



**2021-22**

# Arid Recovery Annual Report



For more information on Arid Recovery visit [www.aridrecovery.org.au](http://www.aridrecovery.org.au) or call 08 8671 2402.

The stone artefacts scattered everywhere through the sand dunes of the Arid Recovery Reserve are testament to the deep time over which Aboriginal people have lived on and cared for Country. We recognise their enduring relationship with these extraordinary lands, and express our deep respect for their connection to this Country. With traditional knowledge and conservation science working together, we hope that struggling wildlife can be re-established to thrive again across Aboriginal land Australia-wide.



Picnic break while mapping bush tucker with Kokatha women on Roxby Downs station. *Photo: Kath Tuft*

This document is the 25th in a series of annual reports and outlines the activities of Arid Recovery for the period from 1st July 2021 to 30th June 2022.

Arid Recovery is an independent, not-for-profit conservation initiative that has been restoring Australia's arid lands since 1997. Our success is attributed to many supporters, including the unwavering support of the local community through volunteers and the long term support of our major sponsors BHP, SA Department for Environment and Water, the University of Adelaide and Bush Heritage Australia.

Copies of this report, supplementary information and previous reports are available on the Arid Recovery website.

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Cover photo: Sturt Desert Peas flourishing on the Arid Recovery Reserve.

*Photo: Ines Badman*

Inside cover photo: Climate Change Research Graduate Jack Bilby holding a young-at-foot burrowing bettong during May cage trapping survey.

*Photo: Martin Stokes*





Storm encroaching on the reserve in January 2022. Photo: Kath Tuft

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# Chair Report

ALLAN HOLMES

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Arid Recovery is a unique conservation enterprise in Australia. It is dedicated to the recovery of threatened species in Arid Australia. Over 25 years it has developed a reputation for ground-breaking scientific research built on innovation, collaboration, and excellence. Arid Recovery is a small operation, and in some ways, this characteristic has been its strength. What has made it successful are the people involved. Arid Recovery has attracted outstanding researchers and supporters.

We are fortunate to have Dr Kath Tuft as our chief executive and she has continued to recruit great people to do our work. Arid Recovery has become a training ground for conservation scientists and natural resource managers, especially for women in science. The opportunities it provides are something special.

Importantly, Arid Recovery is engaging Traditional Owners in many ways. Conservation and restoration of arid environments is as much a cultural endeavour as it is scientific. Landscapes are central to Aboriginal culture and their restoration is part of an important realisation of what has been damaged and lost. We are not sure where this will lead but we have embarked on building a deeper and more meaningful relationship with the Kokatha as the traditional owners.

Arid Recovery enjoys the ongoing support of its partners. BHP is the anchor for this enterprise. It is the major funder and landowner. Bush Heritage has become an important supporter both as a funder and collaborator on conservation management. The South Australian government, through the Department of Environment and Water continues to be an important funder and partner. Finally, the University of Adelaide is a long-term scientific collaborator.

We are governed by a board of eight dedicated directors who have contributed their skills and wisdom to its oversight. This report details the year's outstanding achievements.



# CEO Report

KATHERINE TUFT

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The major project this year was delivering the Commonwealth Environment Restoration Fund's safe haven grant awarded to Arid Recovery. This involved major fencing works that shored up the Red Lake paddock by raising the fence, replacing corroded footnetting and adding electric hotwires. We were pleased to engage Kokatha Pastoral for the works which were done very professionally. I also congratulate Conservation Land Management Officer, Nathan Manders, for his exceptional work leading a team raising the fence between Red Lake and Dingo Pen.

Most excitingly, a new threatened species was reintroduced to the reserve in 2021-22. Establishing kowaris within Arid Recovery's safe haven is a significant step to securing the species as it continues to decline in the wild, and presents an important opportunity to research and raise the profile of these enigmatic little desert predators. Our Ecologist Genevieve Hayes did a tremendous job obtaining approvals and coordinating the translocation.

It has been a pleasure for me to put roots down in the communities of Roxby Downs and the far north region. The connections we have with local volunteers and organisations help us all to flourish, and together we have leapt right back into outreach opportunities after the challenges of the COVID-19 pandemic. We have also been able to do more together on Country with the Kokatha traditional owners and with the Arabana Cultural Rangers this year.

My thanks to our Chair Allan Holmes and the Board for their guidance and contributions throughout the year. I am also grateful for the high calibre of thought and discussion provided by our very active Scientific Advisory Panel, and for the stalwart support of Arid Recovery's long running partners.

Finally, I am proud to work with such a dedicated and talented team. You go above and beyond in your support of Arid Recovery and it is a joy working with you all.

# Arid Recovery Board

For more information on the people of Arid Recovery visit our website at [www.aridrecovery.org.au](http://www.aridrecovery.org.au)

## Allan Holmes

Chair of Arid Recovery Board, Independent  
Ex-CEO SA Department for Environment and Water

## Martin Smith

Representative for BHP  
Head of Health, Safety & Environment, BHP Olympic Dam

## Sandy Carruthers

Representative for SA Department for Environment and Water  
Group Executive Director, Science and Information

## Laura Parry

Representative for the University of Adelaide  
Interim Executive Dean, Faculty of Sciences

## Heather Campbell

Representative for Bush Heritage Australia  
CEO

## Mark Priadko

Independent  
Financial management, financial and business analysis and business case consultant

## Andrew Corletto

Independent  
Partner, Minter Ellison

## Emily Jenke

Independent  
Co CEO, DemocracyCo



New Arid Recovery Board member - Emily Jenke

# Scientific Advisory Panel for 2021-22

Professor Laura Parry continues as Chair of the Scientific Advisory Panel and Board representative for the University of Adelaide. Laura is the Interim Pro Vice-Chancellor (Research) at the University of Adelaide.

The Panel's breadth of expertise was strengthened in 2022 with the addition of Dr Heather Neilly. Heather has previously conducted research at Arid Recovery and now works with the Australian Landscape Trust researching the intersection between natural disturbance regimes and climate change in dryland ecosystems. She has been recognised by the Ecological Society of Australia with the 2021 Wiley Next Generation Ecologist Award. She is also a children's book author.

The Panel met four times during 2021-22 with an additional one-day workshop developing climate change research priorities for Arid Recovery. Throughout the year the Panel contributed to planning the kowari reintroduction and to updating Arid Recovery's Research Plan.



