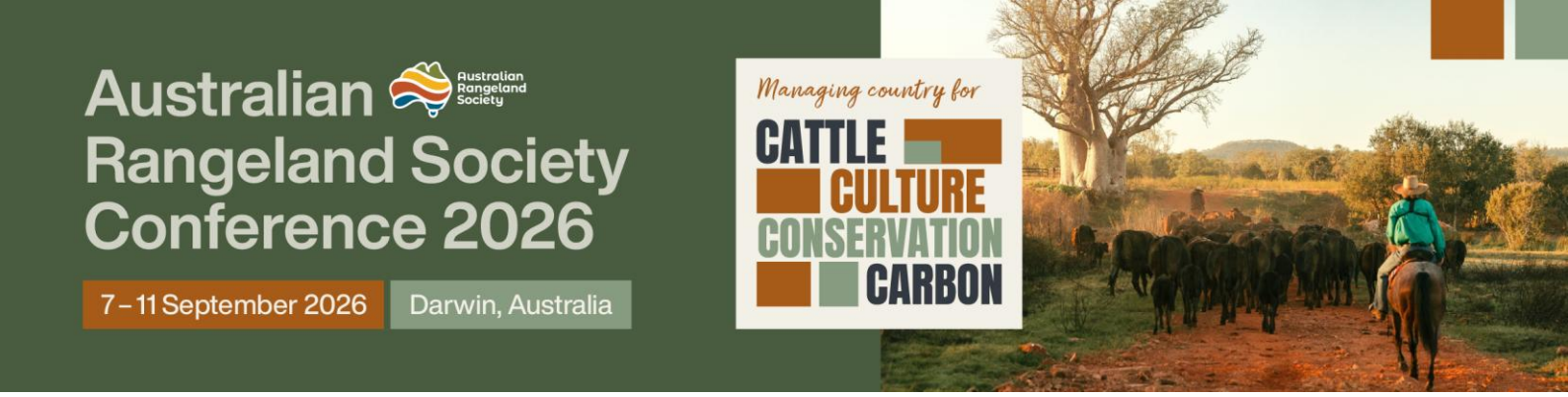


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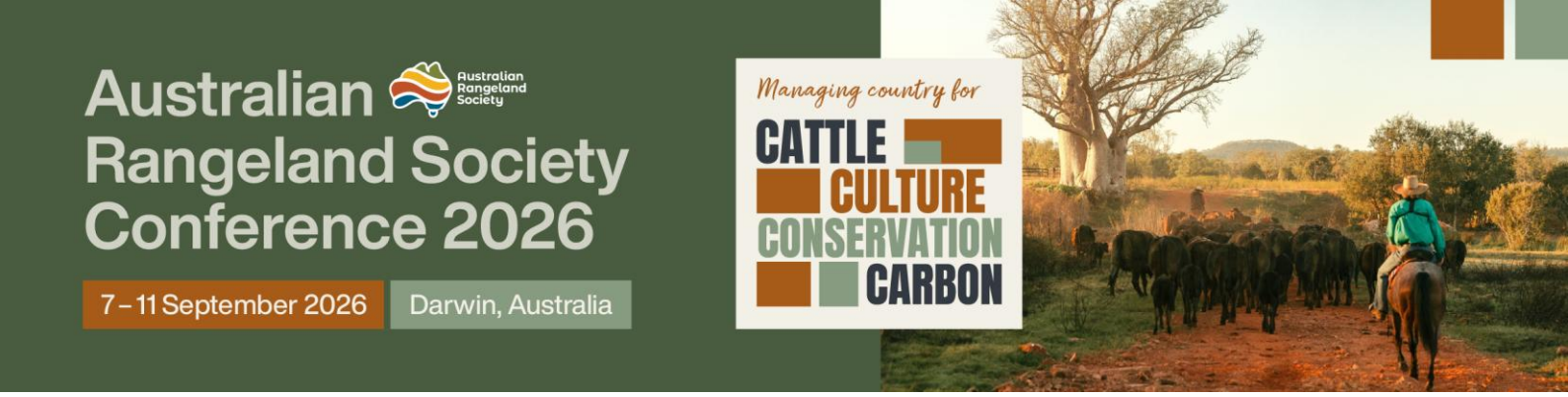
Darwin, Northern Territory

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Contour banks effectively restore productivity and function to claypans in the Mulga lands

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Abstract
Barren claypans are common across Australian rangelands, often resulting from susceptible soils and inappropriate grazing practices that reduce ground cover and increase erosion. At Boothulla, north-west of Cooladdi, Will and Sasha Treloar identified claypans as a constraint to pasture and livestock productivity. In 2023, several water-spreading banks were designed and constructed with support from private consultants. Following early improvements in water infiltration and landscape hydration, additional banks were installed in other degraded areas.

