FACT SHEET 5

Riparian habitat for wildlife

5 RiverLandscapes

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

Riparian lands and their vegetation provide important habitat for land-based plants and animals. Riparian land often contains a high diversity of living organisms, and plays a crucial role as a corridor for the movement of plants and animals. Even though riparian lands may occupy only a small percentage of the catchment landscape, they are vital to its long-term health and sustainable land management.

The ecological importance of riparian land

Riparian lands differ from adjacent areas in several ways. They often have better soils, higher moisture and different plant species. For these reasons, riparian land provides the habitat features needed by many wildlife species. For some species this habitat is critical. The components of habitat that are important include food, water, shelter from predators and from harsh physical conditions, and safe sites for nesting and roosting.

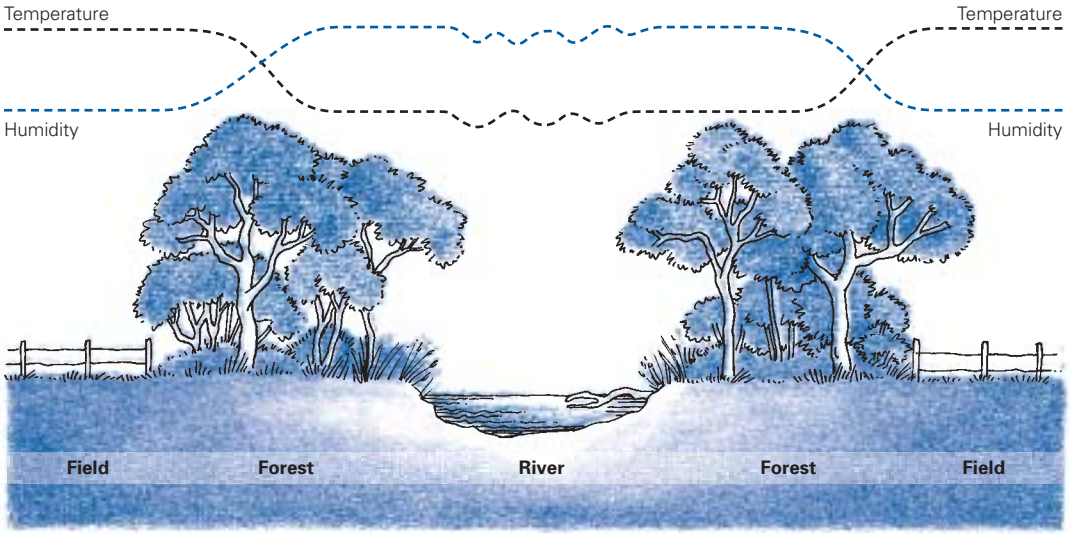
Riparian habitat

Some animals, for example many frog species, are dependent on riparian habitats throughout their life. Photo Hans Wapstra.

Riparian lands often have a high level of biodiversity, that is, a wider range of living organisms than surrounding parts of the catchment. They can also act as a refuge for plants and animals in times of stress such as during fire or prolonged drought. Species can move out from riparian refuges to recolonise adjacent areas when better times return. Some animals rely on riparian lands for their entire lifetime, whereas others may only need them at particular times during the day, in certain seasons, or during specific life stages.

Riparian lands are highly productive and provide a range of habitat components for wildlife.
Photo Peter Walton Photography.

Moisture is an important habitat feature of riparian lands and directly links to the range of wildlife the area can support. Riparian lands generally occupy the lower parts of the landscape, and this means that there is usually more soil moisture available for plant growth, and that it is retained for longer periods. The soils of riparian lands are often rich in organic matter, with a better supply of nutrients available to support plant growth. Soils and nutrients may be replenished by periodic flooding. The microclimate of healthy riparian land, with its shading capacity and available moisture, tends to reduce extremes of temperature and humidity and provides more-balanced conditions for plants and animals.



Above: Riparian vegetation has a moderating effect on air temperature and humidity, creating a special microclimate for wildlife. Illustration Carolyn Brooks.

