Natural Flood Management (NFM)

Ben Fenton, Calderdale Council

The benefits for farmers

There is much research into the flood mitigation and environmental benefits of natural flood management (NFM), but these activities can also offer considerable benefits to farmers/landowners. In addition to reducing the risk of farmland and buildings flooding, implementing NFM features upon a farm can eliminate waterlogging.

Erosion and the risk of landslips are reduced, protecting the soil, and minimising loss of valuable nutrients. By improving soil health with simple activities such as aerating soil, drainage is improved, and water retention increased, reducing the risks of droughts.

Planting trees and hedges can offer livestock protection from the wind and sun. Furthermore, planting willow can offer income generation via short rotation coppicing.

NFM can also mean an Improved water quality for stock and wildlife, which can help to meet the requirements of the EU Water Framework Directive.

To find out more about benefits of NFM for farmers take a look at this handy guide:

Natural Flood Management Measures

A Practical Guide for Farmers in Calderdale

https://eyeoncalderdale.com/Media/Default/NFM/calderdale_nfm_guide.pdf

If you are interested in undertaking natural flood management upon your land, please get in touch to discuss this further:

nfm@calderdale.gov.uk.

Calderdale Council and the Environment Agency have previously offered grants to fund natural flood management, future opportunities will be announced here:

https://eyeoncalderdale.com/

Invasive Non-Native Species (INNS)

John Cave, Yorkshire Wildlife Trust

What are INNS?

Invasive Non-Native Species (INNS) are plants and animals which have been introduced to an environment from outside of their native range and can lead to detrimental impacts to people and wildlife.

Why do they matter?

Many invasive plant species spread readily along watercourses and can have wide ranging impacts; from reducing the stability of riverbanks, increasing flood risk and reducing biodiversity.

Legal responsibility

Landowners have a legal responsibility to prevent the spread of certain INNS from spreading to neighbouring land.

This includes plants such as **Japanese Knotweed** and **Giant Hogweed**. A full list of these species can be found under schedule 9 of Wildlife & Countryside Act 1981.

Biosecurity

INNS by their very nature are effective at spreading. Species such as **Japanese Knotweed** can spread readily from small fragments of the stem or root. Other plants such as giant hogweed can produce an enormous number of seeds which can be carried unintentionally by people.

Accidental or intentional disturbance of invasive plants and surrounding soil can stimulate further growth and facilitate there spread to other sites.

It is important that any activities near INNS populations considers the risk of spreading INNS further. By planning activities and cleaning equipment & clothing we can reduce the spread of INNS.

For guidance on managing INNS and implementing good biosecurity practices contact **invasives@ywt.org.uk**

American Skunk Cabbage

Japanese Knotweed

Giant Hogweed

Himalayan Balsam


Pied Flycatcher


Sand Martin


Pipistrelle


Twite

The Calder catchment is a special place for plants and wildlife.

Good land management and using best practices for water friendly farming are key components of healthy rivers and a healthy environment. Some of our species, including the Twite, and habitats such as Waxcap Grasslands, are of international significance.


Kingfisher


Water Vole


Waxcap


Dipper


Smooth Newt


Greyling


Sphagnum Moss


Brown Trout


Mayfly and Damselfly larvae


Floating Water Plantain


Cased Caddisfly

Water Friendly Farming: What's in it for the farmer?

Water Friendly Farming practices have a number of benefits for farmers as well as for the environment. By using water friendly techniques, farmers can reduce risk and maximise farm profitability.

Working to improve water quality helps to safeguard our watercourses, reducing the risk of pollution incidents and consequent fines or prosecution. Careful application of substances like fertiliser, alongside actions to reduce run-off, mean that costs are reduced as less is used, and less is lost to the river.

Creating better stock handling and housing facilities, and keeping stock out of the watercourses, makes for healthier rivers and streams. It also reduces lameness and illness by keeping animals cleaner. Collecting rainwater for use in cleaning, e.g. washing down vehicles, may reduce water costs, as well as contributing to slowing the flow of heavy rain into watercourses.

