ARID RECOVERY

2019-20

Arid Recovery Annual Report

2019-20 ANNUAL REPORT

For more information on Arid Recovery visit www.aridrecovery.org.au or call 08 8671 2402.

This document is the 23rd in a series of annual reports and outlines the activities of Arid Recovery for the period from 1st July 2019 to 30th June 2020.

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 our new partner 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: Sunset tour at Arid Recovery

Photo: Ines Badman

Page 2 photo: Melissa Jensen carrying traps to set for monitoring western quolls

Photo: Ines Badman

Katherine Moseby and Leanne Van der Weyde release a burrowing bettong. Photo: Lionel Euston

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Chair Report

STEVE MORTON

Australia experiences extreme year-to-year fluctuations in weather, and the ecosystems of the arid zone are the most uncertain of all. The present extended dry spell has tested the resilience of Arid Recovery – and it will continue doing so for an unpredictable future period. Then a pandemic has been added, creating unprecedented strain on our small but vital operation. Even so, Arid Recovery continues to foster scientific and conservation benefits. Continuing success is due especially to the dedication of our staff, so ably led by Katherine Tuft. It is due also to our partners in BHP, the Department for Environment and Water, Bush Heritage Australia and the University of Adelaide, who have been unswerving in their support throughout the year. I commend Arid Recovery's annual report to you.

At the end of 2020 I will step down from the Chair after six years. The experience has been a great satisfaction to me, for Arid Recovery ensures that at least some bandicoots, bettongs and bilbies still emerge under the wide night skies of the inland. I thank my Board colleagues for peerless support, those who represent Member bodies as well as independent Directors who give generously of their time. I acknowledge with pleasure our scientific collaborators, and thanks also to members of the Scientific Advisory Panel for their support. Most of all, though, my plaudits to Katherine and her staff, whose frontline efforts are the guarantee of Arid Recovery's continuing success.

CEO Report

KATHERINE TUFT

We faced some of the greatest challenges in Arid Recovery's history this year as we grappled with the impacts of drought and dealt with multiple incursions. The team responded with a stellar effort and I am immensely proud of them. Everyone reprioritised their tasks to do what was needed to deliver drought relief and tackle incursions. We continue our efforts to catch up with a cat that has been detected intermittently in the reserve, and are making good progress removing rabbits. More importantly, huge investment in the fence this year means it is stronger than ever and better able to withstand the erosion and movement of sand that drought induces.

A very welcome rain event in February gave the reserve a reprieve and I am relieved to see populations of reintroduced species stabilise, albeit some at very low levels. Our gravest concerns are for the stick-nest rats now at critically low numbers. The science team and Scientific Advisory Panel led structured thinking to guide decisions on drought interventions that proved enormously useful. We are now building our research program to better understand the emerging impacts of climate change and to explore how we can adapt conservation of arid zone ecosystems. We know that we are not taking on these challenges alone and were moved by the generous outpouring of support for our drought appeal.

The team and the Roxby Downs community have shown resilience and adaptability during the COVID-19 pandemic. Many of our community activities have pivoted to online interactions, with some creative new communications now reaching more people than before.

Finally, I am delighted to announce a renewed partnership agreement with BHP. We can approach the future with confidence with the solid backing of our partners and family of supporters.

Arid Recovery Board

For more information on the people of Arid Recovery visit our website at www.aridrecovery.org.au

Steve Morton
Chair of Arid Recovery Board, Independent
Honorary Fellow, CSIRO Ecosystem Sciences

Emily Perry
Representative for BHP
Head of Corporate Affairs, Olympic Dam

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

Megan Lewis
Representative for the University of Adelaide
Head of School, School of Biological Sciences

Heather Campbel
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

Allan Holmes
Independent
Ex-CEO SA Department for Environment and Water

Scientific Advisory Panel for 2019-20

Professor Megan Lewis continues to Chair the Scientific Advisory Panel as Board representative for the University of Adelaide. Megan is Head of School of Biological Sciences at the University of Adelaide where she teaches in remote sensing and environmental mapping and monitoring. Megan has a passion for using technology to understand vegetation ecology and extensive experience in South Australia's arid rangelands.