Below: Channels and waterholes in arid environments support a wide range of wildlife. Photo Peter Hudson.

As a result of the greater availability of water, and the presence of soils that are rich in nutrients, riparian lands are amongst the most productive ecosystems on earth. This difference is especially marked in arid and semi-arid environments, where many land-based species are dependent on nutrients derived from in-stream and riparian food sources.

Management to protect riparian land ecosystems

The role of riparian lands as a refuge in difficult times is especially important in Australia, which has a highly variable climate, prolonged periods of extreme conditions, and major events such as wildfires or cyclones that can dramatically alter landscapes and wildlife habitat in the short-term. However, because riparian lands with their good supply of water and nutrients are highly productive parts of the landscape, they have been extensively cleared for agricultural development. They can also be subject to intense pressure when used for grazing by domestic stock and native and feral animals. Riparian lands have been modified extensively by human use for urban development and recreation. Complete- or over-clearing is a common problem and, where native riparian vegetation does exist, it is often in poor condition. The over-clearing of native riparian vegetation can be devastating for many native species. It may result in invasion by weeds and feral animals, disrupt corridors for wildlife movement and dispersal, and result in a local decline or extinction of species.

Payards Lagoon prior to harvesting

Water harvester in operation

After harvesting and bank raking

Clearing of riparian lands has resulted in this lagoon being covered by the invasive water hyacinth that has a negative impact on the water quality and wildlife habitat. Photos Jim Tait.

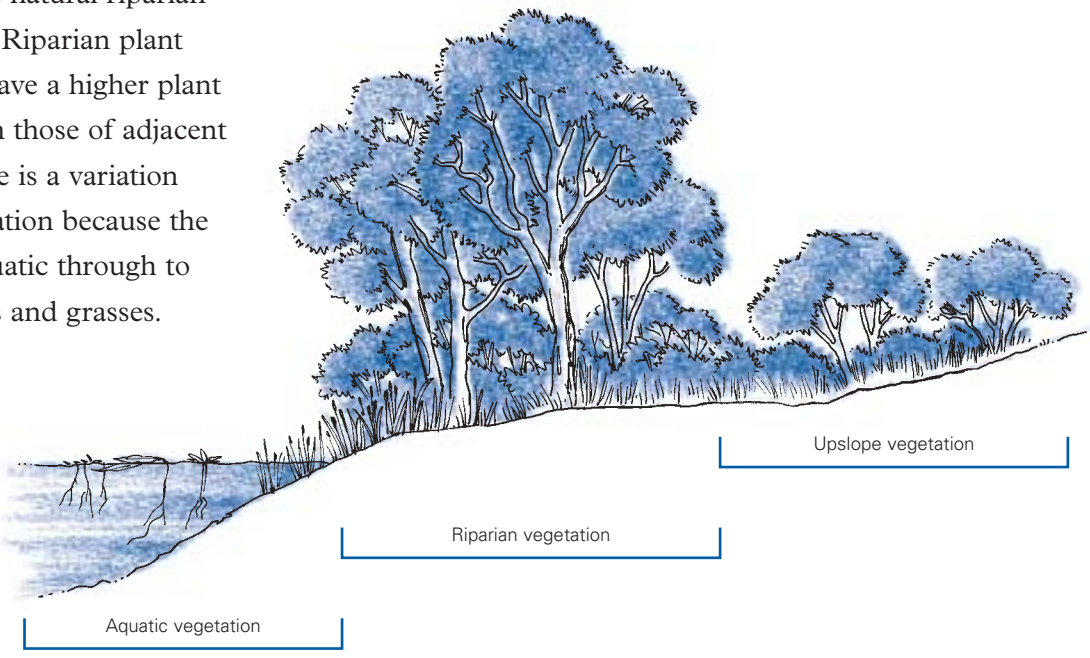
In other countries, the special management needs of riparian lands have been recognised for a long time. In Australia, there is now a growing awareness of the need for careful use and management of this special part of the landscape. The management of riparian lands to maintain land-based ecosystems and to conserve biodiversity must incorporate the protection of riparian vegetation.

