



Southern Gulf
NRM

Case Study

Building skills and knowledge in improving soil rehabilitation and control of soil erosion

Report by Pru Wharton



Photo credit: Simon Eggleston

OVERVIEW

In August 2015, the Regional Landcare Facilitator (RLF) project provided funding under The National Landcare Program (NLP) to Gregory River Landcare Group Inc. and Lawn Hill Riversleigh Pastoral Holding Company. The funding supported the completion of the Erosion Restoration Project on Lawn Hill Creek and Crocodile Creek.

At the time of the project, the Southern Gulf NRM's RLF Pru Wharton engaged Darryl Hill from Soil Save to deliver a series of subsidised erosion control workshops throughout northwest Queensland. These consisted of five workshops, held over a period of two years and covering 25 properties representing a total of 8,079,2013 hectares of grazing land in the rangelands.

The Lawn Hill Creek soil erosion project and associated workshops was an important part of a strategy to address knowledge gaps across the region in relation to soil erosion. The project and workshops assisted land managers to obtain the correct knowledge, skills and management tools to understand the causes of soil erosion, how to avoid triggering additional erosion and how to ameliorate the erosion that is already in place. This is a key priority for the Southern Gulf region, as there are a significant number of pastoral leases across the region that have a high level of active soil erosion. An estimated 20 tonnes of soil per hectare may be lost in one intense rainfall event (Jolly 2009). This highlights the significance of why management of soil erosion is a key priority for the region.

Project Partners Southern Gulf NRM Regional Landcare Facilitator Project, Lawn Hill Riversleigh Pastoral Holding Company, Gregory River Landcare Group Inc.



The Regional Landcare Facilitator Program is an initiative of the Australian Government Department of Agriculture. This project is supported by Southern Gulf NRM, through funding from the Australian Government's National Landcare Programme.



BACKGROUND

Lawn Hill Creek is a large permanently flowing primary tributary of the Gregory River and rises on the Barkly Tableland in the Northern Territory, which then flows roughly east into Queensland. The total length of Lawn Hill Creek from its origins in the Northern Territory to Gregory River is approximately 230 km.

In 2015, the then manager of Lawn Hill Station identified that a large section of Crocodile and Lawn Hill Creeks was severely affected by major gully erosion and land degradation. This section was originally a road, which over time had impacted the natural flow of water from rainfall events, resulting in a change to drainage patterns into the river during multiple wet seasons. The end result was the development of a deep cavernous change to the soil landscape. The two separate creek systems effectively would have joined up to become one if the erosion was allowed to continue and ultimately resulting in irreversible changes to the flow of water in these two highly important creek systems.

This saw Darryl Hill (Soil Save) brought into the region to educate and train land managers on what was causing erosion, how to best address the issue of soil erosion and the associated loss of fertile topsoil.

HOW WAS THE PROBLEM ADDRESSED?

Heavy machinery was used on the site to carry out excavation on the area with the intention of returning the eroded soil within these two creek systems to as close to its original state as was possible. A number of worn tractor tyres were put in as stabilisers for the soil bank during excavation of the soil. Appropriate soil was moved to the site in order to fill the eroded gully and allow the regular flow to continue within both creek systems.

As there was a road running between both of the creeks, and it was a heavily utilised road, which likely contributed to the severe erosion, a decision was made to relocate the flow of traffic by moving the road away from the two creeks.

The workshops reinforced the importance of reducing erosion on pastoral land. The benefits observed within the project and workshops were the retention of fertile topsoil, reinstatement of natural water flow and water erosion avoidance through application of best practice management.

OUTCOMES

After the completion of the project, the site had two monsoon wet seasons between November 2015 and April 2017. There has been a visible increase in the return of native grasses and vegetation growth across the site. The return of substantial ground cover will reduce the potential risk of lost topsoil during rain events, and of gully erosion developing into the future. Both creeks are now flowing again unimpeded by erosion issues, resulting in a reduction of loose soil sediment in the creeks. A series of site photos were taken before the project was implemented and after completion. Additional photos were also taken two years after in order to demonstrate the progress of the site's return to a more natural and improved state. A follow-up workshop is intended to be held on-site in order to showcase the impact of the project, and to allow land managers from across the region to benefit from the learnings of this project.

GENERAL EROSION MANAGEMENT PRACTICES

- Fencing off eroded creek systems or restricting livestock access to rivers when practical.
- Wet season spelling of paddocks reducing grazing pressure, allowing native pastures to recover and return to vigour following rainfall; this ultimately will result in healthier native pastures and vegetation which translates to improved ground cover.
- Preventing a loss of ground cover will assist in protecting the topsoil from excess rainfall run-off and associated topsoil losses.
- Immediate earthworks stabilisation at the discovery of mild erosion, and address the cause of erosion.
- Building roads away from creek systems and the design of roads should be in a manner that will prevent erosion.
- Continue educational workshops which focus on teaching practical management practices for prevention of erosion.

Southern Gulf NRM would like to acknowledge the following organisations for their support for the project and the delivery of the Soil Save Workshops:

Lawn Hill Project

- Lawn Hill Riversleigh Pastoral Holding Company
- Gregory River Landcare Group Inc.

Soil Save Workshops

- Australian Agricultural Company
- Carpentaria Land Council Aboriginal Corporation
- The North Australian Pastoral Company
- Flinders Shire Council





LAWN HILL PROJECT SITE

Pictorial references

These photos were taken 16 May 2015 looking back from Crocodile Creek towards Lawn Hill Creek. The photo identifies the severity of the depth of soil loss and the increase of gully erosion that had been occurring over time on the site. At the time it was recorded that 16 metres separated the two river systems. With the likelihood of continued erosion, there was a significant risk that the creek tributaries would join, impacting the natural flow of Lawn Hill Creek and ultimately flow being diverted into Crocodile Creek.



This photo is looking from the road between Lawn Hill Creek and Crocodile Creek, 16 May 2015.



These photos were taken **8 November 2015** looking towards Crocodile Creek showing the restored site.



Follow up photos of the project site **24 June 2017**. The area has received rainfall from two monsoon wet seasons since November 2015. The photos show a visible increase in the return of native grasses and vegetation growth across the site.



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