Megan holds a PhD in ecology from the University of NSW, two Masters degrees in Applied Science and Environmental Studies and a Bachelor degree with Honours in ecology. She sits on the Board of the Goyder Institute and contributes to technical committees in geoscience and remote sensing, and is a Member of the College of Experts at the Australian Research Council.

The panel was refreshed in 2020 with new terms confirmed for all ongoing members, departure of Mike Letnic and Catherine Herbert and appointment of Dan Rogers. Dan is Principal Zoologist with the SA Department for Environment and Water and brings to the panel his expertise in policy and connections to the wider conservation community.

Panellists

Megan Lewis	Arid Recovery Board
Jeremy Austin	University of Adelaide
Peter Copley	SA DEW
Graeme Finlayson	Bush Heritage Australia
Catherine Herbert	University of Sydney
Mike Letnic	University of New South Wales
Reece Pedler	UNSW, Wild Deserts
Stephanie Williams	Ecological consultant
John Read	Ecological Horizons
Allan Holmes	Arid Recovery Board
Dan Rogers	SA DEW

Arid Recovery Staff

General Manager / CEO
Katherine Tuft

Ecologist
Georgina Neave

Principal Scientist
Katherine Moseby

Office Manager
Milly Breward

Conservation Land Management Officer
Nathan Manders

Trapping Officer
Ben Milne

Fence Maintenance Officer
Marty Kittel

Community Coordinator
Ines Badman

Research and Reintroduction Officer
Melissa Jensen

Interns
Katherine Best
Poppy Walker
Antoria Wilson
Jannico Kelk

UNSW Research Officer
Hannah Bannister

The green team. Milly Breward, Ines Badman, Nathan Manders and Katherine Tuft.

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

Adrian Friedel
Adrian Kennett
Andrew Harris
Alex Nankivell
Andrew Spanner
Andrew Williamson
Amber Cleary
Angus Cleary
Anthony Bryson
Anum Malik
Anna Pfuelb
Ashley Stevens
Ballie Trenwith
Ben Stepkovitch
Ben Wilson
Chris McGoldrick
Christine Doering
Christina Walker
Cooper Dignan
Damien Sinkinson
Dana Allen
Deon Vosser
Don McAlpine
Emi Arnold
Emily Belton
Evan Lewis
Grant Aitchison
Greg Neave
Hugh McGregor
Hugo Hopton
Jack Ashby
Jason Keith
Jamie Breward
Jay Poulton
Jesse Gutierrezz
Jett Elliott
Jodie Fereti-Tukuitoga
John Goudie
John Vosser
Kaely Kreger
Kane Hendry
Karen Doyle
Karly Waven
Katy Read
Kaylie Simpfender
Kelly Jansen
Kevin Smith
Kirra Bailey
Kristi Lee
Kobe How
Kurtis Madigun
Lando Montgomerie
Lionel Euston
Louise Bishop
Luke Brind
Luke Young
Madeleine Wilcox-Kerr
Mark Young
Matt Little
Michelle Kittel
Millie Young
Milly Breward
Max Tibby
Natalie Barren
Nicholas Dawes
Nicole Montgomerie
Peta Zivec
Rachel Young
Richie Connall
Richie Cornwall
Rob Brandle
Rob Strotton
Samantha Bryson-Kirby
Sandy Gibb
Saskia Pfuelb
Sarah Voumard
Scott Rogers
Silvia Euston
Steph Walker
Sophie Wilkins
Te Haika
Thomas Allen
Thomas Brazier
Tom Garman
Travis Crompton
Travis Hague
Trevor Sikora
Zachary Richardson

RESERVE REPORT

State of the Reserve

Major investments were made into fence improvements and earthworks over 2019-20. Critical erosion control works were completed to combat accelerated sand movement during drought. In other places, fence sections on dunes had to be raised or have additional panels secured where sand had built up against the fence. Three additional compartments were electrified with two strands of hotwires added to strengthen the external fences around the Conservation Zone. The fences were also strengthened with a revamp of the floppy top. At the same time, the staff have grappled with rabbit incursions caused by sand movement and with an ongoing feral cat incursion.

