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GOVERNMENT OF
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Department of Agriculture,
Fisheries and Forestry

Future
Drought
Fund

Southern Rangelands Revitalisation Program

# Ashley & Debbie Dowden at Challa Station

## Innovation and technology enhancing environmental stewardship

August 2025

## Acknowledgments

This case study was co-prepared by the Department of Primary and Regional Development (DPIRD) and Soils for Life as part of the Southern Rangelands Revitalisation Program (SRRP), jointly funded through the Australian Government's Future Drought Fund and the WA State Government's Climate Resilience Fund.

The program started in 2021 and aims to support pastoralists to investigate and implement long-term solutions for on-station improvements in rangeland condition, land productivity and livestock management in WA's southern rangelands.

We acknowledge that the contents of this document do not necessarily reflect the views of contributors.

Cover image: Aerial view of mustering cattle on Challa Station
Images supplied by Debbie Dowden

For further information, visit **dpird.wa.gov.au/southern-rangelands-revitalisation-program**

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# About the case study series

This case study is part of a series that showcases 7 pastoralists in Western Australia who have participated in the Southern Rangelands Revitalisation Program (SRRP) run through the WA Department of Primary Industries and Regional Development (DPIRD), funded by the Australian Government's Future Drought Fund – Resilient Soils and Landscape program and the WA State Government's Climate Resilience Fund.

The Southern Rangelands Revitalisation Program aims to support pastoralists to investigate and implement long-term solutions for on-station improvements to land condition and livestock profitability in WA's southern rangelands. This program takes a systems approach to rangelands revitalisation involving:

- the regeneration of palatable, productive, perennial vegetation
- landscape function and hydration restoration
- total grazing pressure control
- livestock management.

The program provides support to pastoralists to learn as a community through organised group meetings with like-minded pastoralists, funding to access expertise and training, and grant funding for revitalisation projects.

The 7 pastoralists in the case study series received training and specialist support in the first phase of the program and were then successful in applying for funding for an on-ground revitalisation project.

Soils for Life has prepared each case study in collaboration with DPIRD and the pastoralists. Each pastoralist story provides an insight into their unique rangeland environment and context, challenges and motivations, and ways they are adapting and innovating to build resilience. The case study has a focus on practices implemented through the SRRP, but provides context about each pastoralist's broader management approach.

# Station facts

### Location
Badimaya Country, Murchison region, WA

### Climate
Hot dry summers, cold winters

### Average annual rainfall
232 mm[1]

### Agro-ecological region
Arid[2]

### Property size
206,000 ha (Challa and Windimurra)

### Elevation
395 m

### Social structure
Family operated pastoral lease

### Enterprise type
Santa Gertrudis breeding cows and progeny

### Landscape
Mulga, saltbush and bluebush scrub[3]

### Soils
Hardpan wash plains and sandplains (with some mesas, stony plains and salt lakes) on granitic rocks of the Yilgarn Craton with red loamy earths, red shallow loams (often with hardpans), red sandy earths, red deep sands and red shallow sands.[3]

### Land systems
Nubey, Cunyu, Woodline, Nallex, Hootanui, Mileura, Steer and Merbla[4]

1 Sourced from pastoralist and **SILO**.
2 Agro-ecological region is determined according to **Outback Australia - the rangelands**. Extreme variability of rainfall is a defining feature of southern rangelands and has a significant impact on the challenges and solutions being explored in the SRRP.
3 Sourced from **Natural Resource Information, WA DPIRD**.
4 Land systems of the SRRP project area. Sourced from the Rangelands baseline surveys - Western Australia.

