



better
habitats
mean
better fishing

Fisheries habitat improvement

We are the Environment Agency. It's our job to look after your environment and make it **a better place** – for you, and for future generations.

Your environment is the air you breathe, the water you drink and the ground you walk on. Working with business, Government and society as a whole, we are making your environment cleaner and healthier.

The Environment Agency. Out there, making your environment a better place.

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Habitat improvement



We have written this booklet for fishery owners. It explains how to set about improving the habitat in your fishery, and guides you through the legal process for making changes.

If you want to improve the habitat in your fishery, you probably want to provide better conditions for the fish – and enjoy better fishing. However, it is also an opportunity to provide a good habitat for other wildlife. This booklet explains how you can make lasting improvements to your fishery that will benefit the environment as a whole.

Where habitat has been engineered, modified or otherwise degraded in the past then fisheries improvements may produce good habitat for other wildlife, as well as better fishing. Although it is important to stock waters with the appropriate native species that are capable of thriving in them, it is also possible to alter or improve the habitat to create better conditions for the fish.

Habitat improvements work best where the present habitat has been artificially created, or where it has been modified or degraded in the past. Improvements aimed solely at improving fishing are often not sustainable. In fact they may be harmful to the other wildlife present.

Some fisheries are formally recognised as areas important for conservation. Examples are Sites of Special Scientific Interest. In these places there are restrictions on the types of habitat management that are allowed. Other fisheries may have species that it is illegal to disturb or habitats that it is highly desirable to conserve. Such fisheries often have Biodiversity Action Plans. Examples include mesotrophic lakes – these are lakes with a moderate level of nutrients.

At the Environment Agency, we have a statutory obligation to maintain, improve and develop the fisheries resources of England and Wales. You should get advice from our local staff before you start making improvements to your fishery's habitat.

We have written this booklet to help you manage your watercourse or stillwater fishery. To maintain and improve the habitat and water quality of your fishery, it is essential that you assess its current state, and recognise any polluting inputs or habitat damaging features. You need to deal with the problem at the source before starting on improvements – that way the changes you make will be of lasting benefit. Bear in mind that the 'problem' may be some distance away from the 'symptom'. For example, the problem may be caused by diffuse silt pollution within a river catchment.

Drawing up a site-management plan allows you to assess the state of the fishery and to plan appropriate habitat improvements. Work on the plan with our local staff before habitat improvement work begins. We will need to be happy with it before you put it into action.

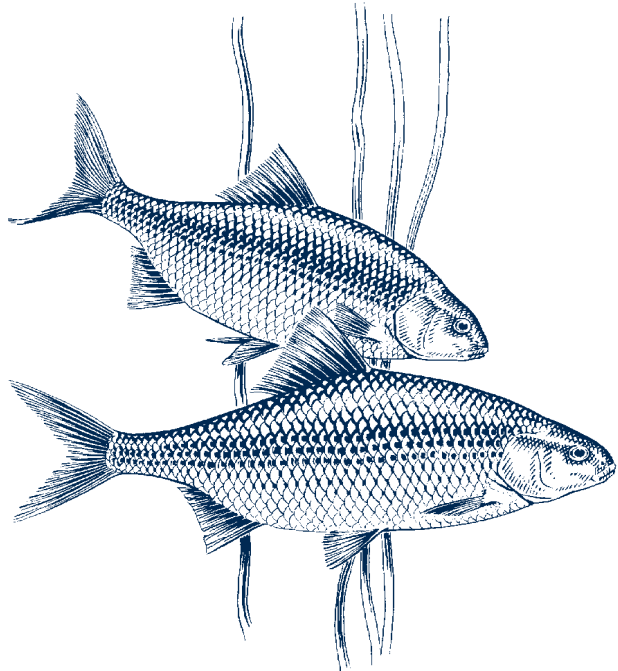
To get in touch with your local Environment Agency office, call our general enquiry line on **08708 506506**.

We have divided this booklet into two sections: stillwaters and running waters. Under the Water Resources Act 1981, the Environment Agency regulates:

- all rivers, streams, canals, estuaries, coastal waters and groundwaters;
- all stillwaters that discharge into a river or stream;
- all stillwaters that discharge into another stillwater connected to a river or stream.

This booklet also covers the relevant legislation for changing habitat in still and running waters. The rules for totally enclosed stillwaters are different.