ELECTRIC FENCING

The reserve's defences against feral cats were fortified by adding hotwires to an additional 27 km of external perimeter around the First, Second and Northern Expansions. Until now, the 14 ,000 ha Main Exclosure was the only electrified section. Now 60,000 ha is protected by two hotwires. Fencing contractors Cindy and Graeme Coumbe were engaged to install the specialised offsets, wires and energiser systems and completed the project within three weeks with assistance from staff and volunteers. The new hotwires now carry 6,000 volts powered by Gallagher energisers that will have capacity to be isolated remotely and report faults in real time when wifi gateways become available later in the year.

EROSION CONTROL

The drought triggered movement of sand that brought existing erosion problems around the fenceline to critical levels with erosion threatening to undercut sections of fence along the western boundary. In August 2019 local contractor MPS was engaged to clay-cap the five affected dunes. The new clay caps were laid down over five days and have held up to heavy rain and run-off.

FENCING WORKS

Where the build-up of sand reduced the effective height of the fence, fences had to be raised to prevent feral cats incurring. Similarly, where sand reduced the height to the 50 mm aperture netting layer, new panels of 30 mm netting were added to prevent small rabbits for entering the reserve.

The fences were strengthened with replacement of the stays that hold the floppy top's shape to lift the curve where original stays have slackened and caused it to sag. Pen testing identified that small to medium quolls can breach 50 mm aperture netting, requiring retrofitting of the Main Exclosure to maintain the area as a quoll-free control. A panel of 40 mm netting is being added to the fence between the lower 30 mm layer and the lowest hotwire.

Conservation Land Management Officer Nathan Manders rolls out netting to secure the Main Exclosure against quoll incursions.

INCURSIONS

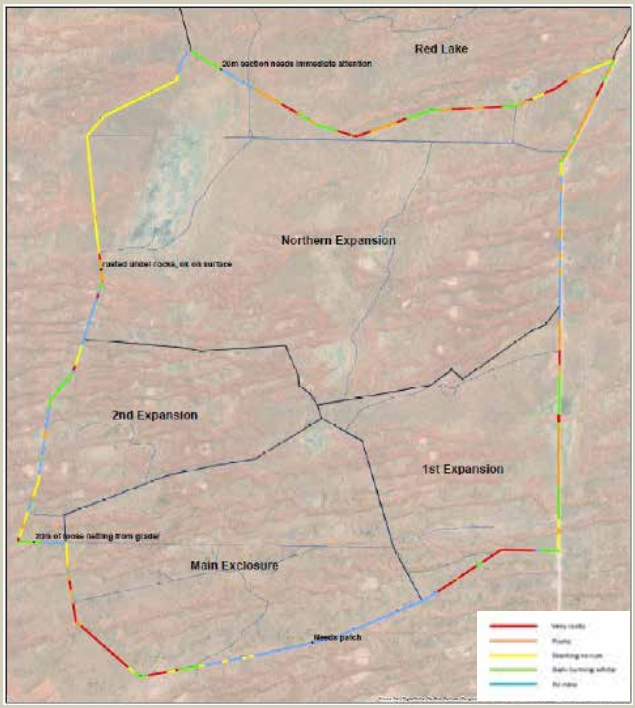
Six rabbit incursions were detected and four of them removed. They are suspected to have entered as young animals through 50 mm netting made accessible by build-up of sand on dune crests. One feral cat was detected and removed from the Second Expansion by Ecologist Georgina Neave in September. A second feral cat was detected inside the reserve intermittently throughout the year, most often in the First Expansion, but also in the Northern and Main. Traps have been operated nearly continuously, tracks surveyed weekly, baits laid and hundreds of hours of spotlighting undertaken by staff, volunteers and contractors to deal with this animal without success. Efforts continue and it is hoped that improvements to the integrity of the fence (hotwires and floppy top correction) may prevent its return.

