

Managing riparian land



What is riparian land?

Riparian land is any land that adjoins or directly influences a body of water. It includes:

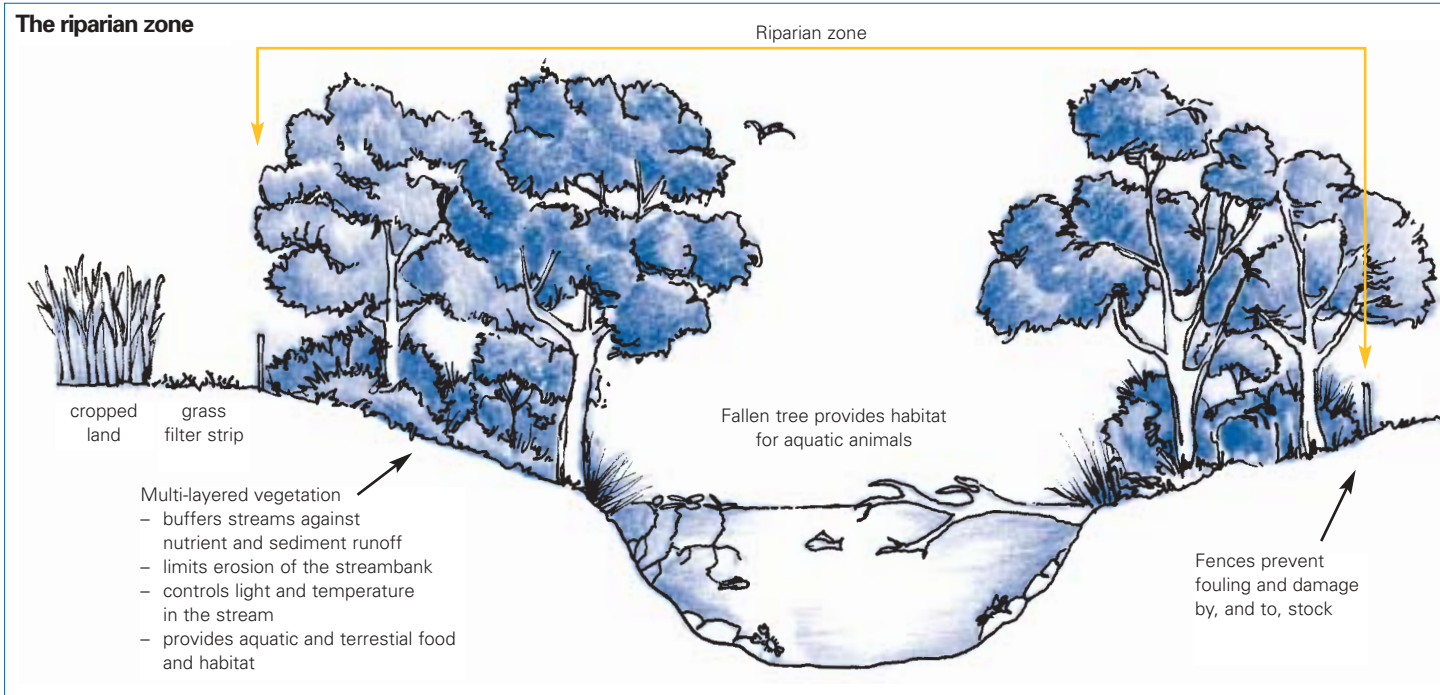
- the land immediately alongside small creeks and rivers, including the river bank itself;
- gullies and dips which sometimes run with water;
- areas surrounding lakes; and
- wetlands and river floodplains which interact with the river in times of flood.

It is important not to think of riparian land as just a narrow strip along each riverbank. Depending on the nature of the land (floodplain, gorge or valley) and the adjacent land use (national park, farming, forestry, urban housing), the width of riparian land that needs special management will range from very narrow to a wide, densely-vegetated corridor.

This Fact Sheet is the first in a series dealing with the management of riparian land.

River Landscapes





Why do riparian lands need special care?

Riparian land is often highly productive. As a result, it has often been heavily cleared and is used for intensive cropping (e.g. cane, bananas, cereals), intensive grazing (e.g. dairy), or for intensive irrigation. The natural vegetation on riparian land usually reflects the better soils and greater moisture found in the lower parts of the landscape. Riparian land also plays an important role in the lifecycle of many native animals and plants, it provides wildlife corridors as well as being a refuge for animals in times of drought or fire.

