in drains and streams. They found that pH value and conductivity levels declined significantly in drains after blocking, with pH also declining in streams. Dissolved oxygen showed a slight decline after blocking but this was strongest during high rainfall periods. There was no real trend present in the absorbance data, although absorbance in discharge waters during high rainfall events decline over time. DOC yield declined	Search and Sift

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
103	(Wishart and Warburton, 2001 [3-])	(Wishart and Warburton, 2001)	WISHART, D. & WARBURTON, J. 2001. An assessment of blanket mire degradation and peatland gully development in the Cheviot Hills, Northumberland. Scottish Geographical Journal, 117, 185-206	A field case study (Wishart and Warburton, 2001 [3-]) at Cheviot Hills examined an area of blanket peatland comprising 70km2 of which 45% is peat covered.. The following interventions were applied. . Measurements were taken of peat erosion was mapped in detail from aerial photographs and classified as linear, anastamosing or dendritic, and the state of the peat margin classed as indistinct, a peat scar, or lightly or densely dissected. Peat slides were also mapped. Field visits were conducted to confirm the mapping and gullies measured, and aerial photoghaph of different ages compared to assess change in gullies	Re-selected by Author

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
104	(Worrall et al., 2010 [2+])	(Worrall et al., 2010)	WORRALL, F., BELL, M. J. & BHOGAL, A. 2010. Assessing the probability of carbon and greenhouse gas benefit from the management of peat soils. Science of the Total Environment, 408, 2657-2666.	A meta-analysis (Worrall et al., 2010 [2+]) examined the results of comparative field studies looking at the impact of land management on elements of carbon and greenhouse gas budgets. Studies were characterised on whether they had demonstrated an improvement in the budget (ie. improved C storage or reduced greenhouse gas (GHG) emissions), and the number of studies showing improvements were used to calculate a probability of any new study reporting an improvement. These, and the number of studies, were weighted against assumed relative importance of the components in the carbon budget (based on a carbon budget study at Moor	Search and Sift

	UER citation	Standard Citation	Bib ref	Analysis	Source of Reference
105	(Worrall et al., 2011 [2++])	(Worrall et al., 2011)	WORRALL, F., ROWSON, J. G., EVANS, M. G., PAWSON, R., DANIELS, S. & BONN, A. 2011. Carbon fluxes from eroding peatlands - the carbon benefit of revegetation following wildfire. Earth Surface Processes and Landforms, 36, 1487-1498.	A field-based-based comparative survey (Worrall et al., 2011 [2++]) at Bleaklow, the Peak District examined an area of blanket peatland 468-630 m a.s.l. with an annual average rainfall of 1200mmm, subject to past wildfire, visitor disturbance, grazing, metal and acid deposition, and severely eroded with gullies. The study area was subject to a severe wildfire 3 years before this study, which left a surface of bare peat. Four of the plots in this study represent areas subject to revegetation management (date unspecified), through application of fertiliser, lime and seeding with Festuca, Deschampsia and Agrostis spp., and application of Calluna	Search and Sift

	Type of Evidence	study type	field-based/laboratory	Country	Location
1	RCTs or analyses of RCTs	treatment/control comparison study and controlled before/after study	field-based	Scotland, UK	Bad a Cheo
2	Non RCTs, or analyses of these	treatment/control comparison study - unbalanced, or survey	field-based	England, UK	Peak District
3	RCTs or analyses of RCTs	treatment/control comparison study	field-based	Scotland, UK	Bad a Cheo
4	Non RCTs, or analyses of these	treatment/control comparison study	field-based	England, UK	Peak District and Forest of Bowland
5	Non RCTs, or analyses of these	before/after study	field-based	England, UK	Peak District
6	Case studies etc.	treatment/control comparison study	field-based	England, UK	Peak District
7	Non RCTs, or analyses of these	survey and treatment/control comparison study	field-based	UK (Scotland and England)	Scottish Highlands, Pennines, Exmoor
8	Non RCTs, or analyses of these	survey	field	England and Scotland, UK	thirty two survey sites, across the Pennines, northern Scotland and Exmoor
9	Non RCTs, or analyses of these	survey and treatment/control comparison study	field-based	UK (Scotland and England)	Scottish Highlands, Pennines, Exmoor
10	Non RCTs, or analyses of these	comparative survey	field	Scotland, UK	Forsinard
11	RCTs or analyses of RCTs	treatment/control comparison study	field-based	Canada	Riveiere-du-Loup,
12	Non RCTs, or analyses of these	treatment control comparison and monitoring		England	North York Moors
13	Non RCTs, or analyses of these	treatment/control comparison	field-based	England, UK	Bleaklow, the Peak District
14	RCTs or analyses of RCTs	treatment/control comparison study	field-based	Canada	Riveiere-du-Loup,
15	Case studies etc.	treatment/control comparison study	field-based	Eire	Glenamoy
16	Case studies etc.	before/after study	field-based	England, UK	Peak District
17	RCTs or analyses of RCTs	systematic review of treatment/control comparison studies	mainly field-based, but with some laboratory,	various worldwide	
18	RCTs or analyses of RCTs	treatment/control comparison study	laboratory	Switzerland	

	Type of Evidence	study type	field-based/laboratory	Country	Location
19	RCTs or analyses of RCTs	treatment/control comparison study	field-based and laboratory	Canada	Sainte-Marguerite-Marie peatland in the Lac Saint-Jean region,
20	Non RCTs, or analyses of these	repeated survey	field-based	England, UK	Peak District
21	RCTs or analyses of RCTs	controlled before/after study	field-based	England, UK	Holme Moss, Dark Peak, Peak District
22	Non RCTs, or analyses of these	survey	field-based	England, UK	Peak District, Forest of Bowland and North Pennines
23	Non RCTs, or analyses of these	comparative survey	field	England and Wales, UK	Lake Vyrnwy, South Pennines, North York Moors
24	Case studies etc.	Case Study	field	UK	Exmoor
25	Case studies etc.	case study	field-based	Wales, UK	Drygarn Fawr, Elenydd
26	Case studies etc.	case study	field-based	Wales, UK	Hirwaun Common and Mynydd Llangatwg
27	RCTs or analyses of RCTs	treatment comparison study	field-based	Canada	Lac-Saint-Jean, Quebec
28	Non RCTs, or analyses of these	treatment control and before and after comparison	field-based	England, UK	Moor House, North Pennines
29	Non RCTs, or analyses of these	series of field experiments and survey	field-based	England, UK	Burnt Hill, Moor House NNR, Cumbria
30	Non RCTs, or analyses of these	comparative survey	field	UK	Moor House, Waskerley, Oxnop and Gunnarside
31	Non RCTs, or analyses of these	case study (comparisons) with some controls	field-based	England, UK	Peak District (Kinder)
32	Non RCTs, or analyses of these	detailed case study	field-based and laboratory	Canada	near Riviere-du-Loup, Quebec
33	Non RCTs, or analyses of these	field case study and laboratory controlled before/after study	field-based and laboratory	Wales, UK	Plynlimon
34	RCTs or analyses of RCTs	treatment/control comparison study	outdoor chambers	England, UK	Manchester & Surrey
35	RCTs or analyses of RCTs	treatment control comparison	field-based	Canada	New Brunswick

	Type of Evidence	study type	field-based/laboratory	Country	Location
36	Non RCTs, or analyses of these	controlled before/after study and treatment/control trial	field-based	England, UK	North Pennines (Allendale, Upper Teesdale, Widdybank Fell and Moor House)
37	Non RCTs, or analyses of these	repeated survey	field-based	England, UK	Exmoor
38	Non RCTs, or analyses of these	control/treatment comparison	field-based	England, UK	Moor House, North Pennines
39	Non RCTs, or analyses of these	before/after study	field-based and laboratory	England, UK	Yorkshire
40	Non RCTs, or analyses of these	before/after study	field-based and laboratory	England, UK	Edge of Yorkshire Dales
41	Non RCTs, or analyses of these	treatment comparison	laboratory	England, UK (on samples from Wales)	
42	RCTs or analyses of RCTs	survey and control/treatment comparison	field-based	Canada	Lac-Saint-Jean and Riviere-du-Loup,
43	RCTs or analyses of RCTs	treatment/control comparison study	laboratory	Switzerland	the lab
44	RCTs or analyses of RCTs	treatment comparison experiment	laboratory	Switzerland	
45	Non RCTs, or analyses of these	survey	field-based	Sweden	near Goteborg
46	Non RCTs, or analyses of these	repeated survey (short term)	field-based	Czech Republic	Sumava National Park
47	Non RCTs, or analyses of these	laboratory treatment comparisons and field trials	field-based and laboratory	England, UK	the Peak District
48	Case studies etc.	case study	field-based	England, UK	Moor House, North Pennines
49	Non RCTs, or analyses of these	survey	field-based	England, UK	Moor House, North Pennines
50	Non RCTs, or analyses of these	treatment/control comparison	field-based	England, UK	Moor House, North Pennines
51	Non RCTs, or analyses of these	survey and monitoring study	field-based	England and Scotland, UK	Upper Teesdale, Upper Wharfedale, Barrhill, and Clar Loch Beag

	Type of Evidence	study type	field-based/laboratory	Country	Location
52	Non RCTs, or analyses of these	survey	field-based	England, UK	Upper Wharfedale
53	Non RCTs, or analyses of these	case study	field-based	England, UK	Upper Wharfedale
54	Non RCTs, or analyses of these	monitoring study	field-based	England, UK	Moor House, North Pennines
55	Non RCTs, or analyses of these	survey	field	England, Wales and Scotland, UK	160 sites across Dartmoor, Exmoor, North Wales, South and North Pennines, North York Moors, Ayrshire, the Cairngorms, Skye and Caithness and
56	Non RCTs, or analyses of these	survey, case study and before and after laboratory study	field-based and laboratory	UK (Scotland England and Wales)	160 sites across Dartmoor, Exmoor, North Wales, South and North Pennines, North York Moors, Ayrshire, the Cairngorms, Skye and Caithness and
57	Non RCTs, or analyses of these	survey	field-based	UK (Scotland England and Wales)	320 sites in Dartmoor, Exmoor, North Wales, South and North Pennines, North York Moors, Ayrshire, the Cairngorms, Skye and Caithness and
58	Non RCTs, or analyses of these	survey	field-based	England, UK	Moor House, North Pennines
59	Case studies etc.	before/after study	field-based and	England, UK	North Pennines
60	Non RCTs, or analyses of these	treatment/control comparison study	field-based	Finland	

	Type of Evidence	study type	field-based/laboratory	Country	Location
61	Non RCTs, or analyses of these	repeated survey and case study	field	Canada	Quebec
62	Expert opinion	review	field-based	UK including Scotland. Netherlands, Germany, Latvia plus references to other works globally in both N and S hemispheres	
63	Expert opinion	Review	review	UK (Scotland, Wales, Northern Ireland and England)	
64	Case studies etc.	case study	field-based	England, UK	Forest of Bowland
65	Non RCTs, or analyses of these	case study	field-based	Sweden	Store Mosse National Park, plus Morhult and Akhult bogs Southern Sweden
66	Case studies etc.	review	field-based	various worldwide	Throughout
67	RCTs or analyses of RCTs	treatment/control comparison	field-based	England, UK	Northern Peak District and Mossdale, Upper Wensleydale, Yorkshire Dales
68	Non RCTs, or analyses of these	survey and aerial photo analysis	field-based	England and Wales, UK	unenclosed land over 200m a.s.l.
69	RCTs or analyses of RCTs	treatment/comparison study	laboratory	England, UK	
70	RCTs or analyses of RCTs	control treatment comparison	field-based	England, UK	
71	RCTs or analyses of RCTs	control treatment comparison	field-based	England, UK	North Yorkshire
72	Case studies etc.	restoration monitoring	field-based	Eire	1989 ha of afforested blanket bog in 14 SACs throughout Kerry, Clare, Galway, Mayo, Sligo, Donegal and
73	Non RCTs, or analyses of these	survey	field-based	England, UK	North Pennines

	Type of Evidence	study type	field-based/laboratory	Country	Location
74	Non RCTs, or analyses of these	repeat survey	field-based	England, UK	the Peak District
75	Non RCTs, or analyses of these	case study	field-based	England, UK	North Yorkshire
76	Non RCTs, or analyses of these	survey and treatment/control comparison study	field-based	England, UK	North Pennines
77	RCTs or analyses of RCTs	treatment/control comparison study	field-based	England, UK	Peak District
78	Non RCTs, or analyses of these	survey (comparative monitoring)	field-based	England, UK	Moor House, North Pennines
79	Case studies etc.	case study	field-based	England, UK	Moor House, North Pennines
80	RCTs or analyses of RCTs	treatment comparison	field-based	Ireland and Estonia	Clara Bog, the Midlands, and Mannikjarve Bog, Central Estonia
81	RCTs or analyses of RCTs	control treatment comparison and monitoring	field-based	Canada	Sainte-Marguerite-Marie peatland in the Lac Saint-Jean region,
82	RCTs or analyses of RCTs	treatment/control comparison study	field-based and	Canada	Quebec
83	RCTs or analyses of RCTs	treatment/control comparison study	field-based and	Canada	Quebec
84	Non RCTs, or analyses of these	monitoring study	field-based	England, UK	the Peak District and Forest of Bowland
85	Non RCTs, or analyses of these	treatment/control comparison study and controlled before/after study	field-based	Scotland, UK	Southern Uplands
86	RCTs or analyses of RCTs	monitoring survey and treatment control comparison	field-based	Scotland, UK	Kintyre
87	Non RCTs, or analyses of these	repeat survey	field-based	Scotland, UK	Bad a Cheo, Caithness
88	RCTs or analyses of RCTs	treatment/control comparison study	field-based	England, UK	Peak District
89	RCTs or analyses of RCTs	treatment/control comparison	field-based	Germany	Alpine foothills
90	Non RCTs, or analyses of these	survey	field-based	England, UK	North Pennines
91	Expert opinion	Review	NA	Scotland, UK	Caithness and

	Type of Evidence	study type	field-based/laboratory	Country	Location
92	Non RCTs, or analyses of these	treatment/control comparison study	field-based	England, UK	Peak District
93	Expert opinion	Review		UK including N Ireland, Eire	
94	RCTs or analyses of RCTs	treatment/control comparison	field-based	England, UK	Exmoor, North Peak and the Yorkshire Dales
95	Non RCTs, or analyses of these	treatment comparison	field	Finland	Aitoneva
96	Non RCTs, or analyses of these	case study	field	Finland	Vanneskorpi, Kuru and Aitoneva, Kihnio
97	Non RCTs, or analyses of these	comparative survey	field-based	England, UK	Ougtershaw Moss, Yorkshire
98	Non RCTs, or analyses of these	treatment/control comparison study	field-based and laboratory	England, UK	Yorkshire Dales
99	Non RCTs, or analyses of these	single site monitoring study	field-based	England, UK	Moor House, North Pennines
100	Non RCTs, or analyses of these	before/after study	field-based and laboratory	Wales, UK	Lake Vyrnwy
101	Non RCTs, or analyses of these	before/after study	field-based and laboratory	Wales, UK	Lake Vyrnwy
102	Non RCTs, or analyses of these	before/after study	field-based and laboratory	Wales, UK	Lake Vyrnwy
103	Case studies etc.	case study	field	England	Cheviot Hills
104	Non RCTs, or analyses of these	meta-analysis	field-based	various worldwide	
105	Non RCTs, or analyses of these	survey	field-based	England, UK	Bleaklow, the Peak District

	Blanket peatland?	Grid ref or Lat/Long	Duration of measures (post treatment) (months)	Conditions prior to intervention	Replicates
1	blanket peatland	ND167500	240	peat 3-5m deep, fibrous acrotelm, with oligofibrous peat beneath, dominated by Trichophorum cespitosum, Cladonia portentosa, with abundant Sphagnum capillifolium, Eriophorum angustifolium, E. vaginatum, Erica tetralix, Sphagnum papillosum, Narthecium ossifragum and Calluna vulgaris.	4
2	Yes	SK0796; SK0597; SK0891		at Harrop Moss (peat surface changes), the study area was a blanket peatland subject to a recent fire, causing patches of bare peat and vegetated areas, and a range of topographies. At Peaknaze (screefing) the sites supported a shallow balnket peatland dominated by Eriophorum species and crowberry. At Snake Pass (transplants and fertiliser) the area was bare deep peat.	5 replicates were used for the Snake Pass revegetation plots.
3	blanket peatland	ND167500	60	peat 3-5m deep, fibrous acrotelm, with oligofibrous peat beneath, dominated by Trichophorum cespitosum, Cladonia portentosa, with abundant Sphagnum capillifolium, Eriophorum angustifolium, E. vaginatum, Erica tetralix, Sphagnum papillosum, Narthecium ossifragum and Calluna vulgaris.	4

	Blanket peatland?	Grid ref or Lat/Long	Duration of measures (post treatment) (months)	Conditions prior to intervention	Replicates
4	Yes	53.995762,-2.564793; 53.995964,-2.526684; 53.245701,-1.976681	48	Blanket bog in the forest of bowland (2 catchments) and the Peak District Moors (1 catchment) subject to gripping, or where there has been no gripping (or grips have been judged to be no longer functioning).	At Brennand, 2 subcatchments with grips and 1 area of intact blanket bog. At Goyt: 3 dipwell locations and 2 vegetation monitoring plots. Note: whitendale map is the same as goyt
5	yes	53.517553,-1.932049	An unknown period (less than 1 year) before restoration, during restoration (9 months from October), and 28 months post restoration	Blanket bog sites with severe erosion, gullies and bare peat exposure. Intact areas supporting mainly cotton-grass (Eriophorum spp.) with more Vaccinium myrtillus and Empetrum nigrum on the drier peat. Calluna vulgaris is abundant on Arnfield Moor and parts of Quiet Shepherd.	four treated plots for the heather/geojute/grass seed/fertiliser/lime treatments and 1 untreated reference plot, and 1 treated and 1 untreated plot for the coir rolls.
6	yes	SK146923; SK161898; SK164905; SK173937;	6000 - 1000	blanket peatland (it is not possible to infer the initial state of the vegetation)	8
7	probably - not clearly stated	SD842822 (monitoring site)	95.5 months (for monitoring at Wharfedale)	the survey was targetted at gripped and grip-blocked upland peatland. The reported monitoring site at Wharfedale was grip-blocked in 1999.	184 samples taken of water in grips for DOC and water colour analysis, during a survey of 30 sites, and 350 individual grips. 3 replicated grips for water table and "grab samples" at Wharfedale, but only 1 site for blocked and unblocked intensive monitoring (no replication).

	Blanket peatland?	Grid ref or Lat/Long	Duration of measures (post treatment) (months)	Conditions prior to intervention	Replicates
8	yes			gripped sites that had been blocked using a variety of damming methods	
9	yes	Survey was conducted over 32 sites (7 sites in the scottish highlands, 1 on Exmoor, 1 in the north york moors and 23 in the pennines) . Monitoring site at Wharfedale was at 54o13' N 2o12' W	14	Gripped peatland, peat 2m deep, some grips blocked at a previous, unspecified time, and monitoring site at Wharfedale	survey covered 320 drains, of which 266 were blocked, 49 were open and 15 were indeterminate. Only one blocked and one open drain were sampled, but three open drains and three blocked drains were used for water table assessment and grab sampling.
10	yes	58o24'N 3o59'W		four seperate sites supporting low-altitude (100-200m a.s.l.) blanket peatland, comprising two sites where drains had been blocked (3 years previously at 1 site, and 4, 5 and 11 years previouly at the second site), and two where drains remained open.	

	Blanket peatland?	Grid ref or Lat/Long	Duration of measures (post treatment) (months)	Conditions prior to intervention	Replicates
11	Raised bog - near equivalent	47o 48'N; 69o28' W	18	post-mined (cut-over) peatlands, abandoned for 5 years, then with drains blocked for a further 5 years. The experimental sites supported 3 different vegetation types dominated by either ericaceous dwarf shrubs (Ledum groenlandicum, Kalmia angustifolia and Vaccinnium angustifolium), or monospecific vegetation of Eriophorum spissum (tussock-forming) or E. angustifolium with covers of 20%, 35% and 80% respectively.	5
12			24	upland area formerly vegetated with a varying mixture of mainly Calluna and Eriophorum sp, but following an uncontrolled fire in 1976, bare peat 30cm to >120 cm with varying degrees of wetness, humification and a "crust" of varying thickness and strength and degree of	8
13	blanket peatland	SK087964	36	Bare eroding peat with pH ranging from 3.5-3.8 within a larger exclosure area from which grazing livestock had been largely removed. The study site comprised three restoration areas on Bleaklow, Shining Clough, Joseph Patch and Sykes Moor and an intermediate non-treatment control.	3

	Blanket peatland?	Grid ref or Lat/Long	Duration of measures (post treatment) (months)	Conditions prior to intervention	Replicates
14	Raised bog - near equivalent	48o 51 42" N; 69o 27' 12" W	5	post-mined (vacuum-harvested) raised bog peatland, abandoned for 5 years, then with ditches filled for a further 3 years. The experimental sites were sparsely vegetated with dwarf shrubs (Vaccinium spp., Kalmia angustifolium, Chamaedaphne calyculata) or scattered trees (Betula spp.).	8 paired plots represeting a control and treated area.
15	yes (see notes)		66	4m deep peatland on a gentle slope with hummock and tussock microtopography. Upper peat layers are mainly Shoenus nigricans litter (Von Post score 5-6) with lower material more humified (von post 9-10) and 90-95% water content.	not replicated
16	yes		?	broadly intact peat areas dissected with small gullies with peat at their base and sides and more severely eroded gullies with bases reaching mineral substrate.	not a replicated study
17	peatland, including blanket peatland				

	Blanket peatland?	Grid ref or Lat/Long	Duration of measures (post treatment) (months)	Conditions prior to intervention	Replicates
18	relevant species		4	five sets of peat core monoliths (45cm long, by 13.3cm diameter) representing different levels of disturbance. These comprised peat from an intact bog; peat from a bog with dry heath Calluna vulgaris vegetation following cutting and draining; post cutting surface peat (0-45cm); post cutting deeper peat (45-90cm); and cultivated, fertilised peat. The most acidic was under Calluna (pH 4.4), cultivated peat had a pH of 5.3 and the others around 5.1. In all cases surface moss root layers were removed and 12 capitula of Sphagnum fallax were distributed across the centre of the monolith surface.	3
19	Raised bog - near equivalent	48o47'N, 72o10'W	6	the field experiment was undertaken on formerly block cut peatland where harvesting operations had ceased 2-32 years before the experiment, and where drains had been blocked with peat dams up to 1 year prior to the start of the experiment, raising the water table to within 20-30 cm of the peat surface. Peat surfaces were bare at the start of the experiment.	4 replicates for both field experiments, 3 for lboth aboratory experiments.

	Blanket peatland?	Grid ref or Lat/Long	Duration of measures (post treatment) (months)	Conditions prior to intervention	Replicates
20	Yes	SE096036; SK132929	approximately 336 months (28 years) since Sphagnum sowing experiment at Holme moss	experimental Sphagnum reintroduction was applied to intact peat surface wtih a high water table at holme moss which had been fenced previously to exclude livestock. Surveys of bog pools and their surrounding areas took place on species poor blanket mires dominated by Eriorphorum spp (approximating NVC M20 community).	6 replicates for the Sphagnum reintroduction experiment.
21	yes		8		4 replicates for the field experiment
22	yes		NA	blanket bog (identified by habitat inventory)	256 quadrat locations, with 50-150 samples at each of the 3 survey locations

	Blanket peatland?	Grid ref or Lat/Long	Duration of measures (post treatment) (months)	Conditions prior to intervention	Replicates
23	yes	52o47'N,3o34'W; 5o13'N, 2o0'W; 5o24'N, 1o03'W		4 paired balnket bog catchments near Lake Vyrnwy, all drained between 1940 and 1980 and half blocked using heather bales during 2007, and also (in the 2nd year of study) 1 pair of drained (1945-1955) and blocked (peat dams, 2006) catchments in the South Pennines, and a pair of drained (1960's) and blocked (peat dams, 2008) catchments in the North York Moors. Vegetation at Vyrnwy was dominated by Eriophorum vaginatum, Calluna vulgaris, Trichophorum cespitosum with some Molinia caerulea and dry grassland. The South Pennines site was dominated by E vaginatum with Deschampsia flexuousa, Molinia caerulea and Vaccinium myrtillus, while the North York Moors site was dominated by Calluna and V. myrtillus, with E. vaginatum in wetter areas, and some bare peat.	
24	No- wet heath plus 1 x borderline deep peat	SS766425; SS767424; SS825418		2 moorland vegetation types one dominated by Molinia and the other mosaic Molinia and Calluna vulgaris at the two geographical locations. The authors acknowledge the starting point vegetation differs between the two regions within the broad description.	

	Blanket peatland?	Grid ref or Lat/Long	Duration of measures (post treatment) (months)	Conditions prior to intervention	Replicates
25	yes	SN 857584	peat profiles represented c. 2000 years to based of 1m core	blanket peatland strongly dominated by Molinia caerulea (spp. poor M25a), with study site being a 2m high hagg, vegetated with M. Caerulea, frequent, but low cover of Vaccinium myrtillus, occasional Calluna vulgaris and Erica tetralix and with no Sphagnum present.	
26		SN934040, SO177153, SO178153, SO188150		Molinia dominated upland grassland (species-poor M25) on peat <50cm deep at Hirwaun, and blanket peatland dominated by Molinia, Eriophorum or Calluna (M19a, with some similarities to M20 and M17 in places) at Mynydd Llangatwyg.	
27	"plateau bog" raised bog - near equivalent	48o47'N, 72o10'W	89	bare "plateau bog" peat 1.2-1.8m deep, that had been drained, and block-cut by heavy machinery, but where drains had been blocked for 1 year before the start of the study. Replicate blocks were placed across a range of contrasting surface conditions (concave, convex or embanked).	5 or 6 (first year only)
28	yes	NY 756326	30	Calluna vulgaris - Eriophorum vaginatum balnket mire (M19), Empetrum nigrum sub-community, with a singificant proportion of Sphagnum.	2
29	yes	NY754328	12	Blanket peatland	

	Blanket peatland?	Grid ref or Lat/Long	Duration of measures (post treatment) (months)	Conditions prior to intervention	Replicates
30	yes	NY755330, NZ003443, NY926956, NY937025		blanket peatland at a range of altitudes and rainfall conditions, all with functioning drainage grips, dug between 8 and 30 years prior to the study.	
31	yes		5-7 months	bare blanket peat with extensive gulleying	16 and 9 gully lines respectively (389 individual gully blocks)

	Blanket peatland?	Grid ref or Lat/Long	Duration of measures (post treatment) (months)	Conditions prior to intervention	Replicates
32	raised bog - near equivalent	47o53'N, 69o27'W	2.6	lowland (83m A.S.L.) raised bog which had been drained 65 years previously and peat harvested continuously for 33 years using block cut (baulk and trenches) methods and some vacuum harvesting. The site was then abandoned to natural succession and became dominated (9*0% cover) by ericaceous shrubs (Chamaedaphne calyculata, Kalmis angustifolia and Ledum groenlandicum) which has left a 0.5-5cm thick litter layer over the 3-4 m depth of residual peat. Tree cover was low (<20%) but rises around the edges of the site. Sphagnum mosses were sparse (<10% cover) and mainly found in depressions and trenches. Two experimental areas were examined, one well drained area dominated by dwarf shrubs and one poorly drained area dominated by Sphagnum. Drainage ditches had been blocked 6 months prior to the start of the study.	

	Blanket peatland?	Grid ref or Lat/Long	Duration of measures (post treatment) (months)	Conditions prior to intervention	Replicates
33	yes	SN820866	field study: 48 months; laboratory experiment: 0.75 months of measurements pre-treatment, and 2 months following treatments.	blanket peat (~345m A.O.D, pH 3.9-4.8) dominated by Juncus and Sphagnum communities, with two areas drained by naturally-formed peat pipes and two areas of undrained wet peat. Fifteen monolith samples (11cm diameter by 25cm deep) of peat and vegetation were extracted from an undrained area for a laboratory study.	1 true replicate of treatment and control and 2 of continuously wet peatland, with 5 pseudo-replicated sampling stations within it.
34	in artificial bog water	NA	1 month to 5 months (solution experiments)	sphagnum taken from clean air sites	all replicated, varying n
35	Raised bog - near equivalent	47o49'15"N, 62o02'15"W		cut over raised bog, with moderately low precipitation, and low rainfall, and 40-120cm of residual peat of which 10-30 cm is Sphagnum peat, and where ditches had been blocked 2 years prior to this study.	3
36	yes	NY875477, NY802317,	at least 24 months, longer in some cases		
37	yes		several or more years after blocking	gripped blanket bog	4 sites each with transect

	Blanket peatland?	Grid ref or Lat/Long	Duration of measures (post treatment) (months)	Conditions prior to intervention	Replicates
38	yes	NY762327; NY748332; SE028001; SK032997; SE034005	12, "several years", 120 and 36	eroded blanket peatland, either with remnant shallow peat, cultivated to produce a rough even suface, or mineral material, sandstone drift, where livestock grazing had been excluded (within 2 exclosure plots), and which had been seeded with a mixture of Agrostis capillaris, Anthoxanthum odoratum, Deschampsia flexuousa, Festuca rubra, Poa pratensis, and Trifolium repens. A later set of field trials were established in bare, deeper (unspecified depth) eroded peat where grazing was excluded, and seeded with D. flexuosa only. The third study examined an area of deeper (>0.5m) eroding peatland divided into 4 plots each with a represetative area of hagg ("hummock"), slope and flat eroding bare peat areas. A fourth study, at Arnfield Moor, looked at three plots where livestock had been excluded at the start of the study, one on shallow peat and mineral substrate, another on gently sloping peat 1m	3, 2, 4 and 3 for the four studies described experiments.
39	yes		up to 24 pre and 12 post-blocking	blanket bog with many grips	2 drainage networks
40	yes		24 and ongoing	blanket bog with many grips	12 recording sites on moor

	Blanket peatland?	Grid ref or Lat/Long	Duration of measures (post treatment) (months)	Conditions prior to intervention	Replicates
41	yes	52o58'38"N, 03o46'56"W	Core samples were manipulated for 9 months. Donor sites were blocked at least several years before.	Large monolith peat cores were extracted from a grip-blocking experimental field site at Migneint in North Wales and transported to a climate controlled chamber. Cores were collected from between grips under three different vegetation types dominated by Eriophorum, Calluna or Sphagnum papillosum, and also from the bases of grips.	3 in each treatment = 63 intact peat cores
42	Raised bog - near equivalent	48o47'N, 72o10'W; 47o48'N 69o28'W	18	, for the survey, peatlands that had been cut over then abandoned for 10 years, where there was natural revegetation and a nearby undisturbed peatland as a source of propagules. The experiment at Riviere-du-Loup was undertaken on bare peat plots, cleared of any vegetation, roots or debris, at a fomerly vacuum-harvested peatland which had been abandoned for 10 years but was poorly revegetated.	6
43	Near-equivalent	NA	4.3	various	3

	Blanket peatland?	Grid ref or Lat/Long	Duration of measures (post treatment) (months)	Conditions prior to intervention	Replicates
44	relevant species		3	Discs of living vegetation dominated by Sphagnum fallax, S. magellanicum and S. fuscum were extracted from intact bog vegetation and placed on top of peat cores 45 cm deep collected from five different locations: undisturbed S. Magellanicum bog; dry Calluna heathland; shallow peat from a cut over peatlands (0-45cm); deep peat (45-90) from a harvested peatland; cultivated agricultural peatland. Undisturbed, cut over and cultivated peatlands were pH 5.4, while the dry heathland peat was pH 4.2, and the cut over and agricultural peats had higher Ca and N content that the others. In each sphagnum disc 10 Sphagnum plants, cut to 5cm lengths, were marked with a polyester thread and implanted into	3

	Blanket peatland?	Grid ref or Lat/Long	Duration of measures (post treatment) (months)	Conditions prior to intervention	Replicates
45	lowland ombrotrophic bog	57o25'N,12o14'E		an ombrotrophic lowland (60m a.s.l.) bog with >1000mm annual rainfall, and relatively high atmospheric deposition of N (1.25N m-2 yr-1) and S (0.97g m-2 y-1), with a vegetation of Sphagnum spp. (affine, auriculatum, austinii, cuspidatum, fuscum, majus, magellanicum, molle, papillosum, pulchrum, rubellum and tenellum), Carex spp., Eriorphorum angustifolium and E. vaginatum, Molinia caerulea, Calluna vulgaris, Erica tetralix, Empetrum nigrum, Myrica gale, Vaccinium uliginosum, Rubus chamaemorus, Narthecium ossifragum and seedlins of Betula pendul and Pinus sylvestris	3 for each vegetation type
46	raised bog		14	Raised Bog Peatland	3 monospecific plots each for 6 species of Sphagnum regarded as hummock forming (3) hollow dwelling, (1), aquatic 1) and lagg forest (1).