New Scientific Advisory Panel member - Heather Neilly

## Panelists

Professor Laura Parry	Arid Recovery Board
Dr Jeremy Austin	University of Adelaide
Peter Copley	SA DEW
Dr Graeme Finlayson	Bush Heritage Australia
Allan Holmes	Arid Recovery Board
Dr Heather Neilly	Australian Landscape Trust
Dr Reece Pedler	UNSW, Wild Deserts
John Read	Ecological Horizons
Dr Dan Rogers	SA DEW
Dr Stephanie Williams	Ecological consultant

# Arid Recovery Staff

## General Manager / CEO

Dr Katherine Tuft

## Principal Scientist

Dr Katherine Moseby

## Ecologist

Dr Genevieve Hayes

## Administration Officer

Milly Breward  
Erica Mayer-Zirn

## Conservation Land Management Officer

Nathan Manders

## Community Coordinator

Ines Badman

## Safe Haven Support Officer

Nicole Galea

## Graduate Researcher

Jack Bilby

## Rabbit incursion support

Ned Ryan-Schofield  
Benjamin Tiver  
Harrison Talarico

## Fence Maintenance Officer

Dr Hugh McGregor

## Fencing workers

Alex Marinelli, Connor McDonnell, Bernie Reid

## Casual Field Ecologist

Saskia Gerhardy

## Wildlife Hotline

Hayley Randall

## Interns

Athanasia Hatzis, Harrison Talarico, Molly Barlow

## UNSW Research Officer

Dr Leanne van der Weyde  
Dr Kylie McQualter



↑ Outgoing Administration Officer, Milly Breward.

The Arid Recovery staff go above and beyond, volunteering a great deal of their time to help keep the Reserve secure, research projects get underway and the organisation running smoothly. We could not do it without you.

# Thank you to the volunteers of Arid Recovery for all their support

Isabel Anderson  
Leon and Gerry Anesbury  
Natalie Barren  
Molly Barlow  
Jamie Breward  
Milly Breward  
Todd Burns  
Hayden Cradock  
Ash Curtis  
Tyrone Demaine  
Jack Dugand  
Robert Dugand  
Courtney Etherington

Corrie Ferguson  
Graeme Finlayson  
Nicole Galea  
Yasmin Gee  
Anthanasia Hatzis  
Louise Hayes  
Ann and Frank Ingwersen  
Adrian Kennett  
Harrison Kent  
Anabelle Krugar  
Tara Ledingham  
David Lewis  
Hamish Longbottom  
Tessa Manning

Alex Marinelli  
Daniel Markos  
Eloise Matthias  
Beth McDonald  
Zachariah McDonald  
Glen McDonald  
Hugh McGregor  
Michael McKenzie  
Andrea Merrylees  
William Merrylees  
Madeline Newbery  
Brenton Oldfield  
Nicholas Ortodossi  
Edwin Pang

Tyson Qualmann  
Bernie Reid  
Scott Rodgers  
Joe and Janet Rosa  
Catherine Ross  
Ned Ryan-Schofield  
Domenik Scipione  
Samantha Semenian  
Jamie Simpson  
Rebecca Simpson  
Ben Stepkovich  
Andrea Stiglingh  
Maddison Stuart  
Harrison Talarico

Sam Thorn  
Max Tibby  
Deon Vosser  
Jess Waaleboer  
Taney Warren  
Constance Wilson  
Mark Young  
Rachel Young



# State of the Reserve

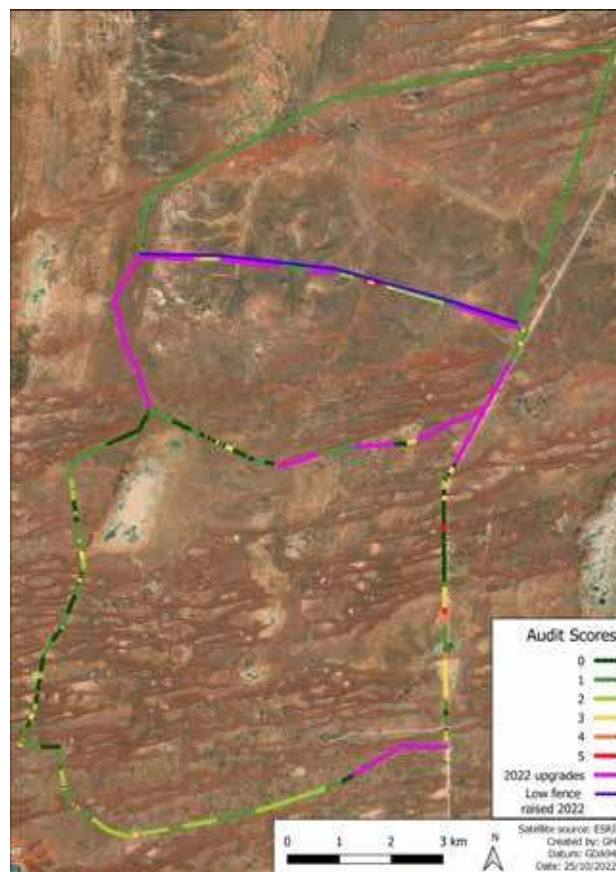
A record investment in fence maintenance got underway in 2022 with support from a Commonwealth Environment Restoration Fund Safe Haven grant, with works focussed on the Red Lake paddock in preparation for the reintroduction of Kowaris. A major rain event in January tested the Reserve's infrastructure. Efforts to address rabbit incursions in the Conservation Zone were ramped up, as did control of rabbits, feral cats and foxes in a buffer zone around the reserve as populations continued to boom.

## FENCING WORKS

Nathan Manders and a team of workers raised the entire 7km length of the Dingo Pen southern boundary to 1.8m in height to fully cat-proof the Red Lake paddock. Contractors through local indigenous enterprise Kokatha Pastoral laid 13km of new galvanised footnetting to replace highly corroded sections and installed 20km of new electric fencing around the Red Lake paddock. Materials were selected with support from the soil corrosion research team and specially produced by Waratah Fencing to give the maximum life possible. The lengths of footnetting replaced amount to 94% of the areas identified as highly or moderately corroded in the 2021 fence audit. Areas of the fence where the most aggressively corrosive soils have been mapped will be treated with stainless steel and PVC-coated in the coming year.

## RESEARCH STATION

Monadelphous Engineering, a local business and long-time community supporter of Arid Recovery, volunteered their capable team to erect a verandah roof at the research station to allow us to park all-terrain vehicles and store other equipment away from the weather. They also installed a gantry to assist with lifting heavy loads on and off vehicles with support from Nobles Lifting & Rigging.



- ↑ Upgrades to footnetting and sections of fencing raised through safe haven works overlaid over the 2020-21 fence audit

## RAIN EVENTS & EROSION CHALLENGES

The Reserve received 199mm of rain in January, the largest amount of rain to fall in such a short space of time in the Reserve's history. The fence stood up well to the large flow of water thanks to the fence maintenance program and erosion control works made after the large 2011 rains that directed water away from the fence. A number of tracks around the Reserve were damaged by the rain, and existing erosion issues exacerbated. An SA Arid Landscapes Board Grassroots Grant received in late 2022 will support training and works to address some of these issues.

## VEHICLES

A second-hand dual cab ute was added to the fleet in December to provide more capacity ahead of a big year of fence maintenance works and a new reintroduction program. A new two-seater ATV was also purchased to enable more access into sand dune country on the Reserve for rabbit incursion work. The new ATV has also proven useful for accessing areas otherwise hard to reach after rain.



