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Saving Streambanks: Essential for healthy wetlands

What is streambank erosion ?

Streambank erosion is the loss of soil from banks along waterways. Streambank erosion is a dynamic and natural process as streams meander across the landscape.

The amount of streambank erosion can be rapidly exasperated when streambank vegetation is cleared. There are two main reasons for this:

- > Clearing of deep rooted, natural vegetation from catchments for agriculture and urban development causes increased runoff. This increased flow puts pressure on streambanks and causes erosion.
- > Removal of native riparian vegetation from streambanks (as a result of clearing, flooding, stock or fire) weakens the strength of streambanks, making them more prone to erosion.

Why is the prevention of streambank erosion important ?

Healthy streams are essential for healthy wetlands.

Wetlands are one of our most important yet endangered and under-valued environments. Approximately half of Australia's wetlands have been lost since human settlement and many of those remaining are degraded or threatened.

Wetlands act as the 'kidneys' of our waterways, filtering out pollutants and improving the quality of water entering our waterways. Wetland also provide habitat to a unique array of species. More than 75 % of commercial fish species require wetlands to complete part of their life cycle. Many local and migratory birds utilise wetlands as breeding and roosting sites.

The degradation of streambanks through erosion can degrade valuable wetland areas.



Erosion of a streambank in Myrtle Creek, Casino. The extent of erosion has been exasperated by cattle accessing the stream for water (photo G. Owers)



Erosion and slumping of streambank after high flow (photo G Owers)



Cross section of a stream showing the matrix of tap and fibrous roots from different species acting to stabilise the streambank (Diagram modified after Price & Lovett 2002)

Why is the prevention of streambank erosion important ?cont.

Streambank erosion can degrade the health of streams and wetlands through:

- > causing loss of stream and wetland habitat for native species
- > reducing water quality for aquatic species such as fish
- > increasing water temperature, which promotes algal growth
- > reducing stream productivity, which means less food for aquatic animals in streams and wetlands
- > promoting weed growth
- > causing sedimentation of streams, altering flow rates

Streambank erosion can cause further problems, including:

- > threatening infrastructure such as buildings and bridges
- > loss of valuable and productive land

How do plants help ?

Plants help streambanks to resist erosive forces through:

- > root systems which reinforce the soil in the same way steel rods reinforce concrete
- > water use and improved drainage of streambank soils
- > buttressing soil above the streambank, helping to prevent collapse
- > reducing the flow speed of water in streams

Revegetating streambanks is a technique that can provide relatively inexpensive long term stability, as well as providing a host of other benefits for native riparian plants, animals and fish.

What plant species are best ?

A range of vegetation types is preferable to planting a single species. Under natural conditions, healthy streambanks contain a range of species and you should aim to mimic this when revegetating. Best stabilisation is achieved through a range of species with different root systems (eg. fibrous & tap). These root systems work together to form a matrix that holds the streambank together.

There are some native species that are particularly useful in controlling erosion because they:

- > grow right at the waters edge, protecting the bank face
- > produce a dense mat or roots
- > are flexible and rapidly recover following floods

Some of the most useful species for controlling erosion in northern NSW waterways include:

- > *Phragmites australis* (Common Reed)
- > *Triglochin procerum* (Water Ribbons)
- > *Waterhousia floribunda* (Weeping Lily Pilly)
- > *Lomandra* spp. (Mat Rush)
- > *Tristania laurina* (Water Gum)



Dense growth of mat rush helping to prevent streambank from erosion (photo G. Owers)



The mat roots and foliage of the common reed can help stabilise streambanks (photo J. Green)



Root system of streambank vegetation helping to hold a streambank in place (photo G. Owers)

How else can I prevent streambank erosion ?

You can help keep our wetlands and streams healthy by helping to prevent streambank erosion. The risk of erosion can be reduced through:

- > Stock management to prevent trampling of vegetation and soil erosion
- > Weed control
- > Preventing over-clearing within the catchment and along stream banks
- > Preserving existing vegetation



Revegetation of streambank to prevent erosion. Here the streambank was re-battered after slumping (note the loss of bank, and dead trees in the water (photo J. Green)

Further Reading

Price, P & Lovett, S (2002) 'Streambank Stability' Fact Sheet 2. National Riparian Lands Research & Development Program. Land & Water Australia, Canberra, ACT.

Price, P & Lovett, S (eds) (1999) Riparian Land Management technical Guidelines, Volume II" On-ground Management Tools & Techniques, LWRRDC, Canberra

WetlandCare Australia (2003) Wetland Information Kit. Wetland Information for Managers. WetlandCare Australia. Ballina, NSW.

Common misconceptions about streambank erosion and revegetation

Myth	Truth
> Grasses such as structural paragrass alone will stabilise streambanks	> A diversity of vegetation types with different root systems works best to stabilise streambanks
> Trees are bad for streambanks, causing erosion during high flows	> Trees are an integral component of the plant assemblages required to stabilise a streambank
> Narrow riparian zones stop erosion	> Broad buffer zones are much more effective in stopping erosion

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