



**SUSTAINABLE
FARMS**

HEALTHY FARMERS, HEALTHY FARMS,
HEALTHY PROFITS

Riparian Restoration

Riparian Areas

Watercourses and their accompanying riparian areas (the interface zone between a watercourse and land) hold enormous value for farming operations and are important assets for production and biodiversity. Healthy riparian ecosystems improve water quality throughout the entire catchment area benefitting not only the local landholder, but downstream users as well. Healthy and intact riparian habitats also provide livestock with shelter, reduce erosion, regulate flows, provide critical habitat for wildlife and are aesthetically desirable.

Why are healthy riparian areas important for farm productivity?

- Vegetation (especially native grass) filters nutrients and debris from adjacent paddocks, preventing contamination of water. Vegetation also slows runoff, causing water to flow in slow-moving sheets rather than fast-moving channels, thereby reducing erosion.
- Stabilising banks with vegetation limits land lost to erosion and improves water quality.
- Limiting or excluding stock access:
 - ◇ Reduces erosion from trampling and prevents banks from slumping.
 - ◇ Allows native vegetation to regenerate and perform services listed above.
 - ◇ Minimises the amount of faecal matter that enters the watercourse, reducing bacteria levels and improving the quality of livestock drinking water, and thereby minimising transmission of waterborne diseases.
- Functioning watercourses allow floodwaters to breach banks and deposit nutrients onto the floodplain. This dissipates flood energy and reduces the intensity of flooding downstream.
- Facilitates the formation of chain-of-ponds style watercourses. By slowing flows during wet times, sediment is deposited at many points along the watercourse, which causes gentle buildups of barriers that act as natural 'leaky weirs.' When times are drier, these barriers form deep pools at intervals meaning that the water is stored throughout the watercourse rather than all being deposited downstream, thus improving the water retention ability of properties during dry periods.
- Improved property values due to amenity and visual appeal and by limiting the amount of land lost to erosion and allowing continued access to sections that might otherwise be cutoff by deep erosion gullies.



Wonga wetland, NSW (Photo: Damian Michael)

Why are healthy riparian areas important for farm biodiversity?

- They often support large, old trees, which are increasingly rare in the heavily cleared agricultural landscape of south-eastern Australia.
- Large trees often support hollows, which are an extremely limited resource that provides critical habitat for a multitude of birds, mammals and reptiles of conservation concern.
- The threatened Squirrel Glider relies on drainage lines as feeding areas in periods where no trees are flowering (which is most of the time).
- Several bird species, such as the threatened Diamond Firetail, are attracted to riparian areas and build their nests near these landscape features.
- Arboreal marsupials, such as possums, gliders and antechinus, breed preferentially in riparian areas, but need these areas to be well vegetated in order to do so.
- Where riparian areas have good grass and sedge and reed cover, sediments are filtered and erosion is controlled. These components are also a major source of organic matter supporting aquatic biota and are a crucial component of the aquatic food web.
- The greater variety of available habitats generated by the formation of deep pools leads to greater diversity of native fish and frogs.
- Healthy watercourses are essential to be able to support some of our most attractive and interesting species, such as the Azure Kingfisher, Southern Myotis (or fishing bat), Rakali (or Water Rat) and one of Australia's most iconic animals — the Platypus. Native animals such as these add immeasurable value to a farm and make riparian areas highly desirable places to spend time and have positive benefits to mental health.



Threatened Squirrel Glider (Katherine Tuft)