- ↑ Flooded swale either side of the fenceline after the January rain event. Photo: Nathan Manders

**INCURSIONS**

Additional staff were engaged throughout the year to address rabbit incursions and seven rabbits were removed from the Main, First, Second and Northern paddocks. Success was highest with opportunistic shooting and with leghold trapping, while being careful to avoid impacts to non-target animals where possible. Monitoring buckheaps and activity along fences were most effective for surveillance, supported by track scans along dunes. In house workers were supported in May through July by contractors with Fauna Solutions. The First Expansion has been declared free of rabbits and work continues in the other paddocks.

Two quolls incurred into the Main Enclosure in the autumn dispersal period. One was removed and the other exited independently.

A feral cat incurred into the Main Enclosure in June 2022. The entire team was mobilised in coordinated surveillance, shooting and trapping activity. The cat was caught in a cage trap and removed 12 days after first being detected. No breaches were found despite very careful searches and it was concluded that the animal most likely climbed the fence as some cats can learn to do if given enough time to patrol the perimeter.

**FERAL ANIMAL CONTROL**

Feral cat activity around the perimeter of the Reserve and in the Dingo Pen continued to increase as prey populations boomed



↑ Nathan Manders' team clips new panels of netting to raise the southern boundary of Dingo Pen to 1.8m along the 7km section.

in response to rain. Volunteer shooters removed 74 feral cats and two foxes during the year. At the same time 89 cats were removed using cage traps around the perimeter.

Injected meat baits were deployed over a 7-10km buffer from the Reserve perimeter targeting foxes as detections increased. Neighbours on Roxby Downs and Andamooka stations (Kokatha Pastoral) continue to support this work on their land. Eradicator™ feral cat baits were not used while prey (rabbit and small rodent) activity remained high, but are available when those populations fall and cats are more likely to take baits.

**NEW TRAP ALERT SYSTEM**

A new Celium trap alert system ordered from Encounter Solutions (New Zealand) replaced the obsolete Observant system in early 2022. The new set of communication hubs and telemetered traps have greatly improved the efficiency of managing traps and allowed us to add more traps around the perimeter, into Dingo Pen and to have available for use in the event of incursions. Having alert nodes on traps during the cat incursion proved extremely valuable for enabling many traps to be open with minimal disturbance from people checking them.



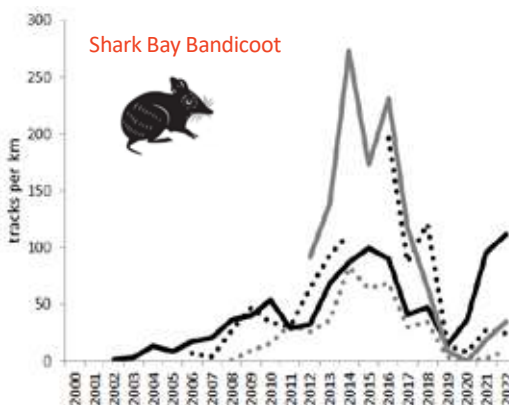
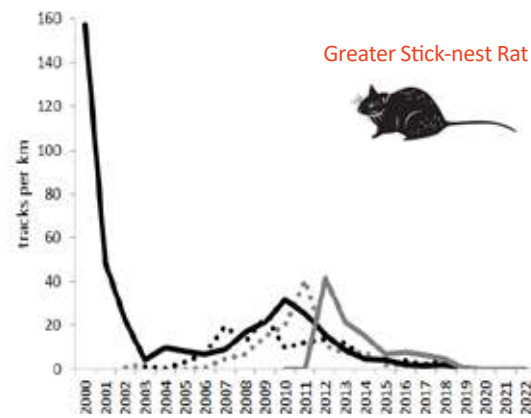
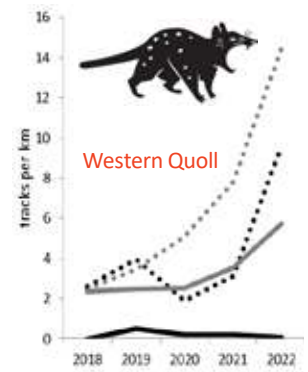
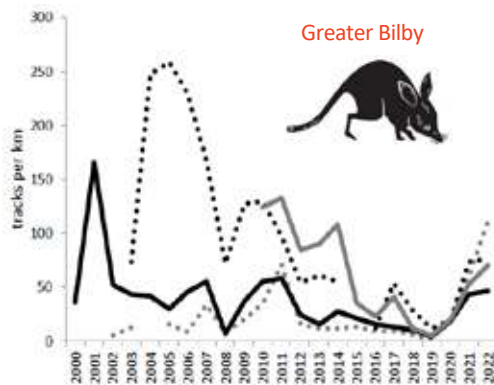
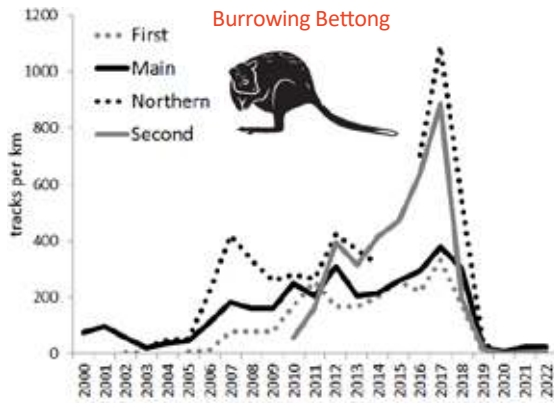
The number of floppy-top fences used across Australian states and territories.

## Floppy Top Fence

The signature curved top design was developed at Arid Recovery in 1997. The floppy top is so effective and cost-efficient that it is now the standard feral-free fence design around Australia.

The floppy top design now protects threatened species in 23 reserves over 58,000 hectares representing 85% of the country's growing network of safe havens.

TRACK COUNTS FOR REINTRODUCED SPECIES



# Re-introduced species monitoring

Track count monitoring of the four reintroduced mammal species was conducted in the four southern compartments of the reserve in four sessions. Focal trapping of burrowing bettongs in the Main Exclusion in May 2021 also yielded population estimates for bandicoots for the second time.

## BURROWING BETTONGS

Bettong track counts remain low after falling through the 2018-19 drought to levels not observed since their initial reintroduction. Capture-mark recapture estimates from the Main Exclusion showed a drop from over 700 individuals in 2018 to 49 in 2020, climbing only modestly to 79 in 2022. Bettongs are less common outside the Main Exclusion and their condition remains poor to fair despite the vigorous vegetation growth. This conundrum has been the subject of investigation during the year.

## GREATER BILBIES

Bilby activity continues to increase across all compartments, to the point that bilbies have put pressure on some fences by digging out and have occasionally been detected on camera traps outside the Reserve.

