



Lake
Baroon
Catchment
Care
Group

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Upper Lawley Creek Restoration

Case Study 2014

Project Duration: 2011-2015



Australian Rivers Institute surveying Bridge Creek; re-researching the efficiency of riparian zones in trapping sediment and nutrients.

The Upper Lawley Creek Restoration project (including the Restoring Bridge Creek project) is located in the Bridge Creek catchment on the outskirts of urban Maleny.

The project was completed on four adjoining properties and removed livestock access to 1,230 metres of Lawley Creek riparian zone. Over 6,000 indigenous species were planted, 3 hectares of weeds managed, a waterway crossing installed and provided awareness through raising opportunities through university research, field walks and field days, threatened species programs and volunteer planting events.

Through weed management, tree planting and the removal of livestock, a buffer has been established to filter run off which reduces risks to water quality in the catchment and ultimately benefitting raw water inflows to Lake Baroon—one of south east Queensland's most important water storages.

Additionally, the project provides broader environmental benefits. The revegetation provides a wildlife corridor between remnant vegetation on the Keton property and areas of bush and older tree plantings on the edge of Maleny. Remnant vegetation has been fenced to exclude livestock.

Several universities have visited the project site and an LBCCG funded research project (partnering with Griffith University) studying the genetics of the locally endemic spiny crayfish (*Euastacus hystricosus*), found a significant population of the species on the Keton property. Project activities will contribute to habitat enhancement and protection.

Other university research on the project has looked at the effect of revegetation on soil properties (University of Queensland), sediment inputs and budgets and the efficiency of riparian zones on trapping sediments and nutrients (Australian Rivers Institute, Griffith University).

Objectives

The Bridge Creek catchment (including Lawley Creek) is characterised by its steep slopes, lack of vegetation in the headwaters, and the inability of the soil to absorb nutrients and moisture. The relatively steep nature of the land, mod-

erate instability (63% of land unstable) and lack of natural cover in some areas of the catchment means that there is high erosion potential, and minimal filtering of run-off, therefore nutrient input is significant.

Water quality monitoring and analysis at the Wells Road crossing shows, despite much of the catchment being vegetated, that significant levels of nitrates, ammonia, phosphates, phosphorus and faecal coliforms are input into Bridge Creek with 70% of samples exceeding guideline levels.

The Lake Baroon Catchment Management Strategy (2004) clearly identifies activities to improve the quality of catchment water:

1. Revegetate first order streams throughout the sub-catchment to maximise buffer capacity and reduce erosion potential.
2. Provision of advice, encouragement and incentives to landholders to maintain adequate riparian buffers, erect riparian fencing and manage stock access to waterways (off stream watering, shade and hardened waterway access points and livestock laneways).
3. Encourage good farming practices, particularly on floodplains and steep slopes to reduce the rate of soil loss.
4. Actively support SCC Land for Wildlife, NRM Small Grants Scheme and legal covenant agreement initiatives that protect and rehabilitate remnant vegetation and enhancement projects.

Upper Lawley Creek Restoration



Bridge Creek has good riparian vegetation and displays excellent bed diversity and bank stability. The creek however is threatened by sediment loads entering the waterway through excessive erosion in the upper reaches of the catchment.



LBCCG Committee, landholders, revegetation and project partners.



The Keton reach of Lawley Creek with revegetation.



Conservation Volunteers planting Richmond Birdwing vines

addressed these issues through:

- implementing an on-ground project that delivers water quality benefits
- raised awareness—particularly of water quality issues
- promoted integrated catchment management in the Lake Baroon catchment
- reduced sediment delivery to waterways
- reduced pathogen delivery to waterways
- improved aquatic habitats
- demonstrated best practice
- encouraged and supported further investigation by Seqwater and independent researchers.

The project completed:

- 6,000 tube-stock (2,000 Keton, 2,000 on Smith, 1,500 Lawley, 500 on Malter) to establish a riparian buffer and wildlife corridor
- 50 Richmond Birdwing vines planted to provide suitable habitat to the Richmond Birdwing butterfly and increase diversity
- 3 hectares of weed management carried out to improve biodiversity and habitat
- 1,230 metres of permanent fencing of water courses hill slopes, springs and seeps
- Protection of 0.3 hectares of remnant vegetation
- 1 concrete low level waterway crossing providing watering point
- 3 community events (1 field walk, 1 field day, 1 volunteer planting event)
- 4 separate University research projects plus macroinvertebrate monitoring with USC PICSE work placement student
- On going maintenance over three year period to ensure successful establishment of revegetation.

What did we learn?

Species selection and placement is critical, as some species were planted throughout the site when they were



Macroinvertebrate sampling. This was conducted with the assistance of a work placement student through the Sunshine Coast University Primary Industry Centre for Science Education (PICSE).

only suitable for particular (waterlogged) areas.

Despite the initial higher expense of purchasing and installing 'Plant Pink' guards, overall maintenance costs were reduced as the tree guards allow faster herbicide application, reduced predation and increased plant visibility.

The dry period between July 2012 and January 2013 delayed tree planting, therefore possible drought periods must be considered before planting begins.

The cattle watering access proved to be less than ideal as there was limited water available and erosion continued at the access point. In future, the access point should be hardened or off-stream watering strongly considered.



Acknowledgements

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Irene Keton

Marek & Libby Malter

Gary Smith

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Barung Landcare for providing tubestock, guards, stakes and weed mats.

Griffith University (Australian Rivers Institute) researchers who surveyed spiny crayfish populations, catchment geomorphology and sediment budgets, and the efficiency of riparian zones on trapping sediments and nutrients.

University of Queensland PhD Effects of revegetation on soil properties.

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