It is important to remember that, if the aim of riparian management is to maintain wildlife corridors and habitat within an otherwise largely cleared catchment, the width, composition and continuity of the natural riparian vegetation is critical. Riparian plant communities often have a higher plant species diversity than those of adjacent upland areas, as there is a variation in the types of vegetation because the area ranges from aquatic through to upslope trees, shrubs and grasses.

Actions to protect riparian lands

Working with neighbours and the catchment community

Maintenance of riparian habitat for plants and animals needs to be considered at the landscape or catchment scale, because this is the scale at which species move and evolve. There is little point in one landholder taking steps to manage their riparian land and vegetation to maintain wildlife habitat if their neighbours do not. There are now many examples where



Vegetation changes as distance from the water increases. Often there is a band of taller, denser vegetation in the riparian zone and shorter, sparser vegetation further away.
Source: redrawn from Thomas et al. (1979).

Riparian zone restoration needs to be considered at the catchment scale, so that projects such as connected wildlife corridors can be undertaken. Photo CSIRO Ecosystems Services Project.

State and local government agencies, community groups and individual landholders have jointly planned and implemented programs of riparian management along a 20 or 30 kilometre stretch of stream. This has led to far more effective results and benefits than could have been achieved by those groups or individuals working independently. If one of the management objectives for your riparian land is to maintain or enhance wildlife habitat, contact your local catchment management, Landcare or Rivercare group to find out about coordinated group action.

Maintaining healthy riparian vegetation

Native riparian vegetation which remains in a healthy condition should be maintained and protected. This may require some form of fencing or other means of controlling the access of domestic stock and other animals. Some landholders are using narrow, grassy filter strips to help protect their riparian frontage from any adverse effects of adjacent intensive agricultural use of the land. Effective management may need to also include action to control weed species and feral animals, the use or prevention of fire to maintain a healthy and diverse pattern of vegetation, and the replacement or regeneration of species lost through past poor management.

It is important to protect those environments that remain in their 'natural' state, so that we do not repeat the mistakes we have made in clearing and regulating many of Australia's rivers.

Floodplain swamp at the junction of Cooper Creek and Whitula Creek floodplains. Inset: Part of a breeding colony of Australian pelicans in wetlands of the Georgina River – Eyre Creek systems. Photos Aridflo project.

Revegetation of degraded riparian lands using native species

In areas where the riparian vegetation has become fragmented or totally removed, revegetation is an essential first step. In some situations, it is possible to promote natural regeneration, for example by controlling the timing, duration and intensity of stock grazing. Regrowth of native plants by seed or suckering from existing individuals, from buried seeds in the soil, or from seeds transported to the site by the stream or by native animals, may then be enough to initiate the revegetation required. However, if the site is isolated from natural seed sources, deliberate replanting may be necessary. The use of local, native riparian species should be your first choice, as replanting with introduced species will not recreate the habitat needed to support the full range of native wildlife. Information about practical methods and costs of replanting, whether through direct seeding or use of tubestock, is now available from Greening Australia or equivalent organisations in most parts of Australia.

Replanting the riparian zone.
Photo CANEGROWERS.

In especially difficult situations, for example where there is active bank erosion or salinisation, you may need to consider special works to stabilise the soil surface, or to help replanted vegetation get the best start possible. This may involve structural works to stabilise the streambank, or mounding of soil in salinised valley bottoms to help ensure young seedlings do not succumb to high soil salinity. In extreme cases, you may consider the temporary use of introduced species to provide stability and cover while longer-lived, but slower-growing native vegetation becomes established.

A rehabilitated riparian zone.
Photo Michael Askey-Doran.

Native species

Flying foxes roosting in the riparian zone.
Photo Glenn Conroy.