	Blanket peatland?	Grid ref or Lat/Long	Duration of measures (post treatment) (months)	Conditions prior to intervention	Replicates
47	yes		26 months	formerly bare blanket peat that had been subject to revegetation management (unspecified), with haggs, and sparsly vegetated areas, and mobile balnket peat which had been treated with heather brash only. For the first laboratory trial shallow trays were filled with peat of unknown origin, while in the second laboratory trial trays were filled with commercially extracted Irish peat and peat collected from Holme Moss, Peak District.	
48	yes		12	Blanket peat formed over glacial till, with mean 1950mm annual rainfall, in a 0.44km2 catchment area delineated by both topographic and salt tracer techniques, that ranges from 570 to 515m A.O.D., with a NE predominant aspect, and comprising mostly intact (not gullied) peatland with peat 1.5-2.5 m deep (max 3.2 m), with only one artificial drain.	

	Blanket peatland?	Grid ref or Lat/Long	Duration of measures (post treatment) (months)	Conditions prior to intervention	Replicates
49	yes	54o41'N, 2o23'W	NA	the same site (and same experiment) as reported in for (Holden, 2009a [3-]). In addition to the conditions reported there, the bare peat is described as being eroded, so that it is 50cm lower than surrounding intact peat, and being more highly humified (Von Post scores of H5-H8) over the top 20cm layer, and with bulk densities of from 0.22 g cm-3 at the surface to 0.35 g cm-3 at 20 cm. Water table was 30cm below the peat surface during the measurement period.	8
50	yes	54o41'N, 2o23'W	60-96 months in the initial study, and 24-72 months in the more recent study	four blanket peat catchments, two of which had been drained in 1952 and 1956 and two of which were intact. The 1952-drained catchment represented 2 subcatchments, one which was drained and the other being extensively gullied. This catchment had also been partially burnt (intensity unknown) in 1950, 52 years before the start of the current study. All catchments were vegetated with a mix (in declining order of dominance) of Calluna vulgaris, Eriophorum spp. and Sphagnum spp., except one undrained catchment dominated by Eriophorum, Sphagnum and	2

	Blanket peatland?	Grid ref or Lat/Long	Duration of measures (post treatment) (months)	Conditions prior to intervention	Replicates
51	yes	54o41N, 2o23'W; 54o13'N, 2o12'W; 55o5'N, 4o46'W; 58o1'N, 5o4'W	NA	four upland blanket peat catchments, with a range of precipitation conditions (1068-1982mm) with moorland drains (grips) dug in 1952-56 or in the early 1960s. Monitoring of discharge and turbidity was carried out on three seperate systems of unblocked grips, two systems blocked with peat dams, and one which had not been	2/3
52	yes	54o'13N, 2o13'W	NA	blanket peat, <2m deep, dominated by Eriophorum spp. and Sphagnum spp., with dwarf shrubs rare, and where water tables were typically within 30cm of the peat surface, and saturation-excess overland flow common in high intensity rainfall events. Both intact areas and drains were examined to compare overland flow velocities.	
53	yes	54o13'N, 2o12'W	18	a catchment with mean annual preciptiation of 1774mm, at 379-668m a.o.d. and covered with a typcial thickness of 2m blanket peat. Vegetation is dominated by Eriophorum spp., with moderate cover of Sphagnum spp. and Politrichum. The three study sites had similar slopes (0.082-0.093 m m-1).	1

	Blanket peatland?	Grid ref or Lat/Long	Duration of measures (post treatment) (months)	Conditions prior to intervention	Replicates
54	yes	54o41'N, 2o23'W	33	a catchment 17.4 ha in extent and 545-580 m a.o.d.98% of which is covered in blanket peat, typically 3-4m thick, but up to 8m thick in places. Slopes are mainly E or SE facing and are mainly 0-5o (max 15o) and vegetation is dominated by Calluna vulgaris and Eriophorum vaginatum w2ith some Empetrum nigrum and Sphagnum capillifolium.	
55	yes			160 blanket peat catchments between 0.8 and 4.2 ha in extent, selected to represent the main areas of blanket peat within Britain.	
56	yes	various and 54o41'N, 2o23'W	12 for water table monitoring at Moor House, treatment in laboratory study lasted 140 days	blanket peat catchments around the UK, for the survey, and on plots across an area of upland blanket peatland (70% peat cover) 35km2 in extent ranging from 290 to 848m a.o.d. And dominated by Calluna-Eriophorum-Sphagnum balnket bog vegetation (mainly M19), but with an altitudinal limit to Calluna of 650 a.o.d. (community M20).	6 (laboratory study)
57	yes			blanket peat slopes	

	Blanket peatland?	Grid ref or Lat/Long	Duration of measures (post treatment) (months)	Conditions prior to intervention	Replicates
58	yes	54o41'N, 2o23'W	NA	Blanket peatland with peat deposits 1-4m thick overlying glacial till. Peat is poorly humified at the surface 5cm (Von post scores of 2-3, bulk density 0.15g cm-3), and only moderately humified below this (von post 3-4, 0.18g cm-3 at 20cm), gradually becoming more humified with depth (0.27g cm-3 at 50 cm) to become almost fully humified (von post 9) at 1.5m. Total porosity of the peat ranges between 90 to 97%. Vegetation is dominated by Eriophorum sp., Calluna vulgaris, Sphagnum spp. with some areas of bare peat.	8
59	yes	NY596517, NY788395	12	blanket bog with many grips	4 blocked, 4 unblocked over two sites
60	yes	61o51'N,24o14'E	24	drained blanket mire used for forestry	10 plots in total but not replicated

	Blanket peatland?	Grid ref or Lat/Long	Duration of measures (post treatment) (months)	Conditions prior to intervention	Replicates
61	Raised bog - near equivalent	46o42'N, 71o03'W		A cut over raised bog formerly dominated by Sphagnum mosses and trees, then subject to peat extraction by block cutting and vacuum harvesting. The study sites comprised 2 180 by 24 m peat fields had been abandoned since 1993, 10 years before the study began, one of which was wetter and dominated by Eriophorum vaginatum with peat thickesses ranging from 24cm to 143 cm, and the other being drier with thicker peat (165-189 cm) and having a low cover of around 10%.	
62	yes- primarily lowland raised bog but does mention upland situations especially in relation to peat formation via paludification where peat formation is not reliant on there being a pre-existing water body		N/A	N/A	
63			N/A	N/A	

	Blanket peatland?	Grid ref or Lat/Long	Duration of measures (post treatment) (months)	Conditions prior to intervention	Replicates
64	yes	SD5947	12	upland blanket peat (510m elevation) subject to either "summit type" erosion, leaving isolated haggs on mineral substrate, or "gully erosion" represented by sparsely branched, parallel gullies through the peat. Three sites were examined, representing an area dominated by Sphagnum papillosum and S. capillifolium, an area near gullies dominated by Eriophorum vaginatum, and a large remnant peat hagg dominated by dwarf shrubs and grasses.	
65	raised bog		120	Raised Bog Peatland	
66	yes but research extends over most mire types including fen		N/A	N/A	
67	undetermined	SE177022; SD820910	60	two moorland areas, one dominated by Molinia and the other mosaic Molinia and Calluna vulgaris, at the two locations.	3
68	partly		24	various upland unenclosed sites, at 5km grid intersections across England and Wales.	
69				Plants of Molinia caerulea were collected and Calluna vulgaris were obtained from a nursery, transplanted into nutrient rich acid	
70	probably not - shallow peaty soils, not true blanket peat	SE081699		Molinia and Calluna dominated areas, probably overlying shallow peat.	3

	Blanket peatland?	Grid ref or Lat/Long	Duration of measures (post treatment) (months)	Conditions prior to intervention	Replicates
71	no	SE104716	44	Molinia dominated moorland, probably over shallow peaty soils, but not true balnket peat.	
72	yes		48	afforested blanket bog	
73	yes				200 quadrats over 20 1km squares
74	yes	NY748332; SK0992; SD763185; SE093038; SK094928; SK0989	12	either the entire gritstone moorland area of the Peak District National Park, or in various locations of bare and eroding peat, with some comparative studies elsewhere in the country.	
75	yes	SE170703		an open grip and a grip blocked within the previous year with peat dams on blanket peatland	
76	yes	54o41'1"N, 2o27'0"W	3-11 post blocking	blanket bog with many grips	3
77	blanket peatland	SK078873	27	bare peat, with scattered residual vegetation of Eriophorum vaginatum, E. angustifolium Vaccinium myrtillys and Deschampsia flexuosa.	4
78	yes		24	two blanket peat-covered catchments with artificial drainage (gripping) and two with natural drainage. One artificially drained catchment was described as "bare", having experienced a severe fire in 1950, and the others were dominated by heather with fairly abundant sphagnum. Catchments ranged from 3.8 to 8.8 ha in size.	1 or 2

	Blanket peatland?	Grid ref or Lat/Long	Duration of measures (post treatment) (months)	Conditions prior to intervention	Replicates
79	yes	54o41'N, 2o23'W		two tracks which had received approximately 30 tramplings a week for ~1year, and then abandoned for either 1 or 2 years. The tracks are located in a 20ha headwater catchment with blanket peat deposits 1-4m thick at 545-580m a.s.l., 2063mm of rainfall, 6o average annual tempereature and 244 rain days a year. Vegetation is dominated by Calluna vulgaris, Empetrum nigrum, Eriophorum vaginatum, E. angustifolium, Sphagnum spp., Pleurozium schreberei and Hypnum jutlandicum. The tracks were compared with a line of undisturbed peat, as a control.	1
80	Raised bog - near equivalent	53o19'N,7o37'W; 58o52'21"N, 26o14'56"E	40	two raised bog peatlands, both with low mean annual rainfall (675 and 804mm) dominated by Sphagnum magellanicum, with S. cuspidatum, S. rubellum and S fuscum, and with Rhynchospora alba, Andromeda polifolia and Oxycoccus plaustris.	5 or 6
81	Raised bog - near equivalent		6	two raised bog peatlands, one dominated by Sphagnum fuscum and the other by Sphagnum capillifolium, which had had the surface layer of Sphagnum removed (for the purposes of restoring bare peatlands elsewhere).	3

	Blanket peatland?	Grid ref or Lat/Long	Duration of measures (post treatment) (months)	Conditions prior to intervention	Replicates
82	Raised bog - near equivalent	48o 47'N, 72o 10'W	5 months for lab experiment and 14 months (2 growing seasons) for the field	cut over raised bog peatland, with bare peat, drains blocked in spring 4 months prior to treatment.	unknown or 2 for mineral additionsl experiment.
83	Raised bog - near equivalent	48o 47'N, 72o 10'W	28 months for collection depth experiment, 36 months for applcation density experiment.	cut over raised bog peatland, with bare peat, drains blocked year prior to treatment, and some areas harrowed to remove hydrophobic crusts and topographic variation due to areas of block cutting.	4 for 10cm depth increments.

	Blanket peatland?	Grid ref or Lat/Long	Duration of measures (post treatment) (months)	Conditions prior to intervention	Replicates
84	yes - partly		48	two monitoring plots in each of three blanket-bog dominated areas, and two dry heath areas. The blanket bog areas were: Lamb Hill (Bowland) where 450ha of blanket peatland, 39% "degraded" (cause not specified), had been subject to reduced grazing levels, away-wintering of stock, and implementaiton of a burning plan; Sykes (Bowland) where 575 ha of blanket peatland (mostly "degraded") and dominated by dwarf shrubs subject to reduced stocking levels, indoor lambing and implementation of a burning plan; and Pikenaze (Peak District) subject to removal of sheep grazing or restricted spring grazing, unrestricted summer grazing, and off-wintering of stock, along with a programme of cattle grazing, herbicide application and Calluna seeding, aimed at controlling Molinia caerulea. Details of the burning plans are not provided. The results for the two dry heath sites are not presented here.	

	Blanket peatland?	Grid ref or Lat/Long	Duration of measures (post treatment) (months)	Conditions prior to intervention	Replicates
85	transition raised bog-blanket bog	NT203532	120	peat 3-6m deep, dominated by Calluna vulgaris, Eriophorum vaginatum, Sphagnum capillifolium, with patches of Cladonia portentosa and Sphagnum fallax and Sphagnum papillosum, with frequent Erica tetralix, Hypnum jutlandicum and Pleurozium schreberi.	4 blocks of the wet N treatments

	Blanket peatland?	Grid ref or Lat/Long	Duration of measures (post treatment) (months)	Conditions prior to intervention	Replicates
86	yes	NR175639		an area of deep blanket peatland 280ha in extent, which had been drained, ploughed (double mouldboard, 50cm deep) and planted with Picea sitchensis during the 1980s, which were then clearfelled during 1999-2001. Drains had mostly naturally revegetated, and were not blocked. Felled trees were not removed, but were either chipped in situ, felled and cut up in situ, or trunks removed and used to make a corduroy trackway Chippings accumulated in the plough furrows. Also included in the study area is 170 ha of unplanted blanket peatland. Elevation is ~300m a.s.l., with over 2000mm annual rainfall. Peat is generally over 2m deep, but with some shallow areas near outcrops and peat pH is mostly between 2.7 and 4.2. Vegetation present in the unplanted areas comprise M15, M17, M18 and M19, with some dry heath and acid grassland, there is no burning management and little grazing	3

	Blanket peatland?	Grid ref or Lat/Long	Duration of measures (post treatment) (months)	Conditions prior to intervention	Replicates
87	yes	ND167500	360	a 50 ha blanket peatland 90m a.s.l. With 930mm annual rainfall, 233 rain days per year, on 3.5-5.5m of peat, with a fibrous (H4) surface layer and oligofibrous (H6-H9) deeper layers. Unaffected balnket bog vegetation is predominatnly Sphagnum papillosum and Trichorphorum cespitosum.	
88	blanket peatland	SK047998	54	eroding peat, sloping eroding peat, disturbed peat (tipped in lagoons) and sloping rocky areas.	3
89	raised bog - near equivalent		24 to 48	a cut-over raised bog complex where cutting ceased in 1986, the site was reprofiled into terraces where water levels were raised and surfaces sown with Carex rostrata and Eriophorum spp.	3 to 6

	Blanket peatland?	Grid ref or Lat/Long	Duration of measures (post treatment) (months)	Conditions prior to intervention	Replicates
90	yes	NY752329; NY761342; NY733484; NY783377; NY745525; NY678460; NY684395; NY665403; NY705429; NY783395; NY785359		various blanket bog catchments across the North Pennines, ranging from 390-730 m a.s.l., with mean slopes between 1o and 8o, and drained by moorland grips spaced at 15-35m, with varying levels of grazing, and burning management. In most cases the vegetation was dominated by Calluna vulgaris, Eriophorum vaginatum, with some Sphagnum capillifolium and/or Deschampsia flexuosa. The Burnt Hill catchment had been drained in 1952 (27 years before this study), and the Bellbeaver site was drained 1 year before this study.	
91	yes				
92	Some sites on blanket peatland, at least one on mineral soil.	SK280832; SK074927; SK096933; SE092040; SE094046; SE096047	41 months,	difficult to assess. Several sites are described as having deep or shallow peat over "mineral rubble" but the depth associated with these terms is not given. Sites included a range of altitudes and soil types and so represent a wide range of soil condiitons. A description of "former vegetation" is also given, but it is not clear whether this means an assumed vegetation prior to erosion, or the vegetation at the start of the experiment.	5 sites (3 repeated treatments at each site)
93	yes				

	Blanket peatland?	Grid ref or Lat/Long	Duration of measures (post treatment) (months)	Conditions prior to intervention	Replicates
94	yes - partly	SS8241; SS7743; SE177022; SD8291	24	Areas of moorland dominated by Molinia caerulea ("white moor"), or by a mixture of M. Caeulea with Calluna vulgaris and Vaccinnium myrtillus ("grey moor").	2 at site level, 3 nationally
95	raised bog - near equivalent	62o12'N, 23o18'E	48	a cut over raised bog with low rainfall (700mm annually) and short growing season, drained in 1938, block cut from 1944 and milled from 1951 until 1975, leaving approximately 1m thickness of residual peat. The site was re-wetted by blocking drains in 1994 and re-routing water from the surrounding areas.	5
96	possibly - unspecified peatland		48	, for case study 1, afforested peatland, which had been treated with phosphorus fertiliser, and for case study 2, a cut over raised mire exactly matching the description given in Tuittila et al. (2003).	2 for the C balance study
97		54o13'N, 2o12'W	18 (water table only)	three blanket peatland catchments with similar slope aspect and peat depth, and all within 400m of each other. One catchment was intact, undisturbed peatland, the second had been drained (15m intervals) and at the third, drains at the same intervals had been blocked, with peat dams every 10m, 6 years before this study.	1 site-level replicate for each treatment
98	yes	54o13'N, 2o12'W	5 months	drained and undrained blanket mire	2 at each site

	Blanket peatland?	Grid ref or Lat/Long	Duration of measures (post treatment) (months)	Conditions prior to intervention	Replicates
99	yes	NY757317	10 - 22 months	blanket peatland 615 m a.s.l., overlying till, with peat depth varying between 1-3m and composed of by Eriophorum, Calluna and Sphganum remains, with a prevailing SW wind. Around 17% of the peat is eroded with type 1 gullying on flatter areas and type 2 on steeper slopes, with occasional bare peat flats. Monitoring took place on an area of relatively flat, sparsely vegetated peat.	single site
100	yes	52.761410N, 3.459654W	12 before 12 post-blocking	blanket bog with many grips	4 catchments but focused mainly on 3 of them
101	yes	52.761410N, 3.459654W	2 pre and 2 post, ongoing	blanket bog with many grips	4 sites, at least 3 in drains and 3 in streams
102	yes	52.761410N, 3.459654W	up to 3yrs pre and up to 3 yrs post but ongoing	drained blanket bog	4 catchments, 48 sample points, 32 in drains and 16 in streams
103	yes			an area of blanket peatland comprising 70km2 of which 45% is peat covered.	
104	yes				

	Blanket peatland?	Grid ref or Lat/Long	Duration of measures (post treatment) (months)	Conditions prior to intervention	Replicates
105	yes	SK094961	24	blanket peatland 468-630 m a.s.l. with an annual average rainfall of 1200mmm, subject to past wildfire, visitor disturbance, grazing, metal and acid deposition, and severely eroded with gullies. The study area was subject to a severe wildfire 3 years before this study, which left a surface of bare peat. Four of the plots in this study represent areas subject to revegetation management, through applicaiton of fertiliser, lime and seeding with Festuca, Deschampsia and Agrostis spp., and application of Calluna brash and geojute. Two study sites remained bare untreated peat and a further two sites reprsented areas unaffected by the fire, but subject to managed burning, one dominated by Eriophorum spp. and one dominated by Vaccinium spp and Empetrum spp.	1 to 4

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
1	Water table in 3 boreholes (dipwells) in each plot and peat shrinkage using fixed steel rods embedded in underlying substrate.	Water table measured monthly for 4 years, starting 1 year after experiment was established, and then weekly from for 2 years, starting 19 years after experiment was established, half of whcih was after ditch deepening and establishment of new experimental plots on control treatment. Vegetation composition was surveyed once 3 years following establishment of later experiment.	All drainage treatments resulted in significant lowering of the water table compared with the undrained control, with water table in the more intensively drained treatments having lower water tables than less intensively drained areas. After 19 years, when tree canopy had become closed, the differences between drainage treatments were no longer significant, although all remained significantly lower than theundrained plots. The later plot experiment also found that the 30cm deep ploughing lowered the water table depth and resulted in reduction of peat depth, as a results of a reduction in volume of material at the surface as well as deeper (to 1.5m) down the profile. Ploughing encouraged Calluna vulgaris dominance on unploughed ridges in a low		

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
2	At Harrop Moss, the distance from a fixed frame to peat surface (pin quadrat) to the peat surface was used to measure changes in peat surface height over time, and vegtetation cover at each point was noted. Other studies looked at cover of plants or transplant mortality.	At Harrop moss, measurements were made quarterly, then more irregularly. Two measures were made over 12 months at Snake Pass.	A reported comparison between bare and vegetated peat indicated that bare peat surfaces reduced in height significantly faster than those surfaces that were vegetated or supporting litter or "roots". However, the error bars on the data included in the report suggest that there was no significant difference between rates of surface lowering for bare peat, or those with heather or cotton grass vegetation, while those with moss may have been had significantly lower rates, and those with litter showing increases in peat surface elevation. The "screefing" and seeding treatment appeared to increase heather cover, and also resulted in increased proportion of bare ground which persisted with high cover for at least 3 years following treatment, and cover		

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
3	runoff, using v notch weirs and tipping buckets, sedment load lost through runoff, changes in peat mass volume, both as surface subdidence and at depth, and peat water content.		between 2.5 and 5 years following planting, plots with trees had significantly lower runoff (7%) annually, due to reduced spring and summer runoff, with no difference from unplanted plots in autumn and winter. The peak flow rate from the control, unplanted plots, was significantly lower during less intensive rainfall events (where control plot peaks were lower than 0.5 mm per hour), but were no different at more intensive rainfall events. The proportion of discharge occurring as baseflow was significantly higher for control plots than planted plots three and five years following planting, but showed no effect in other years. Ploughed, planted plots had significantly lower water tables than unplanted controls, with differences more marked during drier weather.		

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
4	vegetation composition and cover, water table depth, temperature, water colour and turbidity in stream flow, discharge in streams, climatic parameters and fixed point photography. Measurements were only taken after grip blocking had been completed at Goyt, during and after grip blocking at Whitendale, and for at least 12 months before grip blocking at Brennand.		grip blocking, along with reductions in grazing and burning, was followed by a slight but consistent decline in measured water colour in most of the catchments studied, and dip wells near blocked grips seemed ot have higher water table than unblocked controls. At Brennand, vegetation changes suggested that heather cover increased following application of management treatments, but then declined, alongside an increase in Sphagnum cover. It is not possible to attribute these changes to any one of the managements, or to compare them to a control. Plots at Goyt with high initial heather cover saw some increases in heather and bilberry following application of the managements.		

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
5	plant species and bare peat cover, and vegetation height and grazing signs, in 30 2m by 2m quadrats, peat pH and moisture content in 10 samples (no depth given), per plot. Hydrological monitoring examined levels of colour and turbidity, discharge, groundwater depth, in stream waters from 2 catchments receiving similar restoration treatments, and streamwater, air and groundwater temperature.		application of all seeding and/or heather brash treatments increased cover in these plots from 0-10% to 60-90% after 3 years, with a decline in vegetation cover shown by the untreated reference plots. These increases were initially mainly due to increases in grasses sown as a "nurse crop" to stablise peat surface, followed by increases in heather cover and frequency and the plot treated with geojute had higher heather cover than those just receiving brash and grass seed/fertiliser/lime treatments. There were also increases in moss cover in all treated plots, mainly represente by the invasive alien moss Campylopus. Application of coir rolls to bare peat pans did not appeart to exert any effect on vegetation cover or recovery, which		

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
6	a survey-based approach comparing three sets of 8 sample sites (one covering the edge of the peat cutting, one 50m away from this in intact balnket peat and one 50m away from the edge in the cut area). Measurements made comprised estimation of plant cover using the DOMIN scale, species of fungi with visible fruiting bodies. Also pitfall trapping (1 site, 6 pitfall traps each on cut and uncut areas) and an adapted breeding bird survey (1 site, 2 transects crossing cut and uncut areas). A bias towards Nardus-domianted areas is acknowledged for the cut peat areas.	vegetation survey was carried out once only, pitfall trapping was conducted fortnightly from late june to late july and again from mid September to mid October, and breeding bird survey (1 site only) on 4 visits during 1 breeding season, using 2 200m transects during 1996.	vegetation in peat cuttings was strongly dominated by Nardus stricta, which was entirely absent from transition or uncut sites. Uncut sites had more abundant cover of Eriophorum vaginatum, with some E. angustifolium and occasional Sphagnum subnitens, which were entirly absent from cut or transition sites. Transitions sites supported Juncus squarrosus and Cladonia coniocraea, which were absent from cut or uncut sites. Hypnum cupressiforme was singificantly more abundant in both cut and transition sites, than in the uncut sites. Distinctive fungal communities associated with the peat cuttings, and absent from the uncut peat areas, are described, including Claviceps purpurea, Cystoderma amianthinum, and Mycena		yes

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
7	DOC, water colour absorbance at 254 and 400nm) from water samples taken from grips (blocked or unblocked, flowing or still), and subjective assessment of the success of grip blocks at holding back and diverting water over the bog surface. Water table was measured at 1 transect of 10 dipwells for each of 3 blocked and 3 unblocked grips, "grab samples" of water from these 3 grips were also taken during stormflow and baseflow conditions and analysed for DOC, absorbance at 254 nm, and XAD resin analysis to identify hydrophobic and hydrophilic DOC fractions.	survey relied on unrepeated measurements taken during 1 day visits per site. Water table monitoring at Wharfedale occurred fortnightly-monthly (between 12 and 28 days) for 9.5 months, while grab samples were taken on 2 occasions representing base and storm flow.	DOC, and water colour at both wavelengths measured, were sigificantly lower in blocked flowing grips than blocked or unblocked standing grips. DOC was significantly lower in blocked flowing grips than in unblocked grips. Flowing water in grips in catchments with burning visible (from APs) had significantly lower DOC and colour than those where no burning was visible. Standing water in grips in grazed catchments had higher DOC and water colour at 254nm than in ungrazed catchments, but no difference was evident in flowing water or in absorbancy at 400nm. Vegetation type was the best predictor of variation in DOC and water colour at both absorbances, with heather-dominated sites being associated with highest DOC and water colour when all grip		n

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
8	substrate, surface wetness, topography, drain dimentions and shape, type of damming and dam effectiveness, at 278 drain-blocks throughout the sites studied. Dam effectiveness was scored as 1 (total failure), 2 (partial failure), 3 (intact, but not effective at higher flows), 4 intact but not redistributing water, and 5 (intact and spreading water over peat surface).		most dams were constructed of peat turves (74%) with between 3% and 7% being constructed of heather bales, perspex, plastic piling, plywood, planks, stones or combinations of these materials. Some regional patterns were evident with perspex being mainly used in Scotland and plywood in Northumberland. Dam spacings were, on average, 12m apart (ranging from 0-infilled to 44m). Spacings over 12m were associated with lower effectiveness scores. Some dams caused spillage channels to form, some of which were eroding. Most dams were effective at retaining water (class 3, 4 or 5), and plastic piling, plywood and heather bales had the highest proportion of scores 4 or 5. Plywood dams and heather bales were least likely		n

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
9	survey recorded location, altitude, orientation of drain, slope, channel width and depth, peat depth, ground wetness, drain class (functioning state of drain), effectiveness of blocks (scored 1-5), blocking method, block spacing, vegetation in channel, vegetation type on slopes nearby (heather, grass, mixed), vegetation around drain blocks, evidence of sheep grazing, evidence of burning, surface water around drain, presence of channels, whether water was flowing in the drain or not, and water samples, analysed for DOC and absorbance at 254 and 400nm wavelengths. At the monitoring site in wharfedale, flow and water colour were monitored	the survey sites were visited once only, the automated sampling at wharfedale was carried out daily during normal flow conditions, and every 10 minutes.during storm events. The water tables in dipwells were measured and grab samples were taken every 2 weeks (approximately?).	DOC concentrations in blocked flowing drains was significantly (28%) lower than in open flowing drains, and higher in still drain water than flowing drain water. Water colour at both wavelenths and DOC were significantly higher in still water in open drains, than in blocked flowing drains. No significant effect of drain block type on block failure was reported, but cf. the analysis of data in Armstrong et al (2008) which inidicates that the proportion of blocks with the highest performance (holding and redistributing water across the peat surface was higher than expected for peat dams). Backwards stepwise regression analysis suggested that only easting and rainfall were significant controls on water colour at 254nm. Colour at 400nm and for DOC were significantly		y

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
10	species identify and percentage cover along 3 transects perpendicular to the drain at 10-20 randomly-selected locations at each site. Data were used to generate Ellenberg moisture values (F index) to indicate drier (F=4 to 7) or wetter (F=8 to 10) habitats, and values also compared to a "bog recovery index". Slope and dam type had no inluence but distance to drain, and presence of spoil heaps, were included as covariates.		for most sites, the index of wetter vegetation was highest furthest from open drains and indicated drier vegetation close to the drain. The response of dry vegetation and bog degradation indices to distance from drains were influence by site, with the longer-blocked site having lower dry vegetation and bog degradation indices close to the drain. Bog recovery index increased with increased time since blocking for blocked sites, indicating greater prevalence of wetland plants.	GLM on tranformed data, with controls for covariates.	n

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
11	visual estimation of Sphganum cover, and counts of Sphagnum capitula, in 8 25 by 25cm quadrats. Measurements of temperature and humiditiy were also taken at the peat surface during summer following establishment, and one-off measurements of PAR under the different treatments. Water table was measured every 2 weeks during the 2 summers of the experiment, and soil moisture content and soil water matric tension measured on several occasions during the first summer.	annually	establishment of Sphagnum was not significantly affected by the addition of straw mulch in the plots domianted by Eriophorum, but had a singificant positive impact on establishment in the dwarf-shrub plots. Strong differences were evident between the plots representing different vegetation types, but valid comparisons between the vegetation types could not be made, with only pseudoreplication available at this level. Sphagnum establishment was greater in plots which were domianted by Eriophorum species than those in the blocks vegetated with dwarf-shrubs, which were drier, both in terms of peat water content, water table and humidity, than those under	ANOVA (general linear model)	yes

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
12	ranked subjective estimates of germination success, counts of seedlings, percentage cover, and dry weight of aboveground biomass.		, of the sown species, Festuca spp and Agrostis capillaris germinated well, D. flexusosa germinated the following spring, H. lanatus, L. Corniculatus, P. pratensis did not survive or germinated poorly. Betula showed scattered germination, and Calluna failed to germinate despite additon of further seed in the following Spring. Cultivation significantly enhanced germination of F. ovina, and fertiliser application enahnced germination of A. capillaris. Both fertiliser and cultivation enhanced establishment of A. capillaris and D. flexuosa in the seed mix treatment. No speices recovered to more than 5% cover by the following year. Fertiliser increased cover of F. ovina, A. capillaris, and D. flexuosa, and this last species had higher cover in cultivated	ANOVA, regression, Wilcoxon, Kruskal-Wallis	y

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
13	pH, number of seeds applied, seedlings germinating by species/genus and subsequent trends, vegetation cover on a grid of 25 5x5 cm sub-squares within 131 4x4 m² quadrats over 44 plots.		grazing removal alone had no significant effect and did not re-vegetate peat, (cover 0-1%) whereas the lime/ fertiliser and seed regime achieved circa 40% cover ranging between 10 and 70% cover after 3 years, with significant year on year increases in cover on treated plots. There were significant differences between the performance of nurse grasses, with Festuca ovina showin increases in seedlings over 2 years, and Agrostis castellana establishing best initially, and maintaining numbers int he second year. There were modest increases in Deschampsia flexuousa, but Lolium perenne, after initial success, died out in the second year and Festuca rubra failed to germinate at all. Where heather brash was used there was a significantly	Standard tests, Kolmogorov-Smirnov, Kruskal-Wallis and Mann-Whitney U Tests as much of data non-standardly distributed	y

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
14	combined capitulum counts of all Sphagnum species present. Water table was measured in dip wells and peat moisture content measured from samples.	Spagnum establishment counts were made only once, it is not clear how often dipwells were monitored, and peat water content was measured on 3 occasions, but the depth is not specified.	volumetric water content was significantly different between all treatments and the control, being highest in reprofiled and sheeted peat, and lowest in the unprofiled,control plots (no sheeting). This pattern was reflected in the success of establishing Sphagna, which also showed significant effects of treatments. The reprofiled and sheeted treatment had the highest capitulum density, which had 4.3 times the mean density of capitula of the control treatment. There was a significant trend towards higher densities in the centre of the V areas, with this increase delivering significantly higher capitulum densitites where plastic sheeting was present, while no such trend was evident in the control areas.	GLM on transformed data, also ANCOVA analysis of changes in capitulum density from the centre of the V.	y

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
15	water table was measured in a series of dipwells, and water outflow from runoff using a v-notch weir with automatic pen recorder, which was calibrated for different flow conditions. Precipitation was measured with a rain gauge and potential evapo-transpiration measured using grass-covered lysimeters near the plots.	water flow was monitored continuously, and dipwells were measured three times a week for the entire period.	water levels in the dipwells in the drained plot were always lower than in the undrained plots, being typically between 10 and 15cm lower during winter months and 20-30 cm lower during summer months. Drainflow from the drained plot (which also is assumed to capture all surface run-off) was consistently higher than surfrace runoff from the undrained plot with an average annual export of water in the drained plot 317mm in excess of the runoff measured. The drained plot had a consistently low, and negative, annual calculated water balance compared to the undrained plot which remained either positive or neutral during the study. This was ascribed to both ongoing dewatering of the peat (as evidenced by observed surface subsidence), capture	none possible, but outputs can be fitted to models.	no

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
16	dipwells were used to assess water table and vegetation monitoring surveys.	unknown	the plastic piling dams enabled build up of peat sediment behind them, which were colonised by Eriophorum species, and dipwells suggsted local rises in water tables which were accompanied by decreases in cover of Calluna vulgaris and Vaccinium myrtillus and increases of V. oxycoccus and, locally, Sphagnum mosses. The dams in the larger gullies also trapped peat sediment which became revegetated with Eriophorum spp.	none	no

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
17	various measures of amount of C stored in peatlands, or greenhouse gases sequestered or released		five studies were analysed which measured all 3 relevant greenhouse gases (CO2, CH4 and N2O) in four Scandinavian mires, and one tropical mire but these found no significant difference between the overall global warming impact of drained and intact peatlands. No studies were found that examined all 3 gases in rewetted peatlands. Based on the 27 studies of methane in drained and intact peatlands, drained peatlands emitted significantly less CH4 (by ~8mg CH4 m-2 day-1) than intact peatlands (although threre was significant potential publication bias in favour of studies showing this effect) and five effects measured in 2 studies suggested that rewetted peatlands typically emitted ~16mg CH4 m-2 day-1 more than drained ones.	random effects meta-analysis of extracted data from various studies, to compare standardised mean differences between treatments, sub-group analysis and random effects meta-regression were used to controll for methodological and environmental covariates.	variable

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
18	length of shoots, change in mass (included a corrected version, and expressed as a proportion of original mass) and a measure of etiolation, based on length and mass changes. Peat core phyisco-chemical properties were characterised at the end of the experiment	single measurement	evaporation from the pots was approximately 30% lower than the glasshouse environment in the unprotected pots, 50% lower under the shading mesh and more than 60% lower under the plastic film, and humidity under the plastic film in the low water table treatments was comparable to unprotected pots with the high water level treatment. Temperature variability was greatest among the unprotected pots, especially in the low water level treatments, but the highest mean daily temperatures were found on hot days among the covered pots. Higher water tables produced significantly more growth in terms of both length and relative weight, while presence of covers also significantly influence these factors, but predominantly impacted on change in length	ANOVA was used to analyse the impact of core type, water table and cover type on Sphagnum growth, while redundancy analysis was used to relate treatments to measured peat properties.	

