

Riparian management in intensive grazing systems for improved biodiversity and environmental quality: productive grazing, healthy rivers

S.R. Aarons¹, M. Jones-Lennon¹, P. Papas, N. Ainsworth, F. Ede and J. Davies

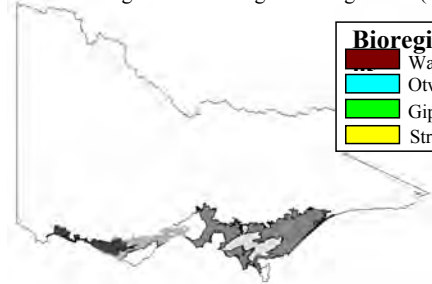
¹Ellinbank Research Institute, PIRVic Ellinbank, RMB 2460 Hazeldean Rd, Ellinbank, Victoria, 3821 Australia, Email: sharon.aarons@dpi.vic.gov.au & www.dpi.vic.gov.au/vro/biodiversity/riparian

Keywords: biodiversity, weeds, water quality, woody debris

Introduction Within high rainfall intensive grazing systems of southern Victoria, riparian zones are often degraded due to vegetation clearing, stock access and inappropriate farm management. Streams in these landscapes often have poor water quality and reduced biodiversity due to degraded terrestrial and aquatic ecosystems. Improved management of riparian zones depends on developing tools and practices for integration into productive grazing systems. This paper describes the approaches used and the tools developed in the 'Productive Grazing, Healthy Rivers: Improving riparian and in-stream biodiversity' project.

Materials and methods The project sites are on intensive beef and dairy properties that occur within the 4 high rainfall (>750mm) bioregions (NRE 1997) of southern Victoria (Figure 1). During the project development phase (September 2001-April 2002) an extensive literature and data review was undertaken followed by consultation with key stakeholders involved in riparian zone management in the grazing industries. Research gaps identified in this process were used to develop the 6 activities currently underway in the research and development phase (June 2002-July 2005) of the project.

Results The review of riparian biodiversity assets (NRE 2002) identified the need to survey riparian biodiversity actively on grazing properties in the study area. Current riparian management actions often differed from recommended guidelines. Eight key riparian management issues were identified, which were used to develop 6 research and development modules. These are: biodiversity surveys of 40 paired, fenced and unfenced, riparian sites on dairy and beef properties in southern Victoria; investigation of the impact of introducing small woody debris on biodiversity of fenced replanted riparian sites; surveys of 36 sites to identify factors affecting native tree recruitment in fenced riparian sites; development of a weed decision support tool to assist landholders manage riparian weeds; assessment of riparian condition of 107 dairy farm sites; water and soil monitoring along the riparian zone of 2 commercial dairy farms to identify farm management impacts and to monitor changes after fencing and revegetation (Aarons *et al.*, 2005).



Bioregio	
Dark red	Warmambool Plain
Cyan	Otway Plain
Green	Gippsland Plain
Yellow	Strzelecki Ranges

Table 1 Key riparian management issues

1	Stock and grazing management
2	Buffer strips
3	Weed management
4	Native vegetation
5	Control of feral animals
6	Waterway modification
7	Conflict with native fauna
8	Management of habitat trees

Figure 1 Project location showing the 4 study bioregions

Conclusions Key riparian management issues identified by the team and stakeholders were the basis of the research activities developed. Biodiversity survey data indicates that fenced sites on beef and dairy farms have greater native biodiversity. Unfenced riparian areas on dairy farms in SE Victoria are generally in poor condition, with on-farm activities contributing to degraded riparian zones. On the other hand, weed species often are associated with fenced riparian areas. A riparian weed decision support tool was developed to assist farmers to manage fenced riparian land. Information from this project is disseminated regularly to landholders and natural resource managers in the project study area.

References

- Aarons, S.R., A. Melland & C.J.P. Gourley (2005). Grazing management impacts on the riparian zone and on water quality. *Proceedings of the XX International Grasslands Congress*.
- NRE (1997). Victoria's biodiversity: Directions in management. Department of Natural Resources and Environment, East Melbourne, Victoria.
- NRE (2002). Biodiversity conservation in intensive grazing systems: Riparian and in-stream management. Department of Natural Resources and Environment, Ellinbank, Victoria.