FERAL ANIMAL CONTROL

Feral cat detections fell during the drought. 21 cats were removed from around the reserve by trapping or shooting during the year, most of them over April-May 2020. Dissections revealed the majority of prey items were invertebrates, with reptiles and small mammals at 25% each.

The network of external perimeter traps was adapted to reduce risk to quolls, with leghold traps in likely quoll dispersal areas replaced with cage traps.

Eradicat™ feral cat targeted baits were deployed in a buffer around the reserve in winter and autumn to reduce off-target take by reptiles and to maximise uptake by cats during periods of hunger and dispersal. Two deployments of injected beat baits were also made in a buffer zone around the reserve to target foxes and feral cats, with assistance from the Wild Dog Management team at SAAL NRM.



2019-20 Arid Recovery fence audit showing the extent of rust on external footnetting.

FENCE AUDIT MAPPING

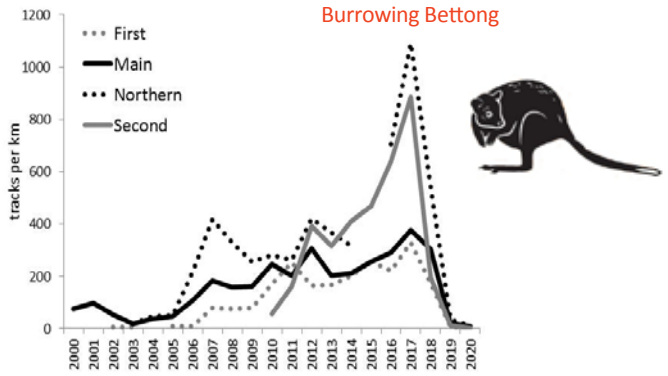
The 2019-20 fence audit identified 7.5 km of external footnetting requiring replacement in the next 1-2 years, some of it immediately. The rustiest sections are along the southwestern boundary of the Main Exclosure and along the Northern boundary of the Northern expansion where it borders Red Lake.

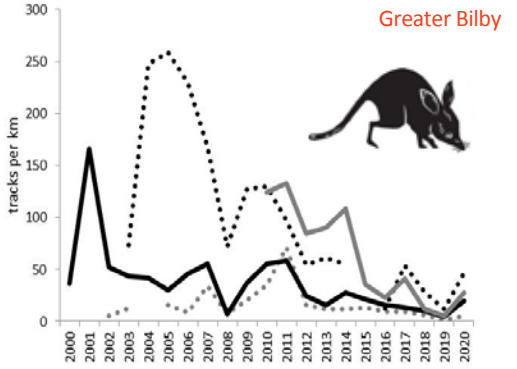
Corrosion research

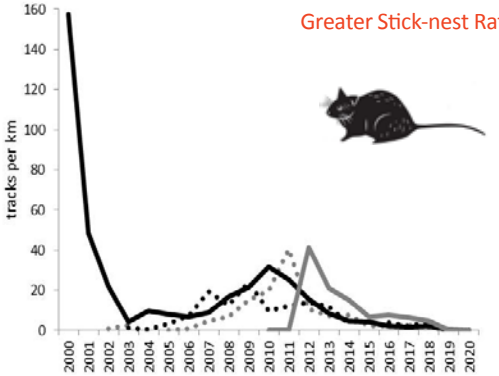
Our research collaboration with the University of Adelaide's Acid Sulfate Soils Centre, CSIRO and Waratah has expanded to test optimum fencing materials to combat corrosion. PhD student Andrea Stiglingh is working with soil scientists, metallurgists and product engineers to test a range of galvanised products, poly-coated netting and stainless steel across a spectrum of soils at Arid Recovery from low to high corrosivity. This research will help us and other land managers develop more cost-effective fence maintenance strategies and will be useful in the design of new conservation fencing projects.