In 2024, the Queensland Department of Primary Industries (DPI) established seven monitoring sites across two renovated claypans. Monitoring in 2026 showed that water infiltration improved within three years, leading to increased ground cover and early recovery of perennial grass species. Monitoring will continue until 2028, when a final land condition assessment will be undertaken.

Introduction

Barren claypans are widespread across the Australian rangelands and commonly develop on susceptible soils where inappropriate grazing has reduced ground cover and increased erosion. At Boothulla, north-west of Cooladdi in south-west Queensland, Will and Sasha Treloar identified claypans as a key productivity constraint and began restoring degraded areas. In 2023, water-spreading banks were designed and constructed with advice from a private consultant (Figure 1). Following early improvements in water infiltration and landscape hydration, additional banks were installed elsewhere on the property.

In 2024, Boothulla became a producer demonstration site for the Queensland Pasture Resilience Program (QPRP). The program is aimed at addressing land condition decline through on-going grazing land management and improved pastures research and extension of best management principles. The project provides objective monitoring of claypan recovery and grazing management outcomes, while also serving as an extension site where local graziers can observe and discuss restoration practices and results.



Figure 1. Ground cover and pasture recovery observed during baseline assessments in August 2024; a water spreading bank is in the middle distance.

Methods

The property Boothulla (26.37° S; 145.22° E) is in the Mulga lands bioregion with a mixture of hard and soft Mulga land types. The climate is semi-arid with mean annual rainfall of 380 mm. Seven monitoring sites were established on renovated areas of two claypan sites in August 2024. Sites were given an initial land condition assessment using the Land Condition Assessment Tool (LCAT) (Hasset *et al*, 2020). Visual estimates of pasture yield, ground cover percentage, and species contribution are taken annually at the end of the wet season period using the Stocktake methodology (DPI&F 2004). Pasture yield and ground cover measurements are also taken at the end of the dry season.

Results

Baseline assessments in 2024 indicated that all sites were in D (poor) condition due to low ground cover (Figure 2) and dominance by annual pasture species such as *Enneapogon* spp, *Aristida contorta*, and various *Chloris* species.

In March 2025, Boothulla received approximately 360 mm of rain during the Southwest Queensland flood event. Despite inundation by flood waters, the banks held with only a few minor breaks. The flooding led to a slight decrease in ground cover due to the removal of litter. However, the increased soil moisture prompted the growth of several winter forb species. Rainfall in the 2025/26 season was below average (224 mm). Despite this, ground cover increased across the renovated areas from increased perennial grass species such as *Aristida spp*, *Digitaria brownii*, and *Panicum* spp.

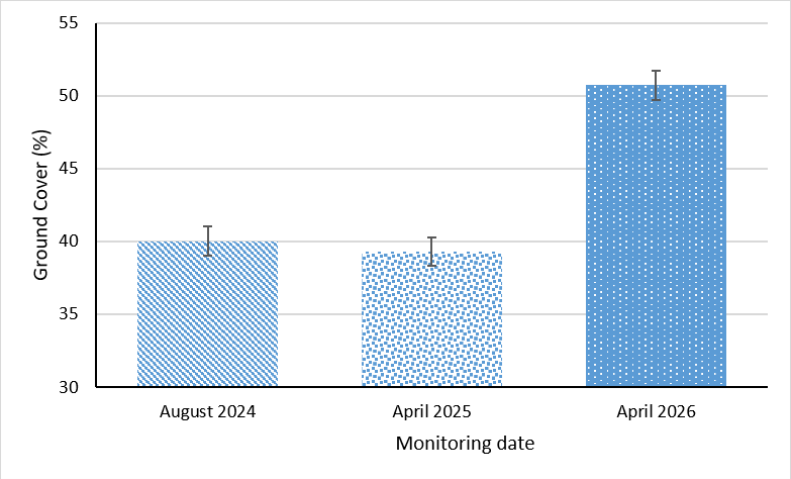


Figure 2. Change in end-of-wet season average ground cover from the baseline in 2024 to 2026. Data averaged across all monitoring sites with standard deviations shown.

Discussion

These results clearly show that the installation of the banks on these degraded claypans has increased water infiltration in a period of only three years. This has resulted in increased ground cover and the steady recovery of perennial grass species. These sites will continue to be monitored until 2028 when a final land condition assessment will be conducted.

Acknowledgements

We acknowledge the Lachlan Hughes Foundation which the Treloars participated in and supported their water spreader bank project. This project forms part of the Queensland Pasture Resilience Program funded via the Queensland Government and an MLA Donor Company.

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