These waters are still covered by conservation and fisheries legislation, but you have more freedom to alter the physical habitat or water quality.



Stillwaters



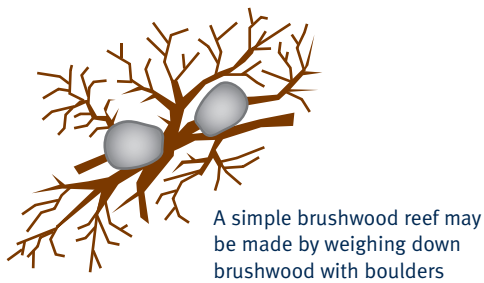
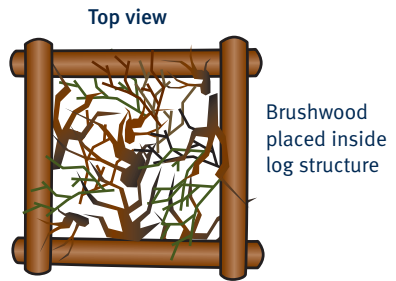
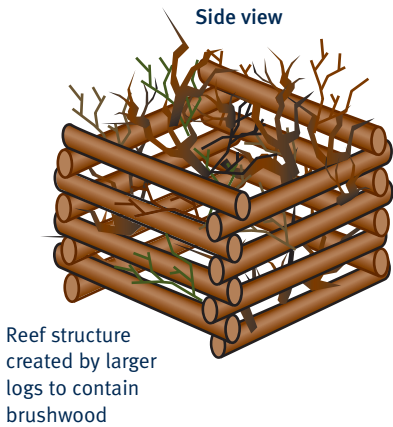
Physical improvements

Physical habitat improvements can provide refuges and spawning sites, as well as improving fish food production. A variety of materials can be used to create underwater reefs. These provide valuable submerged fish habitat and refuges from predatory birds. Underwater reefs can deter birds, such as cormorants by interfering with the interaction between them and the fish. A well-designed reef should have both overhead shading and internal structures.

Brushwood reefs can be made by tying bushes together and weighting them so they sink. In addition, faggot bundles and weighed logs can be utilised in a similar way. The type and location of the reef should meet the objectives for which they are built and avoid conflicts with other resource users. Reefs should also be appropriate for the water body.

Be careful when choosing which materials you use to build the reef. Natural materials are best. Man-made objects, such as waste tyres, are weak substitutes, providing poor productivity and habitat by comparison with natural materials. Organic materials and man-made objects may leach chemicals into the water. They may also be illegal under current waste management legislation. If you want to construct a reef out of any waste materials, contact us first. We can tell you whether the materials are suitable or covered by any legislation.

Brushwood reefs – these structures may need to be weighed down

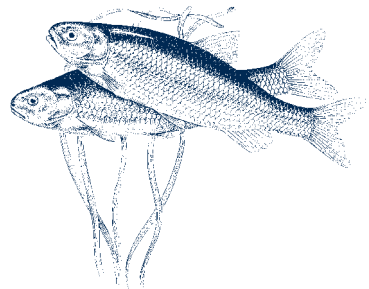


Chemical improvements

The water quality within a fishery is important: it often determines the biological productivity of that water. Acidic water (pH less than 7) is normally less productive than alkaline water (pH greater than 7). Acidic water usually lacks certain essential chemical constituents and, in particular, has lower levels of calcium. These chemicals are essential for the growth of many plants and the recycling of nutrients. Acidic waters rarely harbour dense populations of aquatic creatures. If they do, then the creatures may be specialised for life in acidic environments. Most coarse fisheries are at their most productive when they are slightly alkaline, with a pH between 7.5 and 8.5.

It is possible to manage the chemistry of the water within a fishery. However, you should only do this as part of a wider, sustainable site-management plan. The first step is always to tackle the source of the problem, for example

excess nutrients. The advice of our local officers should be sought before you make any chemical improvements.



Excess nutrients

Occasionally, enclosed (and indeed running) waters may contain excess nutrients. The term for such over-enriched waters is eutrophic. In such cases, thick algal blooms often occur during the summer months and restricted light penetration. The level of dissolved oxygen may also become so low that fish die.

