

Multiple benefits of natural flood management intervention.

Community Forest Trust



A living leaky barrier on the Woodland Trust Smithills Estate. Behind this barrier are hundreds of willow saplings to support the dead wood. (Mike Norbury)

Date carried out

March 2019 - March 2020

Location

Smithills, Bolton.
Upper Roch Valley, Rochdale.
New Mills (Chimley Churn), Derbyshire.

Background

Natural flood management intervention measures can help to slow and control flows upstream of communities who are at risk of flooding. The Environment Agency, using Flood Defence Grant in Aid funding, has supported a number of projects in the uplands around Greater Manchester.

Between March 2019 - March 2020, Community Forest Trust delivered:

- Six engineered leaky log jams, and planted 1,000 trees in plots at New Mills
- 20 runoff attenuation features at Upper Roch Valley
- 25 runoff attenuation features, plus habitat restoration improvements including 65 Ha of riparian woodland (HLF funding) and 1 Ha of wetland at Smithills

Partners

Mersey Forest, Environment Agency, Defra, Liverpool University, Woodland Trust, H & SJ Hallam (Piece Farm), Derbyshire County Council, University of Salford, Ribble Rivers Trust, Pownall Plant Ltd

Themes



Green
Infrastructure



Evidence &
Tools



Water
Quality



Water
Quantity

Project

The primary focus of the Natural Course activity was to gain a greater understanding of how the innovative natural flood management interventions, funded through the Flood Defence Grant in Aid programme, could also be used to address water quality issues. The project involved trialling a range of different hydrological and ecological monitoring techniques.

New Mills

The team carried out water quality surveys and monitored ecological characteristics of the leaky log jam installations. This was to test the impact the interventions had on water at a site where sewage sludge is spread.

A Natural Capital approach was used to define the ecosystem benefits of the projects in addition to the water quality and quantity benefits.



Water level station and weir conducting baseline monitoring, Smithills (The Mersey Forest & University of Liverpool)



Keeled Skimmer (Richard Cooke)

Upper Roch Valley

Greater Manchester Ecology Unit conducted ecological surveys before and after the natural flood management installations.

Training was provided to local Flood Action Groups enabling them to monitor the effect of the natural flood management interventions in their area.

Smithills

Wardens and volunteers collected water samples before the installation to give an ecological baseline. Monitoring and evidence reporting of flora and fauna (including macro-invertebrates) post installation is ongoing.

Outcomes

The primary focus of the original projects is to reduce flood risk and create new or improved habitats. With the support of Natural Course, it is demonstrated that there are multiple benefits to natural flood management interventions, which include improvements to water quality as well as water quantity.

Other positive outcomes are that more people are engaged with their local environment, and are seeing the direct benefit from these measures. Volunteers monitoring newly formed environments created by the installations spotted a keeled skimmer dragonfly at Smithills. Whilst possibly only passing through, this is believed to be the first-ever sighting in Greater Manchester of this locally scarce insect.

Learning

The delivery of multiple benefit projects is time-consuming and involves input from a wide range of partners. The on-going monitoring in place will enable us to measure the water quality benefits from natural flood management interventions.

Next Steps

These projects show the impact of natural flood management interventions at a local level, and will continue to test different types of installations (such as trees, bunds, swales, wetlands, leaky living dams, and tree laying across a stream). Monitoring the ecology using macro-invertebrate kick sampling techniques will be conducted too. The next step is to scale this up and find opportunities to deliver natural flood management at a catchment scale.

Mike Norbury, The Mersey Forest, said:

"At present Smithills Deane, a tributary of the River Irwell, fails to achieve good status for water quality. Studies have shown that building living leaky dams and planting woodland reduces sediment and nutrient loading from upslope land, and in time it is hoped that improvements will follow in the quality of the river environment."

Mark Turner, Natural Course Team Leader, GMCA said:

"These projects are an excellent example of how natural processes can be harnessed to deliver a range of benefits to Greater Manchester including flood risk mitigation, improved water quality and benefits to wildlife."

Contact : info@naturalcourse.co.uk