By its very nature, riparian land is fragile, and performs a vital link between land and water ecosystems. Its productivity also makes it vulnerable to over-use and to practices that cause it to deteriorate, creating additional problems. Good management of riparian land is not a substitute for good land management practices elsewhere in a catchment. However, it is an essential component of sustainable management of a property or landscape that can yield numerous benefits.



Canola crop with a single tree left marking the riparian zone — in this situation a riparian filter strip could be used to protect the ephemeral stream from any soil lost during crop establishment.

Photo Ian Prosser.



Good reasons to manage your riparian land with care

- **Decreased erosion**
- **Improved water quality**
- **Healthy ecosystems**
- **Maintaining river courses**
- **Stock management**
- **Decrease in insect pests**
- **Increase in capital values**
- **Shelter effects**
- **Opportunities for diversification**
- **Retention of nutrients**
- **Lowered water tables**
- **Increased fish stocks**
- **Landscape refuge**
- **Decreased algal growth**
- **Ecotourism**

Good reasons to manage your riparian land with care

Decreased erosion

Over-clearing and intensive development of a catchment results in more water moving quickly off the land surface in times of heavy rain. Often, river channels cannot carry this extra flow. If riparian land is not well-vegetated with deep-rooted plants, this can lead to flood-outs, stripping of topsoil from the floodplain, and accelerated bank erosion — all of these lead to the loss of valuable agricultural land. Replanting of deep-rooted species on riparian land can help to stabilise riverbanks, and protect them in times of flood. Well-vegetated stream banks are more resistant to under-cutting and slumping. Replanting riparian vegetation, in combination with in-stream structures such as rock riffle bars, can help to reduce head-cutting and other forms of streambed erosion.

Improved water quality

Good management of riparian land can decrease the amount of soil and nutrients moving from cultivated fields upslope of the riparian land into the stream. By trapping soil and nutrients, water quality is improved and the loss of in-stream habitat through siltation is prevented.



A wetland provides refuge for wildlife amidst the cane fields, as well as providing sediment filtering for surrounding crop land.

Photo CANEGROWERS.

Healthy ecosystems

Good management of riparian land can prevent or minimise damage to both land-based and river ecosystems. Such damage can upset important biological balances and lead to the deterioration or even destruction of interdependent environmental systems. Riparian lands serve as corridors between tablelands and lowlands, and enable essential seasonal movement of species between the two.

Maintaining river courses

Increased flow from cleared land and unprotected riverbanks can cause rivers to change their courses and form new meanders or flood channels. This happens when the existing channel cannot carry peak flows, which overtop the banks and find a new flow channel. There are many examples where head cutting and meanders threaten roads, bridges and buildings. Healthy riparian vegetation protects banks and channels, reducing the risk of excessive erosion of meander bends or the establishment of new river channels.

Stock management

Stock that are allowed free and uncontrolled access to riparian land can directly foul the water with their wastes. They also increase soil erosion by over-grazing and through formation of bare walking tracks and pads. Both of these reduce water quality for downstream users. It is not uncommon for stock to fall down steep riverbanks or become bogged in riparian zones, resulting in injury or death to valuable animals. This is not only expensive for the stockowner, but can also lead to pollution of water supplies for downstream users. There is also evidence that animals drinking water polluted from upstream grow less quickly than those with clean water supplies. Stock may also contract bacterial infections when drinking polluted water. When water is contaminated with silt, manure or algae, animals are less inclined to drink, resulting in a drop in production.

Decrease in insect pests

Healthy, vegetated riparian land provides habitat for insect-eating birds and insect parasites that can help to protect pastures and crops from damage. It has been shown that losing even a small number of birds can allow significantly more below-ground pasture grubs to survive and become adults.

Increase in capital values

Anecdotal evidence from real estate agents suggests that well managed riparian frontage can add up to 10% to the market value of a rural property. This is valuable whether the landholder wishes to sell the property, pass it on in good condition within the family, or use it as security for a financial loan.

Shelter effects

The shelter and microclimate which riparian vegetation creates can help to reduce death in newborn or newly shorn sheep, and lead to improved growth and productivity through reduction of heat or cold stress in animals. Vegetated riparian areas reduce wind speeds and this can assist growth and production of crops, as well as reduce wind damage to valuable horticultural produce.