What causes this to happen? Eutrophication can be caused by a

number of things, including nutrient-rich agricultural run-off, sewage effluent, excess bait build-up and large numbers of waterfowl. High temperatures also make the problem worse. You must identify the source of the problem, and do everything you can to solve it, before you make any attempts to manipulate nutrient levels.

One way of managing excessive nutrients is through the application of barley straw. For smaller stillwaters barley straw can be netted up in small bags. The bags need to be loose to allow water to flow through them. As the straw decomposes, chemicals are released that act as a natural herbicide to kill the algae. However, this is a quick-fix method. It is only useful as a first step in an integrated management regime for algae. Barley straw is best applied in spring. Subsequent methods include planting more submerged plants and plants with floating leaves. This increases the amount of shade and reduces the amount of nutrient

run-off entering the stillwater. If dense stocks of some fish are contributing to the problem, you may need to reduce fish stock levels in order to control excessive nutrients.

Depleted nutrients

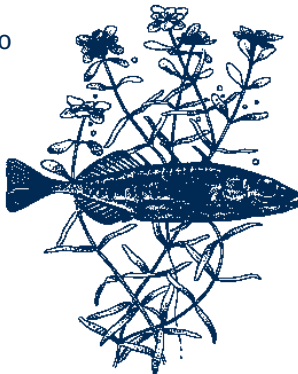
Fisheries can also experience periods of depleted nutrients. This is especially common in older, established pools where nutrients necessary for plant growth become locked within the sediments causing a decline in productivity. This can result in the sediment becoming increasingly acid, slowing the breakdown of organic matter such as plants and leaves, and releasing fewer nutrients into the water for use by plants.

To increase the productivity of an old pool it may be necessary to raise the pH or alkalinity of the mud. This will promote plant growth. There are a number of ways of doing this. Choose the method that is appropriate to the character of the water.

There may be a different reason for your problems, so make sure acidification is to blame before adding lime, as symptoms similar to acidification may result from other problems. Test the pH at various times of the day over a number of weeks. This will allow you to reliably determine the range of pH values. In addition, ask our local officer for advice.

New pools created in rich soil will generally be productive. However pools in gravel pits, clay pits and sandpits contain few plant nutrients – they are therefore not productive to begin with. Nutrients may also be lost from lakes if a stream or groundwater flows through them.

Fertilisers can be added to enhance the productivity of stillwaters, but you will need to be careful if you are to avoid pollution, damage to protected species or rapid removal taking place.



Fertilisers and liming

Artificial fertilisation can increase nutrients in stillwater fisheries where nutrients are depleted. Be aware that this approach can dramatically affect the ecology of the water. Great care is always needed. Fisheries managers should get help from one of our local officers when developing a site-management plan. This should address the possible effects of fertilisation on plants and animals in the area. You must also consider the interests of all other users of the water – both in the stillwater itself and wherever the water moves on to.

Mesotrophic lakes are characterised by having a narrow range of nutrients. They are particularly sensitive to changes in nutrient levels. We have developed a specific action plan for managing these types of waters.

You can get advice on managing mesotrophic lakes from our local officers.

Hydrated lime, crushed limestone and slag all produce an alkaline reaction in water and in pond soil. This aids the release of nutrients for plants. Do not use these products unless you have evidence of acidic or poorly buffered water chemistry, or that organic matter is accumulating in acid soil conditions.

Phosphate is frequently a limiting plant nutrient for algal growth, but needs to be added with care, as it is rapidly removed in the presence of calcium and can also promote blue-green algal blooms that may be toxic. Options include Super Phosphate, a soluble phosphate compound, and fertilisers such as well-rotted farmyard manure. Great care is needed with the latter. The rotting down of organic manures in water can cause extremely low oxygen levels, which may kill fish. It can also introduce excessive

phosphates that result in algal blooms.

Another way of enriching a pool is to drain it so that it dries out over winter. The pond mud becomes oxidised in contact with air. When the pond is refilled, this mud releases nutrient salts to the water. This increases productivity.

If you are thinking about applying any fertiliser, consider carefully the problems that may occur from excessive nutrients. Always look at the possible effect on protected species. Legislation may apply to the use of waste products. Ask us for advice before you start.

Stratification

Stillwaters are often deep enough to form “layers” of water with different temperatures. This is called thermal stratification. It occurs because of the large differences in density (weight) between warm and cold waters.