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
19	for both field and laboratory experiments, assessments were made of the number of capitula per unit area , and the percentage cover of live Sphagnum capitula. Measurements in the field experiments were taken in four 25cm square quadrats and averaged for each replicate.	the field experiment was measured once only after 5 months., while two measurements for the water table experiment were taken after 3 and 6 months.	the field and laboratory experiments examining source depth of Sphagnum diaspores found that for almost all species, diaspores from the 0-10cm produced greater densities of new capitula than those from lower layers, with the exception of S. magellanicum, which produced significantly fewer capitula than S. angustifolium and S. fuscum from diaspores from this depth. In the field none of the species had diaspores from lower than 10cm that produced more capitula than the untreated control. In the lab experiment looking at water level interactions with species and fragment length, significantly more capitula were found after 3 months in all species except S. fuscum at the highest water level than at the 2 lower water levels, and more capitula for	GLM with Tukey's test (on square root transformed data for capitula counts)	y

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
20	Locations and identities of sphagnum colonies were measured within the study plot with tape measures - the survey method used for the wider survey is not provided. Samples of Sphagnum mosses were collected from both the study site at Holme Moss and from a "clean air" reference site at Butterburn Flow in Cumbria, and analysed for ammonium-N and sulphur concentrations. Bog pool water chemistry was also analysed for chemical composition. Results were compared with air quality data from nearby monitoring stations at Ladybower and Wardlow.	single resurvey of the site, wiht a return visit to check identifications.	Of the six Sphagnum species transplanted in the 1970's, S. capillifolium, S. papillosum and S. fallax were found in several patches, while S. magellanicum was only in 1 small patch on the transplant site. The non-tranplanted species S. cuspidatum and S. palustre were also found in the exclosure. The distribution of transplanted mosses did not appear to resemble the experimental layout established 30 years earlier. Eight other moss species and six species of liverworts were also found in the exclosure, which may or may not have resulted from the transplants, and Calluna vulgaris, and Narthecium ossifragum (known to be introduced to the plot in the 1980s) were also present, along with Vacciniuym oxycoccus. Resurvey results	None presented. Chi-square carried out on some data as part of this review.	y

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
21	pH and soil basal respiration were measured approximately 2 weeks before the treatments and monthly for 5 months, then again after 8 months. A score (0-5) of subjective grass establishment was made on the plots 1 3 and 5 months after treatment, and estimates of %cover and measures of frequency made in 1 1m2 quadrat in each plot. After 8 months (though reported as 4 months before plot establishment) all plots had soil samples taken for analysis of water-extractable nutrients. A seperate study also cultured microbial extracts from samples of soil from bare peat and two samples of vegetated peat (dominated by Empetrum nigrum and Eriophorum	every 2-3 months	over the first 5 months of the field experiment, application of lime had a significant positive effect on grass establishment, as did fertiliser, but only in combination with lime. The application of lime continued to have a significant positive effect on grass cover after 8 months, and the highest lime application treatment resulted in significantly lower peat ammonium-N concentrations. Lime treatment caused small but significant increases in pH due to lime addition after 1 and 4 months, although these were smaller than the seasonal changes observed in the all plot, which increased in pH during the winter. Large increases in soil basal respiration were observed after 3 months in many of the plots, but these were not significant between treatments, and there was no	ANOVA was used for analysis of measured data, but statistical significance is also quoted for ranked data. The non-parametric test used to determine this is not mentioned.	no

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
22	A total of 256 locations were selected for survey across the three study areas, these being stratified to include a range of potentially suitable and unsuitable habitats, based on information on location, altitude, vegetation types (including bare peat), former Sphagnum records and management (burning, grazing, grips, gullies, blocking, revegetation), avoiding gullies and pools. At each sample point a 2m by 2m quadrat had vegetation composition and cover identified, including Sphagnum spp., along with vegetation structure, species abundance and land management for the surrounding 20m by 20m area, and each quadrat	single set of survey measurements	Sphagnum diversity and cover were significantly higher at sites with higher pH and higher moisture content, and at more northerly sites, and there seemed to be no significant correlations between Sphagnum abundance or diversity and extractable ammonium or sulphate content. Where Sphangum was present, it had a higher cover in the North pennines than in the Peak District was composed of different species (more hummock forming species). Frequencies of Calluna vulgaris and Erica tetralix were higher in the North Pennines and Bowland than the Peak District, which had more Eriorphorum angustifolium. Bowland supported more Vaccinium myrtillus than other sites. Significant differences were found between surface	Oneway ANOVA was used to compare between the 3 survey areas, and detrended correspondance analysis was used to explore patterns in the survey data, while presence/absence analysis was used for each species and Sphagnum generally.	y

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
23	at 84 sampling points (spread over 2 years) with the S. Pennine and North York Moors sampled only in the second year. Sampling points were randomly selected at blocked and unblocked drains located point mostly at least 50m apart and four cranefly emergence traps were located and 4 traps were left in place, over 3 consecutively periods of 20 days from early May. Traps were located dowslope of grips, and where blocked, represented samples from above and below the block, and sampled both adjacent to the grip and 10m downslope. Soil moisture was measured by probe at the end of each trapping period.		Cranefly abundance increased with soil moisture, with high and low numbers at wetter sites, but only low numbers where dry. This relationship was most prevalent at unblocked drains where there was a higher range of soil moisture values. Soil moisture was higher where drains were blocked, but was lower at the edges fo unblocked drains, in the wetter year, and lower 10m away from unblocked than blocked drains in the drier year. In the later year only, with sampling across 3 sites nationally, craneflies were more abundant at blocked drain sites than at unblocked sites.	GLM testing location, and soil moisture,catchment, blocking and trap locations near grips and blocks.	y

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
24	A single peat core was taken at each site. Cores were analysed using radio carbon dating at depths within profile, accelerator mass spectrometry, micro/ macro fossil analysis to species or nearest genus/ grouping (pollen every 2cm for top 20 cm.), of core using Quadrat and Leaf Count Macrofossil Analysis technique, pollen analysis and charcoal/ sphaeroidal carbonaceous partical counts.		There has been recent replacement of Calluna by Molinia but the fossil record itself points to several vegetational changes in the past including periods of Molinia and/or other graminoid dominance oscillating with Calluna. Where there is evidence older peat (Pre-medeaval) this appears to be formed more from Sphagnum dominated vegetation than present or intermediate communities. Changes appear to broadly tie in with known larger-scale climatic shifts. The Lanacombe 1 core was from the deepest peat, (50cm) but this was highly humified +/- throughout. The fossil record is less well chronologically understood but appears to show a switch away from Sphagnum to a period of increased Calluna cover on a presumably drying	none	y

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
25	three peat vertical profile cores 0.15 by 0.15 by 1m deep, 100m apart from each other. Plant macrofossil analysis was undertaken on all 3 profiles at 2cm intervals, with 2 having upper 25cm sampled at 1cm intervals, along with humication assessment, radiocarbon dating (for lower layers), other dating methods (for upper layers), and pollen analysis on one profile only.	single measure	Molinia caerulea macrofossils were concentrated in the top 10cm of the 3 cores, with little evidence of this species at all below this, where it was replaced with unidentified organic matter, or undifferentiatable monocotylendous material. This unidentifiable material made up the bulk of the top 50cm of peat (formed since approx AD400) during which there was a recognisable decline in Eriorphorum vaginatum remains. The results are intepreted as indicating a rapid, 20th century increase in prevalence of Molinia, but do not explain the likely origin of the unidentified (partially monocot) material.	None were undertaken.	y

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
26	one peat profile 24 cm deep was taken from Hirwaun common, and subject to analysis for pollen and and spheroidal carbonaceous particle content. At Mynydd Llangatwg, 5 peat cores were taken: one 50cm deep from an eroding peat front, which appeared to have a vegetation derived from a collapsed vegetation mat overlying eroded peat, one 42cm deep from intact peat dominated by Calluna, Eriophorum and Molinia, one longer (170cm) profile from under similar vegetation to the second profile, and two short monoliths from areas dominated by Calluna (50cm) and Molinia (55cm), respectively. All profiles from Mynydd	single measure	at Hirwaun, earlier pollen records are domianted by Corylus avellana, which is replaced by graminoid pollen, over the lower half of the profile. The lower part of the upper half of the profile shows a mixture of graminoid and ericaecous pollen, with cereals and plants indicative of disturbance appearing near the top. The upper section is strongly dominated by graminoid pollen and shows a clear appearance fo SCPs, indicating industrialisation. This sample was too well humified to identify plant fragments. The longest profile taken from Mynydd Llangatwg was 170 cm deep. The lowest section showed a mixture of macrofossils from ericales, unidentified monocots and other unidentified organic matter, with low levels of Sphagnum. Sphagnum	None	y

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
27	visual estimations of cover of the Sphagnum, Politrichum strictum, ericaceous shrubs and other vascular plants, averaged from 30 25cm square quadrats for each plot, along with surface (3cm) peat water content measurements at each plot taken 3 times each growing season from 3-5 years following initial plot establishment, and was also measured elsewhere on the site at a line of dipwells measuring water table. Climatic information was recroded at a weather station 24km from the site.	annually	Only one significant interactive effect was found, indicating that differences in the rate of Sphagnum cover increase depended on the trial start date (ie, experiencing some of the same climate conditions but at different stages of colonisation). Those established in drier growing seasons developed slowly compared to those established during wetter ones which had cover slightly more than twice that developed from the trial starting in the drier summer. Soil moisture was not significant as a covariant predicting the recovery of the Sphagnum carpet and there was no signficant differences between multi-species and single species treatments. Mixed or single species treatments containing hummock species (fuscum and rubellum)	MIXED procedure in SAS, with block nested in trial as a random factor and peat moisture controlled as as covariate, with post hoc LSD tests to identify singnificant treatments.	y

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
28	soil water table and samples were taken from dipwells monthly from 2005-2007, and samples analysed for pH, absorbance at 400nm, DOC, metals and nutrients. Run off was measured using crest-stage tubes and hydraulic conductivity was measured in dipwells using slug tests.	monthly for dipwell and every ~2 months for crest stage tubes, and a 3 month ~fortnightly sampling campaign for hydraulic conductivity.	Water table varied from 0 to 67.1 cm below the peat surface, and, after normalisation to remove seasonal and climatic effects, burning regime had the strongest significant influence on water table, with lowest water tables under the areas with no burning, and shallowest under the 20 year burning treatment (possibly 11 years after the most recent burn in 1994 assuming a rigid 20 year cycle) while those under the 10 year cycle were intermediate. Grazing was also significant, but explained only 1% of the variation, and shallowest water tables were found on 20 year burn plots that were grazed. Water tables became significantly shallower (closer to the surface) following a burn	GLM with Tukey's test on data normalised for each sample visit and Chi-square tests for runoff.	n

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
29	206 25 x 25 cm quadrats surveyed for rooted presence/absence of species on 2-3.5 metre deep blanket bog split by 4 microhabitat types, pool, lawn, hummock and 'general BB' where no obvuoius allocation to the previous 3 could be made in April 1970. Repeat survey in July showed a few additional seasonally dormant species occur. Areas/ proportion of each microhabtat calculated and species frequency for each made. A seperate experiment undertook estimates of net dry matter or primary productivity of four Sphagnum species, S. cuspidatum, S. (fallax) recurvum, S. papillosum and S. (capillifolium ssp.) rubellum using two methodologies and		Of 18 species observed 8 were found to be more frequent and could be hierarchically ranked to habitat. Four, Erica tetralix, Calluna vulgaris, Eriophorum vaginatum and Cladonia arbuscula were ranked general bog species.Three, Sphagnum (capilifolium ssp.) rubellum, Sphagnum papillosum and Eriophorum angustifolium are hummock and lawn species whilst Sphagnum cuspidatum is a pool species. The surveyors estimated 18% of the bog area could be defined as pool, 13% lawn and 8% hummock whilst 61% could not be specifically allocated and just termed general bog. Productivity experiments on Sphagnum found that plants generally elongate most in wetter pool conditions but this did not necessarily coincide	Analysis of variance, F test	y

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
30	water table was measured at 2 sites, at 10 points arraged 1.5m above above and below 2 adjacent grips, and at the midpoint between the grips. Vegetation cover was estimated from 40 transects of quadrats stretching 9 m above and below grips, spaced at 1.5 or 2 m intervals. Invertebrates were sampled in rows of 5 pitfall traps at the same distance from gips as water table sampling. Heather samples were taken 1.5m above and below ditches, analysed for nutrient content and fed to Saturnia pavonia caterpillars and weight gain measured, switching bewteen diets to compare rates. Decomposition rates were measured	monthly, for water tables	water tables were higher at Moor House, than at the lower site with lower rainfall (Waskerley). At both sites water table and surface soil moisture content was higher 1.5 above the ditch than below the ditch. The overall pattern was for water tables to be near the surface at midpoints between grips, lowered slightly abnove the grip and lowered more deeply and over a longer distance downslope of the grip. The water table was 5 times deeper for the lower site at 1.5 m below the grip than at Moor house and at Moor House the water table 1.5m above the grip was no different from the midpoint between grips, while at Waskerley it was significantly lower. Vegetation composition near the grips was more affected in the lower sites surveyed, with large increases	t tests and chi squared tests	y

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
31	vegetation survey/composition and sediment movement.	3 month survey	, in relation to vegetation, high slopes were associated with Eriophorum vaginatum and, to lesser extent, Empetrum nigrum. Low slopes were associated with E. vaginatum and Deschampsia flexuosa. Eriophorum angustifolium is a key species in early stages of re-vegetation following artifical gully blocking. E. vaginatum is also an important component of revegetation. Blocking gullies reduces sediment with the more expensive blocks (stone and wood) being more effective than plastic or hessian blocks.	ANOVA, DCA, TWINSPAN, CCA, CANOCO	yes

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
32	climating data from a weather station on site, canopy interception (difference between gross rainfall and canopy throughfall) away from trees. Evapotranspiration was also measured using deep bladder lysimeters, evaporation using weighing lysimeters and transpiration then calculated from these data. Measurements were also made of net radiation and ground heat flux. The interception storage capacity (for rainfall) of the litter layers of different thicknesses was measured in the laboratory (representing conditions both during and after saturating rainfall events), and laboratory assessments were made of evaporation from litter-		interception and throughflow of rainfall in dwarf shrub canopies depended on both rainfall intensity and duration, with higher interception at low intensity/long duration or high intensity/short duration events. Canopy interception capacity was calculated to be 2mm, and, for the summer studied, would account for capture of 62mm (19%) of rainfall. Litter interception of rain depended on litter mass and type of rainfall. The more intense the rainfall, the more water was intercepted, but rates of interception reduced if rainfall continued for longer than 90 minutes. Overall the dwarf shrub litter layers were estimated to intercept 15.4mm (4.6%) of the period's rainfall. Overall evaporation plus transpiration rates were similar for both dwarf shrub litter and Sphagnum sites, and	student's t-test and oneway ANOVA	y

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
33	, in the field study, samples of gas (CO_2, CH_4 and N_2O flux) were taken from transparent and shrouded sampling chambers and analysed by gas chromatograph, and O_2 saturation in pore water was assessed using a probe. Soil solution samples were taken at 10 and 30cm depths and soil samples were collected to 10cm depth and assessed for soil moisture content. Soil solution samples were also extracted from the laboratory samples. All soil solution samples were assessed for pH, DOC (total C less inorganic C in filtered solution), phenolic compounds, dissolved iron, anions and cations. Soil samples were assessed for "potential" water extractable DOC	monthly for field study, and every 4 days for the laboratory experiment.	water tables on the re-wetted plot were higher than those on the untreated plot after 4 days, and in following periods. In a dry year, water table in the untreated plot ranged from -71 cm to -27 cm from peat surface, compared with -58 to -11 in the treated plot, while in a wet year these figures were -49 to -7 compared to -18 and 0 for drained and treated plots, respectively. Concentrations of DOC in soil water in the field were closely correlated wtih concentrations of iron, particularly in the rewetted plot, and at different times, 1 or 2 of the five samples in the rewetted plot had far higher, sustained, levels of DOC than the others. Samples with high DOC also had high levels of bromide, calcium, magnesium, potassium and sulphate. Emissions of methane showed	t test and ANCOVA	n

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
34	Sphagnum growth (extension) and chlorophyll content	once at the end of the experiment	Sphagnum growth extension was sensitive to all three forms of sulphur pollution, bisuphite, sulphate and sulphur dioxide. In solution, bisulphite was more harmful than sulphate and of the sphagnum species tested (S. recurvum, tenellum, papillosum, magellanicum, capillifolium, imbricatum), S.recurvum (= S. fallax) was more tolerant and S.tenellum the most sensitive. Similar effects were seen of these solution sulphur forms on chlorophyll content. In some species low concentrations of bisulphite increased growth but higher concentrations always reduced it. After exposure to the SO2 (duration not stated) growth was reduced in four sphagnum species (tenellum, imbricatum, recurvum, capillifolium) , but not in S. magellanicum. There	In experiments using bisulphite and sulphate in solution, no statistical tests are shown, but standard errors are small and the differences between mean values are large at the highest concentrations. The exposure to sulphur dioxide experiments incorprate T-tests to compare clean and polluted treatments.	y

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
35	numbers of captula and percent cover of Sphagnum and companion plants.	annally	there was no overall difference caused by microtopography treatments on the establishment of sphagnum, but within plots, establishment was better in hollows than on ridges and flat surfaces. Companion species had no impact on Sphagnum capitulum counts, but presence of E. angustifolium treatments increased Sphagnum cover (ie. plants were larger), while poorer establishment of dwarf shrubs and mosses probably reduced their impact as companion plants. A larger number of Sphagnum capitula were observed in the P-fertilised	GLM, with Tukey tests on transformed and untransformed data	y

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
36	automatic water sampling, at varying frequencies, with filtered samples analysed for DOC, absorbance (at 400, 465 and 665nm wavelengths), pH, conductivity, and flow rate at a V-notch or crump weir, with modelling of flow for missing data due to equipment failure, and climate parameters measured at a nearby weather station (Moor House ECN).	water samples were taken every 8 hours, but only daily during June and July, and weekly at Moor House	the different study sites exhibited different calibration relationships between DOC and absorbance at 400nm. ANOVA detected significant effects of site, month of sampling and the interaction between these.Significant differences were found between all sites for absorbance data, but there was no difference detected between the DOC concentrations for the 2 undrained catchments. Undrained sites had significantly lower absorbance and DOC concentrations than drained sites. The highest average DOC concentration was found in the shallow peat site blocked for the longest time, while the catchment with open drains had average DOC concentrations between those of the two recently blocked catchments. Comparison of	DOC budgets were modelled from the data, then ANOVA performed to check calibration requirements between absorbance and DOC, and then to examine the interaction between catchment and month of sampling (as well as pre- and post-blocking values) and on modelled DOC flux values per unit area, with water yield controlled as a covariate. Tukey post hoc tests were used to identify significant	n

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
37	vegetation composition in quadrats along transects.	survey Aug-Oct, second or third survey over several years depending upon site.	there was slight evidence (not consistent across all samples) that re-wetting resulted in a change of plant communities to include more plant species with an affinity for wetter ground.	Spearmans Rank Correlation Coefficient	no

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
38	number of shoots on up to ten individuals of each species, selected randomly in each plot. Fixed point photography was also continued for several years after establishment. The later trial was monitored only using oblique photographs and observations. The third and fourth experiments estimated cover from point quadrats after 6 and 10 years, but only in seeded/fertilised plots, with estimated values from the other areas, along with photographs.		in the phosphous/lime addition experiment only Deschampsia flexuousa survived after several years. Shoot density for Deschampsia flexuosa was significantly higher in the treatments receiving phosphorus, lime or a combination of these, than in the control treatment, and was higher on the bare mineral substrate than on the peat, and here treatments with lime resulted in significantly higher densities than phosphorus alone. Observations from the later field trial suggest that formalised casein treatment elicited the best cover of D. flexuosa, while balanced nutrients and digging worked well, but only in one drier plot, failing to succeed in the wet plot. Control (untreated), digging only or balanced fertiliser plots with no digging produced few shoots which	analysis of variance on square root transfored data for phosphorus/lime addition experiment.	

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
39	water table, discharge and DOC/POC.	Discharge every 30 mins during high flows, dipwells monthly (?), Water chemistry up to 29 sampled events.	grip blocking changed the way the discharge behaves during a storm event, so that it takes longer between the start of the rain and the peak in discharge, and so that the time taken between the start of the rise in the hydrograph to the peak also takes longer. Additionally, the amount of discharge resulting from a given amount of rainfall also appears to be lower and the amount of discharge resulting from a given rainfall intensity is also lower. DOC concentrations increased in the few months after the restoration. However DOC load exported reduced on one site and increased on the other. POC concentrations appear to be lower post-blocking, but the evidence is	Kolmogorov-Smirnov, Shapiro-Wilk, Kruskal-Wallis, Regression.	No
40	discharge, water colour, DOC and suspended sediment concentrations.	approx monthly	there was little evidence at ctachment scale that grips had impacted storm hydrographs. There was no indication of significant reductions in suspended sediment and water quality, and DOC has not significantly decreased since blocking took place.	ANOVA,	OK but update report so full description probably elsewhere

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
41	CH_4, CO_2, NO_2 emissions and pore water chemical composition.	weekly and monthly.	methane emissions differed significantly depending upon type of grip infill method simulated. Methane emissions were lowest, and there was even net uptake of methane, in the mesocosms representing pools. Other treatments had posiutive and similar efflux of methane. Sphagnum-dominated mesocosms had more ebullition emissions of methane than other treatments, but this was a small proportion of total methane emissions. The grip infill also had singificant impacts on CO_2 emissions (NEE), which were highest in mesocosms infilled with heather brash, then those simulating reprofiles, then those simulating pools, with flux from the Sphagnum carpet being lowest. Mesocosms simulating	one and two way ANOVA,	Yes

	Measurement types	**Measurement frequency**	**Main findings**	**Statistical tests**	**well described habitat/situation?**
42	During the survey, a rectangular grid of 101 sampling points with 10m by 20m spacing was visited and water table checked in an auger borehole, along with presence of Polytrichum strictum or Sphagnum species. At experimental plots, measurements were taken of summer irradiance and air temperature at or near the original peat surface. Water content was measured in temporarily introcuced Spahngum fragments, randomly located in the plots and either implanted into the carpet, under straw and/or among the P. strictum fragments. Fragments were in place for 3-5 days during 6 periods over July and August of the year of	For the experiment, after 3 months and 18 months for most measurements, but every 30 minutes for temperature, using a data logger, for 3 9-16 day periods during July and August in the year of application, and twice in mid july and august for irradiance. Introduced Sphagnum water content was measured 6 times during the first summer.	P. strictum was present at 92% of sampling points, and Sphagnum species at 33% of these. Sphagnum only occurred in the presence of P. strictum. Points with no P. strictum had higher mean water tables (-33cm), points with both P. strictum and Sphagnum had intermediate water tables (-50cm) and where only p. strictum was present, water tables were lower again (-54cm). Photosynthetically active radiation (PAR) passing through the P. strictum carpet was 5% of that availble above it, 24% under P. strictum fragments and 34% under straw mulch. P. strictum treatments resulted in less variable temperature, being cooler in warm weather and warmer in cool weather. In the hottest weather, treatments made no difference to	Chi-square and GLM for the field survey, ANOVA on transformed data for the microclimate/Sphagnum water content trial, ANOVA for the "seed" trapping trial, and Tukey multiple comparison test for seedling health.	y

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
43	increases in length and weight of Sphagnum shoots		S. fallax grew faster than the other 2 species in the mixed-species pots, and in those with higher water tables, and there was also an interaction between water table and species, with S. fallax in the high water table treament growing faster than the other species. There was less impact of peat substrate type, with S. fallax showing the greatest differences only in the low water table treament, with greatest growth in bare cut-over surface peat. The second expeiment measured peat physico-chemical characteristics as variables, rather than using peat type as a treatment, and this revealed that peat porosity and other key characteristics influenced S. fallax growth rate, interacting with water table depth, while microclimate influenced growth		

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
44	changes in length and weight (capitulum corrected) of the implanted Sphagnum shoots. Layers of 10cm thick down each peat profile were characterised for pH, phyrophosphate, C, H, N, Ca, Mg, K, Na content, cation exchange capacity, bulk density water holding capacity, porosity, pore size proportions.	single measurment	Sphagnum species, water table and peat type all signifiantly influenced Sphagnum growth responses, with influencing factorsing being species > water level > species x water level >> peat type. S. Fallax showed the largest increase in mass relatively to original mass, particularly in the high water table and cultivated peat treatments, while at low water tables this species grew most on cut over surface peat. S fuscum was less sensitive to water table, and the direction of the response was dependent on peat type (preferring low water tables on dry heath peat and high water tables on cultivated peat). S magellanicum grew more at higher water tables, and with least growth on undisturbed peat, and most on cultivated peat, with other peat types		y

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
45	vegetation type, using spectral analysis of satellite images, calibrated against 191 4m2 plots surveyed on the ground for percentage cover of different "growth forms" of vegetation. Peat accumulation was measured by marking the current peat surface on pine seedlings, extracting them and measuring the distance between the root collar and the peat surface, then counting the annual rings at the root collar. Vegetation composition was assessed in a 10cm diameter plot next to the seedling, and a peat core extracted to the depth of the pine root collar. Only pines <2cm diameter were used to avoid impacts of pines on vegetation. Three plots for	single samples taken	seven different classes of vegetation could be distinguished from the satellite imagery. These comprised mud bottoms, Sphagnum-dominated carpets, hummock/hollow mixtures (dominated by Sphagnum with dwarf shrubs and graminoids), hummocks (dominated by evergreen dwarf shrubs, little Sphagnum), hummocks with 20-50% deciduous dwarf shrubs (dominated by evergreen dwarf shrubs and little Sphagnum), lawns with 50-80% deciduous dwarf shrubs and forbs (dominated by forbs, with dwarf shrubs and no Sphagnum), and lawns with >80% dwarf shrubs and forbs (dominated by forbs, no Sphagnum). There were recognisable gradients between these vegetation types, and the first two (having no pine seedlings) were not	ANOVA was used to explore the impact of habitat on pines' age, height and diameter, and conceptual models were constructed relating pine age, annual increments of mass/C/N in the living vegetation (to indicate starting mass when the pine seedling started growing), decay/compaction rate and, in one model, a constant-adjusted Sphagnum cover. The values of these parameters were then estimated by	y

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
46	Net primary production, growth and litter decomposition rates by species	60-79 days	Growth rates vary between species and season,(not always as expected possibly compounded by the short duration of the experiment and external factors- RG). Biomass and shoot density increase away from water table. Decomposition rates of most Sphagnum slower than just cellulose. Claim this means the hummock-hollow natutre of bogs is self-maintaining although this is less clear from some of the results once past Table 1.	ANOVA, Tukey HSD F-test, Bonferroni correction	y

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
47	counts of Sphagnum beads or strands were made in an unknown number of 0.5 by 0.5 m quadrats, along with an assessment of their colour (white or green). Monitoring after the first 12 months of the experiment was observational and fixed point photography only. For the larger plots, fixed point photography and collections of Sphganum samples were used to monitor the success of the introduction. In the laboratory experiment individual plants established from beads or strands were extracted, dried and weighed. Most other studies only report observations. Water, KCl and BaCL2 extractions, at different moliarities, were		plots receiving Sphagnum propagules in June had no surviving Sphagnum, but those applied during other months all had surviving green propagules by the following June. Those sown in March had the highest proportion of surviving propagules by June. More propagules survived at the plots which had had full revegetation treatment, but this may relate to different site conditions. At the revegetation treatment site observations suggest that after 2 years none of the introduced Sphagnum was evident on drier, vegetated tops of peat haggs, but had survived where vegetation was sparser and the peat wetter. At the heather brash site very few Sphagnum plants could be found 1-2 years following treatment. Sphagnum plants did establish from the beads,	normality checkes, LSMEANS for treatement differences and redundancy analysis, to enable testing and control for peat physical factors.	n

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
48	pipe flow at 10 pipes (either by insertion of a weir plate into the pipe, or by montoring pipe outlets), along with flow in 1 grip, 1 gully, 2 flush zones and the main catchment stream outlet. Peat pipes were mapped from stream outlets by following depressions in the ground, and by listening for water movement, and some areas re-mapped by GPR survey.	flow (stage) was recorded every 15 minutes during the study period, with breaks due to equipment failure.	Pipes were observed to be associated with pools, to spill aboveground then re-enter new pipes as sinkholes. Shallow pipes seemed to be associated with grass vegetation, while deeper pipes seemed to have little vegetation impact. The longest pipes were found crossing river terraces. Despite water tables being close to the peat surface for most of the study, approximately a third of the pipes had ephemeral flow, being reduced to <1L hr-1, and these were not associated with any particular position in the peat and were not separated by pipe size from those that flowed above this rate more continuously, although almost all pipes ceased to carry water in dry periods. Pipes that flowed between peat and substrate	none	y

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
49	infiltration rates at 0, -5, -10 and -20 cm, at 4 different water pressures (-12cm, -6cm, -3 and 0cm), in peat under Calluna, Eriophorum, Sphagnum and on eroded bare peat. These were used to calculate hydraulic conductivity of the peat, and to identify proportions of flow through different sized macropores in the peat.	single measures	across all vegetaton types studied, macropore flow (through pore >1mm) accounted for 35.9% of field saturated hydraulic conductivity. Significant differences were found between the proportion of macropore flow between vegetation types and at different soil depths, with Sphganum sites have larger proportions of flow through macropores than other vegetation types, and the highest proportion of macropore flow at 5cm and least at 20cm depths. Proportion of surface macropore flow was similar for bare peats (eroded down 50cm from original surface) and intact vegetated peat. There were also significant differences between values of saturated hydraulic conductivity between	ANOVA	y