## SHARK BAY BANDICOOTS

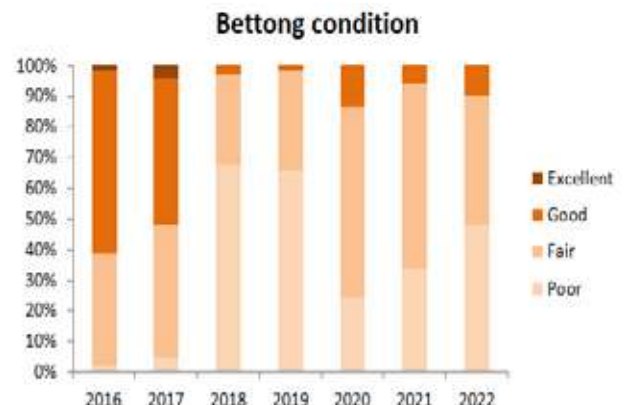
Bandicoot activity is rebounding very well post-drought. The population in the Main Exclusion was estimated at 158 in 2021 and 168 in 2022. Bandicoots are breeding vigorously, with 75% of females with active pouches and 12% of captures juvenile animals. The difference in activity in the quoll-free Main Exclusion is starkly higher than elsewhere. A further 13 bandicoots were provided to Wild Deserts and Mallee Refuge in May.

## GREATER STICK-NEST RATS

Stickies were active at as few as three closely located nests in the Main Exclusion and remain at critically low levels.

## WESTERN QUOLLS

Quolls are opportunistically captured in cat cage traps on the external perimeter and continue to appear on track counts and camera trap images within the Reserve. While the data are noisy, activity of quolls on track counts has increased markedly since their release in 2018. Carcass dumps ceased to be provided for quolls in early 2022 with the end of drought conditions and conclusion of a research project into their effectiveness.



# In situ fauna



Hopping Mouse, smooth knob-tailed gecko (*Nephurus levis*) and Sudell's burrowing frog (*Neobatrachus sudellae*). Photos: Ines Badman & Jack Bilby

**2022 SURVEY** Small vertebrates were captured at 20 dune sites over four nights of annual pitfall trapping in March 2022 with 1,045 captures of 41 species of mammals, reptiles and even frogs and birds. Volunteers travelled from several states to take part in the survey and included Bush Heritage Ecologist Graeme Finlayson and members of BHP's environment team.

**NATIVE SMALL MAMMALS** Small mammals were relatively abundant at dune sites, moreso inside the Reserve compared to outside. Spinifex hopping mice *Notomys alexis* were most common with 175 captures, and Bolam's mice *Pseudomys bolami* rare (only 5 captures) compared to earlier years, reflecting a declining trend in that species. Other species captured included a short-tailed mouse *Leggadina forresti*, plains mice *Pseudomys australis* and two species of dunnart.

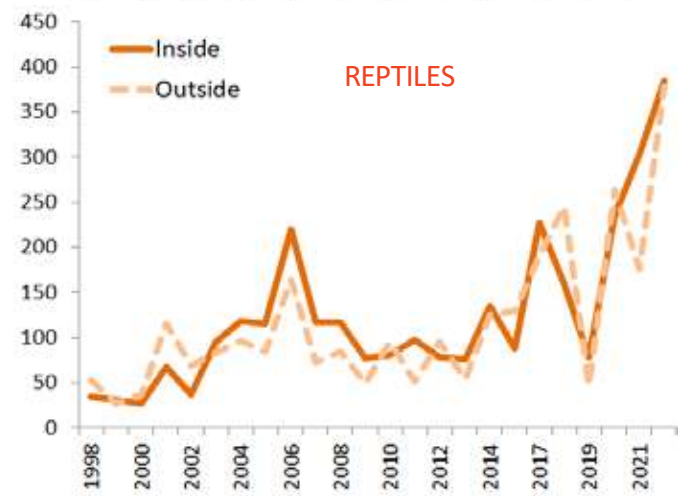
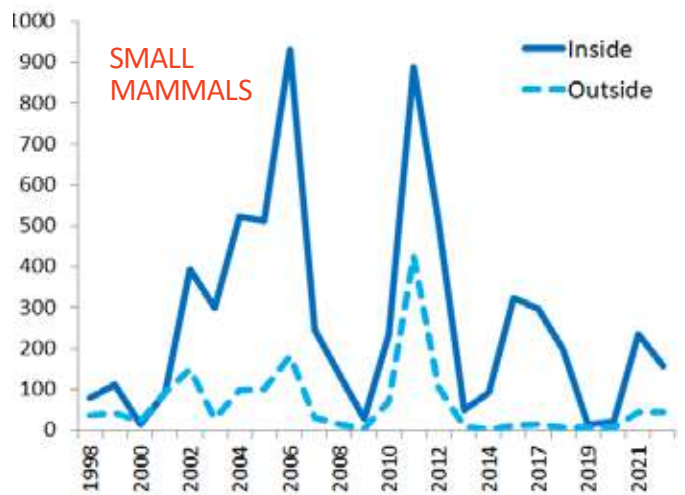
**REPTILES** Reptiles were exceptionally abundant during the 2022 survey, and notably more abundant inside the reserve compared to outside. Reptiles from 28 species were captured, including five snakes, a sand goanna *Varanus gouldii* and a western blue-tongue lizard *Tiliqua occipitalis*.

**PLAINS MOUSE TRANSLOCATION**

In June 2022 Arid Recovery supplied 49 plains mice to the Australian Wildlife Conservancy for a translocation to a new fenced reserve in Pilliga National Park, NSW, via captive staging at Monarto Safari Park.



← Sunrise trap checks. Photo: Ines Badman



▲ Abundance of small mammals (above) and reptiles (below) captured in pitfall surveys between 1998 and 2022, both inside and outside the Reserve.

# Vegetation condition

## RAINFALL EVENTS

Very significant summer rain fell in a series of storms close together in January and further rain in April totalling 189mm. There was little to no winter rain however. Vegetation on the Reserve responded with a sustained burst of annual growth and substantial growth of many perennial species, especially shrubs, *Rhagodia spinescens* and *Enchylaena tomentosa*.

## VEGETATION MONITORING

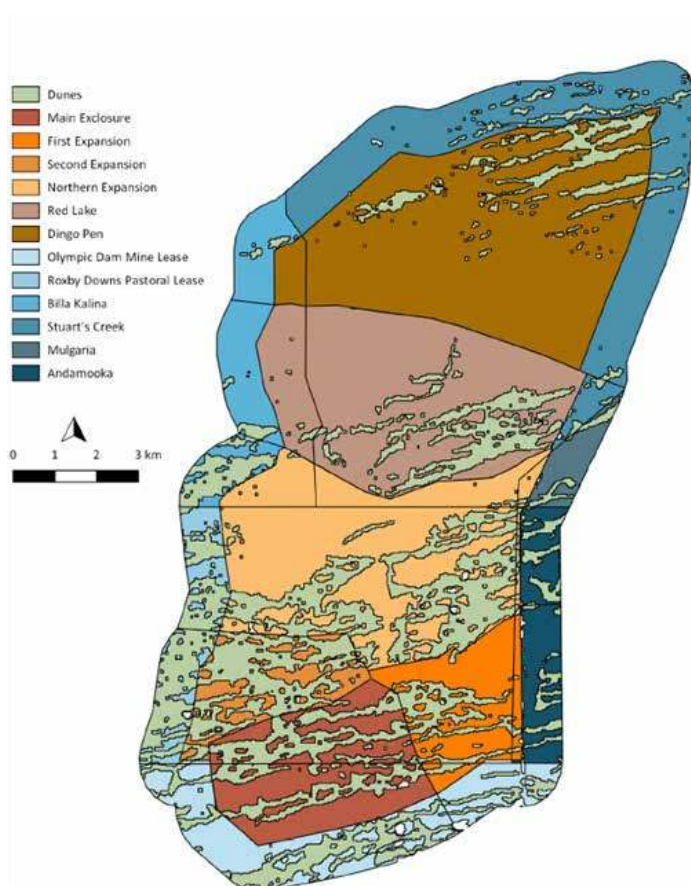
Climate change adaptation research Graduate Jack Bilby worked with volunteer botanist Craig Baulderstone to repeat the long-term vegetation monitoring. They surveyed Jessup transects, step counts and photopoints over several weeks in autumn 2022, adding to a dataset that now spans more than 25 years representing the landscape's transition from land grazed by rabbits and cattle, to a feral-free area, through a period of overabundant bettongs, drought and now good rainfall years.