It is an offence to intentionally pick, uproot, destroy, possess or sell any wild plants listed in Schedule 8 of the Wildlife and Countryside Act 1981. It is an offence to kill, injure, take, possess, sell or destroy any wild animal listed in Schedule 5 of the Wildlife and Countryside Act.

Summer stratification can result in the formation of anoxic (without oxygen) layers in deeper water. If levels of dissolved oxygen in a stillwater become too low, it can result in a partial or total fish kill. Most stillwaters will naturally destratify in the autumn when temperatures fall. The proper application of aeration or mixing equipment can help to manage most of the difficulties and nuisance conditions associated with stratification. However these are only short-term tools. Long-term solutions may involve shallowing (infilling) or increasing surface water movement (tree removal).

Biological improvements

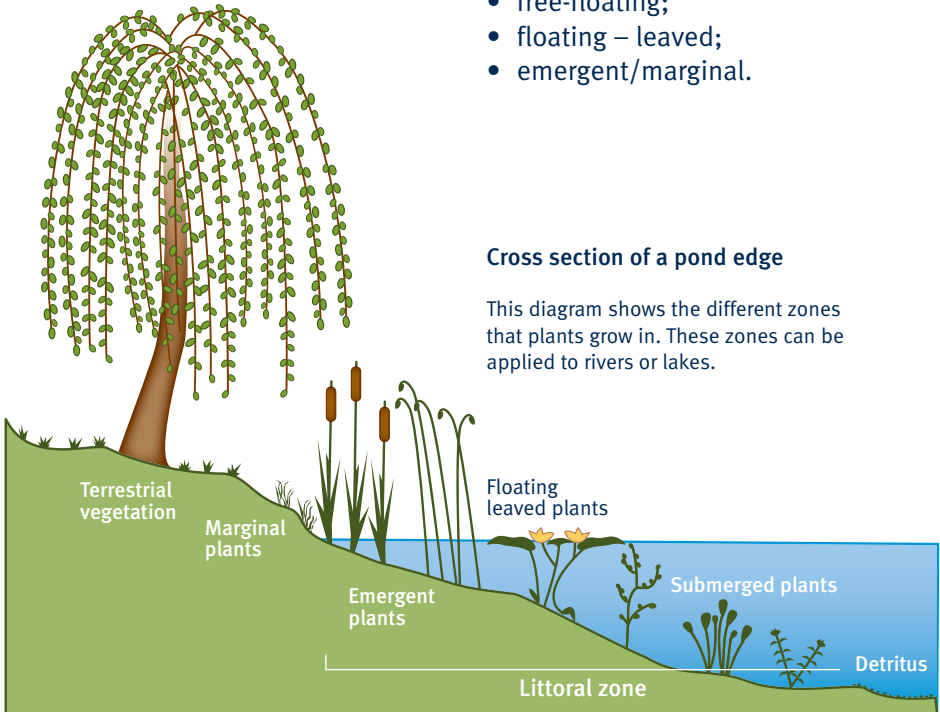
When done with care, the provision of reefs and manipulation of water quality may produce a marked improvement in stillwater fisheries. The addition of plant species may also improve the fishery or its local environment. Care should be taken when considering biological introductions and you should seek advice from one of our local officers before introducing plant species. Avoid non-native species, as well as invasive species and plants with growth that can be difficult to control. We can advise you on the safe stocking of fish.

The Wildlife and Countryside Act 1981 (WCA 81) provides protection to many species, including plants. The legislation outlined on page 12 applies.

Introducing plants

There are a large number of different water plants growing wild in Britain. They fall into four main categories:

- submerged;
- free-floating;
- floating – leaved;
- emergent/marginal.



Cross section of a pond edge

This diagram shows the different zones that plants grow in. These zones can be applied to rivers or lakes.

Plant material and availability

Generally the vegetative (growth-related) parts of plants are used for stocking rather than seeds. The roots or rhizomes can be obtained in two ways:

1. Buy them from a reputable commercial nursery or aquarium.
2. Transplant them from the wild from an approved source under the WCA 81.

It may be possible to obtain materials from your own lake or pond – or one nearby – if it has an excess of water plants. If the lake or pond is not yours, you must obtain permission from the owner. Under no circumstances should you transplant rare species or dig up plants without the owner's permission. Where possible, use only locally obtained or common plants.