Healthier environments which promote biodiversity also have benefits for the wider community. A healthy, biodiverse landscape increases the recreational value of the land, and improves local fisheries, helping to bring more money into the local economy.

Water friendly farming practices also promote good working relationships with neighbours, by reducing flooding and pollution, and increasing biosecurity through better animal management.

Keeping it legal

Before undertaking any works, make sure you contact the relevant authorities

- Will the work be on or affect a designated site? e.g. Site of Special Scientific Interest (SSSI), Special Area of Conservation (SAC), Special Protection Area (SPA), Scheduled Ancient Monument (SAM)
- Will the work affect protected species? e.g. Otters, Bats etc. Seek advice, as a Natural England license may be required.
- Consult the Environment Agency before undertaking works on a main river or in a designated floodplain.
- To carry out work on an ordinary watercourse, you will need to contact the Lead Local Flood Authority responsible for that particular watercourse.
- Do not undertake in-stream or bank profiling work without first getting permission from the Environment Agency
- An Environment Agency license is required if spraying herbicide near to or on any watercourse.
- A felling license is required if more than 5m^3 of timber is coppiced in a calendar quarter.
- The Environment Agency can be contacted at **rachel.kipling@environment-agency.gov.uk 07827 986596 / 0370 8506506**

Help and Advice

Organisations working in the Calder catchment

Calder and Colne Rivers Trust, Farm and Rural Liaison
jane.rowling@calderandcolneriverstrust.org 07943 470261

Calderdale Metropolitan Borough Council Natural Flood Management Team nfm@calderdale.gov.uk

Environment Agency, Aire and Calder Catchment
rachel.kipling@environment-agency.gov.uk
07827 986596 / 0370 850 6506

ForusTree info@forustree.org

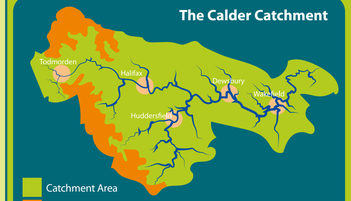
Holme Valley Climate Action Partnership japlet@icloud.com

Kirklees Council Flood Risk and Drainage Management
martin.stephenson@kirklees.gov.uk

River Holme Connections: riversteward@riverholmeconnections.org 01484 661 756

Yorkshire Wildlife Trust Invasive Species Team
elliot.baxendale@ywt.org.uk

The Calder Catchment



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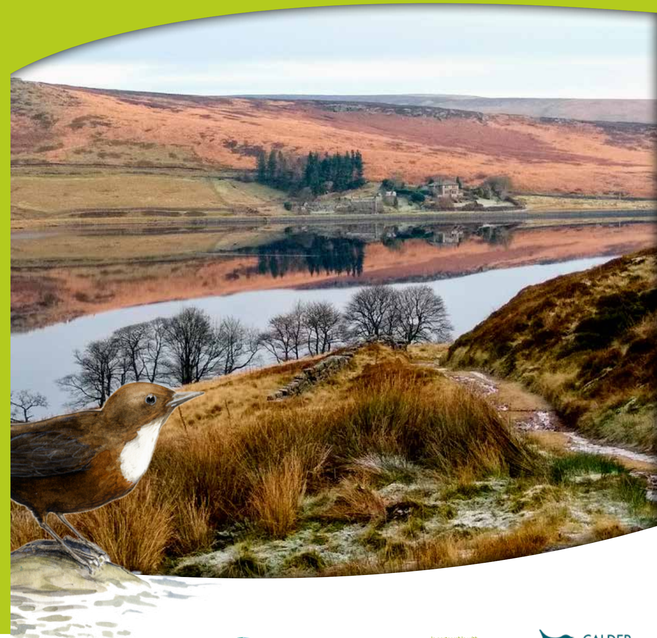
Calder and Colne
WATER FRIENDLY FARMING
Good Practice Guide



WATER FRIENDLY FARMING

Water Friendly Farming can help protect our rivers and streams, and can help make farm businesses more effective and efficient. Good land management and farm practice will improve soil protection, reduce fertiliser and pesticide use and can also improve animal health. This can result in both cost savings and environmental improvements.