Similarly, where native vegetation has been replaced by introduced exotics, such as willows, camphor laurel or privet, it is often possible to selectively remove the invaders and progressively replant with native species. In this way, benefits being provided by the exotic species, such as cover from frost or predators, or stabilisation of streambanks, are not lost while the replacement by native species is progressing. There may be other benefits from on-site treatment of exotics rather than wholesale removal. For example, stem injection to kill large camphor laurel trees in northern New South Wales has resulted in retention of valuable roosting sites, with the birds bringing in a wide range of native species in their droppings which have effectively recolonised beneath the former exotics.

In planning a revegetation project, it is important to put the right species in the right position. For example, species naturally found along the tops of banks will often not grow satisfactorily further down, where they may be subject to periodic flooding. Similarly, plant species which are frost-sensitive or need shade in their early growth period cannot be established successfully on bare banks. Local government, Greening Australia groups and other revegetation and tree-planting groups can provide excellent local knowledge, based on experience, to help ensure that revegetation projects are successful.

Control of stock access to riparian lands

Domestic stock, particularly cattle, favour riparian areas because of the availability of water, feed and shade. When stock access is not restricted, the animals can do substantial damage through over-grazing, trampling, formation of tracks and pads, physical disturbance of bank soil, and water contamination with large amounts of nutrients through dung and urine. Feral pigs and horses can also do significant damage to riparian land.

Grazing on riparian lands, even of native vegetation, may be compatible with maintenance of wildlife habitat, providing that grazing is planned and managed with care. Many landholders have found that the feed on riparian lands can be carefully and strategically used to improve enterprise margins and profitability. Careful grazing can also be used to reduce weed infestation and risk of fire during the early years after fencing. The key is good planning, careful monitoring of grazing impacts, and prompt removal of stock at the first sign of over-grazing or damage. Fact Sheet 6 in this series provides more information on managing stock access to riparian lands.

Heavy livestock grazing in riparian areas can eventually result in near-total collapse of the native riparian vegetation cover. Source: modified from Thomas et al. 1979. Illustration Carolyn Brooks.

Desert ash removal and revegetation as part of a rehabilitation project. Photo Siwan Lovett.

Manage fire

Frequent burning to reduce fuel loads may also destroy old and dead trees with nest hollows and reduce woody debris that provides shelter and foraging sites for many animals. In other situations, burning too infrequently may cause species of concern to decline. The most suitable fire regime varies greatly both among and between different regions, so it is important to work with local experts to develop a fire regime that is suited to local plants and wildlife.

Riparian rehabilitation

Riparian rehabilitation is likely to be most effective for wildlife where both the total habitat area and its links with other areas are maximised. The width and length of the rehabilitated area are important, as are connections with other parts of the catchment. The widths suggested as suitable for wildlife habitat and movements range from a minimum of 50 metres to several hundred metres. While some broad guidelines are possible, it is likely that appropriate widths for riparian buffers and corridors will depend on the specific wildlife habitat you are trying to create. Within cleared areas, target widths for riparian rehabilitation may need to be wider than within landscapes still retaining some vegetation cover, as there is less area available for wildlife to move in and out of the riparian area.

When developing a riparian rehabilitation plan for wildlife, consult with local experts who can advise on the width required for particular species, the vegetation that is native to the region, and the management approaches that can be used to assist your project attain its goals.

For further information

Lynch, R. & Catterall, C. 1999. 'Riparian wildlife habitats' in Lovett, S. & Price, P. *Riparian Land Management Technical Guidelines, Volume One: Principles of sound management*, Land & Water Australia, Canberra.

Lynch, R. & Catterall, C. 1999. 'Riparian wildlife and habitats' in Price, P. & Lovett, S. *Riparian Land Management Technical Guidelines, Volume Two: On-ground management tools and techniques*, Land & Water Australia, Canberra.

FACT SHEET 5
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

1 Managing riparian land
2 Streambank stability
3 Improving water quality
4 Maintaining in-stream life
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 Rutherfurd, 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

Edited by Phil Price and Siwan Lovett and produced by Land & Water Australia's National Riparian Lands Research and Development Program.

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