

Revisiting planted riparian buffer zones: a decade on, do they live up to expectations yet?

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Across NZ and internationally, considerable effort and expense is devoted to stream rehabilitation. Rehabilitation projects typically focus on riparian planting, recognising the proven ability of forested riparian buffers to mitigate land use impacts. In addition to improvements in water quality and physical habitat, an expectation of many riparian projects is to restore aquatic and terrestrial ecological function and processes. However, the limited evidence to date shows the link between rehabilitation of riparian vegetation and rehabilitation of aquatic ecological function and processes depends on many factors. This work describes a re-assessment of the benefits of replanted riparian vegetation and livestock exclusion on stream condition in agricultural catchments of New Zealand by Parkyn et al. (2003). A decade on from the original study, we re-assessed the same nine paired buffer and control reaches to determine whether increased growth of the replanted riparian vegetation at the buffered reaches (now ranging in age from 13 to 35 years since replanting) was associated with further improvements in stream condition. Increased maturity of riparian vegetation was generally associated with increased shade and decreased water temperature, and consequently decreased benthic algal abundance, but not with improvements in instream fine sediment, volume of wood or aquatic plants, nutrient levels, visual water clarity, faecal indicator bacteria, or streambank stability – and recolonisation by ‘clean water’ macroinvertebrate communities had changed little. However, analysis of changes within buffer sites relative to control (unbuffered pasture) sites revealed that best improvements to stream ecological health were associated with increasing buffer length. Somewhat surprisingly, buffer age appeared to have little effect on any of the invertebrate or water quality response variables.

Parkyn SM, Davies-Colley RJ, Halliday NJ, Costley KJ, Croker GF. 2003. Planted Riparian Buffer Zones in New Zealand: Do They Live Up to Expectations? *Restoration Ecology* 11:436-447.