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
50	precipitation, excluding snowfall, at the Moor House weather station, <1.6km from the study catchments. The catchment outlet discharge was monitored from 1954 / 1957 to 1962 and from 1998 to 2004 for the drained/gullied catchments and from 2002-2004 for the other three catchments. Fifty storm hydrographs were analysed for each catchment for each study period, avoiding extreme storm events which might give more unreliable data. In each catchment flow of water through the peat mass was measured by a series of troughs inserted down the profile of a vertical peat face to divert water into tipping bucket recorders. Water table	the more recent monitoring made measurements of discharge and runoff troughs every 5 minutes, and dipwells and crest-stage tubes were assessed every 2 weeks.	in all catchments the percentage of rainfall exiting catchments as stream discharge (termed runoff efficiency) was highest in winter and generally lower in summer. There was no difference in runoff efficiency between the earlier (1950's-60's) study period and the 2003-2004 period in the intact catchments, but runoff efficiency was significantly higher in the latter study in one drained catchment (catchment S) and lower in the other (catchment N), despite no significant change in rainfall. It is later noted, however, that catchment N had 2 large peat pipes that bypassed the gauging station, and served to reduce stream dishcarge at the station by 9% which would negate the observed drop in runoff efficiency. In the	most comparisons don't mention a test, although p values are given occasionally. Mann-Whitney U test was used for macroporosity comparisons	y

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
51	, on randomly selected moorland drains at 5m intervals of GPS location, cross sectional measurements, peat depth, width of overhanging vegetation, proportion of drain floor width vegetated, and slope and catchment area were later derived from a digital terrain model. Comparison was made between the current cross sectional areas of drains with that left by the typical Cuthbertson plough used for moorland drainage, to indicate rates of grip erosion or infill. At one catchment (Ougtershaw in Wharfedale), dicharge and suspended sediment were measured using turbidity probes and automated samplers to provide samples for calibration of	automatic water sampling at Oughtershaw was carried out every 12 hours. Turbidity and flow (stage at v notch weirs) was measured every 15 minutes.	extent of cross-sectional erosion was most strongly predicted by slope (48% of variance) and then by catchment area (18%). Drains with slopes under 2o were commonly infillling and only rarely eroding and those on 4o slopes or more were most commonly eroding and rarely infilling. Slopes over 5o have a wider rnage of erosion values and can have 1m2 or more of cross sectional area eroded. Erosion was often most extensive at confluences. Eroding drains that have incised to the mineral substrate beneath the peat tend to be wider than those remaining entirely in the peat. Twenty nine percent of drain cross sections were totally shaded by vegetaion, and 42% had 60-99% shading. Drain floor vegetation cover was	multiple regression and t tests, no statistics were presented on the sediment budgets from Oughtershaw	n

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
52	at 64 0.5m by 6m plots for 4 vegetation types (Sphagnum, Eriophorum, a mix of these two, and bare peat) totalling 256 plots on uniform slopes ranging from 0.01 to 0.55m m-1. On these plots, measurements water was pumped onto the peat surface at the top fo the slope, to reach a steady flow state as measured at the bottom of the plot, then dye was introduced at the top of the plot and its appearance at the bottom of the plot (first apperance and centroid) was timed using an automatic logging fluorometer. Mean water depth on the plot was measured at 10 random points per plot and all measurements were taken at four different discharge		only Sphagnum dominated plots became totall submerged during the experiment. Overland flow was consistently and significantly higher over bare peat than over vegetated surfaces, and those over Sphagnum-dominated vegetation were significantly lower than for other vegetation types. The differences between vegetation types depended on water supply, with mean velocities being Sphagnum < mixed < Eriophorum < bare for the lowest and highest supply rates, but with the mixed vegetation slowing velocity most at 0.08 L s-1 and Sphagnum and mixed vegetation both sharing the slowest velocities at 0.20 L s-1. Data were fitted to a flow model to generate a value for a surface roughness, which	reduced major axis regressoin. Some comparisons are given p values but the tests used are not identified.	y

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
53	, for each site, along 1 transect of 9 dipwells at right angles to the drain, arranged at 3 uneven distances upslope from the drain and 6 uneven distances downslope of the drain, reaching to 2m upslope of the next downslope drain, so that there were 2 measures 2m upslope of 2 different drains. On the intact site, the arrangement was the same with regard to slope, but with no drain. At each dipwell, water table was measured automatically at 20 minute intervalsm, and a weighted mean water table calculated weighted by the distance between adjacent dipwells. Water levels in the drains (blocked and unblocked) were monitored using crest-stage tubes. Six peat	every 20 minutes for dipwells, and every 2 weeks for crest-stage tubes	Vegetation cover differed slightly between the 3 sites, with more Molinia caerulea at the blocked site and more Sphagnum spp. at the intact site. Bulk density tended to increase with depth on all sites, and was significantly lower at 5cm on the blocked site, than the unblocked site. Water levels in the unblocked drain were <4cm from the base while they were <12cm from the top of the channel in the blocked drain. Mean water table depths were significantly different between the intact, blocked and drained sites (5.8, 8.9 and 11.5cm from the surface, respectively). Water tables were generally lowest nearest the drain, but rose rapidly in the 2m up and downslope of the drain. During storm events, water tables rose significantly more in the drained treatment	repeated measures ANOVA, and pearson's correlation for storm event parameters and dipwell measures, and t-test for the paired dipwells.	y

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
54	rainfall, temperature and other climatic data, which were monitored at the nearby Moor House weather station. Three surveys of pipe outlets (where peat pipes meet streams) were conducted in August, July and April of 2007, 2009 and 2010, in which each outlet in the catchment was marked, photographed, measured (horizontal and vertical axes, and position relative to peat surface), classified morphologically as lenticular (vertical or horizontal), circular, cracks, triangular or rectangular and identified as flowing or not.	~ annually	Of the 99 outlets surveyed int he first year, 86 and 77 were found in the 2 later years. Pipes were up to 60 cm tall by 30cm wide. Those pipes flowing on all surveys (perennially-flowing pipes) had significantly (~3 times) larger outlets than ephemerally-flowing pipes and perennial-flowing pipes had the majority of outlet area, despite being around half as prevalent in number as ephermerally -flowing pipes. Ephemeral pipes were significantly deeper int he peat at their bases (mean 100cm) than perennially-flowing pipes (mean 56cm). Pipes were observed to appear, close up (infill or collapse) during the study period. There was a significant trend for pipe outlets to increase size in the vertical axis, resulting in an increase in vertically lenticular	Mann-Whitney U tests, Friedmans repeated measures test, paired t tests.	y

	Measurement types	**Measurement frequency**	**Main findings**	**Statistical tests**	**well described habitat/situation?**
55	GPR surveys of peat pipes were taken in 2 areas of each catchment, usually on opposite slopes, and in 3 plots for each area, at the hill top, mid-slope and footslope. Each plot was surveyed using 6 20m parallel transects along the contour and 10 m apart. Number of pipes per unit length of transect was recorded. Aspect, slope and topographic index were recorded for each plot, and peat depth measured. At 24 plots saturated hydraulic conductivity and bulk density were measured at 10cm intervals down the peat profile. Measurements were also taken of the depth and diameter of peat pipes entering streams.		Peat pipes were present in all catchments surveyed and only in 5.2% of plots were no peat pipes found. Hill top slopes had higher pipe densities than foot slopes and both had higher densities than midslopes. There was no relationship between pipe density and slope angle, but more pipes were found in mid ranges of topographic index (between -2 and 2). Aspect had no impact on pipe density in the full data set, except in interaction with gripping. The wettest catchments (>2000mm mean annual rainfall) had higher pipe density than drier ones, but rainfall had no influence within these drier sites, where aspect also exerted an influence having more pipes to the S and SW. Plots on gripped hillslopes had significantly higher pipe densities (127.4	GLM and oneway ANOVA on square root tranformed data	y

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
56	six 50 by 20m plots were surveyed in each catchment, in which six parallel GPR transects,10 m apart, were taken across the slope using 100 and 200MHz antennae. In each plot the presence or absence of certain blanket bog species was noted, these being Calluna vulgaris, Eriophorum spp., Sphagnum spp. and bare peat. Topographic index (ratio of drainage area to slope) was calculated for each plot. A case study was also made of 16 lower altitude GPR plots at Moor House NNR which supported abundant Calluna and 16 higher altitude plots in which Calluna was rare. Plots were matched for topogrphic index and on different hillslopes, with	single measurements fpr the survey and every 2 weeks for water table in the Moor House plots.	peat pipes were present in all catchments surveyed and only in 5.2% of plots were no peat pipes found. Presence of Calluna and bare peat in the plots were found to have significantly higher frequency of peat pipes (pipes per km of GPR transect) than peatlands without these features. Topographic index had no significant control on peat pipe frequency nor did it though interactions with vegetation. In the Moor House case study, peat pipes were significantly more frequent in the plots with Calluna, below 650 m altitude, than those without Calluna, above this elevation. There was little variation in the water table reported within or between both lower Calluna-dominated plots and the higher non-Calluna plots. Depth, rainfall treatment and vegetation type all had	ANOVA was used to compare vegetation effects in the survey and impacts of rainfall, vegetation and depth on macropore flow. No statistical analysis is provided for the paired block comparison.	y

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
57	a 50m by 20m plot was surveyed by six 20m parallel ground penetrating radar (GPR) transects, 10m apart, and broadly parallel with contours, using 100 or 200 MHz antennae (depending on peat depth), to indicate layers with different reflective properties in the peat and thus detect peat pipes with a minimum cross sectional area of 6cm. The year when land drainage took place was ascertained from aerial photos, landowner information, published material, parish records, for all but 2 sites, where the date was known within a 4 year period, and drain spacing was examined as a covariant, but not assessed as a factor. At each site, the mean	single measure	there was a strong, significant, linear, positive correlation between peat pipe density and the number of years a peatland had been drained, with pipes apparently increasing in density by 2.1 km km-2 each added year of drainage, above an extrapolated undrained level of piping of 41.6 km km-2 (close to measured values for undrained peatlands). There was also a weaker, but similar and significant correlation between pipe cross-section and number of years drained. Pipe cross section on undrained slopes was significantly lower on undrained slopes compared to drained (11.6 cm compared to 15.9 cm), and peat volume, and peat mass volume occupied by pipes was 0.27% in undrained slopes, and 1.28% in drained slopes.	t tests were used to compare drained and undrained slopes on the raw data (which were normally distributed) and correlation/regression for relationships.	n

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
58	steady-state infiltration rates, using a tension disc infiltrometer, at 8 randomly chosen sites for each of the 4 cover types, at four depths (0 cm, 5 cm, 10 cm and 20 cm), and with 4 different hydraulic heads (-12 cm, -6 cm, -3 cm and 0), the last three chosen to sequentially exlude flow through pores of different sizes (0.25mm, 0.5mm and 1mm). Data were used to calculate hydraulic conductivity, porosity volumes, with measured water temperature used to model changes in water viscosity and density.	single measures	vegetation cover, soil depth and water tension all had signficiant effects on infiltration. Higher water tensions led to more rapid infiltration, with a general pattern of reduced infiltration between 0 and 5cm, then more gradually reduced infiltration from 5 to 10 and from 10 to 20cm depths. For Calluna and Eriophorum, the difference between surface infiltration and lower infiltration rates become more marked under lower water tensions. One exception was bare peat, which, at 10cm depth, maintained similar mean infiltration rates at 10cm depth, regardless of water tension Also, Sphagnum which, though having lower surface infiltration rates at high water tensions than other vegetation types, had infiltration rates at 5cm which	ANOVA was used to compare the effects of vegetation types, water tension and peat depth	y

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
59	water table, flow, and water chemistry including DOC and E4:E6 ratio.	water level every 15 mins, water sampling monthly	water table remained relatively unresponsive and unchanged on either side of blocked and unblocked grips. There was no significant difference in colour of water between gripped and blocked, but there are differences related to date of sampling. The trend for E4:E6 ratio is of a decline in the values.	No details presented	yes

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
60	vegetation cover (seasonal), water table height (weekly), rainfall (weekly), carbon dioxide flux (twice weekly in growing season for year 1, weekly in the growing season for year 2, and every third week in growing season for year 3).	vegetation cover (seasonal), water table height (weekly), rainfall (weekly), carbon dioxide flux(yr1 two weekly in growing season, yr2 weekly in growing season , yr3 every third week in growing season.	Water table was higher in the restored bog (average 20 cm below peat surface). Some flooding was observed on mire, especially in hollows and lawns. After 2 years, changes in vegetation were small but cover of Andromeda polifolia, Vaccinium oxycoccus & V. microcarpum showed a moderate increase in hollows. Empetrum nigrum cover on hummocks increased and Calluna vulgaris started to die in hollows. Cladonia cover decreased whilst Sphagnum balticum, S. fuscum and Polytrichum strictum increased. At non-vegetated plots CO_2 efflux lower from restored bog. Mean CO_2 rates were significantly higher from untreated plots in 1996. The trend in total CO_2 efflux from vegetated plots was for mean rates to fall over the period 1994-1996. CO_2 efflux	analysis of covariance, Tukey's HSD pair-wise comparison, ANOVA on SYSTAT software.	Yes, would benfit from a map

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
61	vegetation species were measured at point quadrats (1cm squares) at 1 m intervals along 25 180 m long transects in 1999 and 2003. On the wetter plo, measurements were also taken of relative elevation, peat depth, surface soil moisture content and water table at one of the peat fields. ON the drier plot permanent quadrats were established in a single block and vascular plant species monitored annually for 5 years in terms of species, cover, E. vaginatum tussock position, vitality, infructescence number and density, along with seedling density in fewer quadrats, peat thickness and peat chemistry. Water table was monitored weekly for 2 years	daily or weekly for water table, once for soil moisture and every 4 years for the vegetation survey. Annually for the drier plot with rewetting.	in the four years between survey periods, Eriophorum vaginatum declined in the wetter plot, and trees, ericacious shrubs and liverworts increased. In both years, cover of E. vaginatum was signifcantly correlated with water tables (more prevalent at higher tables) which explained large scale spatial variation in cover on the site. On the drier site tussock density of E. vaginatum decreased over the study period and cover of E. vaginatum increased, with the largest increases following the rewetting of the site.	Wilcoxon's signed ranks and McNemar's tests for comparision between years. Correlation for water table and cotton grass cover.	n

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
62		N/A	Most UK bog formation is via paludisation. Important that there is a permanantly waterlogged and anaerobic zone, catotelm, and ideally this should lie close to the surface with a thin acrotelm of seasonnally fluctuating water levels in which the mosses and vascular plants grow. Conditions suitable for paludification will fluctuate with climate and slope such that there may be natural occurrences of bog loss or gain over more millennial/ geological timescales. British limit is loosely set at >700mm rain/year and >200 rain days/year to maintain the humidity regime on even or gentle terrain but this wil increase with slope. Bogs have formed by paludification on slopes of up to 30 degrees if the climate is wet enough. Trees should be restricted to	N/A	

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
63	N/A	N/A	Notes peat is material of vegetable origin dating back hundreds or thousands of years. Assumes bog formation depends on the dominance of Sphagnum plus paludification as a method of spread for larger raised and blanket bogs. Notes bogs have the potential to occur almost anywhere in Britain c.f remains of Andromeda polifolia and Vaccinium oxycoccus found near Cambridge in 'the dry east' as recently as 1855. Cites research by Backeus 1998 that the moisture regime conditions of the previous year and August in particular have the greatest impact on Sphagnum growth the following year. Temperature plays little role altough it may indirectly affect moisture regimes and accumulation/decomposition	Not quoted. F test obviuosly used from results tables.	y

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
64	Surface peat cores 50cm long were extracted from each site and analysed for macrofossil, pollen, trace metals, other cores of unspecified depth were extracted for 210Pb dating, and the Eriophorum/gully and dwarf shrub/hagg sites had additional 50cm cores analysed for14C dating, wihle the Eriophorum site also had 2 cores taken at 45-95cm, for pollen, macrofossils and bulk density. Three sites near the original 3 (dominated by "wet mire" vegetation, Empetrum nigrum-Hypnum cupressiforme, and by Dicranum sp./Deschampsia flexuosa) were also cored and analysed for macrofossils only. Cores were divided into 1cm or	monthly (water table and rainfall), and single measure (peat cores).	seven pollen horizons were recognisable, dated from 140 BC to 1850 AD with 100-720 year seperating intervals. These were used to link and date peat horizons across the cores taken. Lower peat horizons from most cores tended to be dominated by macrofossil remains of Eriophorum vaginatum, with variable secondary sub-components of ericaceous plants and Sphagnum tenellum or S. recurvum. In the mid or upper half of most cores, S. papillosum became more prevalent, or occasionally dominant, while in many cores ericaceous plants became more scarce. Water tables were highest in the Sphagnum dominated area (mean 8.4cm), than in the gullyside Eriophorum area (mean 25.1) or the hagg-top dwarf shrub area where water	None	y

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
65	Productivity and decay rates plus net mass balance estimated for four microtopographical zones: Sphagnum Hummocks, Lichen hummocks, Sphagnum lawn hollows and bare peat hollows. C14 age		Productivity of lichen hummocks and bare peat hollows negligible and net mass balance negative,		y

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
66			Nutrient supply is limited on ombrotrophic bogs. Mosses control most input esp. atmospheric, whilst vascular plants depend on mineralisation within substrate. Mosses/Sphagnum not 100% essential to peat formation but certainly facilitate/enhance it plus historically Sphagnum formed the bulk of most blanket bog peat. High water table and anoxic conditions required to prevent oxidation/ decomposition of organic remains. Fewer spp. in ombrotrophic bogs and fewer still are restricted to this habitat. All are stress tolerators and vascular plants must havean upward growth strategy to offset moss accumulation, roots may the subsurface restrict water movement. Dynamic competitive ecosystem in		

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
67	vegetation height, % cover of plant species, no of seedlings	?	There was no significant variation between the two regions and herbicide treatment so those results could be pooled. Glyphosate treatment significantly reduced the height and cover of the Molina on "White Moor" plots throughout the experiment. Other treatments had some singnicant effects but no consistent pattern, e.g glyphosate addition caused significant increases in Deschampsia flexuosa cover on Dales White Moor over the control as a response whilst in the North Peak the same treatment caused the greatest decline in cover. Glyphosate apperaed to adversely affect existing heather cover. Heather seedlings may germinate on seeded plots but survival appears low and in some plots declined to the background levels found in	standard tests, univariate and multivariate analysis of variance, Monte Carlo	n

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
68	estimates of area and missing volume of eroded soil at 399 field sites, within a 10m and 50m radius circle. Short term loss or deposition rates in erosion gullies was measured using vertical measurements to tapes stretched between fixed pins at the gully sides	every 2 years	an estimated 18,025 ha of erosion driven by water (including gullying and hagging in blanket peatlands), and 0.242km3 of soil/peat had been estimated lost. Another 6,541ha of eroded land was attributed to biotic pressures (animals and humans) resulting in 0.04l km3 of soil lost. Upland erosion increased by 518ha and 1,333 m3 (2.57m3 ha-1) over 2 years between surveys, with almost all of this additional erosion being due to biotic factors. Although less extensive in their increases, "Water erosion" including gully/hagg erosion on blanket peat resulted in far greater proportional loss of volume; this type increased by 114m3 on less than half a hectare (>228 m3 ha-1). Bare and revegetated eroded ground covered similar areas. Gully		n

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
69	, initially, tiller numbers, length of longest leaf and total shoot length. Following treatment, measurements were made of tiller number, leaf number leaf length, number of seed heads, shoot and root dry weight. For Calluna only inital and post-treatment total shoot length was also measured. Effective dose required to elicit a 50% reduction in response relative to the control (ED50) was modelled for each combination of herbicide and plant, using sigmoidal, linear, log or exponential curves.	single measure	Only three hearbicides (glyphosate, quizalofop-ethyl and sethoxydim) produced a sufficient response to calculate ED50 for Molinia caerulea, with recommended doses of 0.41-0.67kg active ingredient ha-1. The different biological parameters measured responded differently to different herbicides and doses. Only glyphosate reduced root growth to 50% of control growth, quizalofop-ehtyl reduced Molinia tillering at low doses, but only reduced flowering at high doses. Only glyphosate produced a sufficient response in Calluna to calculate an ED50 value, and application reduced shoot length in Calluna at 13 times lower application levels than for Molinia. Some graminicides produced significant, but small,	regression and curve fitting - not clear whether ED50 scores were compared statistically.	

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
70	species composition of the vegetation was assessed after 4 weeks 1 year and 3 years, along with sward height in the Molinia-dominated area.	1-2 years	In the Molinia-dominated plots different herbicides had different effects, with propaquizafop and quizalofop-ethyl reducing live Molinia cover after 4 months, but after 1 year cycloxydim and glyphosate becoming more effective at reducing live cover, and after 3 years, only glyphosate showed significant reductions compared to the control. All the herbicides mentioned above resulted in singificant increases in dead molinia after 4 months, which were stll evident after 1 year, but had declined to control levels afer 2 years. Higher rates of herbicide application resulted in larger reductions in Molinia cover. There were no effects of treatments on cover of other species. In the Calluna-dominated plots glyphosate and cycloxydim significantly reduced live	ANOVA and RDA (CANOCO)	n

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
71	plant species cover 1 to 3 times each year, along with cover of bare ground, sward height, litter depth, Calluna seedling density (from year 3)	1-3 times annually	Cutting treatment significantly increased cover of bare ground following the first year of treatments, and reduced vegetation height throughout the study, with the greatest impact in the thrice-cut plots. Cutting twice or three times, also significantly reduced cover of Molinia 6 and 7 months into the study, and after 21 and 32 months, and increased seedling density of Calluna after 21, 32 and 44 months. Plant diversity was significantly reduced by grazing and increased by cutting, but only in the last year. Calluna seedling density was increased by herbicide treatment after 1 year and reduced by grazing after 2 years, and there was no apparent influence of heather brash. Multivariate analysis of the vegetation composition indicated that, over time, all	analysis of variance to compare treatment effects and RDS (CANOCO) to examine overall vegetation trends	y

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
72	assessment of vegetation composition and cover in 4m2 quadrats, and monitoring of water table in dipwells using WALRAGs.		there were differences in the vegetation composition of the ground flora under younger (13-20 year old) plantations and older (25-35 year old) plantations, with older plantations being dominated by needle litter and bryophytes (Hypnum cupressiforme, Rhytidiadelphus loreus, with some Sphagnum capillifolium and other woodland mosses), with younger plantations having a more even balance of herbs, dwarf shrubs and bryophytes (Calluna vulgaris, Molinia caerulea, Potentilla erecta, Sphagnum capillifolium, Erica tetralix) more similar to intact bog which supported E. tetralix, C. vulgaris, Eriophorum angustifolium, Narthecium ossifragum, S. capillifolium and S. tenellum. Felling of younger plantation resulted in expansion of M. caerulea and	None	no

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
73	pH, peat depth, altitude, aspect, slope, conductivity and a range of vegetation data.	5 months fieldwork spread over two years	there were signifcant correlations between: vegetation height and overall plant diversity; altitude and overall plant diversity; peat depth and Sphagnum species diversity; peat depth and abundance of seven Sphagnum species.	DCA, GLM, CCA	yes

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
74	A mapping exercise was carried out in 1979 of moorland vegetation and land cover on the gritstone areas of unenclosed moorland of the National Park, assigning vegetion at a landscape scale, by visual estimation, to 6 main categories (Heather, Cotton-grass, Crowberry, Bilberry, Acid Grassland and Bracken), as dominant or co-dominants, also noting "Juncus spp." to indicate flushes and marshes, and areas with abundant Eriophoroum angustifolium. Some of the areas surveyed were compared with the extent of analogous vegetation and soil erosion types also surveyed in 1913. Bare and/or eroding soil/peat was also mapped, both in the field and using 1976		In the 52,252 ha area surveyed, areas where heather was dominant or co-dominant were the most extensive vegetation (32%), followed closely by acid grassland (30%), and then by Cotton-grass (25%) and Bilberrry or Crowberry dominated or co-dominated areas made up a further 25%. Comparison with 1913 maps indicates that the total moorland area had declined by ~2000ha, this being mainly due to forestry and some agricultural improvement. On the Kinder and Bleaklow area (367 km2) extent of Eriophorum-dominated vegetation had apparently declined from 56% and 24%, respectifvely, to 35% and 16%, and concomitant increases in bilberry, crowberry and, in some areas, acid grassland between 1913	For vegetation comparison, none provided, although data is appropriate for Chi-square analysis. For erosion study spearman's rank correlations used. I applied a PCA too.	y

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
75	invertebrate abundance and species at 36 points arranged over a 6m by 6m square positioned over the grips and in sweep net samples. Broad infomration on vegetation community composition and incidence of grouse faeces were also recorded. Sampling took place in July and traps were left for 10 days, collecting samples in ethylene glycol, before collection and identification to family, genus or species level where possible.	single measurement	both sites were dominated by Calluna vulgaris and Politrichum and juncus more in evidence near the grips. The report suggests that grouse droppings were more abundance near the blocked grip than the open grip, but there is no statistical analysis, or even mean values, presented to support this. There were no significant differences in the shannon diversity index for inverebrates between the sites based on either the sweep netting or pitfrall trapping. More tipulids (presumably larvae) were collected at the blocked site than the gripped site, and more chironomids from the open grip site, than in the blocked site. Vegetation communities recorded were more similar between sites than communities of invertebrates from sweep	Spearmans Rank Correlation Coefficient, oneway anova, t test, Jaccard's coefficient of similarity	y

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
76	macroinvertebrate abundance and richness, and stream water concentrations of SO4, particluate organic matter, suspended sediment and aluminium.	5 samples over 2 yrs approx	mean concentrations of SO4, particluate organic matter, suspended sediment and aluminium were all highest in drained streams. Mean invertebrate abundance and richness was highest in drain-blocked and intact sites and lowest in drained sites.	PCA, ANOVA, CANOCO, RDA, ANOSIM	yes
77	number of shoots per original shoot planted and total length of living E. angustifolium leaves.	annually at the end of the growing season	Pot-grown plants had greater increases in the length of living leaves, than directly introduced plants, and those grown in ericacous compost produced significantly greater leaf lengths. Fertiliser and lime, or alginure soil improver, resulted in greater leaf lengths, than control or fertiliser only plots. The laboratory experiment indicated that the growth responses were due to pH changes more than calcium availability, with significantly higher (almost four times) root lengths produced at pH 3.7 than at pH 2.9 or 3.1 in standard nutrient solution, and 38% increases in shoot length when peat pH was raised from 2.9 to 3.6 using sodium		

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
78	flow rate at V-notch weirs, rainfall and other climatic data from a nearby (1.6km max) weather station supported by readings from rainfall collectors at the weirs.	continuous monitoring of flow, checked daily, and weekly measurements at rainfall collectors. Data were compared to predicted peak flow times based on models of catchment flow, based on mapped channel length.	the two artificially-drained catchments had flood hydrographs that suggested a significantly shorter mean response time to peak flow (flashier flow), than the catchments with natural drainage, based on data from all storm events in the four catchments, except those involving snow, over two years. There was no detectable difference in the storm percentage runoff (efficiency) between	Not mentioned	n

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
79	fortnightly of POC and DOC in samples taken at 5-15, 25-35 and 45-55 cm deep into the peat, and in runoff samples collected using crest-stage tubes on the tracks. Automated runoff recorders were used to time the initiaion of runoff events, and peat samples were taken from depths of 10, 30 and 50cm and analysed for bulk density. Point quadrat estimates of vegetation cover and composition were made in four split sampling plots placed at 5m intervals along the tracks in August/September during 2 consecutive years, and total above-ground biomass samples taken in the first year.	1 vegetation measure per year,	Vascular plant biomass was significantly higher on the control area than on either of the tracks, for both dwarf shrubs and graminoids. Vascular plant species richness was significantly lower, Sphagnum cover lower and bare peat cover higher, on the more recently abandoned track, than on the control or older abandoned track. Runoff events occurred 5.5-7.4 times more often on the tracks than in the control. Runoff on the more recently-abandoned track contained more POC than the control or the longer-abandoned track. There were no impacts of tracks on DOC concentrations in runoff or soil solution, or on peat bulk density.	ANOVA with Tukey HSD tests on log or reciprocally transformed data.	y

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
80	Sphagnum height increases, during summer months only, using a modified cranked wire method, and visual assessment of percentage cover. At the end of the experiment samples were taken from the planted plugs and analysed for water content. Monthly or bi-annual measurements were made of water table in dipwells		larger plugs maintained or increased size better than smaller ones, responses to water table were species specific, with S. cuspidatum losing more cover at low water tables than at high water tables. S. rubellum and S. fuscum declined initially and then increased again, but only S fuscum, with larger plugs, increased significantly above the cover planted initially, especially at lower water tables.	ANOVA and repeated measures ANOVA	n

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
81	In the experimental plots, % cover of Sphagnum was evaluated after 1 growing season, and subjectively assessed after 6 growig seasons. The larger monitoring plots were assessed for % cover of Sphagnum and species diversity in three large plots after 5 or 7 growing seasons.		After one growing season, plots in the S. capillifolium area recovered around 14% Sphagnum cover, and in the S. fuscum area, around 33 % Sphagnum cover. There was no benefit to Sphagnum cover recovery in cut plots of adding straw mulch, or of reintroducing Sphagnum, after 1 growing season, and there was no visible difference between plots observed after 6 growing seasons. Monitoring of the areas left to regenerate naturally for 5-7 growing season show very little difference in community composition from intact bog. The S. fuscum dominated area had recovered full sphagnum cover, but contained more S. capillifolium than originally, while the S capillifolium area had recovered to 77% Sphagnum cover, with Eriophorum	ANOVA/GLM	y

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
82	Sphagnum cover, diameter of Sphagnum colonies and numbers of capitula	monthly (lab) and annually (field)	S. fuscum regenerated best from fragments which included a capitulum, compared with branches and stems, while S. magellanicum regenerated well from all except branch fragments, produced greater cover than other species, and more new capitula under a higher water regime. S angustifolium was the only species studied that could regenerate from branches alone as well as from capitula, while S nemorosum only regenerated from fragments of both captula and stem, and did not establish well on either low or high water tables. Fertiliser treatments enhanced Sphagnum growth. Addition of Sphagnum propagules in the field experiment resulted in greater capitulum density after both 1 and 2 growing		

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
83	Number of Sphagnum capitula in regenerating plots, and cover of Sphagnum, either as a percentage, or as as ratio of the area from which the diaspores were collected.	annually for field depth increment trial, weekly for lab 1cm increment trial	Only Sphagnum material from 0-10cm regenerated significantly more capitula than control untreated plots, and that most species regenerated best from fragments originating less than 6cm below the capitulum. Fragment length made no difference to regeneration, but greater densities of application resulted in greater cover, and larger species (with larger fragments) produced more cover than smaller species. Sphagnum fuscum had a higher ratio of area restored compared to area from which diaspores were collected than Sphagnum magellanicum, which was 40-44% as effiicient at producing cover from diaspores, and lower application rates resulted in the highest area restored, per unit area collected (340:1 for S. fuscum at 150 fragments m-		

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
84	percentage cover of plant species/groups, cover of bare peat, vegetation height, and heather growth stage in 30 randomly located 2 m by 2 m for each plot. At the plot scale, observations of grazing animals, flowering of dwarf shrubs or cotton-grass and growth phase/vigour of dwarf shrubs. Peat pH and moisture were measured in 10 locations across the plots and fixed point photographs taken. Monitoring took place in 2006, 2008 and 2010.	three times (2006, 2008 and 2010)	vegetation height increased significantly from 2006 to 2010 at both Lamb Hill plots and at both Sykes farm plots. At Lamb Hill there was a significant reduction in bare ground and increase in vegetation cover at Lamb Hill, with one plot increasing in graminoid cover, and another increasing in non-Sphagnum moss cover from 2006 to 2010. The plot subject to the herbicide and seeding treatment at Pikenaze had singificant reductions in total vegetation and Molinia caerulea cover from 2006-2008, and significant increases in Campylopus moss from 2006-2010. By 2010, the Bowland sites had not yet met SSSI condition targets for sufficient Sphagnum cover, and had too great a graminoid cover, and at Pikenaze, the absence of	Kruskal-Wallis, with Dwass-Steel-Critchlow-Fligner tests, and or Mann-Whitney U tests. Community changes were explored using detreneded correspondence analysis.	y

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
85	a range of meteorological and soil descriptive properties, plant vitality symptoms, and vegetation percent cover changes in permanent quadrats.	Cover and vitality scores started before treatments in 2002 and on several occasions to 2009	Within 3 years, exposure to relatively modest deposition of dry NH3, 20–56 kg NH3-N/ha/yr led to dramatic reductions in species cover, with almost total loss of Calluna vulgaris, Sphagnum capillifolium and Cladonia portentosa. These effects appear to result from direct foliar uptake and interaction with abiotic and biotic stresses. Some other species, including Eriophorum vaginatum and S.fallax and S.papillosum were less damaged. Wet N treatments caused much less damage than dry N, but strong negative effects of wet ammonium chloride were found in Sphagnum capillifolium where cover was significantly decreased in 24 kg N/ha/y treatment of ammonium chloride. When data was expressed in terms	subjective vitality scores not statistically analysed; living cover data analysed using ANCOVA after normality testing and appopriate transformation; litter stems and dead Calluna analysed using 2 way generalised model, post hoc tests used to separate treatment effects where overall significance was found.	y

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
86	, annually for 4 years, of percent cover of plant species, rock, bare peat, water and tree remains in 5 1m by 1m quadrats nested within each of 77 10m by 10m randomly-distributed permanent quadrats. Clearance method, estimated clearance date, peat depth, slope, number and diameter of tree stumps were recorded at each permanent quadrat. Permanent quadrat locations were stratified for geographical spread and to represent an uneven spread over the 3 felling methods, an uncleared area of Picea sitchensis and an area of existing blanket bog vegetation. Monitoring plots were established from 0-2 years following felling, and those		felled sites showed a significant and consistent change in community from being similar to older Sitka-dominated plantation, towards M19 communities (represented both by intact bog sites and by computer-generated communities). There was little difference between types of felling treatment. Younger sitka plantations had vegetation more similar to the M19 communities. Analysis of the species in these communities showed competitive or woodland species associated with recent felling (Chamerion angustifolium, Holcus lanatus, Dicranella sp.), Eriophorum vaginatum, Molinia caerulea and Potentilla erecta being associated with the gradual reversion towards bog vegetation and more intact bogs being assocatied with	detrended correspondence analysis, canonical correspondence analysis and redundancy analysis. Cover of major species and decomposition in the wood chip experiment was compared using a univariate linear mixed effects model on log transformed data with an orthogonal contrast analysis, and community data analysed using multivariate principal response curve anslysis. Diversity indices and PCA were used to assess	y

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
87	Ground level and peat depth were originally surveyed in 1966 using metal pipes driven into the mineral substrate belwo the peat as reference points, and taking measures on a 50m grid. Limited transects were re-surveyed in 1987 and two of these were re-surveyed in 1996 for the current study. One of these transects was 430m long ran across unplanted bog, a shelter belt, the area planted in 1989 and the area planted in 1968. The other was 75m long, and ran between 2 of the 1968 planted plots crossing a small unplanted areas between. At points along these transect, measurements were taken of suface height, water content, water table and	once only for this study - see text	subsidence was greatest from 1966 to 1996 in the afforested plots planted in 1966 and furthest from the plantation had changed the least. In plots planted in 7 years previously subsidence was about half of that in the 30 year old plots. Outside forest plots, subsidence was only detectable within 40m of the forest edge where the data suggest a mean of 26cm subsidence occurs reducing to 0cm 30m from the edge. Within the forest, rates of subsidence were variable. Points in the forest had significantly greater subsidence in those plots that received the most intensive drainage treatment in the 1960s. Subsidence in drained but unplanted areas observed to be less than those in drained planted areas. Comparison of the 3 surveys	ANOVA and linear regression	y

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
88	vegetation cover	annually for 4 years, then once, again, after 17 years.	fertiliser and lime application increases likelihood of establishment and cover of vegetation on formerly bare and macerated peat. Effects continued to persist 17 years after treatment. The composition of the vegetation was not reported.		