## REMOTE SENSING

The suitability of remote sensing tool VegMachine for regular monitoring of Reserve condition was assessed by Jack. While the tool is able to show broad trends, limitations mean that it is not as informative as more onerous approaches, but this is likely to improve with updates to VegMachine in coming years.

## SOIL SEED BANK STUDY

Jack started a comprehensive sampling of the soil seed bank, repeating sampling conducted in 2005 to assess changes in seed availability following bettong overabundance and drought. He collected and sieved 750 soil samples and the work will be continued by an Honours student to identify seeds and analyse the change over time.



↑ Polygons developed for remote sensing analysis of vegetation with dune and swale habitats across all Reserve paddocks with equivalent buffer areas represented outside the Reserve.



↑ Graduate Jack Bilby and volunteer Eddie Pang sieve hundreds of soil samples to measure the seed bank inside and outside the Reserve.



↑ Water fills a large claypan bisected by the western boundary fence. Photo: Ines Badman via drone.

# Climate Change Action Plan

In 2021 Arid Recovery launched a Climate Change Action Plan. It recognised climate change as a major challenge, threatening the persistence of some species and affecting the stability of the ecosystem, with flow on effects to Arid Recovery's effectiveness as a conservation reserve and research program.

The plan set out four targets that progress is being made against.

## 1. MITIGATE

Solutions to reducing Arid Recovery's own carbon emissions were tested with a converted electric vehicle for suitability as a work horse with potential advantages in wildlife monitoring and feral animal control by virtue of running quietly with no engine noise.

## 2. ADAPT

The wet year provided the opportunity to foster vegetation condition by keeping grazing pressure from herbivores low, putting the reserve in a better position ahead of the next drought. A new drought-relief soak was completed and tested in the Main Enclosure.

## 3. UNDERSTAND

Arid Recovery hosted the first graduate program for climate change adaptation research, supporting Jack Bilby over eight months. Collaboration with the University of Western Sydney to understand climate effects on mulga trees commenced with a PhD student recruited. Katherine Moseby received a prestigious ARC Future Fellowship to research extreme heat as a driver of desert mammal communities, both feral and native.

## 4. SHARE STORIES

Throughout the year, Arid Recovery was driving climate change conversations in the sector with discussions at recovery teams and through the safe haven network.



↑ Top to bottom: decibel readings on the electric Suzuki, drone view of the new soak, mulga tree grove. Photos by Hugh McGregor, Ines Badman & Jess Waaleboer.



↑ Climate change research graduate Jack Bilby radiotracking. Photo: Ines Badman

## Research priorities

The Scientific Advisory Panel held a special session in October 2021 to discuss the research priorities for understanding climate change and developing adaptive strategies.

The Panel discussed the need to understand climate change impacts to arid ecosystems and the implications for threatened species and how safe havens are managed. These priorities were developed into the updated Research Plan under a new climate change research theme:

1. Measure and predict climate change impacts to vegetation & soils
2. Measure and predict climate change impacts to fauna
3. Develop and test adaptations to ameliorate climate change impacts to arid ecosystems
4. Develop strategies to promote climate resilience in fenced safe havens.

# Safe Haven project

Works under Arid Recovery's Safe Haven grant project began in earnest in 2021-22, culminating in the release of the first kowaris ever to be translocated wild-to-wild.

The grant was awarded under the Australian Government's Environment Restoration Fund to support the nation's network of predator-free sanctuaries to protect under-represented species. Kowaris *Dasyuroides byrnei* were identified as susceptible to predation by feral cats and foxes and until now were not protected in any havens, despite having a 20% chance of extinction within the next 20 years.

Major fence maintenance works in 2022 prepared the Red Lake paddock for the arrival of kowaris - with a 7km section of fence raised to 1.8m, 13km of galvanised footnetting replaced and the entire paddock electrified.

The funding is also providing the opportunity to expand drought resilience measures and to test new corrosion-resistant fencing materials. Partners have made significant contributions to support the project: Kokatha Pastoral, Waratah, DEW, SA Arid Landscapes Board, BHP and Bush Heritage.



↑ A kowari fitted with a radio-collar moments before release into the Arid Recovery Reserve. Photo: Ines Badman

## Kowari reintroduction



↑ Temporary soft-release pens in Red Lake, drone view.

Intensive effort went into preparing to translocate kowaris. The science team navigated the approvals process and coordinated with landholders and agencies. As fence upgrades around the Red Lake paddock neared completion, the team intensified monitoring and control for feral animals and quolls. The paddock was declared free of feral cats. Rabbit populations were knocked down as far as practical by identifying active warrens and fumigating them. Targetting trapping allowed quolls to be relocated to other paddocks to reduce pressure on kowaris from native predators.

Twelve soft-release pens were constructed in the centre of Red

Lake with the help of many volunteers. They were constructed from polybelt and adapted from a design devised for mulgaras at Wild Deserts in Sturt National Park.

Good rainfall in NE South Australia in recent months meant that wild kowari populations were abundant enough for 12 animals to be harvested, including seven females carrying small pouch young. Kowaris were flown direct to Arid Recovery where they were fitted with radio-collars and settled into the pens. The science team will monitor the kowaris closely over the coming months.

The translocation presents a great opportunity to study this lesser known species. Research is being supported by the Thyne Reid Foundation to better understand the drivers for decline in kowaris and develop strategies to secure the species' future.



↑ The Kowari trapping team at Clifton Hills station: Harrison, Robert, Genevieve, Katherine and Nathan.

# Research

## PREY NAIVETY

The ARC Linkage project with the University of NSW continued with Research Officer Leanne van der Weyde handing over to Kylie McQualter in May. PhD student Ben Stepkovitch collected data on quoll hunting behaviour and carcass dump effectiveness. He also ran an experiment at research partner Bush Heritage's Bon Bon Reserve comparing hopping mouse behaviour inside and outside of a feral animal control area. Honours student Jess Waaleboer assayed bandicoot behaviour across quoll-exposed and quoll-naive groups.