Care should be taken as transplanting vegetation also carries with it the risk of transmission of unwanted animals,

plants, and diseases, such as crayfish plague, between waters. Introduction of the tiniest frond of some plants can produce an uncontrollable problem ever after. New Zealand swamp stonecrop and parrot's feather are two such plants. They are sold by aquatic centres, but also occur as contaminants on other plants. Do not introduce them to natural waters.

Always get our advice before you introduce plants.

In some stillwaters plant introductions can be avoided by fencing off areas to encourage plant growth.

Sometimes there is very little organic matter on the bed of the lake, for example in newly constructed lakes. In these cases it is advisable to put the rhizomes in a biodegradable container, such as a sack, containing soil and compost. You will find further advice about plant introductions in *Planting Up Ponds*, a fact sheet available from the Pond Conservation Trust's website.

A selection of common plants

Common name	Scientific name	Comments	
Found at water's edge			
Watercress	<i>Rorippa nasturtium-aquaticum</i>	Usually grows half-immersed in shallow flowing water.	Established by pushing cutting into the mud, and anchoring with a stone.
Sweet-grasses	<i>Glyceria sp.</i>	Are loosely tufted, growing by and in shallow water.	
Common reed	<i>Phragmites australis</i>	Tallest of the aquatic grasses, capable of reaching 350 cm in height and creating extensive beds.	
Yellow flag	<i>Iris pseudacorus</i>	Mostly a marsh or swamp plant but can grow in shallow water.	Spread by seed or bulb.
Found in water up to 0.5 m deep			
Water starwort	<i>Callitriche sp.</i>	Still and flowing waters. Some species submerged, others only partly submerged.	
Water milfoil	<i>Myriophyllum sp.</i>	Grow submerged in still and flowing water, often with long trailing stems.	
Water crowfoot	<i>Ranunculus sp.</i>	Eleven species with floating or submerged trailing leaves.	

(continued overleaf)

A selection of common plants (continued)

Common name	Scientific name	Comments	
Found in water 0.5 m to 1.25 m deep			
Broad-leaved pond weed	<i>Potamogeton natans</i>	Easy to establish and extensively used by invertebrates. However, leaves can form a dense cover over water, which impedes fishing and other forms of recreation.	Emergent species should be notched at the edge of the water or in 20cm of water or thereabouts (depending on the species).
Lilies	<i>Nuphar lutea</i> (yellow water-lily) and <i>Nymphaea alba</i> (white water-lily)	Establishment accelerated if planted in sacks or cardboard tubs of 50:50 rotted manure and soil. Some control needed to prevent excess shading. This species can spread slowly and can suppress growth of more troublesome submerged plants.	
Found in deep water			
Stonewort	<i>Chara sp</i> of green algae	Fast growing, good for disturbed habitats where other plants might struggle.	Submerged and floating leaved plants are generally planted by attaching a weight to the stems and throwing or dropping them into the water at the required place.



Table of unsuitable plants

Common name	Scientific name	Problem	Eradication
Australian or New Zealand swamp stonecrop	<i>Crassula helmsii</i>	Will grow on damp margins of ponds and in water up to 3 m deep. Dense mats out-compete all other aquatic vegetation, eliminating native flora and creating a poor ecosystem for invertebrates and fish.	DO NOT PRACTICE MECHANICAL CONTROL ON THIS PLANT. Chemical control is the best option.
Floating pennywort	<i>Hydrocotyle ranunculoides</i>	Forms dense interwoven mats of vegetation which can quickly cover the water surface, interfering with ecology and affecting amenity uses of the water.	Long-term programme of chemical treatment. Any cutting can cause spread downstream.
Giant hogweed	<i>Heracleum mantegazzianum</i>	Is colonising many areas of waste land and river banks. Can grow to 5 m high and form dense colonies that suppress the growth of native plants and grasses and leave the banks bare of vegetation in the winter. Sap causes painful blisters and severe irritation.	All cutting should be done carefully, using a hand scythe, and with appropriate protective clothing. Chemical treatment is possible at early stages.
Himalayan balsam	<i>Impatiens glandulifera</i>	Is rapidly colonising riverbanks and damp ground. Forms dense stands, which suppress the growth of native British plants leaving the banks bare of vegetation in autumn and winter and liable to erosion.	Cut close to ground before seedpods have formed. Chemical treatment is possible.