# SRRP project highlights

## Goals and approaches

- Building landscape resilience and prioritising herd genetics to support an efficient and high quality cattle herd
- Developing methods and utilising technology to measure landscape outcomes and preserve knowledge for future generations

## Practices implemented

- Built Total Grazing Management (TGM) yards to improve grazing management, herd quality and drought resilience
- Set up automated biodiversity monitoring units to overcome the challenges of monitoring rangeland landscapes, and to provide verifiable data that could be used in the future for natural capital accounting
- Implemented rehydration works to utilise rainfall, including fine tuning and installing grader ‘scallops’ in hard areas to trap water, soil and seeds
- Revegetation trial to fast track landscape restoration
- Improving reproductive performance of cattle to lift herd productivity and build drought resilience

## Initial insights

- Trap yards are improving drought management and resilience through better livestock management and labour efficiency, providing the ability to respond quickly to dry conditions to prevent overgrazing and livestock condition decline
- The automated biodiversity monitoring units are gathering consistent, verifiable monitoring data
- Increased understanding of previously unknown aspects of biodiversity on Challa Station, including wildlife that stays out of sight in the presence of humans
- New plant growth in the ‘scallops’ suggests that the rehydration works are helping to support regeneration of hard areas

> You’ve got to get it right in this part of the world. It’s not a forgiving environment if you overgraze the country and do damage to it.
>
> **Debbie Dowden**

# Meet Ashley and Debbie

Ashley and Debbie carry on the Dowden family legacy of environmental stewardship at Challa Station, located 400 km inland from Geraldton, near Mount Magnet, WA. Together they run the 206,000 ha station as a cattle enterprise with 1,000 Santa Gertrudis breeding cows and progeny.

Challa Station has been in the Dowden family since 1888. Ashley is fifth generation on the station and Debbie has been at Challa Station for 30 years. They've run the station together for 15 years since the management gradually transitioned from Ashley's father as he retired. Now that Ashley and Debbie's 4 children 'have grown up and left the School of the Air school room', Debbie has taken a more active role in the running of the station.

Balancing landscape revitalisation with livestock production is critical for the Dowdens, who keep stocking rates below recommended carrying capacity. According to Debbie, 'If you do any damage in this environment with your livestock by overgrazing, it can literally take decades to recover.' The Dowdens own a separate wheatbelt property in Gingin that they use to finish cattle or to reduce the stocking rate on Challa Station in dry times to protect

**Image 1** Debbie and Ashley Dowden

**Image 2** Debbie Dowden leads the mobs

the landscape from overgrazing. 'It's not just being good environmental stewards,' Debbie says. 'It's also part of a really solid business plan that allows us to plan for the long term. We hope to be able to produce red meat on this country in perpetuity.'

In 2015, the Dowdens took up the opportunity to buy the lease next door, Windimurra Station and it became part of Challa Station. Being in good sheep country, Challa Station was originally a sheep station. But when wild dogs[5] made it unviable to run sheep, Ashley and Debbie sold the last of their sheep in 2008 and committed to running cattle in 2014.

They started with mixed breeds and refined their herd over the past 10 years to be a Santa Gertrudis herd.

The Dowdens see the value of the station for running cattle, particularly on the areas with clay soils that grow a lot of grass when it rains. Debbie says they prioritise improving herd genetics 'so that we can run an efficient, productive, high quality herd on this landscape, rather than running twice as many cattle that are half the quality and not good breeders, that potentially damage the country in times of prolonged drought'.

5 In WA wild dogs are defined as dingoes, dingo/dog hybrids, and feral domesticated dogs.

**Image 3** Santa Gertrudis calves on Challa Station

## Rehabilitating degraded areas with rehydration works

With their commitment to improving landscape health, the Dowden family has introduced and refined landscape rehydration practices over at least 3 generations. Ashley remembers spending time with his grandfather as a child on the Fordson Major tractor with a mouldboard plough to address compaction and rehabilitate hard pans. More recently, Ashley and Debbie have implemented a range of practices to rehabilitate degraded areas, slow the flow of water to prevent erosion and improve landscape function for future generations. Practices include camel pitting,[6] grader ripping, whoa boys,[7] diversion and ponding banks, along with trials of ripping and seeding areas with felty leaf bluebush (*Maireana tomentosa*), saltbush (*Atriplex* spp.) and perennial grasses. Ashley and Debbie continue to modify their approach as they learn from their experiences. They have noticed increased vegetation and reduced erosion, and overall a better landscape condition over time.