Opportunities for diversification

Some landholders have combined riparian management with agroforestry production. Others have used riparian land for producing hay or other stored forage, or for growing firewood or specialist crops. These farmers have increased the diversity and sustainability of their property while, at the same time, protecting its most valuable land.

Retention of nutrients

In addition to preventing erosion and improving water quality, riparian vegetation can absorb and use natural or added nutrients that might otherwise be washed into streams, resulting in the growth of nuisance plants and algae within rivers. Sediment and nutrient can be trapped from overland flows and, in some circumstances, riparian vegetation can also utilise sub-surface flows of groundwater and the nutrients it contains.

Lowered water tables

Deep-rooted riparian vegetation may, in some circumstances, act to lower water tables along riverbanks, reducing the movement of salt and nutrients into streams from sub-surface flows.



The riparian zone is where land and water meet.

Photo Siwan Lovett.

Increased fish stocks

Healthy riparian vegetation helps maintain good habitat for aquatic animals, including insects and the fish that feed on them. Riparian vegetation provides important food sources including leaves, fruit and stems that fall into the stream. The roots of vegetation provide essential habitat by protecting overhanging banks, while large branches or trunks that fall into the water also provide shelter from predators and a diversity of flow speeds. Streams are an important recreational fishing resource and, in this way, can be a source of income for landholders and regional communities.

Landscape refuge

In drier environments, riparian lands act as vital refuges for plants and animals during drought or fire, and become reservoirs from which species can move out and recolonise adjacent areas when better times return. Riparian lands also act as corridors of natural vegetation, preventing species becoming isolated and dying out.

Decreased algal growth

Riparian vegetation helps to reduce light and temperature levels of stream ecosystems. It has been shown that this controls the growth of nuisance plants and algae, even when nutrient levels in the stream water have increased.

Ecotourism

Ecotourism is becoming a major source of income for rural regions, as shown by the resources being used to establish good bird watching habitat, canoe racing, walking trails and other activities compatible with rivers and their adjacent lands.

Some key issues in protecting riparian land

Sound management of riparian land is not free of cost, but many benefits can be derived from it and problems avoided. In many cases, these easily outweigh the costs incurred over the medium to longer-term. Many community groups and individual landholders have devised innovative methods of improving the management of their riparian lands in a way that fits into normal farming operations.

There are several specific measures that can be used to rehabilitate and maintain riparian land in good condition. Amongst these are:

- Retention of existing natural riparian vegetation, and suppression or removal of weeds and pest species.
- Stabilisation and revegetation of degraded riparian areas, particularly where this can be done by a group of neighbours acting jointly.
- Control and management of stock access to riparian zones, and provision of off-stream watering systems.
- Carefully-planned use of fire to control weeds and maintain riparian vegetation in healthy condition.

Ecotourism



FACT SHEET 1 BACK PAGE

These **Fact Sheets** are grouped according to whether they deal with riparian land, in-stream issues, river contaminants or other matters. They aim to set out the general principles and practices for sound management. Other information that focuses on local conditions and management issues is available from state government agencies, local governments, catchment management authorities, rural industry bodies and community organisations. Together, this information should assist users to understand the key issues in river and riparian management, and enable them to adapt general management principles to their particular situation, and to know where to go for advice specific to local conditions.

Other relevant Fact Sheets

- 2 Streambank stability
- 3 Improving water quality
- 4 Maintaining in-stream life
- 5 Riparian habitat for wildlife
- 6 Managing stock
- 7 Managing woody debris in rivers
- 8 Inland rivers and floodplains
- 9 Planning for river restoration
- 10 River flows and blue-green algae
- 11 Managing phosphorus in catchments
- 12 Riparian ecosystem services
- 13 Managing riparian widths

Numbers 1–7 of these Fact Sheets are based on the previous *Riparian Management* series produced in the 1990s. The authors involved in the development of the earlier series were: Michael Askey-Doran, Stuart Bunn, Peter Hairsine, Ian Prosser, Ian Rutherford, Brian Finlayson, Ian O'Neill, Chris Gippel and Wendy Tubman.

Further information on river and riparian management can also be found at the Land & Water Australia 'River Landscapes' website.

www.rivers.gov.au

This website provides access to projects, fact sheets, guidelines and other information designed to assist people to better manage river and riparian areas across Australia.

River Landscapes



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Australian Government

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