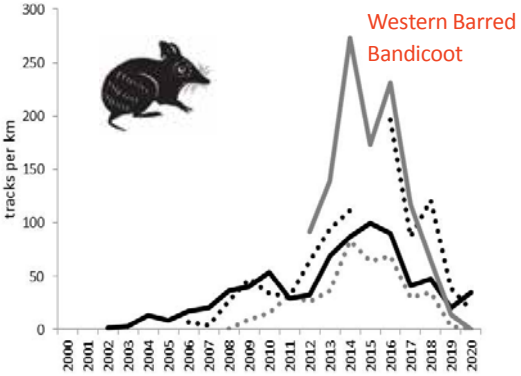
There is so much interest in the research that Andrea's project has extended to corrosion problems in acid-sulfate soils in coastal environments and redesigning of the dog fence in South Australia. Waratah continue to sponsor the research and are very active collaborators not afraid to get on the ends of shovels to set up the experiments.

TRACK COUNTS FOR REINTRODUCED SPECIES







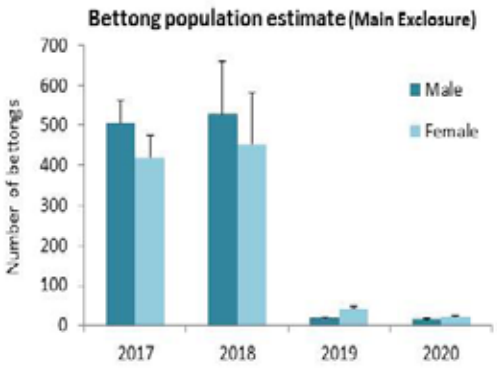


Re-introduced species monitoring

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 Exclosure was done in May 2020.

BURROWING BETTONGS

Bettong track counts fell through 2018 and 2019 to levels not observed since their initial reintroduction. Capture-mark recapture estimates from the Main Exclosure showed a drop from over 700 individuals in 2018 to fewer than 50 in 2020. Bettongs almost ceased breeding during 2018 and 2019, and lost condition which they are just starting to regain in 2020. Most females trapped in 2020 were breeding again.



GREATER BILBIES

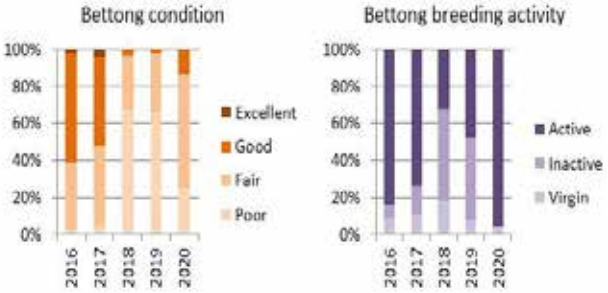
Bilby activity declined during the drought but responded rapidly to rainfall event in February 2020 with track indices increasing in all compartments and evidence of breeding from juvenile bilby tracks on transects.

GREATER STICK-NEST RATS

Although rats are still active at four nests in the Main Exclosure, they are now undetectable on track transects and absent outside the Main.

WESTERN BARRED BANDICOOTS

Western Barred Bandicoot activity fell during the drought. There has been some recovery of activity observed in the Main Exclosure in 2020.



MONITORING REPORT

In situ fauna and flora



Knob-tailed gecko, southern desert banded snake, and hopping mouse drinking sugar water. Photos by Ines Badman and Glen Murray.

NATIVE SMALL VERTEBRATES

Small mammals and reptiles were captured at 20 dune sites during annual pitfall trapping in March 2020. Mammals were 18 times more abundant inside the reserve compared to outside, whilst there was little difference in reptile abundance (1.1 times as many inside compared to outside).

