

Managing bank erosion

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Background

Bank erosion is a natural and essential process that occurs in all river systems. Without it, rivers would have no meanders, there would be no supply of gravel for spawning riffles and the course of each channel would remain unchanged over the millennia.

What is less desirable is the uncontrolled, rapid erosion that is often seen on some systems. Overgrazing of banks, over-vigorous cutting of bankside plants, cultivating for agriculture too close to the bank top, and dredging of rivers can all result in damaging localised bank erosion. This rapid loss of bank will increase the sediment burden within the river, remove valuable fringing vegetation, and result in over-wide, shallow channels which offer sub-optimal habitat for trout.



Over-wide channel resulting from excessive grazing pressure. The tuft of grass marks the line of the original right bank

Objective

The objective of management should be to reduce the rate of excessive erosion to a more natural and acceptable level.

Location

In general, lateral erosion should take place on the outside of bends, with deposition of sediment occurring on the inside of the bends. Other locations where erosion can have a positive outcome by creating trout habitat include beneath tree roots and downstream of Large Woody Debris.

Method

It is important to reiterate that it is unrealistic and counter-productive to try and stop all bank erosion. The aim of any work should be to reduce excessive erosion to an acceptable level. In all cases, it is of paramount importance to identify the reason for the erosion; are grazing cattle responsible, or is regular cultivating of arable fields to the edge of the channel the root cause of the problem?

Where over-grazing has damaged the banks, the simplest and best option is to reduce stock levels significantly. It may be possible for the farming interests to reduce cattle and sheep numbers under one of the many agri-environment schemes. If a reduction in animal numbers is not possible, then the next best alternative is to erect a stock proof fence, ideally isolating a buffer strip of 5-10m alongside the river. Vegetation inside the fence will need trimming to prevent a corridor of scrub from forming; this can be done manually or by allowing stock to graze on a controlled basis.

The creation of un-tilled buffer strips of a similar width can also help protect banks running through arable fields.

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Method

There are a number of techniques that can be used to protect banks from locally damaging erosion. These include, often in various combinations:

- The careful placement of Large Woody Debris to deflect flow away from the site of erosion. In some areas, the use of tethered 'tree kickers' can be of great benefit
- The use of brushwood bundles ('faggots') to protect the toe of the bank
- The installation of live willow spiling, often in terraces where the bank is more than around 0.6m high
- Re-profiling of the bank to reduce its angle, creating a shallow marginal area that will colonise with protective emergent vegetation.

Fenced bank showing lush, protective marginal growth



Live willow spiling installed on the outside of a bend

Details of these and other techniques can be found in the **WTT Chalkstream Habitat Manual** and **Uplands River Habitat Manual**.