(continued overleaf)

Table of unsuitable plants (continued)

Common name	Scientific name	Problem	Eradication
Japanese knotweed	<i>Fallopia japonica</i>	Forms dense stands, which severely impede access to riverbanks and shade out native species – leaving the banks bare and liable to erosion in winter. The rhizomes can penetrate, damage and displace stone and concrete embankments and structures.	DO NOT PRACTICE MECHANICAL CONTROL ON THIS PLANT. Chemical control is the best option.
Parrot's feather	<i>Myriophyllum aquaticum</i>	Non-native plant that spreads through asexual means.	DO NOT CONFUSE WITH MILFOIL. Chemical control is possible. Take action to reduce nutrient inputs to water for long-term eradication.
Canadian pondweed	<i>Elodea canadensis</i>	This species is not legally controlled. However it can form dense stands that can quickly choke a pool. It causes problems by competing for nutrients and outgrowing many native species.	Combined regime of pulling, cutting and chemical treatment.

We can advise you how to control invasive species in or near fresh water. You need our permission to

carry out chemical control. This makes sure chemical control is appropriate and does not harm protected species.

Running waters



Habitat improvement techniques in running water often need to be physical structures. This is because chemicals are quickly flushed out of a river, and plants are more difficult to introduce.

As with stillwaters, you should develop a sustainable management plan with the guidance of our local officers. First, assess the existing state of the river. Next, identify and manage any polluting inputs or features. Tackle the source of the problem before you start making habitat improvements – that way the results can be sustainable.

Instream river improvement devices include those which impound or modify river flow (current deflectors, low dams and weirs, bank stabilisation devices and similar), devices that provide direct cover (submerged shelters, and artificial bank cover devices) and those that improve spawning areas.

Modification of river habitats

Before carrying out any of the modifications outlined in this booklet, you must get permission from our local office. Your proposals have to be appropriate for your fishery and the wider river basin management plan. You may need a geomorphological study to be carried out before we approve river and habitat works. Such a study would look at the characteristics and arrangement of rocks and land forms near rivers.

You must also comply with relevant legislation. The general principle is that you should only undertake habitat improvement works where previous engineering or modifications of the river environment have reduced the natural extent and/or diversity of

If you want to carry out works to restore or enhance a river, you need prior consent from the Environment Agency under:

- Section 109 of the Water Resources Act (1991) – for watercourses designated as a main river;
- Section 23 of the Land Drainage Act (1991) – for unclassified watercourses.

In some areas, you may also need consent under the Land Drainage Byelaws.

habitats. You may find it helpful to refer to the *Manual of River Restoration Techniques* (2002). This provides examples of all the techniques discussed, case studies and further information. You can get a copy of this from the River Restoration Centre website.

Bank stabilisation devices

Many factors may increase the erosion of banks. Erosion often contributes significantly to an increased sediment load in rivers. Remember though that

bank erosion is an important natural process in rivers. It is essential to the development of river geomorphology and in turn underpins the natural development of habitat. Erosion is one of the ways that gravel is introduced and produced in many river systems. Therefore you should only attempt to stabilise banks when a wider investigation has shown that erosion rates are higher than they should be. Check sites for the presence of protected species, such as water voles, before you start bank manipulation.

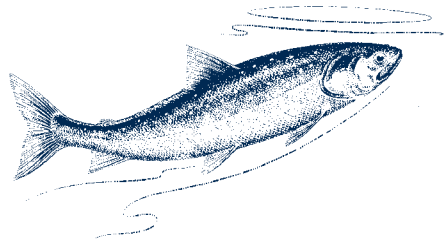
A wide range of techniques and materials are available for the purpose of riverbank protection. The type of bank stabilisation used should be appropriate for the local environmental conditions.

Soft protection methods can be an attractive means of achieving protection while creating wildlife habitat. For example, grass, reed and/or willow planting provide a form of bank protection that seeks to emulate natural conditions.

Intermediate protection techniques provide physical protection for a riverbank, yet at the same time possess some natural characteristics. Examples include willow spiling and willow faggots. In some situations you will need to use more robust methods. However, these do not provide suitable habitat for wildlife.

Tackle the cause of bankside deterioration before you start stabilisation work. For example, you

can deal with over-grazing by using stock fencing to restrict cattle access. This allows bankside vegetation to recover and act as a natural buffer to erosion.