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
89	number and height of seedlings (1st experiment), number of shoots per introduced platn, tussock diameter and estimations of number of living shoots (2nd experiment), plant cover (3rd experiment), and expansion of Spghanum plug, shading and peat surface moisture (subjective scores), pH, water table and Ca2+ and K+ ions in the soil water(4th experiment).	annually (for the first experiment)	some parts of the experimental site were subject to minerotrophic water ingress. Cover materials singificantly increased germination of E. angustifolium, Molinia caerulea and Calluna vulgaris, C. rostrata did not germinate and E. vaginatum germinated well on both bare and uncovered ground. Timing of removal of covers made no different to germination, and seedling numbers of most species declined in the second year. Fertiliser application didn't increase Eriophorum vaginatum except to increase the proportions of livign shoots, but increased number and spread of shoots of C. rostrata and E. angustifolium. Fertilised plots showed spontaneous germination of Rhynchospora alba, Drosera intermedia,	ANOVA with Tukey test, t-test or Wilcoxon tests	y

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
90	A transect of dipwells/boreholes was established crossing three drains (grips) at Burnt Hill and another crossing three drains at Bellbeaver, with six upslope and six downslope of each drain. The midpoint dipwells between drains acted as both upslope and downslope points. Water table in these dipwells was measured on 22 days over 1.5 months in June/July. At both sites, transects of 8 boreholes were also established in nearby vegetation away from the drains. Dipwell data were compared to rainfall data, and regression used to define loglinear slopes to characterise the relationship between them in terms of slope (ie. lower slopes mean that the	dipwells were assessed every 1-3 days	significant regressions between rainfall and borehole water depth were found for all boreholes at all sites, and the response of the dipwells at midpoints between the grips was not signficantly different from that of the boreholes in intact vegetation, and were therefore used afterwards as "control" reference points. There were significant differences between dipwells, and sampling dates, and a significant interaction between these factors. Depending on site, mean water tables at both sites were significantly lower than the midpoints for 2-2.3m immediately downslope of the grip, but only for 0.3-1m upslope of the grip. Water tables in these bore holes were less responsive to rainfall than those immediately above, or distant from, the grip. At burnt hill, 27 years	ANOVA, Kruskal Wallis, regression	y

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
91			studies have shown that afforestation of blanket bog peatlands replaces bog bird assemblages with forest bird assemblages of lower conservation value. Birds are displaced initially to adjacent bog, but the resulting higher populations here are not maintained. There are also likely to be deleterious impacts on birds adjacent to forestry due to the cessation of incompatible management (burning, grazing) causing changes in vegetation structure and due to increased predation of moorland birds by woodland or woodland edge species such as crows and foxes, which may also cause birds to avoid bogs near woodland when selecting breeding or foraging sites. This is borne out by studies of minimum range area thresholds for rarer moorland		
92	individual plant counts and plant species cover indicated by point quadrat.		it is possible to establish plants of heather on bare peat and mineral soil in the peak district.		

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
93			blanket bog covers at least 22,500 km² of the British Isles, which represents an Internationally important proportion of this habitat. Whilst the bulk is found over 450-500 metres the lower limit ranges from sea level in the far North and West rising south and eastwards to around 350 metres in the South Pennines. The upper limit in the Highlands is approximately 1070 metres. Bog formed on even terrain rarely exceeds 3.5 m in depth, on uneven terrain 5-6 metres over hollows is not unusual but peat over 7m thick is an exception. Sphagnum is often a major component in peat but that woody plants may play a structural role in supporting the more flimsy moss whilst living. CLimatic requirements for blanket bog formation are proposed as mean annual		y

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
94	vegetation height, litter depth, floristic composition, dry matter yield (for different species) and Calluna seedling density (after 1 and 2 years)	1-2 times annually in summer, including initial measure at point herbicide treatment.	Molinia standing crop seemed to be greater where tussocky growth forms were prevalent (max 5.33 t dm ha-1). Spraying with glyphosate significantly reduced vegetation height, and significantly interacted with time. Grazing also significantly reduced vegetaiton height at 2 sites. Burning only reduced height slightly at 1 site. In one site burning and grazing had an interactive effect to reduce sward height, while at another burning and herbicide caused an increase in sward height. There were no universal effects of treatments on dry matter yield, with grazing and burning, both individually and interacting, causing reductions in dry matter yield at some sites. Impacts on litter depth varied between sites, with some sites showing significant reductions in litter depth due	ANOVA (GLM) on transformed and untransformed data	n

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
95	cover of Sphagnum capitula, length of 5 randomly selected Sphagnum shoots, and water table during the growing season.	Sphagnum assessments annually, and water tables 8-11 times per growing season.	there were variations in rates of sphagnum growth between years, which interacted with water table. Water tables mostly varied between 35 and 10cm below the suface in the drier plots, but between 25 cm below and 10cm above the surface in the wetter plots. After 1 year, capitulum treatments gave higher cover than stem treatmetns wtih no difference of water table level, after 2 years, the cover was higher in the lower water table treatment and the higher water table treatment was often flooded. In the drier plots shoot length was higher in the capitulum treatment, with no difference between capitulum and stem treatments in the wetter plots.	ANOVA	y

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
96	, in the first case study, suspended solids, COD, total P, and N concentrations in drainage waters. In the second case study vegetation dynamics and Carbon fluxes were measured for 1 growing season before and 4 growing seasons after rewetting.	annual data presented	before felling and ditch blocking the water quality leaving the forest block was the same as that entering the stream, but after treatment, P increased temporarily, suspended solids reduced to almost nothing and nitrate-N concentrations were halved. The two rewetted areas of peatland showed increased methane emissions, alongside increases in cover of Eriophorum and rises in water table, and sites either became less of a carbon source or became a sink after 4 years.	none	n

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
97	flow through different-sized pores, using tension disc infiltrometers and 3 different water tensions were made at 42 points were sampled during July, these arranged upslope and downslope of the drains, or in equivalent positions in the intact catchment. Measurements were also made of bulk density at 14 points in each area and water table depth at 9 dipwells in each area, at 20 minute intervals over 18 months.	single measure for infiltrometers, 14 times during study (during July)	mean water table in the intact peatland was highest (-5.8cm) and remained at the surface for longest (18% of time), compared with -10.1 cm in the drained area and -7.3 cm in blocked area which had water tables at the surface for only 2% of the time. All areas had high macropore flows (>60%) but the intact area had significantly higher macropore flows than the drained or blocked areas. Surface hydraulic conductivity was significantly higher in the blocked area, than in the drained area. The blocked area had a significantly lower bulk density at the surface (0-5cm) than the drained area.	ANOVA and t-test	n

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
98	water table height, pore water pressure and soil water solutions chemistry including DOC and E4:E6 ratio.	monthly	there were significant differences in DOC concentrations and water colour values. DOC concentration values from drained peat were significantly greater than intact peat and those from Intact peat were significantly greater than those from grip-blocked peat. At all three sites, DOC and absorbance were signifcantly and positively correlated. However, median colour/carbon (c/C) ratio was significantly lower for the intact and drained sites compared to that of the blocked site (ie. the DOC is more coloured at the blocked site). The drained area had significantly higher water colour values than intact area. DOC and absorbance varied with soil depth. There were significant differences in the E4:E6 absorbance ratios between treatments, with	correlation and regression analysis	yes

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
99	wind-blown sediment (termed horizontal flux) using fixed position bottles extending 30cm above the peat surface with a vertical collecting slot cut on the side of the prevailing wind. Other samplers were used which pivoted towrads the prevailing wind, and collected sediment at different heights above the ground. An automated weather station measured wind velocity at 4 heights, wind direction, rainfall, soil moisture and soil temperature.	every 30 minutes for the AWS, samplers were emptied monthly.	most sediment was trapped when there was a combination of high winds, heavy rainfall and frost, but had similar avearage rates of collection during other times. Sediment collection was 3-12 times greater in the traps facing the prevailing wind than those facing the opposite way. Assuming a fixed source area downwind of the traps, the erosion rates of 0.46and 0.48 tonnes ha-1 were calculated. Friction velocity (wind shear stress) was greatest in winter months, but did not correlate with sediment trapped. Most sediment was trapped at lower heights above the peat surfae, with very little being trapped at 30cm above ground. The proportion of mineral material:organic material trapped increased with height.		y

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
100	water table and discharge.	In stream/drain measurments every 15 mins, other data fortnightly.	water tables recovered in all catchments but at different rates. Physical factors, such as slope and peat depth, influenced water table recovery. Overall, there was a strong increase in surface water in response to blocking. At both drain and stream levels, average discharge rates were significantly lower after blocking.	Regression, GLM	Yes

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
101	water table, water colour, DOC, POC and discharge.	15 mins for flows, 10-14 days for other parameters.	dipwell data was very variable so no overall trend was detected. Drain blocking appeared to result in more stable and higher flow rates during droughts, and slower declines in flow rate during first 5 days of drought periods. Stream discharge followed the same pattern as drain discharge, with flow rates across all catchments being higher and hydrograph recession rates generally slower after blocking. Accounting for flow rates, the 'total' colour released showed a slight decline in drains after blocking. In drains, DOC concentration during droughts increased significantly after blocking but as with colour, flow-weighted loads showed slight declines. This variation not apparent in streams. Neither POC concentrations nor POC loads released	Regression, GLM	Yes

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
102	pH, conductivity, Dissolved Oxygen (DO) and DOC/POC.	fortnightly	pH value and conductivity levels declined significantly in drains after blocking, with pH also declining in streams. DO showed a slight matching trend but this was strongest during high rainfall periods after blocking. There was no real trend present in the absorbance data, although absorbance in discharge waters during high rainfall events decline over time. DOC yield declined considerably after blocking although DOC concentrations in streams and drains a showed slight increase. Grip blocking resulted in marked declines in the annual flux of DOC and POC.	generalised Linear Modelling, Regression, PROC GENMOD	yes

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
103	peat erosion was mapped in detail from aerial photographs and classified as linear, anastamosing or dendritic, and the state of the peat margin classed as indistinct, a peat scar, or lightly or densely dissected. Peat slides were also mapped. Field visits were conducted to confirm the mapping and gullies measured, and aerial photoghaph of different ages compared to assess change in gullies over time (1920's, 1951 and 1983).		Erosion was most prevalent on high hill tops, with anastamosing erosion associated with flat or gently sloping ground and linear gullies in areas with steeper, more uniform slopes, and dendritic patterns occur where topography funnels flow towards a single point. Linear and dentritic erosion were more common, reflecting a lack of flat ground in the study area. Erosion covers 37% of the peat in the study area. Upper reaches of gullies have high top width:floor width ratios, and frequently extend through the entire peat depth, "older" gullies (presumably represented downslope) have wider bases, but those that incise into the mineral material have narrower bases. Gullies entirely in the peat have squarer profiles (less V-shaped). Comparison of	none	n

	Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
104	metanalyses of the results of comparative field studies looking at the impact of land management on elements of carbon and greenhouse gas budgets. Studies were characterised on whether they had demonstrated an improvement in the budget (ie. improved C storage or reduced greenhouse gas (GHG) emissions), and the number of studies showing improvements were used to calculate a probability of any new study reporting an improvement. These, and the number of studies, were weighted against assumed relative importance of the components in the carbon budget (based on a carbon budget study at Moor House) or scaled to reflect		the metananalysis suggested that managed burning (presumably its introduction) and deforestation would be unlikely ($P<0.5$) to improve C or GHG budgets although the error associated with the estimates for deforestation was very high. It also suggested that drainage would not very likely to improve C budgets but may ($P=0.5$) improve GHG budgets, drain blocking was similarly unlikley to improve C budgets ($P=0.5$) but was more unlikely to improve GHG budgets. Seven of 13 studies saw reductions in CO_2 emissions from soil respiration following grip blocking, while 5 showed no change and 1 showed an increase. However, 9 out of 9 studies considered showed increases in methane emissions following blocking of grips. Equal numbers of the	bayesian meta analaysis	n

Measurement types	Measurement frequency	Main findings	Statistical tests	well described habitat/situation?
105	, at each of two plots for each site, of water table at three dipwells,net ecosystem respiration, gross primary productivity and net ecosystem excyhange of CO_2, and methane flux, at three gas collars (along with temperature and photosynthetically active radiation (PAR)), and rates of surface lowering using 12 erosion pins. Stream discharge was monitored, and storm waters sampled using autosamplers, at v-notch weirs at the catchments for both vegetated and bare plots and for two of the revegetated plots. One further revegetated site was also monitored to provide analogous data for 2 revegetated sites that could not be monitored in	monthly	lowest DOC flux was from the Eriophorum-dominated site (13 tonnes C km-2 yr-1), and highest was from the dwarf shrub dominated site with managed burning (96 tonnes C km-2 yr-1), bare peat and restored sites varied between these extremes. POC flux was least from the Eriophorum dominated site (3.4 tonnes C km-2 yr-1) and most from the 2 bare sites (155-206 tonnes C km-2 yr-1). The dwarf shrub-dominated site, and the flow-only monitoring restoration had relatively high POC export (~38 tonnes C km-2 yr-1) while at other restored sites this was approaching the Eriophorum control, at 6-8 tonnes C km-2 yr-1. There were no significant differences found between dissolved CO_2 levels on any site. CO_2 fluxes indicated that both existing vegetated sites were CO_2	ANOVA, although testing is not consistently reported.	y

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
1			++	measured slope and used it as a covariate in the analysis.	A field-based treatment/control comparison study and controlled before/after study (Anderson et al., 1995 [1++]) at Bad a Cheo examined peat 3-5m deep, fibrous acrotelm, with oligofibrous peat beneath, dominated by Trichophorum cespitosum, Cladonia portentosa, with abundant Sphagnum capillifolium, Eriophorum angustifolium, E. vaginatum, Erica tetralix, Sphagnum papillosum, Narthecium ossifragum and Calluna vulgaris.. The following interventions were applied. Twenty-four 45 by 100m plots received treatments of 30cm deep double-mouldboard ploughing with 90cm deep drains spaced at 9, 14 or 18m at right angles to	Matthew Shepherd	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
2			-	is a series of many unreplicated trails with single plot treatments and multiple measures within over many years.	A field-based treatment/control comparison study - unbalanced, or survey (Anderson et al., 1995b [2-]) at Peak District examined at Harrop Moss (peat surface changes), the study area was a blanket peatland subject to a recent fire, causing patches of bare peat and vegetated areas, and a range of topographies. At Peaknaze (screefing) the sites supported a shallow balnket peatland dominated by Eriophorum species and crowberry. At Snake Pass (transplants and fertiliser) the area was bare deep peat.. The following interventions were applied. At Harrop Moss, a comparison was made over 10 years of rates of erosion along 8	Matthew Shepherd	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
3			++	can only be used to indicate the impact of afforesation on drained peat, rather than impact of drainage, due to lack of non-drained control.	A field-based treatment/control comparison study Anderson et al., 2000 [1++]) at Bad a Cheo examined peat 3-5m deep, fibrous acrotelm, with oligofibrous peat beneath, dominated by Trichophorum cespitosum, Cladonia portentosa, with abundant Sphagnum capillifolium, Eriophorum angustifolium, E. vaginatum, Erica tetralix, Sphagnum papillosum, Narthecium ossifragum and Calluna vulgaris.. The following interventions were applied. double 30cm deep mouldboard ploughing at 4m centres with 90cm perimeter ditches, no planting planting with Pinus contorta, Picea sitchensis, or a 50:50 mixture of	Matthew Shepherd	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
4			-	has poor replication. The only true replication of veg plots (most numerous sample taken) is between 2 sites with no gripping, no erosion and summer only grazing, and those with blocked grips, no erosion and summer only grazing (4 plots, but 3 on 1 site, but widely spaced). If grazing is not included as a factor, there are five plots representing gripped/blocked with no erosion and 3 plots representing sites with no "funtioning" gripping. Are "non-functioning grips" really having no effect? Hydrologically only trends were analysed, with little or no comparison to the control grip, and reductions in water colour observed are not known to be the result of the	A field-based treatment/control comparison study (Anderson et al., 2011a [2-]) at Peak District and Forest of Bowland examined Blanket bog in the forest of bowland (2 catchments) and the Peak District Moors (1 catchment) subject to gripping, or where there has been no gripping (or grips have been judged to be no longer functioning).. The following interventions were applied. Reductions in, or temporary cessation of, grazing, grip blocking with plastic dams or peat dams, fencing off of steep cloughs (non-peatland treatment) and planting of woodlands, cessation (at Goyt) or control (at Whitendale and Brennand) of rotational burning.	Matthew Shepherd	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
5			-	has no replicated control treatments, and in some cases no control treatments at all.	A field-based before/after study (Anderson et al., 2011b [2-]) at Peak District examined Blanket bog sites with severe erosion, gullies and bare peat exposure. Intact areas supporting mainly cotton-grass (Eriophorum spp.) with more Vaccinium myrtillus and Empetrum nigrum on the drier peat. Calluna vulgaris is abundant on Arnfield Moor and parts of Quiet Shepherd.. The following interventions were applied. stock removal, gully blocking, and various combinations of peat surface stabilisation with geojute and/or heather brash, and seeding with grass, along with fertiliser and lime. The study also examined bare peat areas ("peat pans") and those	Matthew Shepherd	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
6	no	no	-	comparative survey approach with bias towards Nardus dominated sites. Unknown scale and timing of impacts. Data on fungi fruiting bodies are not presented. No statistical analysis. Beetles, spiders and harvestmen only assessed at one site (pseudoreplication).	A field-based treatment/control comparison study (Ardron, 1999 [3-]) at Peak District examined blanket peatland (it is not possible to infer the initial state of the vegetation). The following interventions were applied. Past peat cutting - removal of peat turves, probably down to the mineral material beneath. . Measurements were taken of a survey-based approach comparing three sets of 8 sample sites (one covering the edge of the peat cutting, one 50m away from this in intact balnket peat and one 50m away from the edge in the cut area). Measurements made comprised estimation of plant cover using the DOMIN scale, species of fungi with	Matthew Shepherd	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
7	n	n	-	gave no description or control of detailed vegetation parameters, only water samples from grips taken, not at catchment drainage point (so no true indication of loss of DOC or colour leaving the catchment). Bias may derive from preferential blocking of bogs in different condition (eg. preferential blocking of bogs with less degradation). ANOVA analyses applied were one-way when a factorial approach was possible using an unbalanced GLM appraoch that could have controlled for other factors. The number of grips/samples falling into each category is not stated. "Burnt" treatments are defined by presence of burning within catchment,	A field-based survey and treatment/control comparison study (Armstrong et al., 2008 [2-]) at Scottish Highlands, Pennines, Exmoor examined the survey was targetted at gripped and grip-blocked upland peatland. The reported monitoring site at Wharfedale was grip-blocked in 1999.. The following interventions were applied. the survey reflected gripping and grip blocking at some unspecified date, also comparison between catchments with burning (as assessed by aerial photo interpretation) and without burning, and between grazed and ungrazed catchments (although it is not clear how this was assessed).	Matthew Shepherd	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
8	n	n	+	may not have been able to identify sites where dams have totally failed and no trace remains. The data presented here are the same as in Armstrong et al 2009). Again, this study has failed to pick up that peat dams represent a disproportionately high number of class 5 (intact and redistributing water) examples.	A field survey (Armstrong et al., 2009 [2+]) at thirty two survey sites, across the Pennines, northern Scotland and Exmoor examined gripped sites that had been blocked using a variety of damming methods. The following interventions were applied. . Measurements were taken of substrate, surface wetness, topography, drain dimentions and shape, type of damming and dam effectiveness, at 278 drain-blocks throughout the sites studied. Dam effectiveness was scored as 1 (total failure), 2 (partial failure), 3 (intact, but not effective at higher flows), 4 intact but not redistributing water, and 5 (intact and spreading water over peat surface). They found that most	Matthew Shepherd	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
9	n	n	+	suffers from many of the same biases as Armstrong et al (2008) which reports mostly on the same data No replication of autosampler, possible bias in survey site selection towards less damaged peatlands, unbalanced range of grip block types assessed, and these with geographical trends. Poor characterisation of vegetation at sites that does not distinguish dry grassland from wet balnket bog dominated by cotton grass. Also visual characterisation of burning may have classed late rotation burns as unburnt, and the scale of assessment isn't clear. However, statistical analysis of the data is more robust in this paper, which reports a longer run	A field-based survey and treatment/control comparison study (Armstrong et al., 2010 [2+]) at Scottish Highlands, Pennines, Exmoor examined Gripped peatland, peat 2m deep, some grips blocked at a previous, unspecified time, and monitoring site at Wharfedale . The following interventions were applied. grip blocking . Measurements were taken of survey recorded location, altitude, orientation of drain, slope, channel width and depth, peat depth, ground wetness, drain class (functioning state of drain), effectiveness of blocks (scored 1-5), blocking method, block spacing, vegetation in channel, vegetation type on slopes	Matthew Shepherd	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
10	n	n	+	more detail, and perhaps factor analysis of the vegetation communities would have been useful, with less reliance on indices. Survey of a wider range of restoration durations may have revealed more. It is not clear whether transects crossed drains or were on 1 side only, in which case the upslope/downslope orientataion is likely to have influenced, or provided a source of bias.	A field comparative survey (Bellamy et al., 2012 [2+]) at Forsinard examined four seperate sites supporting low-altitude (100-200m a.s.l.) blanket peatland, comprising two sites where drains had been blocked (3 years previously at 1 site, and 4, 5 and 11 years previouly at the second site), and two where drains remained open.. The following interventions were applied. . Measurements were taken of species identify and percentage cover along 3 transects perpendicular to the drain at 10-20 randomly-selected locations at each site. Data were used to generate Ellenberg moisture values (F index) to indicate drier (F=4 to 7) or wetter (F=8 to 10)	Matthew Shepherd	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
11	yes	yes	++		A field-based treatment/control comparison study (Boudreau & Rochefort, 1998 [1++]) at Riveiere-du-Loup, Quebec examined post-mined (cut-over) peatlands, abandoned for 5 years, then with drains blocked for a further 5 years. The experimental sites supported 3 different vegetation types dominated by either ericaceous dwarf shrubs (Ledum groenlandicum, Kalmia angustifolia and Vaccinnium angustifolium), or monospecific vegetation of Eriophorum spissum (tussock-forming) or E. angustifolium with covers of 20%, 35% and 80% respectively.. The following interventions were applied. For each vegetation type, the site	Matthew Shepherd	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
12	y	y	++	had several typographic errors, which did not affect the likely quality of the reserach.	A treatment control comparison and monitoring (Bridges, 1985 [2++]) at North York Moors examined upland area formerly vegetated with a varying mixture of mainly Calluna and Eriophorum sp, but following an uncontrolled fire in 1976, bare peat 30cm to >120 cm with varying degrees of wetness, humification and a "crust" of varying thickness and strength and degree of scorching.. The following interventions were applied. 8 replicates in blocks were established to test the impact of grazing exclusion (non randomised), and randomised applicastion of 8 seeding treatments comprising Calluna mulch, Betula sp., Festuca ovina, Agrostis sp., Festuca	Matthew Shepherd	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
13	n	n	-	plots were not evenly distributed. Sykes Moor had 19, Joseph Patch 18, Shining Clough 4 and the control only 3. In addition there are differences in treatments and changes between the plots and within the wider restoration project. So although there are a large number of quadrats much smaller numbers were available for any individual analysis and the author does acknowledge noisy data. e.g. A fire in April 2003 removed much of the heather brash applied to Shining Clough. There are difficulties in identifying seedling grasses. Only 2 sites recevied treatments of Deschampsia flexuosa seed, because it was not available commercially, and had to be collected	A field-based treatment/control comparison (Buckler, 2007 [2-]) at Bleaklow, the Peak District examined Bare eroding peat with pH ranging from 3.5-3.8 within a larger exclosure area from which grazing livestock had been largely removed. The study site comprised three restoration areas on Bleaklow, Shining Clough, Joseph Patch and Sykes Moor and an intermediate non-treatment control.. The following interventions were applied. Application were made of 1 tonne /ha Calcipril granules (equiv to 1 tonne/ha ground limestone) by helicopter followed by 365 kg/ha NPK fertiliser, (291kg follow-up in subsequent years 2 and 3) and a mix of amenity	Robert Goodison	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
14	n	y	+	has limitations including reliance on one-off or few measurements, and no statistical analysis presented of the dipwell data. There are no descriptions of where the peat samples were taken or from what depth interval (surface sampling is presumed). The study also does not seem to acknowledge that this technique will only establish Sphagnum in the wettest strips, potentially at the cost of wider, but less rapid establishment in a flat-profiled control. Extrapolation of the lines presented suggest that Sphagnum establihment will approach control levels at 4.5-5.5m from the bottom of the V, and might be predicted to be below control levels at greater	A field-based treatment/control comparison study (Bugnon et al., 1997 [1+]) at Riveiere-du-Loup, Quebec examined post-mined (vacuum-harvested) raised bog peatland, abandoned for 5 years, then with ditches filled for a further 3 years. The experimental sites were sparsely vegetated with dwarf shrubs (Vaccinium spp., Kalmia angustifolium, Chamaedaphne calyculata) or scattered trees (Betula spp.).. The following interventions were applied. All areas were first reprofiled to a gentle V shape, to encourage higher humidity and water availability in the centre of these areas, then control areas were reprofiled again, to be flat,	Matthew Shepherd	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
15	yes	no	+	provided no record of the composition of the blanket bog vegetation, although the presence of S. Nigricans remains in the upper peat layers suggest a base rich wetland, rather than an acid bog. However, this species is more prevalent in bogs in the extreme west of the British Isles. There was no replication, and statistical tests are not possible.	A field-based treatment/control comparison study (Burke, 1975 [3+]) at Glenamoy examined 4m deep peatland on a gentle slope with hummock and tussock microtopography. Upper peat layers are mainly Shoenus nigricans litter (Von Post score 5-6) with lower material more humified (von post 9-10) and 90-95% water content.. The following interventions were applied. Installation of 6 different types of drains (of unspecified spacing and depth) in one 0.35ha plot and a similar sized plot with no drainage except a 0.15m deep double drain surrounding the plot to intercept runoff. Grass seeds of an unspecified species were sown on the	Matthew Shepherd	7

