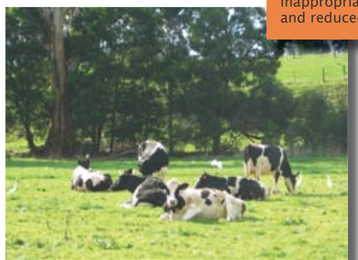
5 Riparian condition and land-use practices: A survey of riparian health on dairy farms

Inappropriate grazing near waterways can result in loss of biodiversity and reduced water quality due to degraded riparian condition.



A riparian condition assessment technique may assist landholders and other natural resource managers to identify, assess and monitor land-use impacts and changes over time to waterways and riparian condition.

A simple rapid appraisal system developed at Charles Sturt University, was tested to determine the condition of streams and riparian land on Gippsland dairy farms.

Riparian zones were scored based on their ability to provide habitat for native biodiversity (in-stream and riparian), to minimise the impact of high flow events on soil erosion and to sustain in-stream health.

These physical measurements were compared with farm management variables such as stocking rates, stock management, and fertiliser application in relation to the use of the stream and riparian land.

Project outcomes:

- a simple rapid appraisal technique that can be applied to waterways on Gippsland dairy farms
- a useful source of information about riparian condition on Gippsland dairy farms
- recommendations on likely best practice for riparian restoration

6 Gippsland dairy riparian project – environmental monitoring:

Reducing water quality impacts from dairy cows

Dairy farm management practices can have negative consequences for riparian zones and water quality.

Inappropriate stock, dairy shed and track management, unsuitable siting of effluent ponds, and excessive fertiliser use can result in increased nutrient and microbial levels in waterways and riparian zones.

Stock access to riparian land can increase sedimentation, bank erosion and loss of vegetation through trampling and consumption.

The identification and development of appropriate riparian best management practices (BMP's) depends on understanding the impact of farm management activities on riparian areas and waterways.

The impact of farm management is being monitored at a research site on 2 commercial dairy farms in Gippsland. Monitoring occurred before and after fencing and revegetation of the riparian zone.

Soil and water nutrients, sediment and microbial levels, water temperature, rainfall, stream flow and measures of biodiversity are monitored regularly.

Project outcomes:

- improved knowledge of farm management impacts on riparian and water quality
- identification and development of riparian zone best management practices
- valuable educational site for LandCare and other natural resource management agencies

Productive Grazing, Healthy Rivers is one of six projects focussing on improving biodiversity in agricultural landscapes funded under the Victorian State Governments Ecologically Sustainable Agricultural Initiative.

For further information on Productive Grazing, Healthy Rivers:

www.dpi.vic.gov.au/vro/biodiversity/riparian

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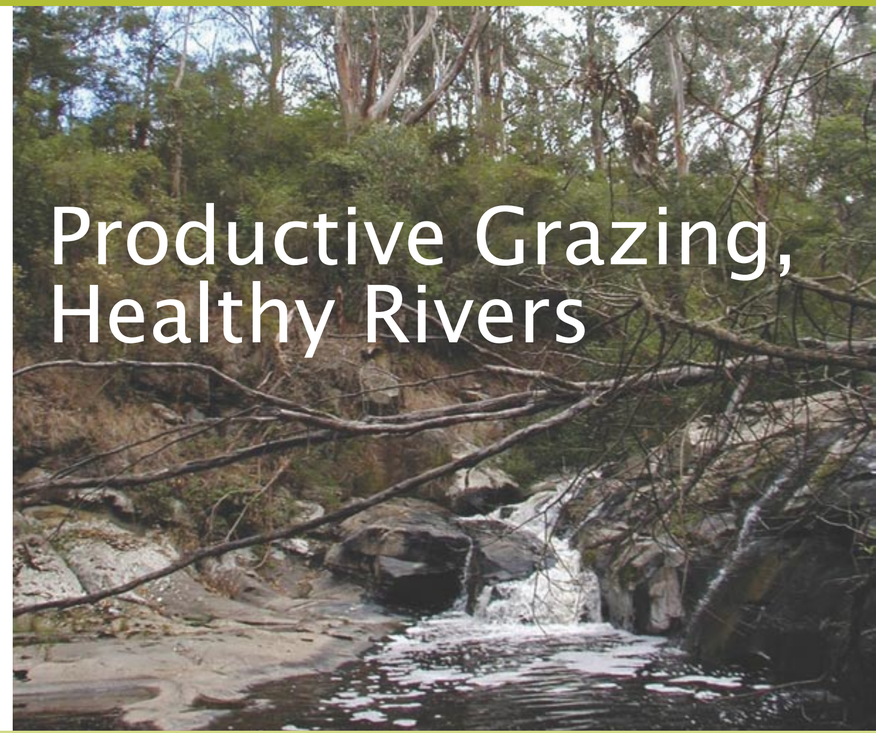

Productive Grazing, Healthy Rivers

Improving riparian and in-stream biodiversity

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Find more information about DPI on the Internet at: www.dpi.vic.gov.au
Department of Primary Industries
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Productive Grazing, Healthy Rivers will assist high rainfall, intensive beef and dairy farmers to improve riparian zone and biodiversity management within productive grazing enterprises.

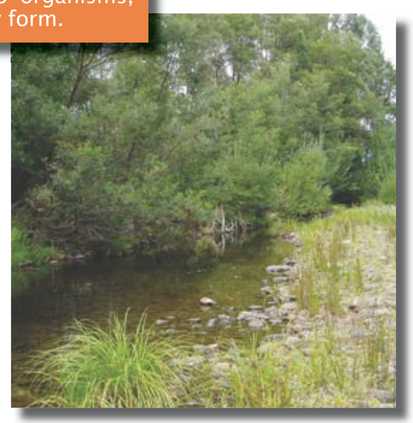
AGRICULTURE depends on healthy ecosystems to provide services such as clean water, nutrient and waste recycling, and sediment control.