## POPULATION PROTECTING IMPLANT TRIAL

University of Adelaide Masters student Ned Ryan-Schofield ran a trial of toxic implants as a tool to protect native animals from hyper-predation during reintroductions. Bilbies were fitted with implants and translocated into the Dingo Pen where feral cats were monitored. The study also compared behaviours of bilbies from quoll-exposed versus quoll-naive populations and tested reactions of feral cats to novel objects to guide best practice use of Felixer grooming traps.

## QUOLL DISPERSAL & SURVIVAL

University of Adelaide Masters student Rebecca Schaefer studied the extent of dispersal and persistence of quolls outside of the Reserve through radiotracking and monitoring activity on an array of camera traps. Her work will identify the potential challenges in seeking to establish populations of threatened species like quolls outside the Reserve through natural dispersal over the fence.

## REPTILE VULNERABILITY TO CATS

An ARC Discovery project with UNSW, Deakin and Charles Sturt Universities will test what cues cats uses when hunting reptiles. A purpose-built pen was constructed in the Dingo Pen paddock following cultural heritage clearance and trials will begin soon.



↑ Taking a head length measurement of a Shark Bay bandicoot.  
Photo: Martin Stokes

## HEAT EXTREMES

Katherine Moseby and Leanne van der Weyde measured how bilbies compared to rabbits in using habitat to manage exposure to extreme heat. Temperature loggers were fitted to animals and placed in their burrows during hot weather, and the animals' movements monitored with GPS trackers.

## RESEARCH PLAN

The Scientific Advisory Panel updated Arid Recovery's Research Plan under six themes: 1) Climate change impacts & adaptation, 2) Ecological restoration of arid lands, 3) Feral animal management, 4) Threatened species management, 5) Safe haven management, and 6) Beyond the fence recovery of threatened species.

## Soil corrosion research informs fence plan



The multi-disciplinary collaboration between soil scientists, metallurgists and land managers provided key information to plans for fence upgrades in Safe Haven grant work this year.

PhD student Andrea Stiglingh worked with Waratah Fencing, CSIRO and the University of Adelaide to map soil corrosion around the Reserve, test samples of a variety of different netting products and make recommendations for cost-effective fence maintenance.

The work identified where standard galvanised products could be used and where to prioritise stainless steel and PVC netting.

◀ Project team lay netting samples in the soil for testing.  
Photo: Andrea Stiglingh



# Working together on Country



↑ Kokatha Pastoral Directors Aaron Thomas and Amanda Dempsey at the Arid Recovery Open Day. Photo: Kokatha Aboriginal Corporation



↑ Auntie Irene Johnson with medicine bush found while mapping bush tucker on Kokatha Pastoral stations. Photo: Kath Tuft

Arid Recovery worked with Kokatha Pastoral (the enterprise arm of Kokatha Aboriginal Corporation) to support land management on lands neighbouring the Arid Recovery Reserve through soil conservation training, coordination of feral animal management and support for the Kingoonya Landscape Group.

The Safe Haven grant project allowed Arid Recovery to contract Kokatha Pastoral for fencing works which were completed with impressive efficiency. Members of the Kokatha community ran a stall at our Open Day, talking to visitors about cultural heritage and work on the stations.

Kath Tuft and Nathan Manders facilitated surveys to map bush tucker on Kokatha Pastoral stations with senior women Irene Johnson and Barbara Amos who spent their early childhood on that country. Together we identified mungarda (quandong), irma irmanka (bush medicine), jarulga (mulga apple) and other resources, with the aunties sharing lots of stories along the way.

Kokatha Heritage Services were engaged to perform cultural clearance surveys prior to development of new pens on the Reserve. A grant awarded to Arid Recovery and the Roxby Downs Environment Forum will fund a bush tucker garden.



↑ Cooking marlu wipu (kangaroo tail) on the fire with Kokatha aunties at Arid Recovery after a day mapping bush tucker. Photo: Kath Tuft

## INDIGENOUS PARTNERSHIPS



↑ Keegan Solomon, Arabana Ranger, releasing a Shark Bay bandicoot during a trapping survey at Arid Recovery. Photo: Kath Tuft



↑ Arabana Head Ranger Sam Stuart with a blind snake during fauna survey work on Finnis Springs. Photo: Kath Tuft

The Arabana Cultural Rangers did more activities on Country with Arid Recovery during the year. The science team helped to produce a report on the successful fauna survey on Finnis Springs in support of healthy country planning for Arabana land.

The Rangers visited Arid Recovery to help with a quoll trapping survey, staying up late to check traps at night and early in the morning. They also helped to establish grazing monitoring plots at the new soak in the Main Enclosure and helped search for rabbit incursion signs.

Researcher Hugh McGregor worked with the rangers over a week to trap for dingoes to fit camera collars to in a project with the National Museum.

These joint activities have been great for establishing friendships across the teams, support Arid Recovery's work and contributes to the rangers' Certificate training in Conservation Land Management being completed through TAFE.

At the Board level, Directors have been building relationships with the Aboriginal corporation Boards and scoping how the organisation can partner more closely with indigenous communities around Arid Recovery. In building these connections we were pleased to welcome Dr Roger Thomas, SA Commissioner for Aboriginal Engagement to Arid Recovery, and for the opportunity for Kath Tuft to present to the Arabana Aboriginal Corporation Board in Marree.



↑ Fauna survey team - Arabana Cultural Rangers and Arid Recovery on Finnis Springs. Photo: Kath Tuft

# Community

## INTERNSHIPS

Three Conservation Internships were offered to recent science graduates in 2021-22. Athanasia Hatzis joined the team in July, taking a break from her work with the federal environment department in Canberra to get some on ground experience. Harrison Talarico, joined the team in March in time for pitfall trapping surveys. Harry came from Melbourne via Tasmania where he completed his Honours on acoustic monitoring for shearwaters. His internship was extended to allow him to join the rabbit incursion team part-time where he made an important contribution developing a Fulcrum app to store and visualise data across teams. Molly Barlow joined shortly after the kowari release to support monitoring, bringing with her experience from quoll monitoring in the Vulkathunha-Gammon Ranges National Park. Thanks to the Rendere Trust and Upotipotpon Foundation for supporting Arid Recovery's internship program in 2021-22.

## STARLIGHT DINNERS

Members of the Rotary Club of Roxby Downs continued their exceptional work cooking delicious camp oven meals for starlight dinners this year. With their help, we hosted three groups including Eureka Tours, Friends of Mound Springs and Arabana Rangers.

## BHP TEAM VISITS

We were pleased to host BHP employees for evenings on the Reserve, including local workers from Olympic Dam, the Olympic Dam Asset President Jennifer Purdie, and Vice-President of Corporate Affairs Stephanie Stonier. Kath gave a presentation to the OD Health, Safety and Environment Team followed by a working bee at the Reserve and a social evening. A visit by the wider BHP Environment team and their Vice-President sparked some great discussions on the future of biodiversity markets and collaborative opportunities in climate adaptation.