6 A camel pitter is an adjustable depth disc implement with a seed box on top, usually towed behind a 4WD, creating a small depression in the ground and sowing seed at the same time.

7 Whoa boys are dirt banks built at right angles across eroded tracks to divert water off the track without causing erosion and so vehicles can cross over them.

**Image 4** Camel pitting at Challa Station

## Diversity and resilience at Challa Station

There are 36 different land systems across the station, with soil types varying greatly from deep red sands to deep red cracking clay soils and stony flats. These diverse landscapes include mulga shrublands, mulga forests, saltbush flats and salt lakes.[8]

Debbie is in awe of the beauty and resilience of the environment at Challa Station, even in dry times. She says, 'When you get to know the country it's beautiful and quite incredible. You develop a real appreciation for how plants can actually manage to survive here. We've just come out of the worst drought in 30 years, and we're seeing plants springing back to life after they've had a bit of rain, and you think they are dead but they're not, they're dormant. It's such a unique part of the world, and a lot of our ecosystems are fairly well intact.'

8 **An inventory and condition survey of the Sandstone-Yalgoo-Paynes Find area, Western Australia**.

# Southern Rangelands Revitalisation Project on Challa Station

The Southern Rangelands Revitalisation Program (SRRP) aims to support pastoralists to investigate and implement long-term solutions for on-station improvements to land condition and livestock profitability in WA's southern rangelands.

## Motivations and goals

Ashley and Debbie's revitalisation vision is to: 'Raise high quality red meat in perpetuity by maintaining our natural capital assets, improving our herd and developing methods to measure and maintain this for generations. Drawing our inspiration from the Global Farm Metric, we build sustainability by maintaining or improving our range condition, our business and our livestock. We want it to be drought resilient and easy to run so that a family can continue to enjoy living here well into the future.'

The Dowdens focused their project on expanding existing watering point Total Grazing Management (TGM) yards, trialling automated biodiversity monitoring, improving landscape rehydration and enhancing their herd performance and resilience.

Their project activities aligned well with Challa Station's 5 pillars of climate resilience:

- livestock selection and management
- maximisation of rainfall capture
- diversification
- long term vision
- carbon capture.

Keen to showcase the natural capital potential of the area and their Holistic Management approach, the Dowdens wanted to demonstrate how improving biodiversity and the repair of nature coincides with lifting livestock production in the rangelands. As Debbie says, 'What's good for the birds is good for the herds.'

Knowing the value of a healthy environment, and also that biodiversity correlates to improved cattle performance and profitability, the Dowdens wanted to deepen their understanding of the ecosystem and the key indicator species at Challa Station. The more they can learn, the more they can ensure that the landscape is in good health, even in the worst drought. 'The landscape has got to be in good health to bounce back when it rains.'

For the past 20 years, the Dowdens have been monitoring landscape conditions at Challa Station, including plant growth and diversity along with photo points. The monitoring data gathered in this way had been highly variable and lacked consistency, with variations occurring in plant identification and results depending on who was doing the monitoring. They wanted to do a better job and were looking for an easier, more efficient and verifiable way to monitor landscape function and include native animals, so they are trialling automated biodiversity monitoring. Their goal is to get a clearer picture of what is going on and a level of accuracy that is needed to see long term trends in landscape conditions.

They were keen to use this technology to address the challenges of monitoring in rangeland landscapes, including the large-scale, the remoteness and the costs to get people on property to measure and manage ecological health. Through this project they hope to develop automated biodiversity monitoring units that other land managers can use.