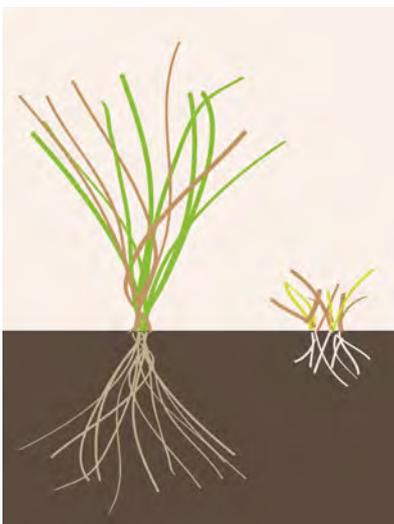
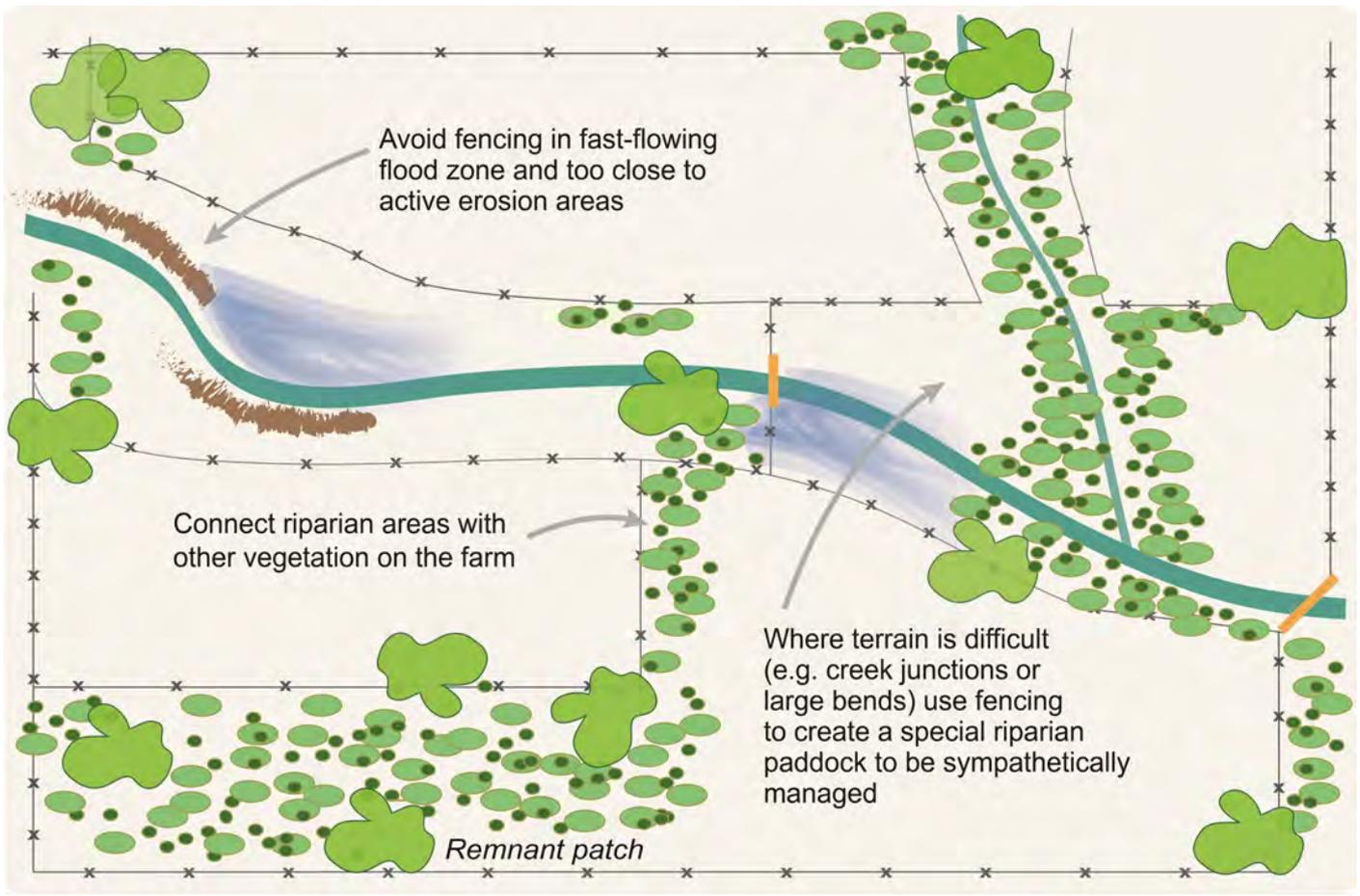
Rakali or Water Rat (Dan Florance)



Threatened Macquarie Perch (Luke Pearce)



Threatened Booroolong Frog (Dan Florance)



The root system of grass is proportional to the above ground parts. Grass that has been grazed has a root system with less biomass. Restricting or excluding grazing allows grass to stabilise soils effectively.

How to restore riparian areas

Restrict stock access

The most important step in restoring riparian areas is controlling livestock access to these areas through strict grazing management or fencing. Given that squirrel gliders and other species, such as bats, occupy these areas, it is important that wildlife friendly fencing is used to avoid their entanglement. Installing fencing that is least likely to accumulate flood debris will make them as flood resilient as possible. Many strands of plain wire with a few barbed strands works well and ringlock should be avoided.

The arrangement of fences will depend on the grazing history of the property and the goals of the land manager. The best practice for riparian restoration is to install fences to permanently exclude or limit stock grazing. It is important to ensure that these fences are installed above fast flowing flood zones to prevent damage and back from active erosion zones (generally the outside of bends).