Livestock and Rivers

Where stock have free access to the river, water quality can be poor.

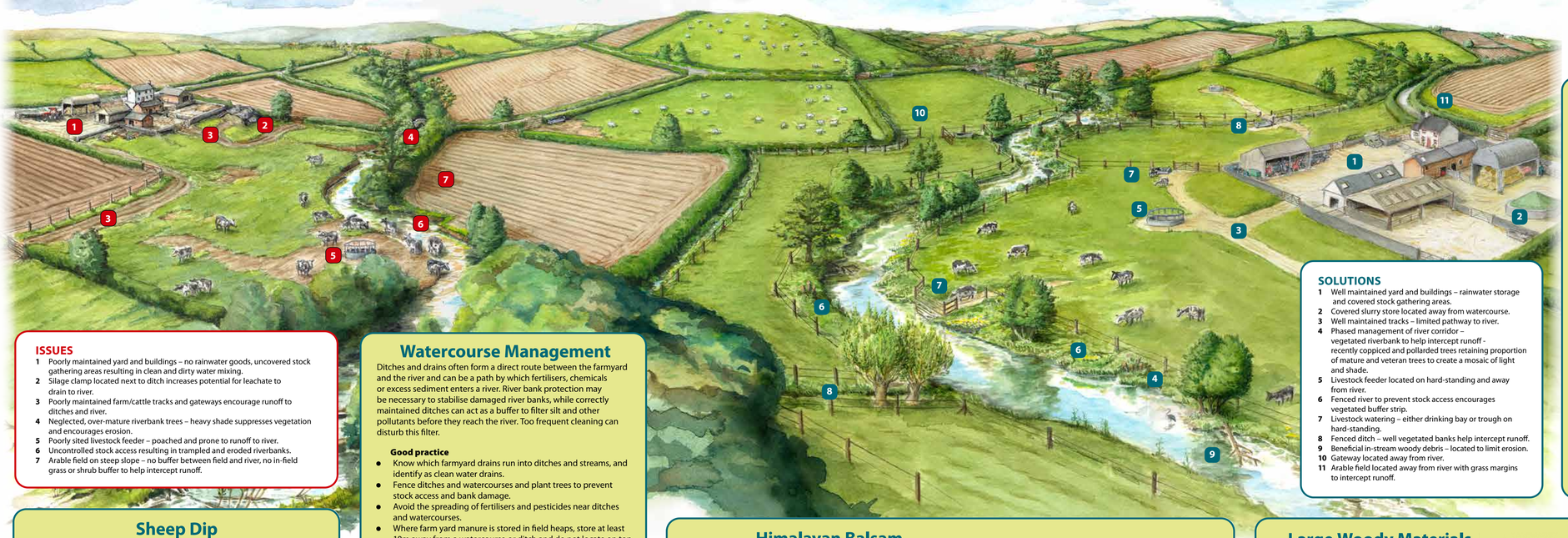
Poached soil leads to erosion, over-wide channels and shallow watercourses. This is compounded by compaction of soil, in turn leading to greater runoff and the deposition of fine silt on the riverbed. Silt robs the riverbed of oxygen by blocking the spaces between the gravels, significantly reducing the number of invertebrates, pearl mussels and fish eggs. Uncontrolled stock access also adds animal wastes to the rivers which causes pollution.