The highly variable rainfall in the rangelands creates the biggest challenges for the Dowdens. 'Uncertain rainfall patterns mean that we don't have a green date[9] or a reliable rainy season. In summer we might get rain from cyclones or thunderstorms, in winter we wait for a cold front to interact with some tropical air that's moving down from the north to get rain.' This climate makes cattle production impossible to predict, so Debbie and Ashley need to be agile in the way they adapt to environmental conditions and make management decisions.

The rehydration works that are part of the SRRP are designed to improve country that is hard, scalded or eroded so that it is able to catch and absorb water and grow plants again. Debbie explains, 'Every single drop of rainfall you get in rangelands has to count, you can't afford to waste it. You can't afford to let rain run off down the bare flats, down the roads into the salt lake. You need to be really conscious of how your management of the landscape affects the water flow.'

9 A date that indicates the break in the dry season.

**Image 5** Project site prior to rehydration works

## Practices implemented

### Total Grazing Management yards

The Dowdens have installed 5 watering point TGM yards, one of which incorporates a fence around a dam to facilitate improved grazing and herd management. Together with the existing 8 TGM yards, the entire Windimurra section of the station is now fully serviced by TGM yards. This will help build drought resilience by enabling faster movement of cattle in dry times to reduce overgrazing and decline in cattle condition. 'Cattle numbers will be optimised for rainfall and we can adjust them easily and quickly using TGM yards,' Debbie says.

With the TGM yards now installed, the Dowdens don't need to move cattle to a central processing yard. Cattle have access to water and hay while they wait in the yards up to 24 hours before processing. The TGM yards are built to ensure the safety of staff and easy cattle handling and management. This system means that 2 people can manage the cattle work. They use a portable crush/loading race that they can quickly set up in a TGM yard and easily move it when needed in another yard.

### Automated biodiversity monitoring

Debbie and Ashley have developed and trialled portable automated biodiversity monitoring units. These units measure and monitor changes in biodiversity on the station and will help improve natural capital accounting reporting in rangeland systems. The units include a weather station, soil moisture probe, soil carbon probe and a fixed camera to capture and record animals and plants within the site. 'In the future we hope that it can be monetised so that work like this can continue,' says Debbie.

Initially, problems with internet availability limited the mobility of the units, so the Dowdens adapted and installed fixed biodiversity monitoring units, which are now used to collect soil and weather data. Once Starlink access overcame the connectivity issues, the Dowdens were able to use mobile units which they could move anywhere. The data collected is sent to the cloud and processed in Perth. Their early challenges with internet availability meant they weren't able to proceed with their original idea for trialling virtual fencing as part of the project, but they are still keen to trial this technology in the future.

**Image 6** Total Grazing Management yards at Challa Station


**Image 7** Automated portable monitoring station at Challa Station

**Rangelands rehydration**

Ashley and Debbie are carrying out rehydration works on four sites across 157 ha to slow and redirect water flow across the landscape to support and improve plant establishment. They have constructed a series of whoa boys along the road to address gully erosion. Whoa boys are dirt banks built at right angles across eroded tracks to divert water off the track without causing erosion and so vehicles can cross over them. Ashley is using a grader technique where banks in the form of long scallops are dug into hard ground to slow and trap water, soil and seeds. Ashley has created approximately 200 ha of these grader scallops in the particularly badly scalded or eroded areas (see Images 10 and 11).

Part of the project involved trialling seeding some of the scallops to see if they revegetate more quickly. They put in silver saltbush (*Atriplex bunburyana*), oldman saltbush (*Atriplex nummularia*), annual saltbush (*Atriplex semilunaris*), sago bush (*Maireana pyramidata*) and felty leaf bluebush (*M. tomentosa*). This trial will help Ashley and Debbie evaluate whether there is enough seed in the natural environment or if seeding can help fast track results.