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
16	no	no	-	provided no figures to back up any of its contentions, and the timing and locations of the restoraiton and the monitoring are not provided.	A field-based before/after study (Burtt & Hawke, 2008 [3-]) at Peak District examined broadly intact peat areas dissected with small gullies with peat at their base and sides and more severely eroded gullies with bases reaching mineral substrate.. The following interventions were applied. Insertion of regularly spaced plastic piling dams along the smaller, peat-based gullies, and installation of barriers of wooden planks, stones and pine logs across gully bases. . Measurements were taken of dipwells were used to assess water table and vegetation monitoring surveys. They found that the plastic piling dams enabled build up of peat sediment behind them,	Matthew Shepherd	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
17	y	y	++	represents a full meta-analysis of data from various studies. Data on methane emissions is most unequvocal, but measurements of true CO2 balance are far less numerous and absent entirely for restored peatlands. A comparison of the overall global warming impacts of the singificant differences between peatlands from different studies suggests that drained peatlands emit more greenhouse gases than intact ones, mainly due to increased emssions of CO2 and N2O, which more than counteract the reduced methane emission. Based on fewer studies, the rewetting of drained peat will increase methane emissions, but these could	A mainly field-based, but with some laboratory, systematic review of treatment/control comparison studies (Bussell et al., 2010 [1++]) at examined . The following interventions were applied. Long-term re-wetting, or draining of peatlands, or comparisons of peatlands with different long-term hydrological conditions (survey approaches). . Measurements were taken of various measures of amount of C stored in peatlands, or greenhouse gases sequestered or released They found that five studies were analysed which measured all 3 relevant greenhouse gases (CO2, CH4 and N2O) in four Scandinavian mires, and one tropical	Matthew Shepherd	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
18			++	was not fully randomised, in that the water table treatments were not fully ranfomised, being housed on seperate trollies, but these were moved randomly weekly and are unlikely to have introduced singificant bias. The rainwater supplied was accepted to have more nitrogen pollution in it than would be found in natural conditions but was thought not to exceed critical levels for Sphagnum growth.	A laboratory treatment/control comparison study (Buttler et al., 1998 [1++]) at examined five sets of peat core monoliths (45cm long, by 13.3cm diameter) representing different levels of disturbance. These comprised peat from an intact bog; peat from a bog with dry heath Calluna vulgaris vegetation following cutting and draining; post cutting surface peat (0-45cm); post cutting deeper peat (45-90cm); and cultivated, fertilised peat. The most acidic was under Calluna (pH 4.4), cultivated peat had a pH of 5.3 and the others around 5.1. In all cases surface moss root layers were removed and 12 capitula of Sphagnum fallax were distributed	Matthew Shepherd	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
19	yes	y	++	was also reported by Rochefort et al 1995, where the quality assessment mark was lower only due to less specific infomration provided.	A field-based and laboratory treatment/control comparison study (Campeau & Rochefort, 1996 [1++]) at Sainte-Marguerite-Marie peatland in the Lac Saint-Jean region, Quebec examined the field experiment was undertaken on formerly block cut peatland where harvesting operations had ceased 2-32 years before the experiment, and where drains had been blocked with peat dams up to 1 year prior to the start of the experiment, raising the water table to within 20-30 cm of the peat surface. Peat surfaces were bare at the start of the experiment. . The following interventions were applied. Peat cores 17cm diameter and 30cm long were	Matthew Shepherd	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
20	n	n	-	suffers because no statistical analysis was carried out. It is not clear whether there was a control, and it was not possible to relate seperate experimental plots to results. There was no equivalent comparison with untreated areas to provide a case study comparison with the treated site. Only overall spp. richness data provided (not cover, or frequency), and an unknown number of sampling points were assessed. It is not possible to ascribe changes in bryophyte cover to any specific environmental change during this period, although this study does show that conditions in the Dark Peak seem to be	A field-based repeated survey (Caporn et al., 2006 [2-]) at Peak District examined experimental Sphagnum reintroduction was applied to intact peat surface wtih a high water table at holme moss which had been fenced previously to exclude livestock. Surveys of bog pools and their surrounding areas took place on species poor blanket mires dominated by Eriorphorum spp (approximating NVC M20 community).. The following interventions were applied. Application of 30 by 30cm square sections of living Sphagnum plants, representing 6 species (S. papillosum, S. magellanicum, S. capillifolium, S. tenellum,	Matthew Shepherd	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
21	yes	y	+	was not fully factorial in that the controls cannot distinguish the impacts of lime and fertiliser alone on the peat, without reseeding. It does not appear that the initail levels of basal repiration (pre treatment), which showed singificant differences, were related to later measurements. ANOVA on basal respiration seems to have been conducted only between simultaneous samples, so it is not possible to determine if the increases in respiration observed after 3 months are significant compared to other measures. I would question whether it is valid to combine the fertiliser treatments to analyse the basal respiration impacts of lime,	A field-based controlled before/after study (Caporn et al., 2007 [1+]) at Holme Moss, Dark Peak, Peak District examined . The following interventions were applied. A series of 3m by 3m plots were treated during July with factorial combinations of 3 levels of lime application (1000, 500 and 0 kg ha-1) and NPK (11:32.5/16.5) fertiliser at 3 levels (365, 183 and 0 kg ha-1) and all treated 2 weeks later with applicaiton of a grass seed mixture at 171 kg ha-1, comprising Festuca rubra, F. ovina, F. longifolia, Lolium perenne, L. multiflorum and Agrostis castellana. A further set of plots received no seed, lime or fertiliser. In a small scale lab experiment, soils were collected from areas	Matthew Shepherd	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
22	y	y	++	also includes an extensive literature review which provides an extensive overview of Sphagnum ecology, niche requirements, and restoration techniques.	A field-based survey (Carroll et al., 2009 [2++]) at Peak District, Forest of Bowland and North Pennines examined blanket bog (identified by habitat inventory). The following interventions were applied. NA . Measurements were taken of A total of 256 locations were selected for survey across the three study areas, these being stratified to include a range of potentially suitable and unsuitable habitats, based on information on location, altitude, vegetation types (including bare peat), former Sphagnum records and management (burning, grazing, grips, gullies, blocking, revegetation), avoiding gullies and pools. At each	Matthew Shepherd	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
23	y	y	++	had no serious shortcomings.	A field comparative survey (Carroll et al., 2011 [2++]) at Lake Vyrnwy, South Pennines, North York Moors examined 4 paired balnket bog catchments near Lake Vyrnwy, all drained between 1940 and 1980 and half blocked using heather bales during 2007, and also (in the 2nd year of study) 1 pair of drained (1945-1955) and blocked (peat dams, 2006) catchments in the South Pennines, and a pair of drained (1960's) and blocked (peat dams, 2008) catchments in the North York Moors. Vegetation at Vyrnwy was dominated by Eriophorum vaginatum, Calluna vulgaris, Trichophorum cespitosum with some Molinia caerulea and dry grassland. The South	Matthew Shepherd	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
24	n	n	+	Given Molinia can be determined present in earlier layers authors suggest more Dicot and UOM could be attributable to that species but this cannot be proved. The authors propose the site has undergone repeat Molinia/Calluna cycles whereby cool and/or wet conditions favour the former and warmer drier conditions the latter. The paper as a whole proposes repeated changes in vegetation composition over time reflecting climatic influences of which some can be substantiated by the results.	A field Case Study (Chambers et al., 1999 [3+]) at Exmoor examined 2 moorland vegetation types one dominated by Molinia and the other mosaic Molinia and Calluna vulgaris at the two geographical locations. The authors acknowledge the starting point vegetation differs between the two regions within the broad description.. The following interventions were applied. N/A- peat cores taken for micro/ macro fossil analysis of past vegetation . Measurements were taken of A single peat core was taken at each site. Cores were analysed using radio carbon dating at depths within profile, accelerator mass spectrometry, micro/ macro fossil analysis to	Matthew Shepherd	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
25	n	n	+	fails to notice the reciprocal balance between unidentified amorphous organic matter and recognisable Molinia remains at the surface, and between unidentified organic matter and identifiable eriophorum remains, which has led it to conclude that Molinia dominance is a recent phenonmenon. However, it seems more likely that the molinia becomes unrecognisable and the vegetation on this site represents a varying balance between Eriophorum, Molinia and, to a much lesser extent, dwarf shrubs, that has been played out over thousands of years. Apart from spores there seems to be little Sphagnum contributing to the peat,	A field-based case study (Chambers et al., 2007a [3+]) at Drygarn Fawr, Elenydd examined blanket peatland strongly dominated by Molinia caerulea (spp. poor M25a), with study site being a 2m high hagg, vegetated with M. Caerulea, frequent, but low cover of Vaccinium myrtillus, occasional Calluna vulgaris and Erica tetralix and with no Sphagnum present.. The following interventions were applied. NA . Measurements were taken of three peat vertical profile cores 0.15 by 0.15 by 1m deep, 100m apart from each other. Plant macrofossil analysis was undertaken on all 3 profiles at 2cm intervals, with 2 having upper 25cm	Matthew Shepherd	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
26	n	n	+	contains some information with low wider applicability to blanket bog, because Hirwaun common site may not be considered to be true blanket peat, due to shallow peat depth observed. No statistical analysis was carried out and radio carbon dates are not provided for all profiles, and are not clearly interpretable.	A field-based case study (Chambers et al., 2007b [3+]) at Hirwaun Common and Mynydd Llangatwg examined Molinia dominated upland grassland (species-poor M25) on peat <50cm deep at Hirwaun, and blanket peatland dominated by Molinia, Eriophorum or Calluna (M19a, with some similarities to M20 and M17 in places) at Mynydd Llangatwyg.. The following interventions were applied. NA . Measurements were taken of one peat profile 24 cm deep was taken from Hirwaun common, and subject to analysis for pollen and and spheroidal carbonaceous particle content. At Mynydd Llangatwg, 5 peat cores were taken: one 50cm	Matthew Shepherd	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
27	yes	y	++	has no true control of no sphagnum application, and so cannot compare to background recovery levels (presumed to be low or non existent), but was otherwise a well-replicated and fully randomised trial.	A field-based treatment comparison study (Chirino et al., 2006 [1++]) at Lac-Saint-Jean, Quebec examined bare "plateau bog" peat 1.2-1.8m deep, that had been drained, and block-cut by heavy machinery, but where drains had been blocked for 1 year before the start of the study. Replicate blocks were placed across a range of contrasting surface conditions (concave, convex or embanked).. The following interventions were applied. Diaspores of Sphagnum of 4 different species (S. fuscum, S. rubellum, S. magellanicum and S. angustifolium) were collected from the top 10cm layer of an intact bog, and applied to 30m2 bare peat plots at a rate of	Matthew Shepherd	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
28	y	y	+	The study is poorly replicated, with only duplicates of each treatment. However, the grazing regime appeared to have little effect, so the burning regimes were effectively replicated 4 times. The vegetation composition, height or structure in the plots is not descirbed, although the discussion section focusses on Calluna vulgaris. The time since the most recent burn in each treatment was not stated, which is unfortunate, because this would be a good indicator of the age and biomass of the vegetation. It is implied that the 20 year and 10 year cycles have been applied since 1954 (ie, 20 year plots burnt in 1974 and 1994, and 10	A field-based treatment control and before and after comparison (Clay et al., 2009 [2+]) at Moor House, North Pennines examined Calluna vulgaris - Eriophorum vaginatum balnket mire (M19), Empetrum nigrum sub-community, with a singificant proportion of Sphagnum. . The following interventions were applied. four blocks of moorland were delineated and a factorial combination of burning (no burning, every 10 years, every 20 years) and grazing (grazing or no grazing) were applied, with treatments starting in 1954. Only two of these blocks were considered in this study. One of the 10 year burns was applied in 2007 during this study. .	Matthew Shepherd	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
29	y	?y	+	Study based on upland blanket bog therefore highly relevant to the upland review topic and productivity although somewhat more indirect on peat formation/ accumulation. Productivity figures lower than a comparable study in the same general area on Calluna-Eriophorum vaginatum dominated bog of 6tonne/ha²/yr by Dr. G.I. Forrest whose calculation methodology this experiment followed. Assume vasscular plants contribute significantly to productivity on hummocks and general bog as Sphagnum productivity figures only just exceed carbon losses. Alternatively the pool/lawn/hummock structure of bogs is not self-	A field-based series of field experiments and survey (Clymo & Reddaway, 1971 [2+]) at Burnt Hill, Moor House NNR, Cumbria examined Blanket peatland. The following interventions were applied. . Measurements were taken of 206 25 x 25 cm quadrats surveyed for rooted presence/absence of species on 2-3.5 metre deep blanket bog split by 4 microhabitat types, pool, lawn, hummock and 'general BB' where no obvuoius allocation to the previous 3 could be made in April 1970. Repeat survey in July showed a few additional seasonally dormant species occur. Areas/ proportion of each microhabtat calculated and species frequency for each	Robert Goodison	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
30	y	y	++	had no serious shortcomings, but will have been influenced by the choice of sites.	A field comparative survey (Coulson et al., 1990 [2++]) at Moor House, Waskerley, Oxnop and Gunnarside examined blanket peatland at a range of altitudes and rainfall conditions, all with functioning drainage grips, dug between 8 and 30 years prior to the study.. The following interventions were applied. none . Measurements were taken of water table was measured at 2 sites, at 10 points arraged 1.5m above above and below 2 adjacent grips, and at the midpoint between the grips. Vegetation cover was estimated from 40 transects of quadrats stretching 9 m above and below grips, spaced at 1.5 or 2 m intervals. Invertebrates were	Matthew Shepherd	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
31	yes	yes as much as possible	++	described where and how to place gulley blocks. The report acknowledges that it was carried out very soon after blocking works.	A field-based case study (comparisons) with some controls (Evans et al., 2005 [2++]) at Peak District (Kinder) examined bare blanket peat with extensive gulleying. The following interventions were applied. Grips were blocked with 4 different types of dam construction. . Measurements were taken of vegetation survey/composition and sediment movement. They found that , in relation to vegetation, high slopes were associated with Eriophorum vaginatum and, to lesser extent, Empetrum nigrum. Low slopes were associated with E. vaginatum and Deschampsia flexuosa. Eriophorum angustifolium is a key species in early stages of re-vegetation	Alistair Crowle	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
32	n	n	+	, although a case study, is rich in information and carefully described and executed. However, the number of replicates or duplicate measurements for the field parameters is not clear, and the field equipment used for measuring evapotranspiration is not clearly described. Furthermore, there is no comparison available between dwarf shrub dominated and sphagnum dominated areas, only between dwarf shrub and bare peat.	A field-based and laboratory detailed case study (Farrick & Price, 2009 [2+]) at near Riviere-du-Loup, Quebec examined lowland (83m A.S.L.) raised bog which had been drained 65 years previously and peat harvested continuously for 33 years using block cut (baulk and trenches) methods and some vacuum harvesting. The site was then abandoned to natural succession and became dominated (9*0% cover) by ericaceous shrubs (Chamaedaphne calyculata, Kalmis angustifolia and Ledum groenlandicum) which has left a 0.5-5cm thick litter layer over the 3-4 m depth of residual peat. Tree cover was low (<20%) but rises around the edges of	Matthew Shepherd	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
33	n	n	+	The field study was not replicated, representing only 1 treatment area and 3 controls. Juncus-dominated blanket bog seems unusual, and the species of Juncus is not mentioned, but might be an important indicator of current and past conditions. The introuction to this paper is a useful source of references relating to impacts of rewetting on DOC dynamics. The study mentions that the rewetted site had higher cumulative emissions of CO2, N2O and CH4, but does not present data or statistical analysis.	A field-based and laboratory field case study and laboratory controlled before/after study (Fenner et al., 2011 [2+]) at Plynlimon examined blanket peat (~345m A.O.D, pH 3.9-4.8) dominated by Juncus and Sphagnum communities, with two areas drained by naturally-formed peat pipes and two areas of undrained wet peat. Fifteen monolith samples (11cm diameter by 25cm deep) of peat and vegetation were extracted from an undrained area for a laboratory study.. The following interventions were applied. One naturally-drained area was re-wetted for four years by redistributing of water from an adjacent stream onto the surface of the	Matthew Shepherd	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
34	y	y	+	applied concentrations of bisulphite and sulphate that reduced growth in sensitive sphagnum species were similar to estimated levels in polluted urban precipitation a the time and probably to rural southern Pennine conecentrations in earlier years. The sulphur dioxide levels were believed to equivalent to urban concentrations at the time, but in the range of rural S. Pennine levels in the 1950s. Although these experiments were not done in the field, they were performed in conditions in chambers where other environmental factors were controlled or equal across the pollution treatments. The least sensitive species in the solution experiments	A outdoor chambers treatment/control comparison study (Ferguson, Lee & Bell, 1978 [1+]) at Manchester & Surrey examined sphagnum taken from clean air sites. The following interventions were applied. sprayed with sulphate or bisulphite immersed in bog water with added bisulphite or sulphate exposed to gas SO2. Measurements were taken of Sphagnum growth (extension) and chlorophyll content They found that Sphagnum growth extension was sensitive to all three forms of sulphur pollution, bisuphite, sulphate and sulphur dioxide. In solution, bisulphite was more harmful than sulphate and of the sphagnum species	Simon Caporn	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
35	y	y	++	would have benefited from inclusion of cover of companion plants as a continuous variable, along with information on water table and soil solution chemistry, which was included but not analysed alongside results.	A field-based treatment control comparison (Ferland & Rochefort, 1997 [1++]) at New Brunswick examined cut over raised bog, with moderately low precipitation, and low rainfall, and 40-120cm of residual peat of which 10-30 cm is Sphagnum peat, and where ditches had been blocked 2 years prior to this study.. The following interventions were applied. Plots were established and factorial and partially randomised treatments were applied, these being creation of microrelief by excavator tracks (15 cm deep and 50-80 cm wide and similar distance apart), or no disturbance, all plots received a mixture of Sphagnum magellanicum,	Matthew Shepherd	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
36	n	n	+	was not fully replicated, in that only 1 site represented drains that had not been blocked. One site (Upper Teesdale) is described as having "shallow peat" but a depth of 50cm, although vegetation composition seems appropriate to blanket bog habitat. The balance of the vegetation in the catchments is not fully described. There were large size differences between intact and drained/blocked catchments (7-300 times larger) which made comparison of the data difficult, and it is not clear how water yield for the catchments relates to different rainfall between these areas. The authors interpret significant differences between the	A field-based controlled before/after study and treatment/control trial (Gibson et al., 2009 [2+]) at North Pennines (Allendale, Upper Teesdale, Widdybank Fell and Moor House) examined . The following interventions were applied. The study represents a comparison between one catchment drained by moorland grips, one where the grips had been blocked 8 years before the study started, one where the grips were blocked using peat dams during the study, and two where there was no artificial drainage present. . Measurements were taken of automatic water sampling, at varying frequencies, with filtered samples analysed for	Matthew Shepherd	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
37	approach ok but likely to be bias between years	design OK.	+	is not as well written as would be ideal. There may be identification errors between years, certainly in regard to bryophytes, but this is not discussed in the results. The approach seems adequate given the objectives.	A field-based repeated survey (Glendinning, 2012 [2+]) at Exmoor examined gripped blanket bog. The following interventions were applied. Grips were blocked. . Measurements were taken of vegetation composition in quadrats along transects. They found that there was slight evidence (not consistent across all samples) that re-wetting resulted in a change of plant communities to include more plant species with an affinity for wetter ground. The study... is not as well written as would be ideal. There may be identification errors between years, certainly in regard to bryophytes, but this is not discussed in the results. The approach seems adequate given the	Alistair Crowle	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
38			-	measures number of shoots per plant, yet reports data as shoots per square metre. It is not clear how these measures relate, or how they were calculated. The poor QA score here is due to insufficient poor measures, and only observational data available for the later trial, which had 2 true replicates, but which proided no data. The term "hummock" is used here without definition, but appears to be referring to peat hagg rather than sphagnum hummocks. It seems likely that the presence of different topographic features within the plots for the final experiment will have influenced the results and introduced considerable error. The lack of	A field-based control/treatment comparison (Gore & Godfrey, 1981 [2-]) at Moor House, North Pennines examined eroded blanket peatland, either with remnant shallow peat, cultivated to produce a rough even suface, or mineral material, sandstone drift, where livestock grazing had been excluded (within 2 exclosure plots), and which had been seeded with a mixture of Agrostis capillaris, Anthoxanthum odoratum, Deschampsia flexuousa, Festuca rubra, Poa pratensis, and Trifolium repens. A later set of field trials were established in bare, deeper (unspecified depth) eroded peat where grazing was excluded, and seeded	Matthew Shepherd	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
39	yes	yes	++	is a small-scale pilot study that suffered delays and difficulties in establishing equipment and access. The weather for some of the recording period was atypical - drought, which will have influenced the results. The post treatment recording period is barely long enough and it is expected that longer time period would give more meaningful results (one way or the other). The study could not draw conclussions on the impacts of grip blocking on the recovery of the water table.	A field-based and laboratory before/after study (Grayson & Holden, 2012a [2++]) at Yorkshire examined blanket bog with many grips. The following interventions were applied. Two drainage networks were blocked. . Measurements were taken of water table, discharge and DOC/POC. They found that grip blocking changed the way the discharge behaves during a storm event, so that it takes longer between the start of the rain and the peak in discharge, and so that the time taken between the start of the rise in the hydrograph to the peak also takes longer. Additionally, the amount of discharge resulting from a given amount of rainfall also appears to be lower	Alistair Crowle	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
40	Yes	Plenty of data points rather than replicates. Study OK.	++	made efforts to remove sources of bias. Atypical weather may have affected this study, which is ongoing.	A field-based and laboratory before/after study (Grayson & Holden, 2012b [2++]) at Edge of Yorkshire Dales examined blanket bog with many grips. The following interventions were applied. Grips were blocked over two years. . Measurements were taken of discharge, water colour, DOC and suspended sediment concentrations. They found that there was little evidence at ctachment scale that grips had impacted storm hydrographs. There was no indication of significant reductions in suspended sediment and water quality, and DOC has not significantly decreased since blocking took place. The study... made efforts to remove sources of	Alistair Crowle	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
41	yes	yes	++	was laboratory-based, and so will not have been able to completely reproduce field conditions.	A laboratory treatment comparison (Green et al., 2011 [2++]) at examined Large monolith peat cores were extracted from a grip-blocking experimental field site at Migneint in North Wales and transported to a climate controlled chamber. Cores were collected from between grips under three different vegetation types dominated by Eriophorum, Calluna or Sphagnum papillosum, and also from the bases of grips.. The following interventions were applied. from the bases of the grips were subject to simulated grip infills, comprising i) open water ii) heather brash, iii) water with a floating sphagnum mat and iv) peat and vegetation (simulating reprofiling of	Alistair Crowle	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
42	y	y	++	It seems likely that the same plots were used in all experiments, so that the microclimate experiment may to some extent also be influenced by the presence of seedlings. The feathers used are unlikely to have had an effect. However, the seedlings were evenly applied as a treatment, so any differences in microclimate can be ascribed to the treatments solely. The presence of 8 small seedlings in a 1.5m square plot may not have had a large influence. However, the use of P. balsmea seedlings was intended to indicate facilitation of Spahgnum colonisation. It seems unlikely that P. balsamea and Sphagnum would share similar ecological	A field-based survey and control/treatment comparison (Groeneveld et al., 2007 [1++]) at Lac-Saint-Jean and Riviere-du-Loup, Quebec examined , for the survey, peatlands that had been cut over then abandoned for 10 years, where there was natural revegetation and a nearby undisturbed peatland as a source of propagules. The experiment at Riviere-du-Loup was undertaken on bare peat plots, cleared of any vegetation, roots or debris, at a fomerly vacuum-harvested peatland which had been abandoned for 10 years but was poorly revegetated.. The following interventions were applied. Some plots received a tranplanted	Matthew Shepherd	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
43			++		A laboratory treatment/control comparison study (Grosvernier et al., 1995 [1++]) at the lab examined various. The following interventions were applied. five different peat subrates in 45cm monoliths, representing intact, heath-dominated, cut over (2 depths), and agricultural management, with near-surface and low (40cm) water tables, each supporting a surface mat of Sphagnum magellanicum, S. fallax and S. fuscum. the same range of peat soils and water table depths, but subject to three different microclimates, using meshes and covers, representing shade, humidity and control conditions, and S. fallax	Matthew Shepherd	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
44	y	y	++	Some sources of error are recognised, in that water table measurements were not fully randomised and rainfall composition may have been more nutrient enriched than typcial Swiss bog rainfall. However, these are examined and considered and/or controlled for. There is no true control treatment possible, in that all treatments are interventions.	A laboratory treatment comparison experiment (Grosvernier et al., 1997 [1++]) at examined Discs of living vegetation dominated by Sphagnum fallax, S. magellanicum and S. fuscum were extracted from intact bog vegetation and placed on top of peat cores 45 cm deep collected from five different locations: undisturbed S. Magellanicum bog; dry Calluna heathland; shallow peat from a cut over peatlands (0-45cm); deep peat (45-90) from a harvested peatland; cultivated agricultural peatland. Undisturbed, cut over and cultivated peatlands were pH 5.4, while the dry heathland peat was pH 4.2, and the cut over and agricultural	Matthew Shepherd	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
45	n	n	++	did not describe the depth of peat, or water table status, and combines data from both eutrophic and obrotrophic areas, as well as, probably, areas with different hydrology, as indicated by the different vegetation types described. It could not detect a significant difference between peat mass and C accumulation between vegetation types studies, but clearly shows correlations between decay rate, accumulation rate, bulk density and Sphagnum. The power of this study to detect vegetation mediated differences in peat/C accumulation rates is limited by the short time periods that the methodology is capable of examining (average 16-20	A field-based survey (Gunnarsson et al., 2008 [2++]) at near Goteborg examined an ombrotrophic lowland (60m a.s.l.) bog with >1000mm annual rainfall, and relatively high atmospheric deposition of N (1.25N m-2 yr-1) and S (0.97g m-2 y-1), with a vegetation of Sphagnum spp. (affine, auriculatum, austinii, cuspidatum, fuscum, majus, magellanicum, molle, papillosum, pulchrum, rubellum and tenellum), Carex spp., Eriorphorum angustifolium and E. vaginatum, Molinia caerulea, Calluna vulgaris, Erica tetralix, Empetrum nigrum, Myrica gale, Vaccinium uliginosum, Rubus chamaemorus, Narthecium ossifragum and seedlins of Betula	Matthew Shepherd	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
46	y	n	+	This study looked at the differential distribution of 6 Sphagnum species within a raised bog and its lagg and sought to demonstrate differential growth rates/ productivity, litter quality and decomposition rates.	A field-based repeated survey (short term) (Hajek, 2009 [2+]) at Sumava National Park examined Raised Bog Peatland. The following interventions were applied. . Measurements were taken of Net primary production, growth and litter decomposition rates by species They found that Growth rates vary between species and season,(not always as expected possibly compounded by the short duration of the experiment and external factors- RG). Biomass and shoot density increase away from water table. Decomposition rates of most Sphagnum slower than just cellulose. Claim this means the hummock-hollow natutre of bogs is self-maintaining although	Robert Goodison	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
47	n	n	-	does not report the number of plots that were subject to each treatment does not state the rates of application and does not mention which statistical analyses were used. The sites are not replicated, and the type of vegetation at the outset of the study on both plots is not clearly described. Lack of control means that establishment cannot be ascribed to the treatment, since there was existing S. fallax and S. palustre in the large plots. There was also an acknowledege bias in that plots spread with S. palustre had apparently different conditions (peat pan) compared to the S. fallax plots. The laboratory study had no true control of no additions, water table, or	A field-based and laboratory laboratory treatment comparisons and field trials (Hinde et al., 2010 [2-]) at the Peak District examined formerly bare blanket peat that had been subject to revegetation management (unspecified), with haggs, and sparsly vegetated areas, and mobile balnket peat which had been treated with heather brash only. For the first laboratory trial shallow trays were filled with peat of unknown origin, while in the second laboratory trial trays were filled with commercially extracted Irish peat and peat collected from Holme Moss, Peak District.. The following interventions were applied. in the first field study, two treatments	Matthew Shepherd	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
48	n	n	+	was a highly descriptive observational case study with some monitoring data. There were no statistical tests and it is likely that there was bias in the selection of pipes and drains to be monitored, due to the physical difficulty of both instrumenting and locating pipes. The overall conclusion, however, seems to be that peat pipes have little impact on drainage of the surrounding peat, and most of the water flowing through them is surface- or near-surface derived. This appears to fit well with all the observations reported.	A field-based case study (Holden & Burt, 2002 [3+]) at Moor House, North Pennines examined Blanket peat formed over glacial till, with mean 1950mm annual rainfall, in a 0.44km2 catchment area delineated by both topographic and salt tracer techniques, that ranges from 570 to 515m A.O.D., with a NE predominant aspect, and comprising mostly intact (not gullied) peatland with peat 1.5-2.5 m deep (max 3.2 m), with only one artificial drain.. The following interventions were applied. None. . Measurements were taken of pipe flow at 10 pipes (either by insertion of a weir plate into the pipe, or by montoring pipe outlets), along with flow in 1 grip, 1 gully, 2 flush zones and	Matthew Shepherd	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
49	y	y	++	, although apparently the same experiment as in Holden (2003a [3-]) has some slight differences in method descriptions (eg. the infiltrometers being on stands to prevent peat compression in the 2003 paper, and resting directly on the peat in this paper, with little observed compression). There is less explanation of the relationship between infiltration rates at different pressures/tensions and the interpretation of how this reveals macropore flow has not been analysed in depth here.	A field-based survey (Holden et al., 2001 [2++]) at Moor House, North Pennines examined the same site (and same experiment) as reported in for (Holden, 2009a [3-]). In addition to the conditions reported there, the bare peat is described as being eroded, so that it is 50cm lower than surrounding intact peat, and being more highly humified (Von Post scores of H5-H8) over the top 20cm layer, and with bulk densities of from 0.22 g cm-3 at the surface to 0.35 g cm-3 at 20 cm. Water table was 30cm below the peat surface during the measurement period.. The following interventions were applied. The study is exactly as described in Holden 2009a [3-] except	Matthew Shepherd	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
50	y	n	+	seems to describe water flowing through the peat mass as "runoff", which may be confused with overland flow. There is an error relating to figure 5 where the description of the total volumes of water does not match the figure. Also some confusion relating to figure 6 with "mean depth to water table" being "lowest" being used to describe a low water table (ie. where the value measuring mean depth is actually highest). The study was not adequately replicated and no statistical tests were described.	A field-based treatment/control comparison (Holden et al., 2006 [2+]) at Moor House, North Pennines examined four blanket peat catchments, two of which had been drained in 1952 and 1956 and two of which were intact. The 1952-drained catchment represented 2 subcatchments, one which was drained and the other being extensively gullied. This catchment had also been partially burnt (intensity unknown) in 1950, 52 years before the start of the current study. All catchments were vegetated with a mix (in declining order of dominance) of Calluna vulgaris, Eriophorum spp. and Sphagnum spp., except one undrained	Matthew Shepherd	1

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
51	n	n	+	representa a well constructed comparative survey approach, but fails to make the most of the hydrological and sediment monitoring thorugh lack of statistical testing. The number of blocked and unblocked catchents represent a low number of replicates, and are unbalanced.	A field-based survey and monitoring study (Holden et al., 2007 [2+]) at Upper Teesdale, Upper Wharfedale, Barrhill, and Clar Loch Beag examined four upland blanket peat catchments, with a range of precipitation conditions (1068-1982mm) with moorland drains (grips) dug in 1952-56 or in the early 1960s. Monitoring of discharge and turbidity was carried out on three seperate systems of unblocked grips, two systems blocked with peat dams, and one which had not been drained.. The following interventions were applied. 2 systems of grips were blocked prior to monitoring, one by slumping blocks of peat from the side of the drain into the channel and the	Matthew Shepherd	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
52	y	y	++	was very well replicated, and is likely to be widely applicable in similar circumstances, given the physical effects being studied. However it only used ditch flow data to test the applicability of surface roughness models to flow data, and did not report any data or comparisons between flow in vegetated and unvegetated ditches, except to note that the model fitted both Sphagnum and bare ditches combined, better than Juncus dominated ditches.	A field-based survey (Holden et al., 2008 [2++]) at Upper Wharfedale examined blanket peat, <2m deep, dominated by Eriophorum spp. and Sphagnum spp., with dwarf shrubs rare, and where water tables were typically within 30cm of the peat surface, and saturation-excess overland flow common in high intensity rainfall events. Both intact areas and drains were examined to compare overland flow velocities.. The following interventions were applied. . Measurements were taken of at 64 0.5m by 6m plots for 4 vegetation types (Sphagnum, Eriophorum, a mix of these two, and bare peat) totalling 256 plots on uniform slopes ranging from 0.01 to	Matthew Shepherd	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
53	n	n	++	is not replicated, and, although very rich in measurements, represents a very small scale study. At least one outcome relating to 12h recession rates, seems to be reported twice with different and contrasting results. Numerous correlations were applied, which increases the risk of first order error, and use of multivariate techiques might have been more appropriate.	A field-based case study (Holden et al., 2011 [2++]) at Upper Wharfedale examined a catchment with mean annual preciptiation of 1774mm, at 379-668m a.o.d. and covered with a typcial thickness of 2m blanket peat. Vegetation is dominated by Eriophorum spp., with moderate cover of Sphagnum spp. and Politrichum. The three study sites had similar slopes (0.082-0.093 m m-1).. The following interventions were applied. A proportion of the catchment had open-cut drains installed in the 1960s (approximately 40 years prior to the study), and a sub-set of these were blocked with peat dams in 1999, 6 years before this study began. .	Matthew Shepherd	4