Fencing watercourses can help reverse this decline

- River bank vegetation is re-established, helping to reduce erosion.
- Establishes a buffer strip between rivers and fields that intercepts soil run off.
- Reducing soil run-off helps to keep important nutrients on the land, often reducing the need and cost of using fertiliser. This is a requirement under the Farming Rules for Water.
- Keeping livestock out of rivers may help reduce the spread of waterborne disease.
- Allowing polluting material to enter a river or stream is also an offence which can attract large fines.

Fencing and Stock Watering Good Practice

- Set fencing at an appropriate distance from the river (banktop height or greater).
- Align fencing parallel to flow and build in weak points at areas of risk.
- Temporary electric fencing or three lines of wire may be more appropriate than stock netting in areas of high flood risk.
- Make provision for gated access, to allow control of invasive vegetation by topping or occasional grazing by livestock.
- Access ramps should be sited on slope no more than 1:6 and should be surfaced with local stone held in place at the toe of the bank with untreated timber or similar.
- Locate water troughs away from watercourses.
- Provide hard base around the trough to minimise poaching.
- Troughs should be used in preference to drinking bays.



ISSUES

1. Poorly maintained yard and buildings – no rainwater goods, uncovered stock gathering areas resulting in clean and dirty water mixing.
2. Silage clamp located next to ditch increases potential for leachate to drain to river.
3. Poorly maintained farm/cattle tracks and gateways encourage runoff to ditches and river.
4. Neglected, over-mature riverbank trees – heavy shade suppresses vegetation and encourages erosion.
5. Poorly sited livestock feeder – poached and prone to runoff to river.
6. Uncontrolled stock access resulting in trampled and eroded riverbanks.
7. Arable field on steep slope – no buffer between field and river, no in-field grass or shrub buffer to help intercept runoff.

SOLUTIONS

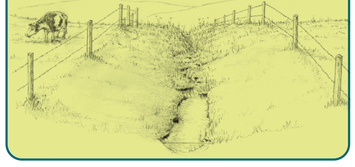
1. Well maintained yard and buildings – rainwater storage and covered stock gathering areas.
2. Covered slurry store located away from watercourse.
3. Well maintained tracks – limited pathway to river.
4. Phased management of river corridor – vegetated riverbank to help intercept runoff - recently coppiced and pollarded trees retaining proportion of mature and veteran trees to create a mosaic of light and shade.
5. Livestock feeder located on hard-standing and away from river.
6. Fenced river to prevent stock access encourages vegetated buffer strip.
7. Livestock watering – either drinking bay or trough on hard-standing.
8. Fenced ditch – well vegetated banks help intercept runoff.
9. Beneficial in-stream woody debris – located to limit erosion.
10. Gateway located away from river.
11. Arable field located away from river with grass margins to intercept runoff.

Watercourse Management

Ditches and drains often form a direct route between the farmyard and the river and can be a path by which fertilisers, chemicals or excess sediment enters a river. River bank protection may be necessary to stabilise damaged river banks, while correctly maintained ditches can act as a buffer to filter silt and other pollutants before they reach the river. Too frequent cleaning can disturb this filter.

Good practice

- Know which farmyard drains run into ditches and streams, and identify as clean water drains.
- Fence ditches and watercourses and plant trees to prevent stock access and bank damage.
- Avoid the spreading of fertilisers and pesticides near ditches and watercourses.
- Where farm yard manure is stored in field heaps, store at least 10m away from a watercourse or ditch and do not locate on top of field drains.
- At field corners consider creating small ponds or filter beds to encourage settlement of silt.
- Use soft revetment to stabilise river banks e.g. willow spilling, brash, and large woody material.
- Revetment should follow the natural line of the river.



Sheep Dip

Parasitic control in sheep is an important factor in maintaining flock health but the chemicals involved can be harmful to wildlife and the environment. If mishandled, they can make people ill, harm the sheep or pollute watercourses and groundwater reserves.