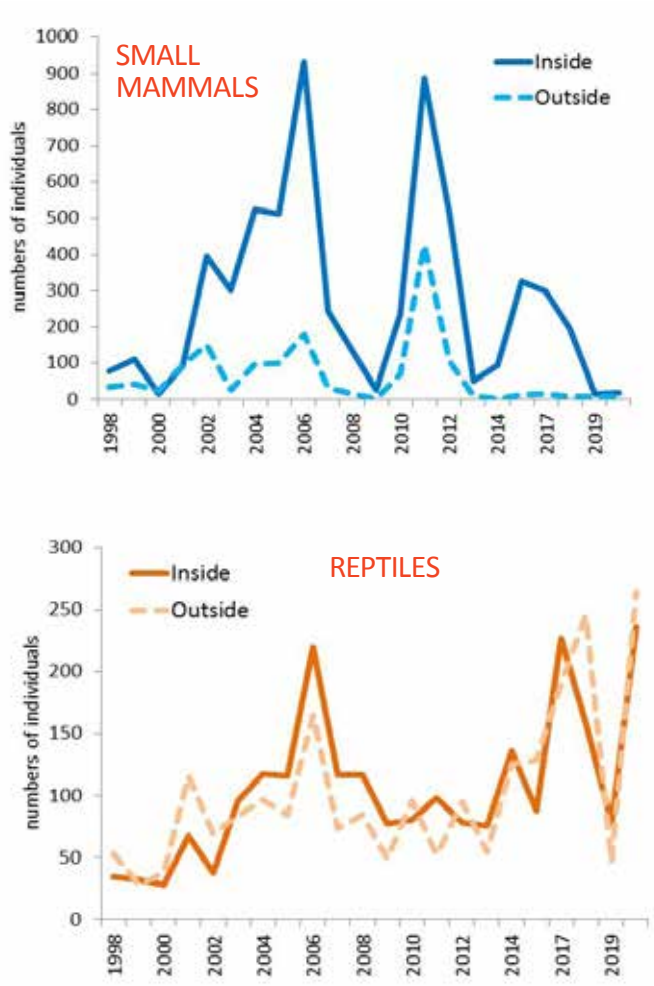
Small mammal numbers were low as expected due to drought, although the full suite of species was caught, indicating that abundance will recover as conditions improve. Seven species of mammals were caught, including spinifex hopping mice, plains mice, Bolam's mouse, stripe-faced dunnart, fat-tailed dunnart, Giles' planigale and house mouse. Reptile species richness was 27, including dragons, skinks, geckoes and blind snakes.

VEGETATION

Quadrat sampling was completed for focal species including grasses and *Enchylaena tomentosa* (ruby saltbush). Estimated cover for both was very low with drought.

Long-term vegetation monitoring that occurs every 5 years was brought forward to capture the low point during the drought. Jessup transects, species lists and step counts were completed for sites inside and outside the reserve with assistance from botanist and long-term volunteer Craig Baulderstone.

Kate Taylor (Bush Heritage) checking traps with volunteer Baillie Trenwith



Abundance of small mammals (above) and reptiles (below) captured in pitfall surveys between 1998 and 2020.

MONITORING REPORT

Drought

Drought set in in 2018 and intensified in 2019 with two consecutive years of below average rainfall coupled with a series of summer heatwaves. Through 2018 and 2019, only 90 mm of rain was received in total. The number of days over 40 degrees C reached a new record at 45 in the summer of 2019-20. These conditions are unprecedented in Arid Recovery's history and were exceptional for the region.

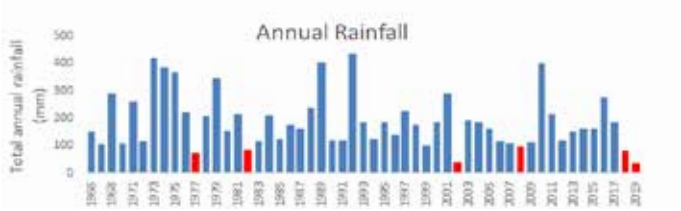
Vegetation cover measured by remote sensing and quadrat monitoring fell to the lowest levels since 2010, with palatable plants such as ruby saltbush becoming almost undetectable both inside and outside the reserve.