## EVENTS

The unpredictability of COVID-19 once again saw us having to be adaptable often resulting in having a plan A, B and C for events. Once restrictions eased, we were able to collaborate on a range of in person events and programs including Open Day, Nature Play, Toddler Story Time & Think It, Make It, Do It. Another spike in COVID cases during early 2022 resulted in our Easter bilby activities being run virtually in collaboration with the Roxby Community Library. Community members were able to access Easter activity packs from the library and we filmed a special Easter story time with Macca the bilby that was posted to social media. We are currently working on some exciting projects with both existing, and new partners.

## OPEN DAY

There was a great response from the community to the 2021 Arid Recovery Open Day, with 109 people visiting the Reserve. Activities included fossil making, bug finding, radio tracking, tracks in the sand and kokatha artefacts. To top off an incredible day, sunset walks, trapping workshops, spotlighting and a BBQ were also on offer. The day was supported by Inspiring SA, Bugs N Slugs, ESS, Time For Wellbeing, Roxby Community Library, Kokatha, Bush Heritage Australia, BHP and the Roxby Downs Environment Forum.



↑ Ines Badman educating participants on snake safety at Nature Play. Photo: Roxby Council



↑ Rotary Club of Roxby Downs campoven chefs. Photo: Ines Badman



↑ Stall at the Port Augusta Pastoral Field Day. Photo: Graeme Finlayson



↑ Kath Tuft checking out a gecko with kids at Open Day 2021.

## COMMUNITY



← 2022 intern  
Harrison Talarico

### TOURS

This year we saw tours become more accessible due to the installation of a Mobi-Mat across the viewing platform dune. The Mobi-Mat was secured through a Government of South Australia grant, and provides a stable surface for those with mobility difficulties to access the viewing platform. Bookings during tour season were often reflected by COVID-19 cases at the time, which resulted in a mixture of busy and quiet periods. Due to consistent rain boosting vegetation and breeding, tour guests were treated to a variety of spectacular wildflowers, and were often lucky to spot a burrowing bettong, greater bilby and hopping mouse during a tour.

### EDUCATION

We assisted the Roxby Downs Area School's year 5 class with their report writing, delivering a workshop on our five introduced species. During the workshop students had to ask questions directed towards each animal's habitat, diet, characteristics and history. After the workshop, students selected one animal and wrote a report on it. St. Barbara Parish School's year 3/4 class, joined us for an overnight camp on the reserve. During their stay they participated in an animal tracking, snake education, and GPS workshop, as well as a nocturnal tour. We also hosted three camps for tertiary students from the University of Adelaide. The sixth field camp for the second year biology course involved the full range of fauna monitoring tools used at Arid Recovery, including pitfall, Elliott and cage trapping, bird surveys, track counts and camera traps. Masters of Landscape Architecture students spent two nights on the Reserve understanding arid zone vegetation and challenges posed by climate change to inform their brief of developing a horticulture plan for Roxby Council. Masters of Environmental Law students were welcomed again for a stimulating visit with input from the science team and from a Kokatha community leader.

### NEW BROCHURE

A glossy new brochure to share the Arid Recovery story and generate new interest for partners and supporters was developed with assistance from a Department of Environment and Water grant. Science communicators and graphic designers BioText were engaged to develop the brochure and it was printed by indigenous business Print Junction.

📍 Further information about our community programs contact the Arid Recovery office on 08 8671 2402.

### KINGOONYA LANDSCAPE GROUP

Conservation Land Management Officer joined the Kingoonya Landscape group, a diverse collaboration of people throughout the region with an interest in land management and regional communities. Arid Recovery joined the Kingoonya group for a session exploring sustainable pastoral development on Kokatha Pastoral's Roxby Downs station and hosted the group for plant identification workshops in Roxby Downs and on the Reserve.

### PASTORAL FIELD DAY

Arid Recovery held a stall and kids activities at the very well attended SA Arid Landscape Board's Pastoral Field day in Port Augusta in December 2021.

### MEDIA

Our profile continued to grow throughout 2021-22. Three TV news stories were run on Channel 7 highlighting Arid Recovery's work in threatened species reintroductions and support for mapping bush tucker on Kokatha Country. Kowaris featured in the Advertiser, Katherine Moseby was interviewed for ABC Radio National's 'Conversations', and Kath Tuft appeared on the Aussie Wildlife Show podcast. Arid Recovery maintained our fortnightly slot on ABC North & West radio's breakfast program talking to regional South Australians about deserts and conservation.



↑ Mobi-Mat installed across the viewing platform dune

## Statistics

322	Tour guests
481	People attending events
4,195	Hours volunteered
60	Media articles, newsletters, blogs
14,552	Facebook followers
768,131	People engaged via Facebook
22,658	Website visitors

# 2021-22 Financial Report

## INTERPRETATION

Income improved substantially in 2022 thanks to significant new grant income, growing support from our partners BHP and Bush Heritage, and a modest but important increase in donations.

Additional expenditure in 2022 was largely driven by projects where expenses were offset by grant income. These included fence integrity investment, feral animal control and reintroduction costs (Commonwealth Safe Haven grant), science communication materials (DEW grant), evaluation of the BHP partnership (BHP) and a wheelchair access mat (SA Department of Human Services).

## Balance sheet

ASSETS		
CURRENT ASSETS	2022	2021
Cash and cash equivalents	\$636,537	\$547,176
Trade and other receivables	\$221,849	\$130,657
Prepayments	\$918	\$24,908
Inventories	\$150,513	\$17,927
<b>TOTAL CURRENT ASSETS</b>	<b>\$1,009,817</b>	<b>\$720,668</b>
NON-CURRENT ASSETS		
Land & buildings	\$256,154	\$259,000
Plant & equipment	\$268,256	\$147,158
<b>TOTAL NON-CURRENT ASSETS</b>	<b>\$524,410</b>	<b>\$406,158</b>
<b>TOTAL ASSETS</b>	<b>\$1,534,227</b>	<b>\$1,126,826</b>
LIABILITIES		
CURRENT LIABILITIES		
Trade and other payables	\$68,807	\$33,421
Income in advance	\$693,691	\$326,936
Provisions	\$32,054	\$17,576
Lease liability	\$0	\$13,647
<b>TOTAL CURRENT LIABILITIES</b>	<b>\$794,552</b>	<b>\$391,580</b>
Provisions	\$19,418	\$15,411
Lease liability - non-current	\$0	\$0
<b>TOTAL NON-CURRENT LIABILITIES</b>	<b>\$19,418</b>	<b>\$15,411</b>
<b>TOTAL LIABILITIES</b>	<b>\$813,970</b>	<b>\$406,991</b>
<b>NET ASSETS</b>	<b>\$720,257</b>	<b>\$719,835</b>
TRUST FUNDS		
Retained earnings	\$720,257	\$719,835
<b>TOTAL EQUITY</b>	<b>\$720,257</b>	<b>\$719,835</b>

Some of the grant expenses are reflected in administration, motor vehicle and wage costs as additional personnel were brought on for short contracts. During the year, the Board approved additional spend to tackle rabbit incursions. Capital outlay was made on a new trap alert system and a second-hand 4WD.

Substantial funds are held as income in advance at financial year end for grants committed to be expended in future years, particularly the Commonwealth Safe Haven grant.