Access to clean water is vital for the intensive grazing industries and the wider community. Improved management of riparian zones and associated biodiversity can contribute to better on- and off-farm water quality.

Managing healthy rivers and RIPARIAN ZONES for improved BIODIVERSITY outcomes can be an integral part of a profitable and productive grazing system.

The Productive Grazing, Healthy Rivers project will provide landholders and natural resource managers with the information and management tools required to integrate riparian and farm management for combined environmental and production outcomes.

BIODIVERSITY is simply the variety of all life, the different native plants, animals, micro-organisms, their genes, and the ecosystems they form.



Research and development

1. Quantifying on-farm riparian biodiversity
2. Wood to Water: habitat creation within replanted riparian land
3. Regeneration in remnant vegetation: overcoming the barriers
4. Weed management in riparian zones: a guide for grazing properties
5. Riparian condition and land-use practices: a survey of riparian health on Gippsland dairy farms
6. Gippsland dairy riparian project – environmental monitoring: reducing water quality impacts from dairy cows

1 Quantifying on-farm riparian biodiversity

What lives along your stream?

Understanding the biodiversity present within a landscape and the impacts of land-use change on biodiversity is essential when making informed management decisions.

Landholders across Gippsland and south west Victoria are concerned about the limited biodiversity information available for private riparian land, and are asking for evidence to demonstrate that fencing off riparian land actually improves biodiversity outcomes.

Fencing off riparian land to improve on-farm biodiversity

This study measures the riparian biodiversity present on beef and dairy farms by assessing the condition of the riparian zone, and by conducting surveys to find out what lives there.

Biodiversity surveys include small mammals, birds, aquatic invertebrates, vegetation and frogs. The influence of stock access and fencing on the quality and quantity of riparian biodiversity is assessed by comparing the biodiversity of farms with fenced and grazed riparian land.

Project outcomes:

- riparian biodiversity present on beef and dairy farms surveyed across southern Victoria
- comparative analysis of biodiversity on fenced and unfenced riparian land
- improve the understanding of the impact of grazing on riparian diversity
- increase landholder ownership of biodiversity
- raise awareness and provide relevant, local examples of biodiversity for landholders

2 Wood to water: Habitat creation within replanted riparian land

Most streams flowing through grazing properties contain a smaller amount of the wood that would have been present in their natural state.

Clearing or loss of native vegetation along stream banks reduces the supply of wood. Wood was often removed in the past in the belief that it impeded water movement, contributed to bank erosion and "looked untidy".

This study investigates a method of improving in-stream habitat and biodiversity values by adding small woody debris to waterways on grazing properties.

Discarded branches of local eucalypt species are placed into streams to accelerate the process of habitat formation for aquatic invertebrates, fish and terrestrial fauna species.

Sites are surveyed before and after the placement of branches to determine changes in aquatic biodiversity.

Wood in streams is important for riparian biodiversity. It can provide habitat for aquatic animals, stabilise the streambed and bank, and re-oxygenate the water.

Project outcomes:

- a method to increase the biodiversity value of fenced and revegetated waterways
- information for LandCare groups and others involved in riparian restoration
- 'recycle' branches generated by councils during tree-lopping

3 Regeneration in remnant vegetation: Overcoming the barriers

The long term viability of remnant riparian vegetation can be threatened by a lack of recruitment of key species, including trees.

In healthy riparian vegetation recruitment of many tree species is thought to occur periodically, after flood or fire events.

Factors that potentially limit tree recruitment include weeds, grazing by exotic and native animals, and changed flood regimes.

This study investigates tree recruitment in remnant riparian vegetation, including the threat to recruitment posed by weeds. In addition, seed germination and seedling establishment is being monitored in browser-proof plots that have different levels of weed cover.

Project outcomes:

- improved knowledge of the factors affecting native tree recruitment
- riparian management strategies that optimise tree recruitment
- improved riparian zone management

4 Weed management in riparian zones: A guide for grazing properties

Weed management is one of the major reasons landholders resist fencing off riparian areas.

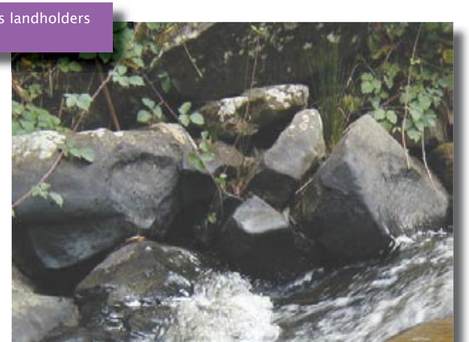
Landholders are usually extremely knowledgeable about local pasture weeds and their appropriate management; however, knowledge about typical riparian weeds and suitable control methods is much more variable.

A weed decision support tool has been developed using existing information on weed distribution, impacts and management. This will assist landholders to determine the most appropriate management strategies for the range of weeds that occur in riparian zones.

Local knowledge from landholders and other riparian managers was collated to develop locally specific guides for south west Victoria and Gippsland.

Lists of declared noxious, regional priority and other species assessed as a threat to riparian zones are included, together with information on how weed species affect biodiversity and livestock production.

The publication assists in identifying stages of a weed invasion, likely responses of weed species to fencing, the suitability of different control techniques and how to define appropriate weed management goals.



Project outcomes:

- weed decision support tools for south west Victoria and Gippsland
- methods to assess riparian weed threats rapidly and to identify suitable management options
- increased willingness of landholders to fence and manage riparian areas.