Major declines in populations of reintroduced species were observed as drought intensified. Bettong activity fell most markedly by over 95%. Bilby and bandicoot activity also fell. Stick-nest rat activity at nests declined most significantly after the 2018-19 summer, and more so in areas where quolls are present. Only four stick-nest rat nests are known to be active as of June 2020, all within the quoll-free Main Exclosure. Quoll activity and breeding success appeared to be unaffected.

Thresholds for intervention were developed (see box) and a range of intervention measures were implemented as triggered by monitoring data. Drought management absorbed extensive staff time as monitoring intensified to detect change in sufficient time to intervene and as intervention measures expanded. Initially, two soaks were instigated to provide free water and stimulate vegetation growth to benefit animals in the First and Main. As populations declined further, water was provided more broadly in water fountain stations as well as supplementary feed. A vehicle mounted 800L water tank was purchased to transport water to fountains and to irrigate small patches of vegetation palatable to stick-nest rats in an experiment to stimulate fresh water-laden growth to benefit the species, essentially simulating a very localised storm.

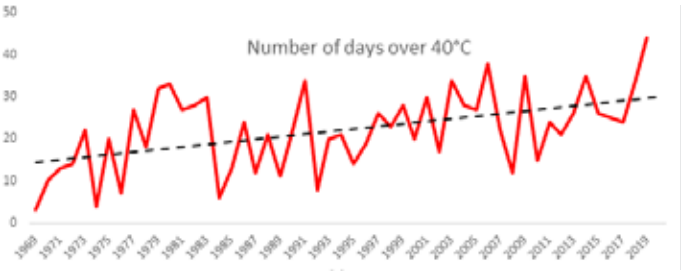
Drought interventions were not taken lightly, as the animals reintroduced to Arid Recovery are exceptionally well adapted to living in the arid zone and their management has been as hands-off as possible to maintain adaptive fitness. The drought response plan outlining thresholds for intervention was very helpful in prioritising and guiding actions.

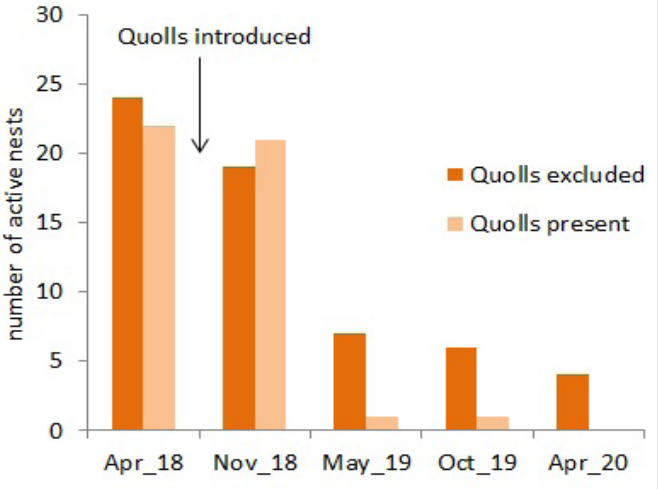
With the exception of stick-nest rats that remain at critically low levels, populations of reintroduced species have stabilised.Animals have resumed breeding, and bilbies and bandicoot activity indices have increased dramatically in some compartments.



Annual rainfall 1966-2019 (years below 100 mm in red)

Number of days over 40 degrees C (linear trend in dashed line)





Number of stick-nest rat nests active in areas where quolls are present and where they are excluded.

Dry dam in Dingo Pen

Animals drinking at water fountains. Left to right: bilby, stick-nest rat with bettong excluded by mesh, quoll and bettongs.

Drought interventions. Top to bottom: water fountain, supplementary feeder, 'storm' irrigation trial. Photos by Ines Badman

Setting thresholds for intervention

With input from the Scientific Advisory Panel, the science team developed thresholds of concern and triggers for intervention to support reintroduced species through the drought. Species were prioritiesed based on their importance to the reserve ecosystem and the population's importance for global conservation of that species.

