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Effects on water quality and CO2 fluxes following a managed burn of a UK blanket bog

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Careful stewardship of the UK upland peat soils is important for several reasons: in the UK they are the largest terrestrial store of carbon; over half the UK receives its water from peat covered catchments, and they are an important area for biodiversity. UK peat is also heavily managed to provide grazing for sheep and ground cover for grouse shooting; included in management is the practise of managed burning - up to 40% of the UK peat is managed by burning.

However recent trends show that UK upland peat soils are highly damaged leading increased losses of sediment and water colour; loss of habitat and many areas may already be net sources of carbon. It is suggested that good land management may return these areas to net carbon sinks. So, is our present land management compatible with long term sustainable use and carbon storage?

Long running experimental plots at Moor House National Nature Reserve in the North Pennines, are being used to investigate the effects of grazing and burning rotation on water quality and carbon storage. Monitoring began in April 2005 and since then samples for water quality have been collected at least once a month and CO_2 flux data has been collected since November 2006. From this data it has been found that the management controls hydrology and water quality through differential development of vegetation.

Some of the experimental plots were burnt in February 2007 as part of a regular 10 year cycle of burning. The monitoring has continued for a year post-burn to assess the immediate effects on water quality and CO_2 fluxes following a managed burn. In

the months following the burn CO_2 uptake on the recently burnt plots was significantly higher than those that had not been burnt. This was due to vegetation growth specifically a vigorous regrowth of *Eriophorum spp.*

This paper also details water quality results which will be completed in February 2008.