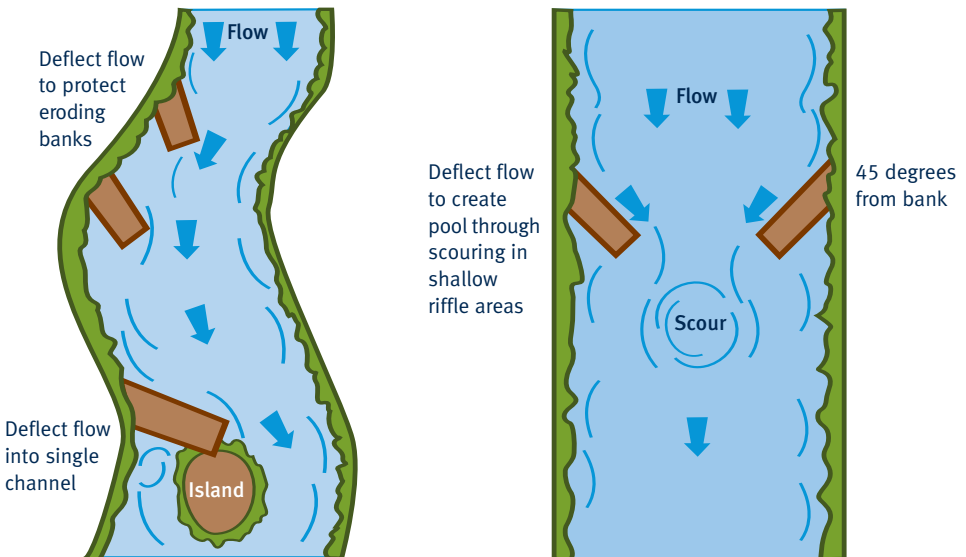
Current deflectors

Current deflectors use the natural river flow to create pools and riffles. Only use them in river systems where pool or riffle sequences would naturally occur but where they have been lost due to engineering or modification. As current deflectors can change dramatically the geomorphology of a river, you should carry out a geomorphological study before work starts.

Current deflectors work by raising the water level upstream of them. This may provide more shelter for fish and siltation may occur slightly in the slower water upstream. Below the deflectors, the water depth is reduced and water speed increases. If deflectors

are inappropriately positioned they can either have no benefits or increase erosion of the opposite bank. Correctly positioned, deflectors can be effective in recreating the pool and riffle nature of a stream. However, take care to prevent harm to protected species.

Current deflectors – the position of deflectors is critical for optimum results



Gravels

Gravels provide spawning areas for most salmonid species and some coarse fish, such as dace and chub. These fish spawn on gravel where the substrate size, and the speed, depth and temperature of the water are suitable. Manipulating the gravels within a river by dredging or other means is generally not advised. This is to safeguard the river's geomorphology and the channel habitats upon which so many birds, invertebrates, plant communities and fish depend. You can find more information about this in our booklet *Protecting River Gravels*. This is available from the Environment Agency website.

Artificial cover devices

Shelter is important to provide cover for prey and predator, as well as increasing habitat diversity. Overhanging banks, hedges or bank vegetation are all natural forms of

shelter. However, there are artificial cover devices which are designed to serve the same function. These are:

- platforms constructed above the water surface;
- floating overhanging platforms;
- smaller structures such as fly boards.

Bankside trees

Trees are an essential part of the environment. They are hosts to a large number of organisms – lichens, fungi, worms, liverworts, insects, other invertebrates, mammals and birds. Trees create cover for fish. Their small feathery roots are used as a substrate for spawning, and abundant insect life can develop in the tree canopy. Trees may also protect riverbanks from accelerated erosion and provide added landscape value. Their shade can reduce the development of weed, reduce water temperatures, and create patches of water with increased levels of dissolved oxygen.

The Land Drainage Act 1976 says that you must have the prior consent of the Environment Agency, if you want to plant any tree, shrub, or other similar growth within 8 metres of any part of the river bank.

In flood risk areas, you need to think carefully about where best to plant trees and bushes. You must avoid creating significant obstructions to flood flow. In addition, where it is required, access to the river must be maintained.

Trees and the wider environment

If you plant trees on the bank of an otherwise barren watercourse, you can usually increase the numbers of fish that the water can support. However, too many trees will produce too much shade. This can suppress fringing vegetation and reduce the suitable instream habitat for fish. Manage trees in batches to leave a mix of sizes along the fishery.