Waterways with cobblestones are biodiversity hotspots and many species, such as the threatened Booroolong Frog and Macquarie Perch, depend on them. When allowed access to these areas, stock can quickly stir up enough sediment to fill the gaps between cobblestones and eliminate much of the wildlife habitat.

Where it is not feasible to exclude grazing, fences can be installed beyond the immediate riparian area to create a riparian pasture, which can be carefully grazed as a part of a rotational grazing system. Temporarily resting riparian areas from grazing until there is sufficient recovery to recommence grazing according to sustainable management principles and practices can make a substantial difference to these areas.

Plant native vegetation

Native trees, shrubs and grasses are essential layers in a healthy riparian ecosystem. When restoring a riparian area, it is important to replace any missing vegetation layers. It may be possible to achieve this through natural regeneration, but in many cases active planting will be required. Given that many watercourses are still fringed by remnant trees, enhancement plantings (plantings that complement existing vegetation) can be an effective and economical way of restoring structure to riparian vegetation.

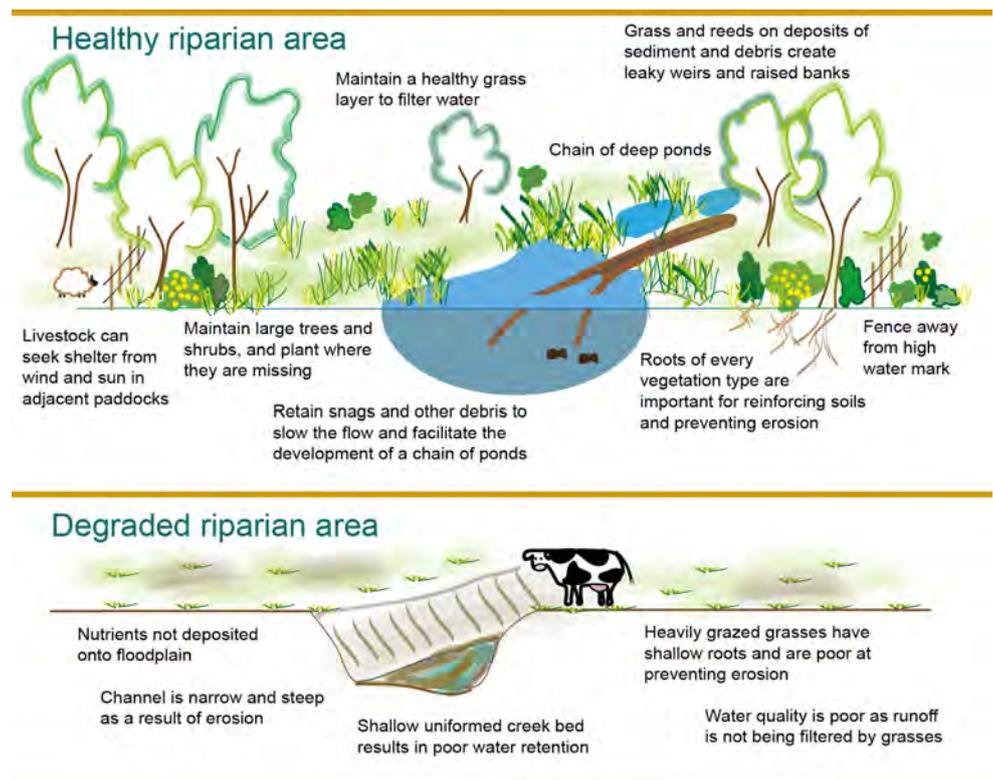
Shrubs and understorey plants are the layer that is most commonly missing, as they are vulnerable to grazing at all stages of their lifecycle. This layer, combined with the ground layer, filters runoff and provides excellent habitat for small birds and reptiles.

The ground layer – which includes grasses, sedges, reeds and rushes – does much of the heavy lifting in

terms of nutrient and sediment capture from runoff. If trees and shrubs are too densely planted, they will shade out the ground layer and limit its ability to perform these functions. Generally speaking, the ground layer will regenerate naturally, when grazing is carefully managed.

Keep snags where they are

Healthy watercourses have many snags – tree branches, large limbs or whole trees that fall into or beside a watercourse. In the past, snags were removed from larger watercourses to make them navigable. However, today we know that snags are important features of watercourses and should not be removed as they facilitate the formation of pools by forming obstructions that trap sediment and fast-track the development of leaky natural weirs. They also provide excellent habitat for threatened native fish and frogs.



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