**Image 8** Automated portable monitoring system at Challa Station

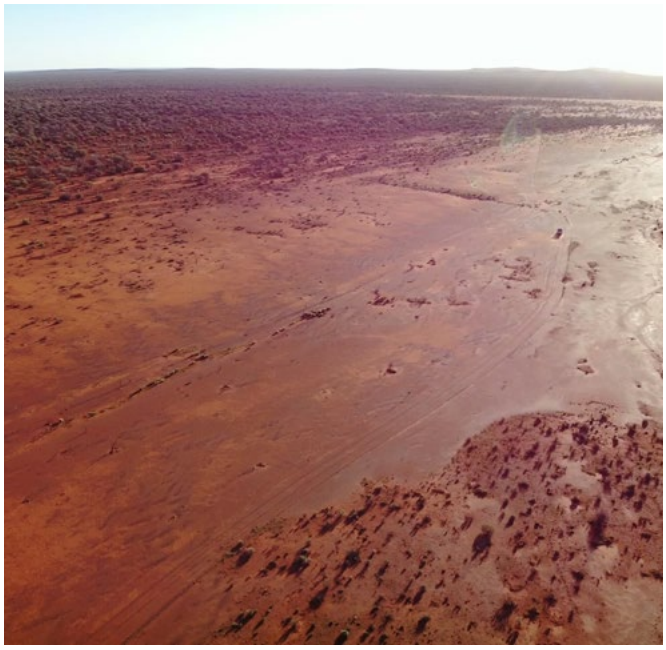

**Image 9** Image of a hard pan on Challa Station before installing grader scallops

**Image 10** Image of the hard pan seen in Image 9 after installing grader scallops

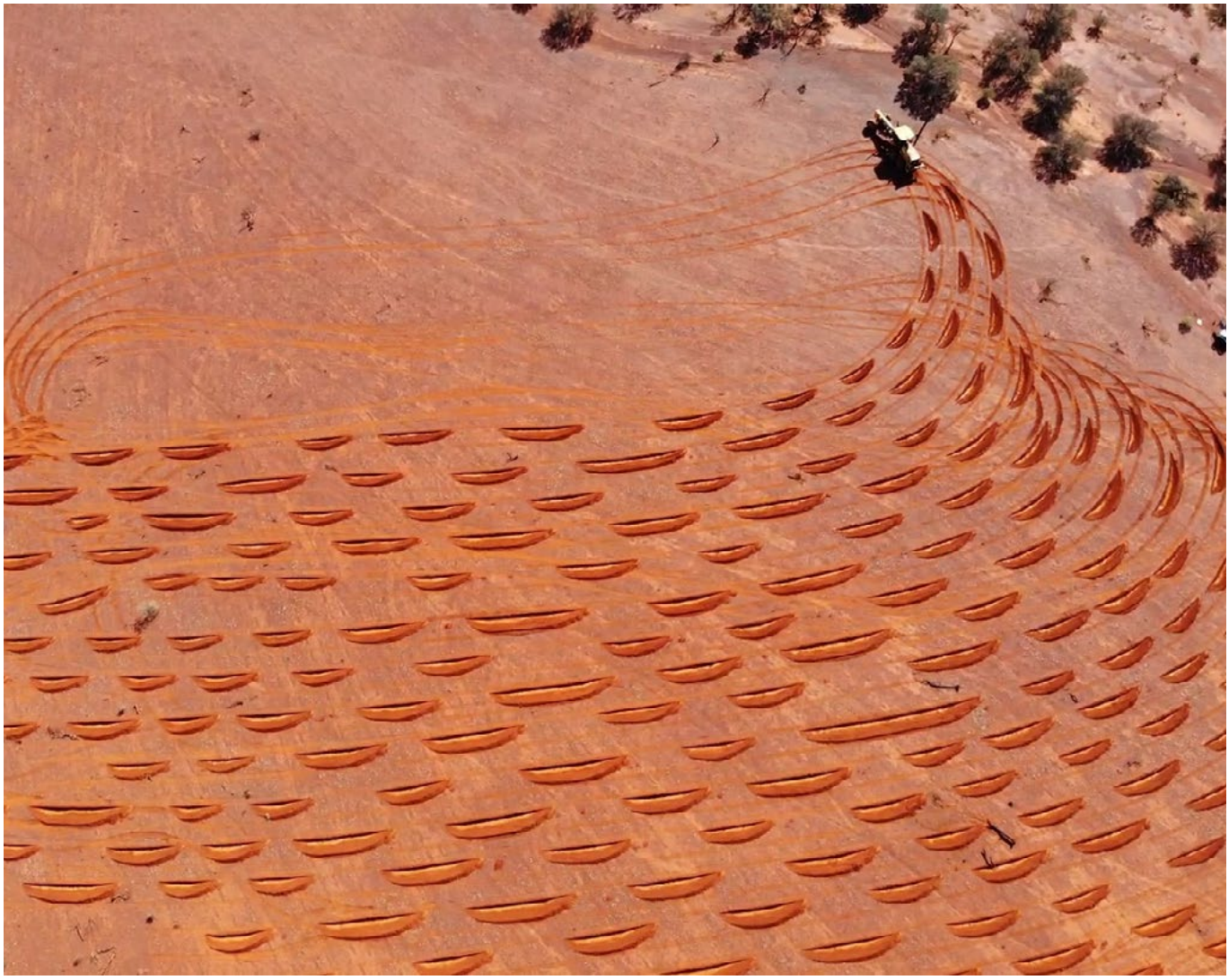

**Image 11** Creating grader scallops on Challa Station to slow and trap water, soil and seeds

**Animal performance and resilience**

Veterinary consultant Dr Enoch Bergman visited Challa Station in 2023 as part of the SRRP project to deliver a 'Build a Better Cow' on-station consultation and field day. Dr Bergman spoke about ways to improve the reproductive performance of a cattle herd to manage drought. Herd fertility and production is a key aspect of drought resilience. During dry times it is important to have an efficient herd because cows that don't produce calves cost as much to maintain but provide no return. The field day also covered diseases that can affect herd fertility, how to measure bull fertility, pregnancy testing techniques, taking tail blood samples to test for diseases and deficiencies, and performing autopsies to determine cause of death.

Ashley and Debbie applied what they had learned from Dr Bergman to manage the 2024 drought conditions by removing non-productive animals from the herd. They employed a station hand trained in pregnancy testing to pregnancy test cows. Cows not in calf were culled and pregnant cows were retained to calve and sell later. They are also taking new approaches to improve the breeding of heifers and testing and culling the herd for bovine viral diarrhoea virus (i.e. BVDV or pestivirus). Debbie says this will mean that 'southern rangelands meat will be recognised as a quality, sustainable product and we will be well placed in the market to attract a premium price'.

**Image 12** Dr Enoch Bergman presenting a workshop at Challa Station in 2023

## Initial insights

Ashley and Debbie share a deep connection with the landscape at Challa Station and value the opportunity this project has provided to continue learning and deepening their understanding of the rangeland ecosystem that is the foundation of their beef business. The SRRP has given them more energy and impetus for biodiversity monitoring, along with tools to run a more productive property in the long run. They have been encouraged by the landscape and enterprise resilience they are seeing through their biodiversity and cattle fertility baseline data. The benefits from fine tuning their livestock management practices to respond to drought are increasing resilience in the landscape and the business.

### Responding quickly and keeping track of cattle

The TGM yards have delivered improved livestock management outcomes. 'We no longer have to bring 12 people in to do a big muster,' Debbie explains. 'Just Ashley and I and one other person can go out and manage the cattle.' The yards give the Dowdens the ability to respond quickly when seasonal conditions become dry, so Ashley and Debbie find they are more agile in their management decisions. The system makes it much easier to get to know and keep track of cattle, and the cattle can't easily avoid mustering. As Debbie says, '99% of the cattle come into the yard. Even the wildest, most horrible bull will be trapped in one of these trap yards. Then you have got the ability to cull them.'

