Last chance for the Freshwater Pearl Mussel?

What are they?

Freshwater pearl mussels are large mussels that can grow to over 15cm long and live for more than a century. They live in clean, fast-flowing rivers, partially buried in coarse sand or fine gravel. They feed by filtering fine organic particles carried by the river. Able to filter about 50 litres of water a day, pearl mussels help to cleanse the river when occurring in large numbers.

Freshwater pearl mussels have been a feature of the River Clun since the end of the last Ice Age. Formerly widespread in the UK, they are now very rare and the River Clun is the only river in the catchment supporting the species.

Why are they rare?

Freshwater pearl mussels have declined because they were killed for the pearls they sometimes contain. This decline has continued due to increasing amount of sediments and nutrients carried in our rivers. Sediments clog the voids between the sand and gravel substrate and nutrients encourage algal growth, both preventing the establishment of young.

The lottery of life

During summer, a female pearl mussel produces between one and four million larvae known as glochidia. Almost all are swept away, but a few are inhaled by juvenile brown trout or Atlantic salmon. Glochidia attach to the fishes' gills and grow in this oxygen-rich environment until the following spring, when they detach. To have a chance of survival they have to establish in gravels that are silt free and in waters low in nutrients.

What is being done?

Natural England, the Catchment Sensitive Farming Initiative, the Environment Agency and the Shropshire Hills AONB Partnership are working together to help conserve freshwater pearl mussels in the River Clun. Supported by Environmental Stewardship Schemes, farmers and land managers are working to restore pearl mussel habitat. It is likely that a slow recovery may take place if the threats are removed. Other projects include soil and watercourse workshops, awareness raising with schools, reintroductions of Atlantic salmon, and a captive pearl mussel breeding programme.

The Teme rivers – A Special Place for Wildlife

Rivers in the Teme Catchment are home to some of our rarest plants and animals. Some including the otter, white-clawed crayfish, Atlantic salmon, shad and lamprey are Biodiversity Action Plan Species. The River Teme itself is designated a Site of Special Scientific Interest (SSSI) throughout its length.

Riverbank Tree Management – Light Means Life

Traditionally riverbank trees were managed by coppicing and pollarding. The timber produced provided a range of useful products including clogs, firewood, charcoal, gunpowder and fencing materials. With declining markets, coppicing has largely ceased, resulting in over-mature and uniformly aged trees which deprive rivers and banks of sunlight. However, promoted by Environmental Stewardship schemes, coppicing is slowly making a comeback, along with the wildlife encouraged by these restored habitats.

The Benefits of Coppicing and Pollarding

- Creates a mosaic of light and shade beneficial to a wide range of plants and animals.
- Rejuvenates diseased and over-mature trees to help bind riverbanks.
- Encourages bank-side grasses and shrubby growth to help stabilise banks.
- Prevents erosion and over-widening by limiting the formation of 'erosion bays' and undercut banks.
- Re-vegetated banks help narrow the river channel, increasing flow velocity to 'scour' silted riverbeds.
- Coppicing is the only known control for alder disease.

Coppicing and Pollarding – Good Practice

- Coppicing is best undertaken during winter months – October to March.
- Check for the presence of protected species before starting work – consult relevant authorities.
- Strike a balance between light and shade – aim for more light over shallows and more shade over pools.
- Avoid cutting back to old growth.
- Dispose of brash carefully – do not burn near to the river and remove ash from the site.
- Retain old and veteran alders for wildlife and landscape value.
- Do not use heavy machinery on riverbanks and in river.
- Use vegetable-based chain oil in chainsaws.
- To prevent the spread of crayfish plague, disinfect clothing and equipment before moving on and off site.

What's in it for the farm?

- Increased capital value of holding.
- Significant improvements in water quality - reduced risk of pollution and prosecution.
- Savings in reduced fertiliser applications and losses to the river.
- Cleaner animals, reduced lameness and infection.
- Improved stock handling.
- Improved fisheries benefit the local economy.
- Promotes good relationships with neighbours.
- Tree management can produce a sustainable timber/firewood crop.
- Improved wildlife and recreational value.

Help and Advice

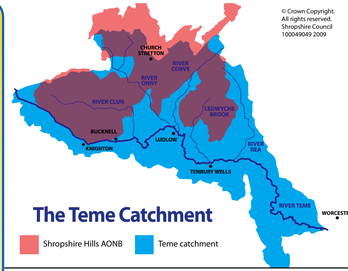
There is lots of support to help manage our rivers and streams. Help to gain consents, capital grants, deal with the paperwork and provide advice. It's all out there and often free.