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
54	n	n	++	is a well-described case study. Clearer presentation of the statistical testing would have been helpful.	A field-based monitoring study (Holden et al., 2012 [2++]) at Moor House, North Pennines examined a catchment 17.4 ha in extent and 545-580 m a.o.d.98% of which is covered in blanket peat, typically 3-4m thick, but up to 8m thick in places. Slopes are mainly E or SE facing and are mainly 0-5o (max 15o) and vegetation is dominated by Calluna vulgaris and Eriophorum vaginatum w2ith some Empetrum nigrum and Sphagnum capillifolium. . The following interventions were applied. . Measurements were taken of rainfall, temperature and other climatic data, which were monitored at the nearby Moor House weather station. Three surveys of pipe outlets	Matthew Shepherd	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
55	y	y	++	Seems to repeat the data already reported in another study considered by this review.	A field survey (Holden, 2005a [2++]) at 160 sites across Dartmoor, Exmoor, North Wales, South and North Pennines, North York Moors, Ayrshire, the Cairngorms, Skye and Caithness and Sutherland. examined 160 blanket peat catchments between 0.8 and 4.2 ha in extent, selected to represent the main areas of blanket peat within Britain.. The following interventions were applied. . Measurements were taken of GPR surveys of peat pipes were taken in 2 areas of each catchment, usually on opposite slopes, and in 3 plots for each area, at the hill top, mid-slope and footslope. Each plot was surveyed using 6 20m parallel transects along the	Matthew Shepherd	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
56	n	y	+	, although it seems to indicate a causal link between Calluna and piping, cannot be used to prove this link because the study is unable to factor out any unknown parameters which may be associated with Calluna, or to rule out the pipes causing the dominance of Calluna. The Moor House study is subject to an acknowledged altitude bias, which may introduce climatic variability, and the study is weakened by not including altitude as a continuous variable in the data analysis. Water table results are not published and not extensively analysed, so it is not possible to compare the seaonal impact of Calluna on water tables, compared to the Eriophorum	A field-based and laboratory survey, case study and before and after laboratory study (Holden, 2005b [2+]) at 160 sites across Dartmoor, Exmoor, North Wales, South and North Pennines, North York Moors, Ayrshire, the Cairngorms, Skye and Caithness and Sutherland. examined blanket peat catchments around the UK, for the survey, and on plots across an area of upland blanket peatland (70% peat cover) 35km2 in extent ranging from 290 to 848m a.o.d. And dominated by Calluna-Eriophorum-Sphagnum balnket bog vegetation (mainly M19), but with an altitudinal limit to Calluna of 650 a.o.d. (community M20).. The following interventions were applied.	Matthew Shepherd	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
57	n	n	++	, although it did not describe the habitats surveyed adequately, was wide-ranging enough to counteract this effect. The study is entirely correlatory, and it cannot be ruled out that some other factor, linked closed to the age of drainage, might be causing the observed relationship between age of drainage and increased peat piping. Little is done with the data from undrained peatlands, and no correlations are explored within the bulk density and carbon dataset. As a survey, however, this is well executed.	A field-based survey (Holden, 2006 [2++]) at 320 sites in Dartmoor, Exmoor, North Wales, South and North Pennines, North York Moors, Ayrshire, the Cairngorms, Skye and Caithness and Sutherland. examined blanket peat slopes. The following interventions were applied. A comparison was made between 57 sites with land drains (grips) and 263 sites without drains. . Measurements were taken of a 50m by 20m plot was surveyed by six 20m parallel ground penetrating radar (GPR) transects, 10m apart, and broadly parallel with contours, using 100 or 200 MHz antennae (depending on peat depth), to indicate layers with different	Matthew Shepherd	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
58	y	y	+	is difficult to interpret in terms of matching changes in water tension to changes in pore flow pathways, possibly because of a confusion in the way that tensions are reported in negative values, which may represent positive pressures, and which seems to have confused interpretation of the results. The range of water tensions applied, from low (-12cm) to high (0cm), resulted in low to high overall infiltration rates. This would suggest that all available water pathways are operative at 0cm, and as tension is reduced, ever-larger pores cease to transport water, yet the paper suggests that the change from 0 to -3cm water tension	A field-based survey (Holden, 2009a [2+]) at Moor House, North Pennines examined Blanket peatland with peat deposits 1-4m thick overlying glacial till. Peat is poorly humified at the surface 5cm (Von post scores of 2-3, bulk density 0.15g cm-3), and only moderately humified below this (von post 3-4, 0.18g cm-3 at 20cm), gradually becoming more humified with depth (0.27g cm-3 at 50 cm) to become almost fully humified (von post 9) at 1.5m. Total porosity of the peat ranges between 90 to 97%. Vegetation is dominated by Eriophorum sp., Calluna vulgaris, Sphagnum spp. with some areas of bare peat. . The following interventions were applied. The study	Matthew Shepherd	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
59	yes	yes	+	lacked descriptions of statistical tests. A longer period may be required to detect the changes so even if the sample size had been bigger, the results may not necessarily change.	A field-based and laboratory before/after study (Jonczyk et al., 2009 [3+]) at North Pennines examined blanket bog with many grips. The following interventions were applied. Grips were blocked. . Measurements were taken of water table, flow, and water chemistry including DOC and E4:E6 ratio. They found that water table remained relatively unresponsive and unchanged on either side of blocked and unblocked grips. There was no significant difference in colour of water between gripped and blocked, but there are differences related to date of sampling. The trend for E4:E6 ratio is of a decline in the values. The study... lacked descriptions of	Alistair Crowle	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
60	Yes but no details on randomisation or dealing with bias	Not replicated but balance	+	was well described, but would have benefited from more detail on vegetation. It did not discuss reasons for selection of sites and there were perhaps not enough replicates and/or it was not clear if some of the treatments were replicated.	A field-based treatment/control comparison study (Komulainen et al., 1999a [2+]) at examined drained blanket mire used for forestry. The following interventions were applied. Trees were cleared and ditches were blocked. In the second year an additional plot was added in the treated and untreated area where all vegetation was removed and the plots kept bare in growing season. . Measurements were taken of vegetation cover (seasonal), water table height (weekly), rainfall (weekly), carbon dioxide flux (twice weekly in growing season for year 1, weekly in the growing season for year 2, and every third week in	Alistair Crowle	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
61	n	n	+	could have made more of its data by better analysis, and could have been more simply presented.	A field repeated survey and case study (Lavoie et al, 2005 [2+]) at Quebec examined A cut over raised bog formerly dominated by Sphagnum mosses and trees, then subject to peat extraction by block cutting and vacuum harvesting. The study sites comprised 2 180 by 24 m peat fields had been abandoned since 1993, 10 years before the study began, one of which was wetter and dominated by Eriophorum vaginatum with peat thickesses ranging from 24cm to 143 cm, and the other being drier with thicker peat (165-189 cm) and having a low cover of around 10%.. The following interventions were applied. Water tables in the drier field	Matthew Shepherd	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
62		?		Review of research relevant to two primary models of peat formation. The first and probably least relevant to most UK settings and certainly not the uplands is 'terrestrialisation' whereby a pre-existing water body infills. The second model of paludification allows peat to form wherever the climate/ground is wet enough which would explain Upland BB and most lowland RB in UK. Flags up the pre-eminence of Sphagnum spp. in most of the world for peat foemation but notes Donatia and Emphodisma vascular plants in Australia/ New Zealand so situation/ conditions may be more important than species per se. The hydrology is of a site	A field-based review (Lindsay et al., 2003 [4]) at examined N/A. The following interventions were applied. . Measurements were taken of They found that Most UK bog formation is via paludisation. Important that there is a permanantly waterlogged and anaerobic zone, catotelm, and ideally this should lie close to the surface with a thin acrotelm of seasonnally fluctuating water levels in which the mosses and vascular plants grow. Conditions suitable for paludification will fluctuate with climate and slope such that there may be natural occurrences of bog loss or gain over more millennial/ geological timescales. British limit is loosely set at	Robert Goodison	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
63				Probably relates more to other questions especially 'what's a bog?' plus possibly restoration/degradation.	A Review(Lindsay, 1995 [4]) in the review examined N/A in where the following interventions were applied. . Measurements were taken of N/A They found that Notes peat is material of vegetable origin dating back hundreds or thousands of years. Assumes bog formation depends on the dominance of Sphagnum plus paludification as a method of spread for larger raised and blanket bogs. Notes bogs have the potential to occur almost anywhere in Britain c.f remains of Andromeda polifolia and Vaccinium oxycoccus found near Cambridge in 'the dry east' as recently as 1855. Cites research by Backeus 1998 that the moisture regime conditions of the previous	Robert Goodison	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
64	n	n	-	has labelled the age horizons in the peat cores upside down for the macrofossil and peat accumulation analysis so that the surface horizons contain the oldest peat. This makes interpretation difficult. The abundance of unidentified organic matter is not reported, and only a subjective scoring of remains is reported, making it difficult to compare data. No statistical tests were applied, despite the suitability of this study to multivariate analysis.	A field-based case study (Mackay & Tallis, 1996 [3-]) at Forest of Bowland examined upland blanket peat (510m elevation) subject to either "summit type" erosion, leaving isolated haggs on mineral substrate, or "gully erosion" represented by sparsely branched, parallel gullies through the peat. Three sites were examined, representing an area dominated by Sphagnum papillosum and S. capillifolium, an area near gullies dominated by Eriophorum vaginatum, and a large remnant peat hagg dominated by dwarf shrubs and grasses.. The following interventions were applied. . Measurements were taken of Surface peat cores 50cm long were extracted	Matthew Shepherd	2

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
65	y	n	+	Based on other research/ models has to assume vertical peat accumulation is a constant and hence the micro-topographical landform fixed. Accumulation rate measurements assume the layer with greatest C14 activity continues to mark an innoculation at the start of the experiment. Decay rate based on N measurements	A field-based case study (Malmer & Wallen, 1999 [2+]) at Store Mosse National Park, plus Morhult and Akhult bogs Southern Sweden examined Raised Bog Peatland. The following interventions were applied. . Measurements were taken of Productivity and decay rates plus net mass balance estimated for four microtopographical zones: Sphagnum Hummocks, Lichen hummocks, Sphagnum lawn hollows and bare peat hollows. C14 age They found that Productivity of lichen hummocks and bare peat hollows negligible and net mass balance negative, The study... Based on other research/ models has to assume vertical peat accumulation is a	Robert Goodison	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
66	?	n	+	Review and summary of research findings on mires (esp bogs) from 1960's to 1990s across much of the Northern Hemisphere if not the world.	A field-based review (Malmer et al., 1994 [3+]) at Throughout examined N/A. The following interventions were applied. . Measurements were taken of They found that Nutrient supply is limited on ombrotrophic bogs. Mosses control most input esp. atmospheric, whilst vascular plants depend on mineralisation within substrate. Mosses/Sphagnum not 100% essential to peat formation but certainly facilitate/enhance it plus historically Sphagnum formed the bulk of most blanket bog peat. High water table and anoxic conditions required to prevent oxidation/ decomposition of organic remains. Fewer spp. in ombrotrophic bogs and	Robert Goodison	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
67	y	y	++	had no serious shortcomings.	A field-based treatment/control comparison (Marrs et al., 2004 [1++]) at Northern Peak District and Mossdale, Upper Wensleydale, Yorkshire Dales examined two moorland areas, one dominated by Molinia and the other mosaic Molinia and Calluna vulgaris, at the two locations.. The following interventions were applied. Two large plots were established at each site, one of which was subject to a burning regime, the other left unburnt. An additional sub-experiment was carried out on the Molinia-dominated "white moor" plots looking into the effect of raking off Molinia litter and seeding heather by applying brash. Grazing regimes were	Matthew Shepherd	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
68	y	n	+	does not (in the Defra report) provide details of the statistical approaches used. The study also had to infer causes of erosion from field observations, and this constrains the validity of the conclusions drawn, especially with regard to the activity of biotic erosion. The report here does not provide seperate figures baseed on soil type, even though this, and corrlatory factors such as elevation and slope, seem to be the greatest predictors of extent and volume of erosion. Various desk and field studies of sediment load and reservoir sedimentation rates, and of erosion modelling, impacts and mitigation are presented which cannot readlily be related to	A field-based survey and aerial photo analysis (McHugh et al., 2000 [2+]) at unenclosed land over 200m a.s.l. examined various upland unenclosed sites, at 5km grid intersections across England and Wales.. The following interventions were applied. . Measurements were taken of estimates of area and missing volume of eroded soil at 399 field sites, within a 10m and 50m radius circle. Short term loss or deposition rates in erosion gullies was measured using vertical measurements to tapes stretched between fixed pins at the gully sides They found that an estimated 18,025 ha of erosion driven by water (including gullying and	Matthew Shepherd	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
69			+	did not mention the duration of the experiment. While p values are given for the regression eqations, it is not clear how these were compared to determine signicance of the differences bewteen the responses to different herbicides.	A laboratory treatment/comparison study (Milligan et al., 1999 [1+]) at examined Plants of Molinia caerulea were collected and Calluna vulgaris were obtained from a nursery, transplanted into nutrient rich acid compost.. The following interventions were applied. Molinia and Calluna plants were sprayed with one of seven different graminicides at 8 different doses. Sprayed plants were grown on in glasshouses in three randomised blocks. . Measurements were taken of , initially, tiller numbers, length of longest leaf and total shoot length. Following treatment, measurements were made of tiller number, leaf number leaf length,	Matthew Shepherd	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
70	y	y	++	has again used the wrong grid reference, corrected here. The study site is probably not true blanket peat, and is mapped as supporting shallow peaty soils. This is a well designed experiment and, given the foliar uptake of herbicides, however, it seems likely that they would respond in a similar way on balnket bog, under similar application conditions.	A field-based control treatment comparison (Milligan et al., 2003 [1++]) at examined Molinia and Calluna dominated areas, probably overlying shallow peat.. The following interventions were applied. For each vegetation type, three replicate blocks of plots received fully factorial randomised treatments in July of five different herbicides at two applicaiton rates, and were compared with 2 untreated control plots. . Measurements were taken of species composition of the vegetation was assessed after 4 weeks 1 year and 3 years, along with sward height in the Molinia-dominated area. They found that In the Molinia-dominated plots different herbicides had	Matthew Shepherd	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
71	y	n	+	has provided the wrong grid reference, corrected here. From the lat/long location provided, this site appears to be on shallow peaty soils (Wilcocks1 association). The multivariate analysis suggests that there were significant changes in vegetation occurring over time, across all treatments, which suggests an underlying trend outside the experiment. When time was not considered as a factor, only grazing or interactions involving grazing were significant. However, grazing was represented effectively by only 2 replicates (2 exclosure plots), and so we cannot attach much confidence to this result. Cutting, despite initial perturbations, resulted in	A field-based control treatment comparison (Milligan et al., 2004 [1+]) at North Yorkshire examined Molinia dominated moorland, probably over shallow peaty soils, but not true balnket peat.. The following interventions were applied. Randomly applied, factorial application of two grazing treatments (1.8 ewes ha-1 or no grazing) in 2 replicated plots, within which four cutting treatments (uncut; cut in Decmber in year 1; cut in December year 1 and June in year 2; cut in December year 1, and June and July in year 2) were applied with sub plots receiving factorial treatments of quizalofop-ehtyl heribicide and/or	Matthew Shepherd	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
72	n	n	-	is only a summary of the monitoring results which are more fully presented in an appenidix (5) which has not been included in this review. It is impossible to tell how often measurements were taken or how many sites the data describe, and it appears that there was no monitoring of unfelled woodland as a comparator.	A field-based restoration monitoring (Murphy, 2008 [3-]) at 1989 ha of afforested blanket bog in 14 SACs throughout Kerry, Clare, Galway, Mayo, Sligo, Donegal and Laois/Offaly examined afforested blanket bog. The following interventions were applied. Trees were felled and removed or chipped or placed into windrows of unwanted timber, drains were blocked using plastic piling or peat dams and regeneration of conifers was suppressed. . Measurements were taken of assessment of vegetation composition and cover in 4m2 quadrats, and monitoring of water table in dipwells using WALRAGs. They found that there were	Matthew Shepherd	3

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
73	yes	yes	++	was not a comparison of retoration of sites but a useful identification of important species for restoration. May be better placed in other questions or used as background?	A field-based survey (O'Reilly, 2008 [2++]) at North Pennines examined . The following interventions were applied. . Measurements were taken of pH, peat depth, altitude, aspect, slope, conductivity and a range of vegetation data. They found that there were signifcant correlations between: vegetation height and overall plant diversity; altitude and overall plant diversity; peat depth and Sphagnum species diversity; peat depth and abundance of seven Sphagnum species. The study... was not a comparison of retoration of sites but a useful identification of important species for restoration. May be better placed in other questions or used as	Alistair Crowle	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
74	n	n	+	has had to make assumptions relating to the definitions of different vegetation types, and had mapped a different range of vegetation types than the 1913 survey. Identification and classifcation was by eye in both instances, thereby probably introducing error in identification, especially where communities show different, temporary forms (eg. heavily grazed cotton grass could appear to be acid grassland). The study cannot be used to determine the rates of erosion because the original mapping excercise included eroded ground in a mixed cover category. The discussion makes much of changes in heather, but these do not appear to be large, and	A field-based repeat survey (Phillips et al., 1981 [2+]) at the Peak District examined either the entire gritstone moorland area of the Peak District National Park, or in various locations of bare and eroding peat, with some comparative studies elsewhere in the country.. The following interventions were applied. . Measurements were taken of A mapping exercise was carried out in 1979 of moorland vegetation and land cover on the gritstone areas of unenclosed moorland of the National Park, assigning vegetion at a landscape scale, by visual estimation, to 6 main categories (Heather, Cotton-grass, Crowberry, Bilberry, Acid Grassland and Bracken), as dominant	Matthew Shepherd	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
75	n	n	-	in effect locates six transects adjacent to each other, across the grip, providing pseudoreplication only capable of improving the plot mean. Despite some unusual statistical appraoches, data are under-analysed, in that tests have not been used to detemine whether there are differences between the 2 plots compared,. However, even then, the 2 plots would not represent any clear conclusion about the effect of grip blocking. Only data on diptera are presented. Community composition of other invertebrates is not described.	A field-based case study (Phillips, 2008 [2-]) at North Yorkshire examined an open grip and a grip blocked within the previous year with peat dams on blanket peatland. The following interventions were applied. None. . Measurements were taken of invertebrate abundance and species at 36 points arranged over a 6m by 6m square positioned over the grips and in sweep net samples. Broad infomration on vegetation community composition and incidence of grouse faeces were also recorded. Sampling took place in July and traps were left for 10 days, collecting samples in ethylene glycol, before collection and identification to family, genus or species	Matthew Shepherd	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
76	yes	yes	++	had no serious shortcomings.	A field-based survey and treatment/control comparison study (Ramchunder et al., 2012 [2++]) at North Pennines examined blanket bog with many grips. The following interventions were applied. Grips were blocked. . Measurements were taken of macroinvertebrate abundance and richness, and stream water concentrations of SO4, particluate organic matter, suspended sediment and aluminium. They found that mean concentrations of SO4, particluate organic matter, suspended sediment and aluminium were all highest in drained streams. Mean invertebrate abundance and richness was highest in drain-blocked and intact sites and lowest in drained	Alistair Crowle	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
77			+	was not fully factorial.	A field-based treatment/control comparison study (Richards et al., 1995 [1+]) at Peak District examined bare peat, with scattered residual vegetation of Eriophorum vaginatum, E. angustifolium Vaccinium myrtillys and Deschampsia flexuosa.. The following interventions were applied. non-factorial combinations of introduction of E. angustifolium plants either as directly collected shoots with 2.5cm of rhizome, or as plants propagated in pots of moss peat or ericacous compost, fertiliser (NPK or seaweed-based) and/or lime, inside and outside of a single fenced plot. Laboratory experiments examined root and shoot growth responses in solution	Matthew Shepherd	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
78	n	n	+	is a re-examination of data from Conway and Millar (1960) with analysis of additional data. It is not a truly replicated comparison, and its quality assessment score reflects its value as a fairly good case study. The repeated measures at the same catchments cannot be used to replicate the effect of drainage, since they reflect both drainage and intrinsic catchment characteristics, and this leaves the study too poorly replicated over space to draw any firm conclusions. It seems likely that, for these particular catchments, the drained ones are more flashy in their flow than the undrained ones, but this may not hold true for all drained catchments.	A field-based survey (comparative monitoring) (Robinson, 1985 [2+]) at Moor House, North Pennines examined two blanket peat-covered catchments with artificial drainage (gripping) and two with natural drainage. One artificially drained catchment was described as "bare", having experienced a severe fire in 1950, and the others were dominated by heather with fairly abundant sphagnum. Catchments ranged from 3.8 to 8.8 ha in size.. The following interventions were applied. . Measurements were taken of flow rate at V-notch weirs, rainfall and other climatic data from a nearby (1.6km max) weather station supported	Matthew Shepherd	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
79	n	n	+	, despite having 4 plots, is effectively a case study comparison of 3 sites, with no real intervention. Using randomly-selected different tracks and control areas would have increased the ability of the study to generalise about track impacts, but this paper can only tell us about specific stretches of specific tracks.	A field-based case study (Robroek et al, 2010 [3+]) at Moor House, North Pennines examined two tracks which had received approximately 30 tramplings a week for ~1year, and then abandoned for either 1 or 2 years. The tracks are located in a 20ha headwater catchment with blanket peat deposits 1-4m thick at 545-580m a.s.l., 2063mm of rainfall, 6o average annual tempereature and 244 rain days a year. Vegetation is dominated by Calluna vulgaris, Empetrum nigrum, Eriophorum vaginatum, E. angustifolium, Sphagnum spp., Pleurozium schreberei and Hypnum jutlandicum. The tracks were compared with a line	Matthew Shepherd	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
80	y	y	+	does not indicate how the different water levels were maintained, and only in the case of 1 species, under certain treatments was cover actually increased after 3 years. The past history of the two bogs is not provided, and this appears to be an introduction of species into an undisturbed, rather than a damaged, bog.	A field-based treatment comparison (Robroek et al., 2009 [1+]) at Clara Bog, the Midlands, and Mannikjarve Bog, Central Estonia examined two raised bog peatlands, both with low mean annual rainfall (675 and 804mm) dominated by Sphagnum magellanicum, with S. cuspidatum, S. rubellum and S fuscum, and with Rhynchospora alba, Andromeda polifolia and Oxycoccus plaustris.. The following interventions were applied. Four small or one large intact surface plugs of Sphagnum cuspidatum, S. rubellum and S. fuscum were transplanted into existing bog vegetation at 2 different water tables (-5 and -20cm), in a replicated randomised block design,	Matthew Shepherd	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
81	y	y	++	has no serious shortcomings, but would have benefited from more detailed measurements over time.	A field-based control treatment comparison and monitoring (Rochefort & Campeau, 2002 [1++]) at Sainte-Marguerite-Marie peatland in the Lac Saint-Jean region, Quebec examined two raised bog peatlands, one dominated by Sphagnum fuscum and the other by Sphagnum capillifolium, which had had the surface layer of Sphagnum removed (for the purposes of restoring bare peatlands elsewhere). . The following interventions were applied. On each peatland type, 3 replicated plots received treatments of straw mulch, split-plot reintroductions of Sphagnum (S. Fuscum, S. Magellanicum, S. Capillifolium or a mix of these) with straw mulch, or	Matthew Shepherd	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
82			-	level of replication and treatments unclear in the field experiment. Lab experiment provides no restults of statistical analysis.	A field-based and laboratory treatment/control comparison study (Rochefort et al., 1995 [1-]) at Quebec examined cut over raised bog peatland, with bare peat, drains blocked in spring 4 months prior to treatment.. The following interventions were applied. the size of fragments from which four species of Sphagnum could regenerate, and the impact of water table, fertiliser regime and type of introduction (plugs or scattered fragments). A field experiment explored the impact of addition of lime, Sphagnum magellanicum or Polytrichum strictum fragments on Sphagnum revegetation of a cutover, drain-blocked peatland,	Matthew Shepherd	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
83			++	was a summary paper previously reported experiments and may have lacked some detail presetned in earlier papers.	A field-based and laboratory treatment/control comparison study (Rochefort et al., 2003 [1++]) at Quebec examined cut over raised bog peatland, with bare peat, drains blocked year prior to treatment, and some areas harrowed to remove hydrophobic crusts and topographic variation due to areas of block cutting.. The following interventions were applied. A series of experiments exploring the practicalities of using Sphganum diaspore harvesting, processing and introduction to restore bog vegetation to cut-over bogs. These comprised introduction to bare peat of propagules derived from 3 10cm depth increments	Matthew Shepherd	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
84	n	n	+	is a monitoring case study. The power of the study would have been incrased by monitoring a wider geographical spread across the treatments, rather than focussing large numbers of quadrats within 1 or 2 plots.	A field-based monitoring study (Ross, 2011 [2+]) at the Peak District and Forest of Bowland examined two monitoring plots in each of three blanket-bog dominated areas, and two dry heath areas. The blanket bog areas were: Lamb Hill (Bowland) where 450ha of blanket peatland, 39% "degraded" (cause not specified), had been subject to reduced grazing levels, away-wintering of stock, and implementaiton of a burning plan; Sykes (Bowland) where 575 ha of blanket peatland (mostly "degraded") and dominated by dwarf shrubs subject to reduced stocking levels, indoor lambing and implementation of a burning plan; and	Matthew Shepherd	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
85	y	y	++	had no serious shortcomings.	A field-based treatment/control comparison study and controlled before/after study (Sheppard et al, 2011 [2++]) at Southern Uplands examined peat 3-6m deep, dominated by Calluna vulgaris, Eriophorum vaginatum, Sphagnum capillifolium, with patches of Cladonia portentosa and Sphagnum fallax and Sphagnum papillosum, with frequent Erica tetralix, Hypnum jutlandicum and Pleurozium schreberi.. The following interventions were applied. Ammonia gas treatment delivered via free air release over one, unreplicated, transect to provide a high to low concentration gradient Wet N treatments were supplied automatically at	Simon Caporn	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
86	y	y	++	acknowledges the influence of different tree clearance methods being preferentially used on different ground types as a source of bias. The development of drier heathier vegetation on areas that were chainsawed, rather than chipped, in situ may be due to a preferential use of this clearing technique on steeper, drier ground. However the slower recover is likely to be due to the larger amounts of remaining brash.	A field-based monitoring survey and treatment control comparison (Sheridan, 2008 [1++]) at Kintyre examined an area of deep blanket peatland 280ha in extent, which had been drained, ploughed (double mouldboard, 50cm deep) and planted with Picea sitchensis during the 1980s, which were then clearfelled during 1999-2001. Drains had mostly naturally revegetated, and were not blocked. Felled trees were not removed, but were either chipped in situ, felled and cut up in situ, or trunks removed and used to make a corduroy trackway Chippings accumulated in the plough furrows. Also included in the study area is 170 ha of unplanted blanket peatland.	Matthew Shepherd	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
87	n	n	++	used a lower than usual oven temperature, which was acknowledged to drive off less water, thus predicting higher bulk density values than those quoted elsewhere. A multivariate approach, rather than the linear regression used in this paper, might have been better able to disaggregate the influence of the trees and the ditches. This paper interprets the surface rises in transect 1, observed between 1966 and 1987, as the results of peat and litter accumulation but does not explain why it was highest between the forestry blocks. However, the surface profile seems to indicate 2 ridges next to the plantation edges which would suggest that this	A field-based repeat survey (Shotbolt et al, 1998 [2++]) at Bad a Cheo, Caithness examined a 50 ha blanket peatland 90m a.s.l. With 930mm annual rainfall, 233 rain days per year, on 3.5-5.5m of peat, with a fibrous (H4) surface layer and oligofibrous (H6-H9) deeper layers. Unaffected balnket bog vegetation is predominatnly Sphagnum papillosum and Trichorphorum cespitosum.. The following interventions were applied. Five 0.6ha plots were subject to drainage and various ploughing treatments and planted with Pinus contorta and Picea sitchensis in 1968. A further control plot within each block had been since	Matthew Shepherd	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
88			+	Peat depth not measured, hydrology not reported, results not fully reported for all treatments, method of assessment not clear, unclear whether treatments were fully randomised and method of statistical analysis unclear.	A field-based treatment/control comparison study (Skeffington et al., 1997 [1+]) at Peak District examined eroding peat, sloping eroding peat, disturbed peat (tipped in lagoons) and sloping rocky areas.. The following interventions were applied. introduction of propagules from Calluna vulgaris and Deschampsia flexuosa seed, or from applicasiton of chopped vegetation, sowing of companion grass species (Agrostis castellana 85%, Festuca rubra 7.5% and Lolium perenne 7.5). application of fertiliser (17:17:17 at 10g m-2) and ground limestone (250g m-2), which was repeated in after 1 and 3 years.. Measurements were taken	Matthew Shepherd	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
89	y	y	++	would have benefited from multivariate approaches using some of the measured variables as controlling factors, which might have removed some of the noise described due to site variability.	A field-based treatment/control comparison (Sliva & Pfadenhauer, 1999 [1++]) at Alpine foothills examined a cut-over raised bog complex where cutting ceased in 1986, the site was reprofiled into terraces where water levels were raised and surfaces sown with Carex rostrata and Eriophorum spp.. The following interventions were applied. in the first experiment random plots were assigned treatments of diaspores of Calluna vulgaris, Eriophorum angustifolium, E. vaginatum, Carex rostrata and were covered with either fleece (shade fabric), geojute or Calluna brash, then coverings removed after 1 and 2	Matthew Shepherd	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
90	n	y	++	would benefit from analysis of the % cover data by modern multivariate techniques such as RDA.	A field-based survey (Stewart and Lance,1991 [2++]) at North Pennines examined various blanket bog catchments across the North Pennines, ranging from 390-730 m a.s.l., with mean slopes between 1o and 8o, and drained by moorland grips spaced at 15-35m, with varying levels of grazing, and burning management. In most cases the vegetation was dominated by Calluna vulgaris, Eriophorum vaginatum, with some Sphagnum capillifolium and/or Deschampsia flexuosa. The Burnt Hill catchment had been drained in 1952 (27 years before this study), and the Bellbeaver site was drained 1 year before this study.. The following interventions were applied.	Matthew Shepherd	6

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
91				This report mentions that there was reserach underway into the edge effects of forestry on balnket bog birds. It is not known where or if the results of this study are published. This is a review, and its studies have not been quality assessed, and include personal communications. It has been included in this study to begin to address a gap in the reserach pointed out by the assurance board. There is a further section in this paper on vegetation impacts, which has not been reported here.	A NA Review (Stroud et al. 1988 [4]) at Caithness and Sutherland examined . The following interventions were applied. . Measurements were taken of They found that studies have shown that afforestation of blanket bog peatlands replaces bog bird assemblages with forest bird assemblages of lower conservation value. Birds are displaced initially to adjacent bog, but the resulting higher populations here are not maintained. There are also likely to be deleterious impacts on birds adjacent to forestry due to the cessation of incompatible management (burning, grazing) causing changes in vegetation structure and due to increased predation of moorland birds by	Matthew Shepherd	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
92			-	had no true control treatment of unfenced and unseeded, also no comparable data between sites reported for changes in percentage cover, and only 2 sites and 1 year for comparison of impact of treatments on seedlng density. The 3 treatment plots represent pseudoreplicates within each of the 3 plots. No results of any statistical analysis provided (though t-tests mentioned).	A field-based treatment/control comparison study (Tallis & Yalden, 1983 [2-]) at Peak District examined difficult to assess. Several sites are described as having deep or shallow peat over "mineral rubble" but the depth associated with these terms is not given. Sites included a range of altitudes and soil types and so represent a wide range of soil condiitons. A description of "former vegetation" is also given, but it is not clear whether this means an assumed vegetation prior to erosion, or the vegetation at the start of the experiment.. The following interventions were applied. stock exclosure and application of Calluna brash as a seed source, interactions with	Matthew Shepherd	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
93				is a review of research over a wide topic area and its sources cannot be quality assessed.	A Review (Tallis, 1998 [4]) at examined . The following interventions were applied. . Measurements were taken of They found that blanket bog covers at least 22,500 km² of the British Isles, which represents an Internationally important proportion of this habitat. Whilst the bulk is found over 450-500 metres the lower limit ranges from sea level in the far North and West rising south and eastwards to around 350 metres in the South Pennines. The upper limit in the Highlands is approximately 1070 metres. Bog formed on even terrain rarely exceeds 3.5 m in depth, on uneven terrain 5-6 metres over hollows is not unusual but peat over 7m	Matthew Shepherd	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
94	y	y	++	has a broad applicability geographically, having examined 3 well-dispersed sites. It did not give any details of the depth of peat under these plots and this study may refer to areas on shallow peaty soils. Comparison with a soils map indicates that one Exmoor plot and both Yorkshire Dales plots are likely to be on shallow peaty soils. However, the treatments applied were surface treatments and it seems reasonable to infer that Molinia and Molinia/Calluna mixes on deep peat might respond in similar ways.	A field-based treatment/control comparison (Todd et al., 2000 [1++]) at Exmoor, North Peak and the Yorkshire Dales examined Areas of moorland dominated by Molinia caerulea ("white moor"), or by a mixture of M. Caeulea with Calluna vulgaris and Vaccinnium myrtillus ("grey moor").. The following interventions were applied. Fully factorial randominsed treatments were applied to 18 plots in 2 replicate blocks at three moorland sites. Treatments were burned (5 months before 1st measurements) or not burned; unrestricted grazing (with sheep, but also ponies and cattle at Exmoor), summer-only grazing (15 Apr to 15 Oct) or no grazing; application	Matthew Shepherd	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
95	y	y	+	was affected by regular flooding of the wetter plots, which perhaps was due to the removal of 10cm of peat from the surface. Microclimatic impacts of this action were not reported, but may also interact with water table.	A field treatment comparison (Tuittila et al., 2003 [2+]) at Aitoneva examined a cut over raised bog with low rainfall (700mm annually) and short growing season, drained in 1938, block cut from 1944 and milled from 1951 until 1975, leaving approximately 1m thickness of residual peat. The site was re-wetted by blocking drains in 1994 and re-routing water from the surrounding areas.. The following interventions were applied. Small plots were established in areas with low and high water tables due to a natural gradient, where shallow cuttings 10cm deep were made and Sphagnum angustifolium, comprising either stem or capitulum only material, was	Matthew Shepherd	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
96	n	n	-	included 2 descriptive case studies alongside data from 4 plots. There are errors in the labelling of the plots, which do not affect the interpretation of the data.	A field case study (Vasander et al., 2003 [2-]) at Vanneskorpi, Kuru and Aitoneva, Kihnio examined , for case study 1, afforested peatland, which had been treated with phosphorus fertiliser, and for case study 2, a cut over raised mire exactly matching the description given in Tuittila et al. (2003).. The following interventions were applied. In case study 1, trees were felled, leaving brash on the surface, and drainage ditches were blocked, restoring a zone between an afforested block and a stream. The second case study examined the impacts of rewetting a cut over peatland by blocking drainage ditches compared with a drained control site. .	Matthew Shepherd	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
97	n	n	+	does not describe the site vegetation at all, although another paper (Wallage et al., 2006) is referenced for site details, although this analysis has no information on vegetation type from this paper. Despite the 14 consecutive measurements, and 42 sampling points, this study effectively still only has 1 site-level replicate, and can only strictly indicate comparisons between these 3 sites.	A field-based comparative survey (Wallage & Holden, 2011 [2+]) at Ougtershaw Moss, Yorkshire examined three blanket peatland catchments with similar slope aspect and peat depth, and all within 400m of each other. One catchment was intact, undisturbed peatland, the second had been drained (15m intervals) and at the third, drains at the same intervals had been blocked, with peat dams every 10m, 6 years before this study.. The following interventions were applied. . Measurements were taken of flow through different-sized pores, using tension disc infiltrometers and 3 different water tensions were made at 42 points were sampled during July,	Matthew Shepherd	5