All dip products contain hazardous substances. Cypermethrin dips have now been permanently withdrawn from sale because of the serious danger to aquatic life. OP dips are potentially more hazardous to people and must be used with great caution.

Special precautions should be made when siting mobile dipping facilities. Responsible disposal of dip must be planned before dipping. Everyone involved in the dipping operation must be properly trained and competent. Only use treatments when they are strictly needed for animal health reasons. Alternatives to dipping are injectable and pour-on treatments. Always follow Environment Agency/DEFRA best practice guidelines to protect yourself, your sheep and the environment.

Himalayan Balsam

Himalayan balsam was introduced to England in 1839. It has colonised river banks, farmland and woodland, suppressing our native grasses and flowers. It spreads fast, using explosive seed pods to scatter its seeds and quickly colonise new habitats. When the plants die back in winter, large areas of bare soil are left vulnerable to erosion.

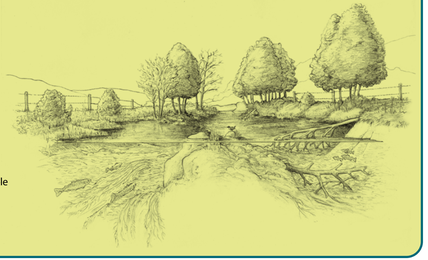
Control

Himalayan balsam can be controlled by hand pulling, strimming, mowing, or with herbicide. All these methods can be carried out from late May or early June and repeated throughout the growing season. The aim is to stop all the plants going to seed. Hand pulling is best for a small number of plants, while strimming or mowing is more effective for large stands. Herbicides can be used in non-sensitive habitats away from water and should only be applied by appropriately trained individuals. Avoid spraying once the plants are in flower as bees will be visiting the flowers for nectar. Once the Himalayan balsam is gone, it can be replaced with native wildflowers or willows which will provide habitat and food for bees and other beneficial insects.

Large Woody Materials

The branches and root boles that collect in a watercourse are often removed because they are unsightly or thought to cause erosion and flooding. Whilst this is sometimes true, large woody debris is in fact a valuable asset to the river and can if managed correctly help to reduce erosion and benefit wildlife.

- It can be difficult and costly to remove woody materials from the river. Instead, if it is pinned to the bank it will help to reduce erosion - by stabilising riverbanks.
- Creates diverse flow conditions that can improve water quality and encourage natural flows that enable the river to self clean.
- It creates niche habitats and cover valuable to fish.
- Woody materials provide valuable resting sites for otter, grey wagtail and dipper.



Good Practice Guide

Controlling Runoff at Source

Clean and Dirty Water Separation

- Ensure guttering, downspouts and underground pipe work are in good order – consider storage of this clean water as an alternative to more expensive sources.
- Ensure that rainwater from rooftops is kept away from stock gathering areas trackways and manure stores.
- Consider roofing stock gathering areas to minimise the production of dirty water.

Livestock and Vehicle Movement

- Minimise poaching through the provision of 'cow tracks'.
- Site feeders on hard-standing areas on higher ground away from watercourses and move regularly to avoid poaching.
- Identify erosion pinch points to reduce poaching – install cross drains in tracks, move or resurface erosion prone gateways, resurface farm tracks, install watercourse crossings.

Managing Soils

- Implement soil, crop and nutrient plans for the farm – identifying areas of erosion and runoff risk will help safeguard the most valuable resource on the farm.
- Consider regular soil nutrient testing to help reduce fertiliser costs.
- Capping and compaction encourage rapid runoff - check soils regularly.
- Avoid cultivation when soil is too moist.
- Avoid vehicle movements/wheel ruts on wet soil.
- Utilise a cropping sequence to ensure ground coverage throughout the year.
- Where erosion is severe consider alternative uses for the land.
- Consider permanent vegetation (hedges, woodland, grass buffers) on steep slopes, natural drainage-ways at risk from gully erosion, long unbroken slopes, wet soils in difficult corners and alongside watercourses.