Arid Recovery is in a strong financial position with the 2022 year ending with a break even result and total equity of \$720,257 at 30 June 2022.

## FULL FINANCIAL AND AUDIT REPORT

Arid Recovery's accounts were audited by MRL Group auditors. The full audited financial report can be found on the Arid Recovery website at [www.aridrecovery.org.au](http://www.aridrecovery.org.au).

## Income and Expenses

REVENUE	2022	2021
Sponsorship contributions	\$605,000	\$584,800
Research income	\$440	\$654
Fundraising	\$8,444	\$4,215
Grant income	\$212,125	\$38,000
Donations	\$65,440	\$57,039
Tours and events	\$12,297	\$10,021
Interest income	\$2,566	\$2,458
Other income	\$19,716	\$21,005
<b>Total income</b>	<b>\$926,028</b>	<b>\$718,192</b>
OPERATING EXPENSES		
Administration	(\$108,714)	(\$73,319)
Depreciation	(\$36,325)	(\$32,771)
Fencing materials	(\$32,620)	(\$18,207)
Flora and fauna management	(\$66,643)	(\$14,926)
Grant expenses	(\$104,028)	(\$0)
Merchandise	(\$1,027)	(\$1,060)
Motor vehicles	(\$40,652)	(\$24,250)
Research	(\$4,433)	(\$28,882)
Reserve maintenance	(\$4,690)	(\$11,382)
Strategic investment expense	(\$7,488)	(\$0)
Volunteer and community	(\$9,228)	(\$8,671)
Wages and Salaries	(\$509,708)	(\$393,189)
<b>Total expenditure</b>	<b>(\$925,556)</b>	<b>(\$606,657)</b>
<b>OPERATING SURPLUS/(LOSS)</b>	<b>\$472</b>	<b>\$111,535</b>

# Partnerships

**BHP** In 2022 we worked with BHP on a formal evaluation of the partnership to-date, identifying how BHP's long-running support has enabled Arid Recovery's impact to extend well beyond the fence to restore ecosystems, produce groundbreaking research and support local communities.

**SA Department for Environment & Water** We worked closely with the department throughout the year in planning and delivering the kowari reintroduction to Arid Recovery with support from ecologists and the permit unit. AR Ecologist Genevieve Hayes supported quoll and possum surveys at Ikara-Flinders Ranges NP.

**Bush Heritage Australia** We launched a new research collaboration with Bush Heritage in 2022 with the University of Western Sydney to understand rangelands mulga. Ecologists Graeme Finlayson (BHA) and Genevieve Hayes (AR) exchanged their skills supporting surveys at Arid Recovery and on Bon Bon.

**University of Adelaide** Connections with the university strengthened through several student projects run at Arid Recovery and Professor Laura Parry's chairing of the Scientific Advisory Panel.



↑ Graeme Finlayson (Bush Heritage ecologist) and Tara Ledingham (BHP enviro) during pitfall survey. Photo: Ines Badman

# Volunteers and supporters



↑ Barry Dadleh, Monadelphous employee and long-time supporter.

Volunteers are the backbone of what we are able to achieve at Arid Recovery and we are fortunate to have so many come from all walks of life. Pitfall and cage trapping surveys draw volunteers from all around the country, while local stalwarts are always ready to lend a hand.

Volunteers helped throughout the year supporting feral animal control, participating in ecological surveys, maintaining infrastructure on working bees and doing battle with the awkward polybelt material in constructing soft-release pens for kowaris. This year we were helped a great deal by skilled volunteers who came to us through Bush Heritage's network.

Just as valuable to Arid Recovery's work are local businesses and other organisations that support us in many different ways. Monadelphous Engineering continued their infrastructure help this year by erecting a shed roof and gantry along with Nobles Lifting & Rigging. Cleanaway and Olympic Dam Transport donated a fuel pod for the kowari collection trip up the remote Birdsville Track. Red Mulga helped out with machinery... to name just a few.

Our thanks also to the Rendere Trust and Upotipotpon Foundation for their ongoing support of the Conservation Internship program.

## Volunteer profile

Mark Young is one of our longest serving volunteers. He regularly knocks up equipment and artworks with his welder and is a regular volunteer shooter helping to control feral cats. Mark's wife Rachel and their kids have also been regulars at Arid Recovery over the years. Mark was recognised in 2022 with a Community Champion Award.





## SUPPORTERS

What better way to contribute to Arid Recovery than sponsoring the Kowari

### Adopt a Kowari

Your sponsorship includes:

- Certificate of sponsorship
- Regular updates on kowari conservation
- Our heartfelt thanks for your support of this enigmatic desert predator.

📍 Adopt a kowari at [www.aridrecovery.org.au/product/kowari](http://www.aridrecovery.org.au/product/kowari)



↑ Kowari on a gibber plain. Photo: Nathan Beerkens

### Donate

Donate online or over the phone to assist the work of Arid Recovery.

### Adopt

Adopt a desert animal to support Arid Recovery's ongoing conservation work.

### Sponsor

Contact the Arid Recovery office if you or your organisation would like to become a sponsor.

### Volunteer

Join us for a working bee or assist around the office, there are many opportunities to volunteer with the staff of Arid Recovery.

# Thank you to the sponsors and supporters of Arid Recovery



Government of South Australia  
Department of Environment,  
Water and Natural Resources



THE UNIVERSITY  
OF ADELAIDE  
AUSTRALIA



Arid Recovery is a conservation initiative supported by BHP, the SA Department for Environment and Water, the University of Adelaide, Bush Heritage Australia and the local community.

#### Thanks to the many businesses who support the work of Arid Recovery:

ABC	Camplin Computer Services	Kokatha Pastoral	PIRSA	SA Arid Landscape Board
Ahrens Group	Carmelo Scavone	Living with Wildlife	Polybelt	St Barbs School
Alliance Airlines	Cleanaway	Mackey Reptile Supplies	Render Trust	Team Kowari
Andamooka Observatory	CSIRO Local Voices	MinterEllison	Ron Kandelaars Media	The Waterhouse Club
Animals Anonymous	DEW	Monadelphous Engineering	Rotary Club of Roxby District	Time For Wellbeing
Arabana Cultural Rangers	Dodoland	MyEnergy SA	Roxby Community Library	WA Specialty Feeds
Arid Lands Botanic Garden	Ecological Horizons	National Science Week	Roxby Council	Waratah
Australian Geographic	ESS	Nature Foundation	Roxby Downs Environment Forum	Wild Deserts
AutoPro Roxby Downs	EV North	Nature Play SA	Roxby Fabrication & Engineering	Woolworths
BHP	HEH Pty Ltd	Nobles Lifting & Rigging Equipment	Roxby LPO	WrightsAir
Bianco	Hern & Associates	Northpoint	RoxbyLink	ZoosSA
Blackwoods	Inspiring South Australia	NRMjobs	RoxbyLink	
Bugs n Slugs	Jam Factory	Olympic Dam Transport Operation Flinders	RoxFM	
Burra Fencing	Kokatha Aboriginal Corporation			
Bush Heritage Australia				