Clearing scrub may result in the loss of bird nest sites. Changes in coppicing methods may put local animal populations at risk. If coppicing is reduced, a closed canopy may develop over extensive areas. If this happens you may lose dormice from the site – they do not like too much shade. Contact the Mammal Society to check if there are dormice at your site. On the other hand, woodland animals may also be adversely affected if coppiced areas are too big, leaving open gaps that they cannot cross.

You cannot cut down or cut back trees that are being used as bat roosts – if you are in any doubt contact your local bat group. Your local Wildlife Trust can provide details on your local mammal and bat groups. Trees may also have a tree protection order on them. Check this with your local authority.

Planting trees

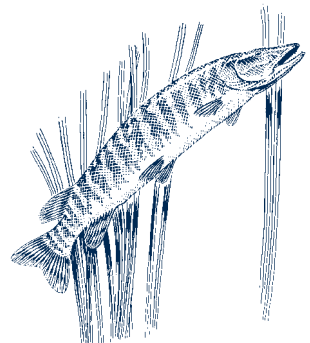
Detailed guidance on how to plant and take care of trees is widely available. You can obtain guides from: the Forestry Commission, The Tree Council, local authorities and local Wildlife Trusts. Only plant trees with the landowner's permission and with the appropriate consent from the Environment Agency. This is important as many areas have land drainage byelaws that regulate, or in some cases prohibit, the planting of trees on banksides. The normal tree-planting season is November to March.

Grants

Grants may be available for planting trees, but are not likely to be awarded for small numbers. If the area involved is large enough or if the planting can be incorporated into a larger scheme, then grants may well be available. For more information contact the Forestry Commission or your local authority.

Improvement of access

You can improve access for angling by building a fishing platform. The Land Drainage Act 1976 states that you need the consent of the Environment Agency before you construct any fishing platform on a main river. Take care not to damage nature conservation sites. We can give you advice about constructing angling platforms. Contact the British Disabled Angling Association for information about improving access for disabled anglers. Their website is listed at the end of this booklet.



Types of trees suitable for the waterside

Common name	Comment
Willow, <i>Salix alba</i> and <i>Salix fragilis</i>	Quick growing, responsive to management. Best managed as pollards. Cut back some 2.5–3 m above ground: the new shoots will grow from the top, out of the reach of cattle. New willow trees can be propagated from shoots from existing willows. Cut straight branches to the size of clothes-line posts and place firmly into the ground. The shoots from these posts will require cutting back approximately once every ten years, providing material for other uses. Smaller bush willows can be propagated from cuttings. Cut back occasionally to near the ground.
Alder, <i>Alnus glutinosa</i>	High numbers of insects in foliage. Quick growing, responsive to management. Can be cut to ground and allowed to shoot again. Need to be protected from browsing stock for ten years. Alders suffer from the lethal fungal disease <i>Phytophthora</i> ; symptoms include tarry or rusty spots on the bark and abnormally small, yellow leaves. We have a leaflet about <i>Phytophthora</i> disease. This is available on our website
Black poplar <i>Populus nigra</i> ssp. <i>betulifolia</i>	This species is native to woods by rivers. Numbers have fallen dramatically since 17th century. Sensible planting of this species is encouraged.

Further sources of information

Publications

'Buyer Beware!' Your guide to stocking fish (1996). Environment Agency

Planting Up Ponds. Fact sheet available from The Pond Conservation Trust – www.brookes.ac.uk/pondaction/publications/plantingupponds.pdf

Protecting river gravels: Why removing gravels can be bad for rivers. (2005) Conservation & Ecology, Environment Agency

Phytophthora disease of Alder. (1997) Advisory Booklet. Environment Agency

Guidance for the control of invasive weeds in or near freshwater. (2003) Advisory Booklet, Environment Agency

Manual of River Restoration Techniques 2002 Update. (2002) Available from the River Restoration Centre – www.theRRC.co.uk/manual.php

Websites

Environment Agency
www.environment-agency.gov.uk

Joint Nature Conservation Committee
www.jncc.gov.uk

Forestry Commission
www.forestry.gov.uk

Tree Council
www.treecouncil.org.uk

British Disabled Angling Association
www.bdaa.co.uk

Mammal Society
www.abdn.ac.uk/mammal/

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