Catchment Sensitive Farming Initiative 01905 362 910
Countryside Council for Wales 0845 1360 229
Environment Agency 08708 506 506
Farming and Wildlife Advisory Group (FWAG) 01785 710 564
Forestry Commission 01905 532 200
Natural England 0300 0601 115
Shropshire Hills AONB Partnership 01588 674 080

Keeping it legal

Before undertaking any works consult the relevant authorities!

- Will the work be on, or affect a designated site? eg Site of Special Scientific Interest (SSSI), Special Area of Conservation (SAC), Special Protection Area (SPA), Scheduled Ancient Monument (SAM) etc.
- Will the work affect protected species? eg otters, bats, etc. Seek advice, as a Natural England or Countryside Council for Wales licence may be required.
- Consult the Environment Agency before undertaking works on main river or a designated floodplain.
- On non-main river, consult the Environment Agency before undertaking any work that might impede flow.
- Do not undertake in-stream or bank profiling work without first gaining permission from the Environment Agency.
- An Environment Agency licence is required if spraying herbicide near to or on any watercourse.
- A felling licence is required if more than 5m³ of timber is coppiced in a calendar quarter.



The Teme Catchment

Shropshire Hills AONB | Teme catchment

Shropshire Hills Area of Outstanding Natural Beauty | NATURAL ENGLAND | A clear solution for farmers — ENGLAND CATCHMENT SENSITIVE FARMING DELIVERY INITIATIVE

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Teme Rivers
WATER FRIENDLY FARMING
Good Practice Guide

Shropshire Hills Area of Outstanding Natural Beauty | NATURAL ENGLAND | A clear solution for farmers — ENGLAND CATCHMENT SENSITIVE FARMING DELIVERY INITIATIVE

WATER FRIENDLY FARMING

It is not farming itself, but poor farm management that harms our river and streams. Poor land management results in soil erosion, and fertiliser and pesticide run-off that can cause pollution. Water friendly farming can reduce these impacts.

Livestock and Rivers

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

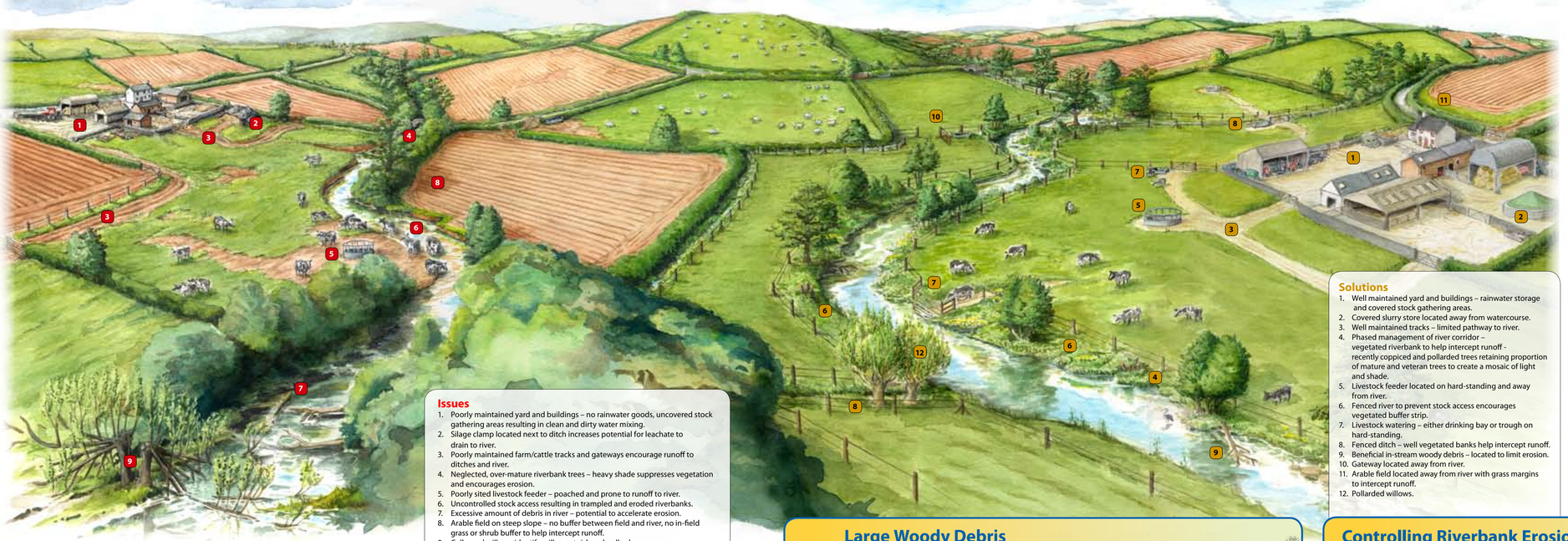
Poached soil leads to erosion, over-wide channels and shallow watercourses. This is compounded by compaction of soil, in turn leading to greater runoff and the deposition of fine silt on the riverbed. Silt robs the riverbed of oxygen by blocking the spaces between the gravels, significantly reducing the number of invertebrates, preventing the establishment of juvenile pearl mussels and suffocating large numbers of fish eggs. Uncontrolled stock access also adds animal wastes to rivers further raising nutrient levels. This encourages algal growth which smothers sensitive aquatic wildlife.

