

Development of a strategy to manage sediment in an appropriate way

Project Summary

Title: Whitfield Moor (Peatscapes Project) Grip Blocking

Location: Whitfield Moor, North Pennines, England

Technique: Infilling drainage ditches to improve water retention of landscape

Cost of technique: ££

Overall cost of scheme: ££££

Benefits: ££££

Dates: 2007-2008

Mitigation Measure(s)

Development of a strategy to manage sediment in an appropriate way

How it was delivered

Delivered by: Environment Agency

Partners: AONB Partnership; RSPB; Natural England; Moorland Association; English Heritage, Wildlife Trusts; Northumbrian Water; Durham University



Background / Issues

Attempts to make the North Pennines agriculturally productive between the 1950s and 1980s have led to the creation of approximately 9,400km of “grips” (ditches which drain the peatland) within the North Pennines Area of Natural Beauty (AONB). As a result of this practice, large areas of the moorlands have dried with some serious consequences for the peatland habitat. These include more rapid hydrological response to rainfall events, which causes increased erosion and leads to increased sediment loads in the rivers downstream. These changes to the drainage network cause negative effects on habitats and wildlife and a reduction in the capacity of peatlands to moderate flooding and store carbon.

A strategy to control erosion and sediment input into the local river network was established through the use of a technique aimed at increasing water storage within the peatland landscape.



1) Grip before blocking, 2) after blocking

Step-by-step

The Whitfield Moor project aimed to restore an area of 480 ha of peatland through the blocking of 120 km of grips and subsequent rewetting of the surrounding landscape.

The grip blocking method consisted of:

- Utilising an excavator with low pressure tracks to dig out dam material from an area adjacent to the grip.
- Placing excavated material in the grip to form dams of approximately 30-50 cm, blocking flows.
- Repeat grip infilling at 7 to 12 m intervals until the length of the ditch is blocked leading to water build up and vegetation colonisation of the dams.



Grip blocking using an excavator

Benefits

- Impoundment of water behind the dams promotes the raising of the water table in the areas surrounding the ditches, contributing towards the saturation of the soils and the recovery of the peat ecology.
- Improvements to hydrology of the peatland by increasing of storage capacity and flood amelioration.
- Changes to hydrology cause a reduction in stream energy, resulting in a decrease in erosion of peatland and a reduction in sediment supply to the river network downstream; Holden *et al.* (2007) have reported restored grips to reduce sediment production by 54 % when compared to unrestored grips.
- Improvements to local biodiversity;
- Improvements to potential for carbon storage and sequestration within peatland habitat.



Moorland research project sponsored through the AONB Partnership's Peatscapes

Lessons Learnt

- While changes in local hydrology and recovering ecology were quickly observable, the need for long-term monitoring of ecosystem recovery as well as hydromorphology has been stressed by the scientific community and is recommended for similar future projects.
- Communication across a multi-organisation project as well as landowners has proven a significant challenge for this project. The appointment of a "field officer" enabled effective communication through a single contact, successfully overcoming stakeholder engagement issues.

Project contact: Flood and Coastal Risk Management, North Yorkshire Area, Environment Agency