The TGM yards make it possible to introduce vaccinations that require follow up boosters and facilitate the culling of undesirable cattle. 'We can manage our herd a lot better. We're building our herd efficiency and culling…so that every animal we have on our property is a quality beef producing machine.'

### Rigorous and accessible monitoring

The automated biodiversity monitoring technology is enabling Ashley and Debbie to find out more about the biodiversity on the station cheaply and easily. They are excited to see the presence of an ecosystem with a diversity of wildlife including insects, reptiles and marsupials, that are healthy and reproducing.

Debbie can see how the biodiversity monitoring unit is ensuring that data is consistent and verifiable. The technology is making it possible to monitor so much more, Debbie explains, 'because now we don't have to go out with pen and paper and spend a whole day counting plants. And, now we can log onto the computer and look at the recordings of animals (cattle and wildlife) for the previous day and see what's popped up on the screens. We don't have to be out there all the time.' The Dowdens are enjoying how the automated monitoring units have added to their enthusiasm for monitoring and have made it fun and interesting. 'It's all such an interconnected web that we're just starting to learn about. There is so much more that we need to know, we're just tapping into the very surface of what's going on here in the rangelands.'

> We are building on our monitoring from being photos and stories by lay people, into highly professional, scientifically rigorous monitoring that is setting the standard for rangelands monitoring.
>
> **Debbie Dowden**

**Image 13** Margi Weir and Ashley Dowden recording plant germination in the grader scallops

These automated monitoring units are helping to overcome the geographical challenges of monitoring in the rangelands by making it easy to access expertise online and by requiring fewer on-site visits. With tangible data and visual evidence made available, the technology is also helping the Dowdens to strengthen the messages they are sharing about landscape resilience in the rangelands.

**Fine tuning rehydration**

Ashley trialled building the grader 'scallops', which he now refers to as 'Challa scallops', on a small area at first and learned through a process of trial and error to perfect the technique and manipulate the grader blade to spill the dirt out into the scallop shape. It will take a long time and significant rainfall before they expect to see signs that landscape rehydration is working in this rangelands context. Debbie explains how they can't expect instant results with the project: 'It takes such a long time to respond, you can do something and you might not get the result for 10 years.' However, they are noticing plants coming up in the scallops, which they find promising. The project has fine-tuned the way Debbie and Ashley implement rehydration and provided an opportunity for sharing about these practices with a lot of people as well.

**Image 14** Plants starting to grow in the grader scallops

# Next steps

Ashley and Debbie plan to continue improving herd management and herd quality. ‘Now that we have the ability to manage the cattle herd and the environment at the same time, we will trap cattle, move them or sell them when we detect the first signs of the landscape going backwards.’

Ashley and Debbie will continue working to refine the automated biodiversity monitoring units in order to support their environmental stewardship and verify the environmental benefits of their land management practices. They hope that by measuring and monitoring biodiversity, they will be able to tap into the future potential of biodiversity and nature repair markets. Monetising natural capital improvements and earning income by enhancing the environment will provide them with an opportunity to fast-track the ecological restoration of the station.

Debbie feels the SRRP project is helping to ‘iron out any dips in resilience that may occur in the future when there is a change in management.’ With none of their 4 children interested in running the station, Ashley and Debbie plan to sell Challa Station in the future and retire to a property that is easier to manage. Debbie and Ashley hope that when they leave, the monitoring data they capture will help their knowledge of the landscape remain in the environment and have a long-lasting benefit. Debbie explains, ‘We have been so mindful of the environment here for such a long time, now we are building on that using technology. I am trying to make things easier for people who don’t know as much about the environment as we do. Once we leave the station, all that knowledge is going to leave with us. It’s really important to develop a way that our knowledge can stay in the environment and have a long-lasting benefit.’

**Image 15** Ashley and Debbie Dowden on Challa Station

> If we can keep the management steady, the stocking level appropriate, and respond when required to drought situations, then the long-term resilience of this landscape can be more than just Ashley and I. It will endure for many more generations.
>
> **Debbie Dowden**

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