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
98	yes - they identified areas of posible bias and attempted to control	balanced but short-term	+	had a short time period. Lot of information was presented in results on colour/carbon ratio at different soil depths. Not recorded this as not especially helpful to review.	A field-based and laboratory treatment/control comparison study (Wallage et al., 2006 [2+]) at Yorkshire Dales examined drained and undrained blanket mire. The following interventions were applied. Grips were blocked and compared with drained and undrained areas. . Measurements were taken of water table height, pore water pressure and soil water solutions chemistry including DOC and E4:E6 ratio. They found that there were significant differences in DOC concentrations and water colour values. DOC concentration values from drained peat were significantly greater than intact peat and those from	Alistair Crowle	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
99	n	n	+	The erosion rates provided are assumed, in that material is assumed to have been derived from a bare peat area SW of the traps. However, there is no reason why they should not have come from further afield, or been redeposited temporarily in the area, so these figures cannot be definitive. If this rate of erosion is converted into peat depth loss, assuming a bulk density of 0.1 g cm-3, it equates to 47mm loss of peat depth. The number of traps used is not provided and no statistical analysis is used to relate sedment trapped to meterological conditions.	A field-based single site monitoring study (Warburton, 2003 [2+]) at Moor House, North Pennines examined blanket peatland 615 m a.s.l., overlying till, with peat depth varying between 1-3m and composed of by Eriophorum, Calluna and Sphganum remains, with a prevailing SW wind. Around 17% of the peat is eroded with type 1 gullying on flatter areas and type 2 on steeper slopes, with occasional bare peat flats. Monitoring took place on an area of relatively flat, sparsely vegetated peat.. The following interventions were applied. . Measurements were taken of wind-blown sediment (termed horizontal flux) using fixed position bottles	Matthew Shepherd	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
100	Yes	Yes	++	had no serious shortcomings.	A field-based and laboratory before/after study (Wilson et al., 2010 [2++]) at Lake Vyrnwy examined blanket bog with many grips. The following interventions were applied. Grips were blocked. . Measurements were taken of water table and discharge. They found that water tables recovered in all catchments but at different rates. Physical factors, such as slope and peat depth, influenced water table recovery. Overall, there was a strong increase in surface water in response to blocking. At both drain and stream levels, average discharge rates were significantly lower after blocking. The study... had no serious shortcomings.	Alistair Crowle	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
101	Yes	Yes	++	had no serious shortcomings.	A field-based and laboratory before/after study (Wilson et al., 2011 [2++]) at Lake Vyrnwy examined blanket bog with many grips. The following interventions were applied. Grips were blocked. . Measurements were taken of water table, water colour, DOC, POC and discharge. They found that dipwell data was very variable so no overall trend was detected. Drain blocking appeared to result in more stable and higher flow rates during droughts, and slower declines in flow rate during first 5 days of drought periods. Stream discharge followed the same pattern as drain discharge, with flow rates across all catchments being higher and hydrograph recession	Alistair Crowle	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
102	yes - they identified areas of posible bias and attempted to control	yes	++	included a lot of text that could have been summarised more succinctly	A field-based and laboratory before/after study (Wilson et al., 2011b [2++]) at Lake Vyrnwy examined drained blanket bog. The following interventions were applied. Grips were blocked. . Measurements were taken of pH, conductivity, Dissolved Oxygen (DO) and DOC/POC. They found that pH value and conductivity levels declined significantly in drains after blocking, with pH also declining in streams. DO showed a slight matching trend but this was strongest during high rainfall periods after blocking. There was no real trend present in the absorbance data, although absorbance in discharge waters during high rainfall events decline over time.	Alistair Crowle	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
103	n	n	-	The paper suggests a mechanism for the initation of gully erosion, saying that "evidence suggests" but does not state what this evidence is or how it suggests it. There are apparently unsupported assumptions about how the gullies have developed, and comparison between photographs have been done "by eye" rather than measured. There are no statistical tests or methods reported.	A field case study (Wishart and Warburton, 2001 [3-]) at Cheviot Hills examined an area of blanket peatland comprising 70km2 of which 45% is peat covered.. The following interventions were applied. . Measurements were taken of peat erosion was mapped in detail from aerial photographs and classified as linear, anastamosing or dendritic, and the state of the peat margin classed as indistinct, a peat scar, or lightly or densely dissected. Peat slides were also mapped. Field visits were conducted to confirm the mapping and gullies measured, and aerial photoghaph of different ages compared to assess change in gullies	Matthew Shepherd	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
104	n	n	+	confounds steady states of peatlands (eg. managed burning, drainage, drain-blocked) with interventions that move a peatland from one steady state to another (afforestation, deforestation, grazing removal, revegetation). The comparison of probability of "improvement" int the carbon or greenhouse gas budget does not take into account he magnitude of the impacts, thus low probability of severe loss of carbon or emission of greenhouse gas does not equate to high probably of low gains of carbon or small reductions in emissions. The weighting of the different elements of the carbon budget are constrained to conform to that measured at a single	A field-based meta-analysis (Worrall et al., 2010 [2+]) at examined . The following interventions were applied. . Measurements were taken of metanalyses of the results of comparative field studies looking at the impact of land management on elements of carbon and greenhouse gas budgets. Studies were characterised on whether they had demonstrated an improvement in the budget (ie. improved C storage or reduced greenhouse gas (GHG) emissions), and the number of studies showing improvements were used to calculate a probability of any new study reporting an improvement. These, and the number of studies, were weighted against	Matthew Shepherd	

	unbiased treatments?	replicated and balanced design?	Study quality (++,+, -)	Notes	concat	review by	Functioning and active blanket bogs are characterised by a high mean annual water table (5-10 cm from surface).
105	n	n	++	the multiple dipwells, collars and erosion pins at each site are pseudo replicates of the management treatments. The controls represent either 2 replicates (bare) or 1 example of 2 different vegetation types in the peatland area unaffected by the wildfire and are therefore not truly amenable to balanced ANOVA testing, or wider extrapolation.	A field-based survey (Worrall et al., 2011 [2++]) at Bleaklow, the Peak District examined blanket peatland 468-630 m a.s.l. with an annual average rainfall of 1200mmm, subject to past wildfire, visitor disturbance, grazing, metal and acid deposition, and severely eroded with gullies. The study area was subject to a severe wildfire 3 years before this study, which left a surface of bare peat. Four of the plots in this study represent areas subject to revegetation management, through applicaiton of fertiliser, lime and seeding with Festuca, Deschampsia and Agrostis spp., and application of Calluna brash and geojute. Two study sites remained bare	Matthew Shepherd	

	Active blanket bogs are characterised by a zone of fluctuating water table, with high hydraulic conductivity, overlying a thicker zone of peat with almost permanent waterlogging and low hydraulic conductivity (the catotelm).	Functioning and active peatlands accumulate peat, and peat carbon, through ongoing deposition of material into the catotelm.	Peat pipes occur naturally in relatively intact peatlands. Gullies are natural features of undamaged peatlands.	Functional and active blanket bogs generate predominantly surface and near-surface runoff and so are characterised by rapid flow responses compared to most other areas, but because the channel network is limited these do not necessarily give rise to such rapidly-responding (flashy) hydrographs compared to less intact peatlands	Runoff travels more slowly across Sphagnum dominated vegetation, than some other moorland vegetation types or bare peat.	Intact (undrained) blanket peatlands export less DOC and water colour than drained or drain-blocked peatlands.	Intact peatlands are net emitters of methane, and emit more than drained peatlands and less than recently restored peatlands.	Peat forms where decomposition is retarded by waterlogging, so plant species which are found in peat are those which tolerate wet conditions, and form wetland communities.
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	Active blanket bogs are characterised by a zone of fluctuating water table, with high hydraulic conductivity, overlying a thicker zone of peat with almost permanent waterlogging and low hydraulic conductivity (the catotelm).	Functioning and active peatlands accumulate peat, and peat carbon, through ongoing deposition of material into the catotelm.	Peat pipes occur naturally in relatively intact peatlands. Gullies are natural features of undamaged peatlands.	Functional and active blanket bogs generate predominantly surface and near-surface runoff and so are characterised by rapid flow responses compared to most other areas, but because the channel network is limited these do not necessarily give rise to such rapidly-responding (flashy) hydrographs compared to less intact peatlands	Runoff travels more slowly across Sphagnum dominated vegetation, than some other moorland vegetation types or bare peat.	Intact (undrained) blanket peatlands export less DOC and water colour than drained or drain-blocked peatlands.	Intact peatlands are net emitters of methane, and emit more than drained peatlands and less than recently restored peatlands.	Peat forms where decomposition is retarded by waterlogging, so plant species which are found in peat are those which tolerate wet conditions, and form wetland communities.
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	Active blanket bogs are characterised by a zone of fluctuating water table, with high hydraulic conductivity, overlying a thicker zone of peat with almost permanent waterlogging and low hydraulic conductivity (the catotelm).	Functioning and active peatlands accumulate peat, and peat carbon, through ongoing deposition of material into the catotelm.	Peat pipes occur naturally in relatively intact peatlands. Gullies are natural features of undamaged peatlands.	Functional and active blanket bogs generate predominantly surface and near-surface runoff and so are characterised by rapid flow responses compared to most other areas, but because the channel network is limited these do not necessarily give rise to such rapidly-responding (flashy) hydrographs compared to less intact peatlands	Runoff travels more slowly across Sphagnum dominated vegetation, than some other moorland vegetation types or bare peat.	Intact (undrained) blanket peatlands export less DOC and water colour than drained or drain-blocked peatlands.	Intact peatlands are net emitters of methane, and emit more than drained peatlands and less than recently restored peatlands.	Peat forms where decomposition is retarded by waterlogging, so plant species which are found in peat are those which tolerate wet conditions, and form wetland communities.
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	Blanket peat is typically composed of a variable mixture of remains of Sphagnum spp., Eriophorum spp., dwarf shrubs, unidentified organic matter and Molina caerulea, the balance of which varies down the peat profile and between sites over small scales.	High water tables facilitate the growth and increase the abundance of Sphagnum.	Calluna vulgaris, and other moorland plants of drier habitats, don't form blanket peat on their own, without the presence of Sphagnum or Eriophorum of other wetland plants.	There is some evidence that Molinia can form peat on its own.	The species found in contemporary peat macrofossil deposits approximate to NVC communities now defined as blanket bog and associated vegetation types. The data to test this contention exists but has not been analysed.	Ploughing and planting coniferous trees on peat lowers the peat water table and causes peat surface subsidence and compaction.	Afforestation reduces methane emissions from peatlands and increases short-term carbon sequestration.	Increasing time under forestry plantation results in greater changes in the understorey community composition making it less similar to typical blanket bog vegetation.
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	There are distinctive plant communities between uncut blanket bog, in peat cuttings and at the boundary of cuttings.	Bare peat in peat cuttings initially dries out rapidly when water tables are low, but then remains stable, whereas dwarf-shrub vegetated peat continues to dry out.	Drainage of blanket peatland lowers the overall water table compared to undrained peatlands, in a changing pattern relating to the location of the grips.	The impact of drainage on the response times for storm hydrographs (flashiness) is not consistent between studies. The following studies showed higher flashiness in drained catchments, but the studies refuting this statement showed a lower or comparable flashiness.	Drained peatlands have less overland flow than intact peatlands.	Drained peatlands have a higher density and volume and larger size of peat pipes than undrained peatlands	Drained peatlands have higher DOC export than undrained peatlands.	Drained blanket peatlands have higher concentrations of DOC in their peat water.
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	Drained peatland have a lower frequency or abundance of Sphagnum and cotton grasses, and a higher frequency or abundance of lichens or grasses, while dwarf shrubs may increase or decrease.	Moorland drains on steep slopes (>4o) tend to erode, while those on gentler slopes tend to infill and there is more erosion at drain confluences that along lengths.	Drained blanket peatlands emit less methane than undrained ones.	Drained peatlands emit more CO_2 than undrained peatlands.	High past rates of deposition of acidic sulphur compounds will have slowed the growth rate several typical blanket bog Sphagna.	High levels of dry atmospheric deposition of ammonia will alter Sphagnum communities to remove some species of Sphagnum completely, or increase “undesirable” nutrient-tolerant species such as S. fallax, and can damage the health of plants of drier moorland (Calluna vulgaris and Cladonia portentosa), while wet deposition of ammonium reduced cover of one Sphagnum species.	Blanket bogs dominated by Calluna vulgaris have more frequent and dense peat pipes, and higher macropore flow lower in the soil, which increases with ongoing high rainfall, unlike that for peat under Eriophorum, Sphagnum or bare ground.
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	Sphagnum-dominated blanket bog vegetation has slower rates of overland flow during storm conditions than blanket bog dominated by Eriophorum or a mix of Eriophorum and Sphagnum.	Eriophorum vaginatum-dominated and Calluna vulgaris-dominated vegetation have lower peat macropore flow at deeper layers (10-30cm) compared with peat under Sphagnum-dominated vegetation.	Blanket peat dominated by Calluna vulgaris tends to have higher DOC export through its drainage waters, and higher DOC concentrations in its grips, that blanket peat dominated by other vegetation.	Severity of gullying and hagging is associated with higher, flatter areas, with reticulate (type 1) erosion on flatter tops, and linear (type 2) erosion on more sloping ground.	Water table in peatlands is lowered by gully/hagg erosion	Gully erosion of blanket peatlands in northern England accelerated during the late 18th/early 19th centuries.	Bare peat surfaces recede vertically (up to 62 mm per year) and do not accumulate new autochthonous peat.	Overland flow over bare peat is faster than over vegetated peat.
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	Sphagnum-dominated blanket bog vegetation has slower rates of overland flow during storm conditions than blanket bog dominated by Eriophorum or a mix of Eriophorum and Sphagnum.	Eriophorum vaginatum-dominated and Calluna vulgaris-dominated vegetation have lower peat macropore flow at deeper layers (10-30cm) compared with peat under Sphagnum-dominated vegetation.	Blanket peat dominated by Calluna vulgaris tends to have higher DOC export through its drainage waters, and higher DOC concentrations in its grips, that blanket peat dominated by other vegetation.	Severity of gullying and hagging is associated with higher, flatter areas, with reticulate (type 1) erosion on flatter tops, and linear (type 2) erosion on more sloping ground.	Water table in peatlands is lowered by gully/hagg erosion	Gully erosion of blanket peatlands in northern England accelerated during the late 18th/early 19th centuries.	Bare peat surfaces recede vertically (up to 62 mm per year) and do not accumulate new autochthonous peat.	Overland flow over bare peat is faster than over vegetated peat.
65							6	
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68				2			-1	
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74				1		2	1	
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	Sphagnum-dominated blanket bog vegetation has slower rates of overland flow during storm conditions than blanket bog dominated by Eriophorum or a mix of Eriophorum and Sphagnum.	Eriophorum vaginatum-dominated and Calluna vulgaris-dominated vegetation have lower peat macropore flow at deeper layers (10-30cm) compared with peat under Sphagnum-dominated vegetation.	Blanket peat dominated by Calluna vulgaris tends to have higher DOC export through its drainage waters, and higher DOC concentrations in its grips, that blanket peat dominated by other vegetation.	Severity of gullying and hagging is associated with higher, flatter areas, with reticulate (type 1) erosion on flatter tops, and linear (type 2) erosion on more sloping ground.	Water table in peatlands is lowered by gully/hagg erosion	Gully erosion of blanket peatlands in northern England accelerated during the late 18th/early 19th centuries.	Bare peat surfaces recede vertically (up to 62 mm per year) and do not accumulate new autochthonous peat.	Overland flow over bare peat is faster than over vegetated peat.
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	Sphagnum-dominated blanket bog vegetation has slower rates of overland flow during storm conditions than blanket bog dominated by Eriophorum or a mix of Eriophorum and Sphagnum.	Eriophorum vaginatum-dominated and Calluna vulgaris-dominated vegetation have lower peat macropore flow at deeper layers (10-30cm) compared with peat under Sphagnum-dominated vegetation.	Blanket peat dominated by Calluna vulgaris tends to have higher DOC export through its drainage waters, and higher DOC concentrations in its grips, that blanket peat dominated by other vegetation.	Severity of gullying and hagging is associated with higher, flatter areas, with reticulate (type 1) erosion on flatter tops, and linear (type 2) erosion on more sloping ground.	Water table in peatlands is lowered by gully/hagg erosion	Gully erosion of blanket peatlands in northern England accelerated during the late 18th/early 19th centuries.	Bare peat surfaces recede vertically (up to 62 mm per year) and do not accumulate new autochthonous peat.	Overland flow over bare peat is faster than over vegetated peat.
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	In drought conditions bare peat loses water from its surface rapidly, but retains it at depth.	Bare peat loses signficant amounts of POC, moderate amounts of DOC, does not emit much CO_2, and has low biological activity.	Felling coniferous trees on blanket peatland is more likely to result in blanket bog vegetation recovery where the plantation is younger.	Felling trees to waste, and disposoing of waste on site need not prevent recovery towards blanket bog vegetation	Blanket bog vegetation will recover more quickly and to more characteristic vegetation, where the ground is flatter, wetter and where forest residues are thinner.	Revegetation of bare blanket peat is possible, using Calluna, grasses, or Eriophorum angustifolium.	Addition of both lime and fertiliser enhances the success of nurse grass, Eriophorum and heather establishment.	Applying geojute to bare peat encourages more rapid development of cover.	Revegetation of bare peat, along with interventions to aid revegetation, can result in increased rates of CO_2 emissions compared with bare peat.
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2						1	1		
3									
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5						2		1	
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12						9	7		
13						3	2	2	
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	In drought conditions bare peat loses water from its surface rapidly, but retains it at depth.	Bare peat loses signficant amounts of POC, moderate amounts of DOC, does not emit much CO_2, and has low biological activity.	Felling coniferous trees on blanket peatland is more likely to result in blanket bog vegetation recovery where the plantation is younger.	Felling trees to waste, and disposoing of waste on site need not prevent recovery towards blanket bog vegetation	Blanket bog vegetation will recover more quickly and to more characteristic vegetation, where the ground is flatter, wetter and where forest residues are thinner.	Revegetation of bare blanket peat is possible, using Calluna, grasses, or Eriophorum angustifolium.	Addition of both lime and fertiliser enhances the success of nurse grass, Eriophorum and heather establishment.	Applying geojute to bare peat encourages more rapid development of cover.	Revegetation of bare peat, along with interventions to aid revegetation, can result in increased rates of CO_2 emissions compared with bare peat.
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	In drought conditions bare peat loses water from its surface rapidly, but retains it at depth.	Bare peat loses signficant amounts of POC, moderate amounts of DOC, does not emit much CO2, and has low biological activity.	Felling coniferous trees on blanket peatland is more likely to result in blanket bog vegetation recovery where the plantation is younger.	Felling trees to waste, and disposoing of waste on site need not prevent recovery towards blanket bog vegetation	Blanket bog vegetation will recover more quickly and to more characteristic vegetation, where the ground is flatter, wetter and where forest residues are thinner.	Revegetation of bare blanket peat is possible, using Calluna, grasses, or Eriophorum angustifolium.	Addition of both lime and fertiliser enhances the success of nurse grass, Eriophorum and heather establishment.	Applying geojute to bare peat encourages more rapid development of cover.	Revegetation of bare peat, along with interventions to aid revegetation, can result in increased rates of CO2 emissions compared with bare peat.
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	In drought conditions bare peat loses water from its surface rapidly, but retains it at depth.	Bare peat loses signficant amounts of POC, moderate amounts of DOC, does not emit much CO_2, and has low biological activity.	Felling coniferous trees on blanket peatland is more likely to result in blanket bog vegetation recovery where the plantation is younger.	Felling trees to waste, and disposoing of waste on site need not prevent recovery towards blanket bog vegetation	Blanket bog vegetation will recover more quickly and to more characteristic vegetation, where the ground is flatter, wetter and where forest residues are thinner.	Revegetation of bare blanket peat is possible, using Calluna, grasses, or Eriophorum angustifolium.	Addition of both lime and fertiliser enhances the success of nurse grass, Eriophorum and heather establishment.	Applying geojute to bare peat encourages more rapid development of cover.	Revegetation of bare peat, along with interventions to aid revegetation, can result in increased rates of CO_2 emissions compared with bare peat.
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	In drought conditions bare peat loses water from its surface rapidly, but retains it at depth.	Bare peat loses signficant amounts of POC, moderate amounts of DOC, does not emit much CO_2, and has low biological activity.	Felling coniferous trees on blanket peatland is more likely to result in blanket bog vegetation recovery where the plantation is younger.	Felling trees to waste, and disposoing of waste on site need not prevent recovery towards blanket bog vegetation	Blanket bog vegetation will recover more quickly and to more characteristic vegetation, where the ground is flatter, wetter and where forest residues are thinner.	Revegetation of bare blanket peat is possible, using Calluna, grasses, or Eriophorum angustifolium.	Addition of both lime and fertiliser enhances the success of nurse grass, Eriophorum and heather establishment.	Applying geojute to bare peat encourages more rapid development of cover.	Revegetation of bare peat, along with interventions to aid revegetation, can result in increased rates of CO_2 emissions compared with bare peat.
85									
86			2	1	1				
87									
88						6	6		
89						10	8	3	
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92						8			
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102									
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104									
105		1							2

	Revegetation of bare peat with grasses will reduce, but will probably not reverse, net loss of carbon from hydrologically unrestored peatlands.	Revegetation of bare peat results in reduction of POC loss.	Bare peat, following revegetation, shows a related increase in the activity and abundance of soil microbes.	Revegetation of bare peat with nurse and moorland grasses, and Calluna will not reduce DOC loss.	Plants of lowland situations, such as agricultural grasses or legumes, are less likely to germinate and survive than those found naturally in uplands.	Atmospheric and climatic conditions in English blanket peatlands are not prohibitive to the growth of Sphagnum.	Sphagnum reintroduction is more successful where water table is raised, humidity is high, and with either shade fabric, nurse vegetation or mulch, and where Sphagnum diaspores were collected from the top 10 cm of intact bog, but this depends also on the species used and the physico-chemical conditions of the peat substrate.
1							
2							
3							
4						2	
5				1			
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10							
11							1
12					1		
13					3		
14							2
15							
16						1	
17							
18							3
19							4

	Revegetation of bare peat with grasses will reduce, but will probably not reverse, net loss of carbon from hydrologically unrestored peatlands.	Revegetation of bare peat results in reduction of POC loss.	Bare peat, following revegetation, shows a related increase in the activity and abundance of soil microbes.	Revegetation of bare peat with nurse and moorland grasses, and Calluna will not reduce DOC loss.	Plants of lowland situations, such as agricultural grasses or legumes, are less likely to germinate and survive than those found naturally in uplands.	Atmospheric and climatic conditions in English blanket peatlands are not prohibitive to the growth of Sphagnum.	Sphagnum reintroduction is more successful where water table is raised, humidity is high, and with either shade fabric, nurse vegetation or mulch, and where Sphagnum diaspores were collected from the top 10 cm of intact bog, but this depends also on the species used and the physico-chemical conditions of the peat substrate.
20						4	
21			1				
22						5	
23							
24							
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26							
27							-1
28							
29						6	
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35							11
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38					2		

	Revegetation of bare peat with grasses will reduce, but will probably not reverse, net loss of carbon from hydrologically unrestored peatlands.	Revegetation of bare peat results in reduction of POC loss.	Bare peat, following revegetation, shows a related increase in the activity and abundance of soil microbes.	Revegetation of bare peat with nurse and moorland grasses, and Calluna will not reduce DOC loss.	Plants of lowland situations, such as agricultural grasses or legumes, are less likely to germinate and survive than those found naturally in uplands.	Atmospheric and climatic conditions in English blanket peatlands are not prohibitive to the growth of Sphagnum.	Sphagnum reintroduction is more successful where water table is raised, humidity is high, and with either shade fabric, nurse vegetation or mulch, and where Sphagnum diaspores were collected from the top 10 cm of intact bog, but this depends also on the species used and the physico-chemical conditions of the peat substrate.
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42							5
43							9
44							6
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	Revegetation of bare peat with grasses will reduce, but will probably not reverse, net loss of carbon from hydrologically unrestored peatlands.	Revegetation of bare peat results in reduction of POC loss.	Bare peat, following revegetation, shows a related increase in the activity and abundance of soil microbes.	Revegetation of bare peat with nurse and moorland grasses, and Calluna will not reduce DOC loss.	Plants of lowland situations, such as agricultural grasses or legumes, are less likely to germinate and survive than those found naturally in uplands.	Atmospheric and climatic conditions in English blanket peatlands are not prohibitive to the growth of Sphagnum.	Sphagnum reintroduction is more successful where water table is raised, humidity is high, and with either shade fabric, nurse vegetation or mulch, and where Sphagnum diaspores were collected from the top 10 cm of intact bog, but this depends also on the species used and the physico-chemical conditions of the peat substrate.
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80							10
81							-2
82							7
83							8
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95							-3

	Revegetation of bare peat with grasses will reduce, but will probably not reverse, net loss of carbon from hydrologically unrestored peatlands.	Revegetation of bare peat results in reduction of POC loss.	Bare peat, following revegetation, shows a related increase in the activity and abundance of soil microbes.	Revegetation of bare peat with nurse and moorland grasses, and Calluna will not reduce DOC loss.	Plants of lowland situations, such as agricultural grasses or legumes, are less likely to germinate and survive than those found naturally in uplands.	Atmospheric and climatic conditions in English blanket peatlands are not prohibitive to the growth of Sphagnum.	Sphagnum reintroduction is more successful where water table is raised, humidity is high, and with either shade fabric, nurse vegetation or mulch, and where Sphagnum diaspores were collected from the top 10 cm of intact bog, but this depends also on the species used and the physico-chemical conditions of the peat substrate.
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101							
102							
103							
104	2	2					
105	1	1		2			

	Both natural recovery of Sphagnum and establishment and growth of newly-planted Sphagnum can occur in areas of degraded blanket bog where the water table is low or absent, as long as there is adequate moisture supply from rain and cloudwater.	The dominance of Molinia caerulea can be reduced by vigorous cutting, grazing and herbicide treatments.	Spring burning does not reduce the dominance of Molinia, unless in combination with a more successful approach.	Grip blocking raises the water table but not to the level found in intact peatlands.	Blocking grips slightly reduces the DOC export from the catchment.	There is no clear pattern in the response of stream DOC/colour concentrations. There are x studies showing lower DOC in stream/drain waters in blocked compared to openly drained sites and x studies showing higher DOC in these situations.
1						
2						
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4				1		1
5						
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7				2		2
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	Both natural recovery of Sphagnum and establishment and growth of newly-planted Sphagnum can occur in areas of degraded blanket bog where the water table is low or absent, as long as there is adequate moisture supply from rain and cloudwater.	The dominance of Molinia caerulea can be reduced by vigorous cutting, grazing and herbicide treatments.	Spring burning does not reduce the dominance of Molinia, unless in combination with a more successful approach.	Grip blocking raises the water table but not to the level found in intact peatlands.	Blocking grips slightly reduces the DOC export from the catchment.	There is no clear pattern in the response of stream DOC/colour concentrations. There are x studies showing lower DOC in stream/drain waters in blocked compared to openly drained sites and x studies showing higher DOC in these situations.
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40						-4
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	Both natural recovery of Sphagnum and establishment and growth of newly-planted Sphagnum can occur in areas of degraded blanket bog where the water table is low or absent, as long as there is adequate moisture supply from rain and cloudwater.	The dominance of Molinia caerulea can be reduced by vigorous cutting, grazing and herbicide treatments.	Spring burning does not reduce the dominance of Molinia, unless in combination with a more successful approach.	Grip blocking raises the water table but not to the level found in intact peatlands.	Blocking grips slightly reduces the DOC export from the catchment.	There is no clear pattern in the response of stream DOC/colour concentrations. There are x studies showing lower DOC in stream/drain waters in blocked compared to openly drained sites and x studies showing higher DOC in these situations.
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59				-1		-1
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67		5	2			
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69		2				

	Both natural recovery of Sphagnum and establishment and growth of newly-planted Sphagnum can occur in areas of degraded blanket bog where the water table is low or absent, as long as there is adequate moisture supply from rain and cloudwater.	The dominance of Molinia caerulea can be reduced by vigorous cutting, grazing and herbicide treatments.	Spring burning does not reduce the dominance of Molinia, unless in combination with a more successful approach.	Grip blocking raises the water table but not to the level found in intact peatlands.	Blocking grips slightly reduces the DOC export from the catchment.	There is no clear pattern in the response of stream DOC/colour concentrations. There are x studies showing lower DOC in stream/drain waters in blocked compared to openly drained sites and x studies showing higher DOC in these situations.
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	Both natural recovery of Sphagnum and establishment and growth of newly-planted Sphagnum can occur in areas of degraded blanket bog where the water table is low or absent, as long as there is adequate moisture supply from rain and cloudwater.	The dominance of Molinia caerulea can be reduced by vigorous cutting, grazing and herbicide treatments.	Spring burning does not reduce the dominance of Molinia, unless in combination with a more successful approach.	Grip blocking raises the water table but not to the level found in intact peatlands.	Blocking grips slightly reduces the DOC export from the catchment.	There is no clear pattern in the response of stream DOC/colour concentrations. There are x studies showing lower DOC in stream/drain waters in blocked compared to openly drained sites and x studies showing higher DOC in these situations.
93						
94		4	1			
95						
96				5		
97				4		
98						
99						
100				5		
101				-2	1	-2
102					2	-5
103						
104						
105						

	Grip blocking increases the abundance of wetland plant species.	Grip blocking results in lower POC export.	Grip blocking increases surface hydraulic conductivity in peat and reduces surface bulk density.	Grip blocking reduces CO_2 emissions	Grip blocking increase methane emissions	Using peat dams to block grips provides comparable or better success rates at retaining water to more expensive solutions.	Grip blocking reduces the flashiness of flood hydrographs
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4	1						
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6							
7						1	
8						3	
9						2	
10	6						
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37	4						
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39		1					1
40		-1					-1
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	Grip blocking increases the abundance of wetland plant species.	Grip blocking results in lower POC export.	Grip blocking increases surface hydraulic conductivity in peat and reduces surface bulk density.	Grip blocking reduces CO_2 emissions	Grip blocking increase methane emissions	Using peat dams to block grips provides comparable or better success rates at retaining water to more expensive solutions.	Grip blocking reduces the flashiness of flood hydrographs
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92							
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95							
96	5	4		3	3		
97			1				
98							
99							
100							
101		3					2
102		2					
103							
104				1	2		
105							

	Grip blocking reduces overall water yield and catchment "efficiency".	Grips on shallow slopes are more likely to infill and revegetate and less likely to erode.	Grip blocking increases invertebrate abundance and diversity	Grip blocking increases base flow.	Grip blocking does not reduce DOC and water colour in soil water.
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	Grip blocking reduces overall water yield and catchment "efficiency".	Grips on shallow slopes are more likely to infill and revegetate and less likely to erode.	Grip blocking increases invertebrate abundance and diversity	Grip blocking increases base flow.	Grip blocking does not reduce DOC and water colour in soil water.
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	Grip blocking reduces overall water yield and catchment "efficiency".	Grips on shallow slopes are more likely to infill and revegetate and less likely to erode.	Grip blocking increases invertebrate abundance and diversity	Grip blocking increases base flow.	Grip blocking does not reduce DOC and water colour in soil water.
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	Grip blocking reduces overall water yield and catchment "efficiency".	Grips on shallow slopes are more likely to infill and revegetate and less likely to erode.	Grip blocking increases invertebrate abundance and diversity	Grip blocking increases base flow.	Grip blocking does not reduce DOC and water colour in soil water.
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101				1	
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104					
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