Fencing watercourses can help reverse this decline

- Riverbank vegetation is re-established, helping to stabilise eroding riverbanks. This in turn allows the river to narrow and deepen, to encourage 'scouring' of the riverbed.
- Establishes a buffer strip between the river and farming operations – intercepts runoff from fertilisers and pesticides.
- Encourages overhanging bankside vegetation, providing valuable cover and food for young fish.

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.
- Drinking bays should be placed on the inside of meanders or protected by upstream trees and should not impede flow.
- 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 on side streams to minimise poaching near to rivers.
- 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. Excessive amount of debris in river – potential to accelerate erosion.
8. Arable field on steep slope – no buffer between field and river, no in-field grass or shrub buffer to help intercept runoff.
9. Collapsed willow - identify willows at risk and pollard.

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.
12. Pollarded willows.

Alder Disease

Alder is vital to the health of our rivers, helping to stabilise riverbanks and to provide food and cover for a host of aquatic and riverbank wildlife.

During the early 1990s, riverside alders throughout Europe started to die. Symptoms included crown dieback, abnormally small, sparse and yellowing leaves and tarry exudates from the base of the tree. The culprit was found to be an entirely new species of *Phytophthora*, a fungus related to potato blight. Spread by free-swimming spores, it is now a serious problem throughout the Teme catchment.

Eradication of the disease is not possible as the spores survive in the soil and root system of infected trees. Coppicing is the only method of control as this encourages regeneration of new growth and prevents the tree from becoming unstable. Even severely affected trees respond well to coppicing.

Ditch Management

Ditches often form a direct route between the farmyard and the river and can be a path by which fertilisers or chemicals enter a river. Ditches can act as a buffer to filter silt and pollutants before they reach the river. Frequent clearing can disturb this filter.

Good Practice

- To reduce the need for frequent dredging, fence ditches to prevent bank damage. Bank-top vegetation will help intercept runoff.
- Phase dredging operations over several years rather than clearing the entire length.
- At field corners consider creating small ponds or filter-beds to encourage settlement of silt.
- Avoid the spreading of fertilisers and pesticides near ditches.

Large Woody Debris

Large woody debris - the branches, trunks and root boles that collect in a watercourse are often removed because they are unsightly or perceived to increase flood or erosion risk.

Whilst this is sometimes true, large woody debris is in fact a valuable asset to the river. It is home to lots of wildlife, with almost 150 insect species associated. In small streams the pools created by large woody debis can provide up to half of the salmonid spawning and rearing habitat.

The benefits of Large Woody Debris

- Creates diverse flow conditions.
- Creates niche habitats and cover valuable to fish.
- Valuable as resting sites for otter and nesting sites for grey wagtail and dippers.
- Increases the range of stream temperatures .
- Can help stabilise eroding riverbanks.
- Helps improve water quality – increases in stream oxygen levels.
- Collects leaf litter – a valuable food source for aquatic insects.

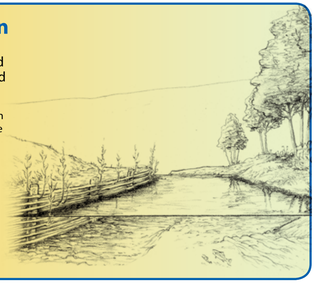
Controlling Riverbank Erosion

Riverbank erosion is largely a natural process. However in recent times erosion has accelerated through the loss of riverbank alder (diseased and over-mature) and uncontrolled stock access.

Eliminating the cause of erosion is essential before embarking on riverbank protection works. Where erosion is sustained it may be necessary to consider revetment.

Revetment – Good Practice

- Environment Agency consent will be required before commencement of works.
- Use soft revetment eg willow spilling, brash, coir matting, pinned conifer tops.
- Hard revetment should be used as a last resort.
- Revetment should follow the natural line of the river.
- Opportunity to incorporate wildlife features eg pipes buried into banks to encourage water voles.



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.