Thresholds and triggers were developed for each from monitoring data and uncertainty taken into account by reviewing the adequacy of different methods to detect change. Some thresholds were set to trigger discussion or more data gathering before intervention, while others triggered direct action. The process was helpful in prioritising actions and giving the team clarity and transparency in decision making.

	Stick-nest rat	Bandicoot	Bettong	Bilby
Importance rank	1	2	3	4
Minor interventions				
soaks	< 50 mm rainfall in preceding 12 months and declines of 70% in track count indices			
Major interventions				
supplementary food and water	< 30 active nests	< 100 tracks/km	< 100 tracks/km	< 5 tracks/ km
ex situ protection or supplemental releases when conditions improve	< 10 active nests	< 5 tracks/ km	population extinction	population extinction

Quoll reintroduction

Two years into the reintroduction, western quolls have established within the reserve and bred successfully over two seasons. The current population is estimated at approximately 20 animals and the subject of intensive research.

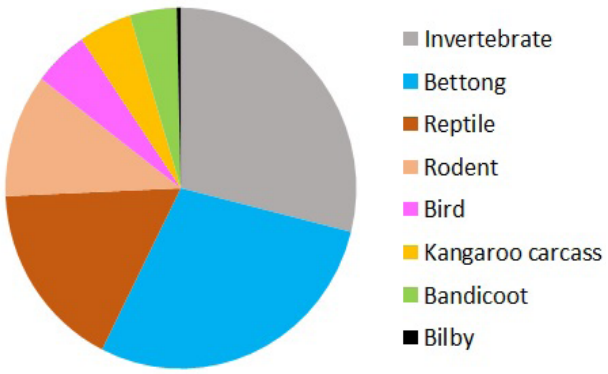
Six female quolls producing a total of 32 juveniles during the 2019 breeding season, more than the 26 juveniles produced in 2018. Four female quolls were radio collared to monitor breeding success and all successfully reared young to independence despite the intense drought conditions. To reduce nutritional stress on quolls and to relieve predation pressure on other species, kangaroo carcass dumps were supplied at four locations. Camera traps recorded visitation at the dumps to help assess the effectiveness of this measure.

Reintroduction and Research Officer Melissa Jensen dissected 317 quoll scats and used hair identification to analyse quoll diet. Invertebrates and bettongs were the most frequently detected dietary items in the scats, followed by reptiles and small mammals.

As quolls have large home ranges, the reserve may be too small to support a genetically viable population in the long-term, and exchanges of quolls may be needed to reduce inbreeding. University of Adelaide Honours student Tessa Manning studied the paternity of quolls born in 2018 to help determine when genetic exchanges would be necessary. She found that one male, Coorlay, had fathered 60% of young. Having made his contribution to the population, Coorlay was caught and translocated to the Ikara-Flinders Ranges National Park in June to supplement the quoll population there. In exchange, two Flinders males will be brought to Arid Recovery in time for the 2020 breeding season to increase genetic diversity.

Two PhD projects commenced this year. Tom Garmin (University of Adelaide) and Ben Stepkovitch (UNSW) will study quoll dispersal and survival outside the reserve, the trophic cascades quolls may trigger in the reserve ecosystem and whether prey species adapt predator-awareness behaviours in response to quolls.

Male quoll, Coorlay, is given a health check before being sent to Ikara-Flinders Ranges National Park in a genetic transfer.



Proportion of dietary items identified in quoll scats (preliminary data).

Quoll-free control

Two female quolls incurred into the Main Exclosure in early 2019, one of them repeatedly. A test pen with two sections divided by a prototype fence was contructed to work out how quolls were breaching the fence.

Intern Kat Best managed the testing, and identified that smaller-bodied female quolls could squeeze through 50 mm aperture netting very rapidly and with agility, while male quolls could not.

A female quoll is photographed as she squeezes through 50 mm aperture netting in a test pen trial. Photo by Katherine Best

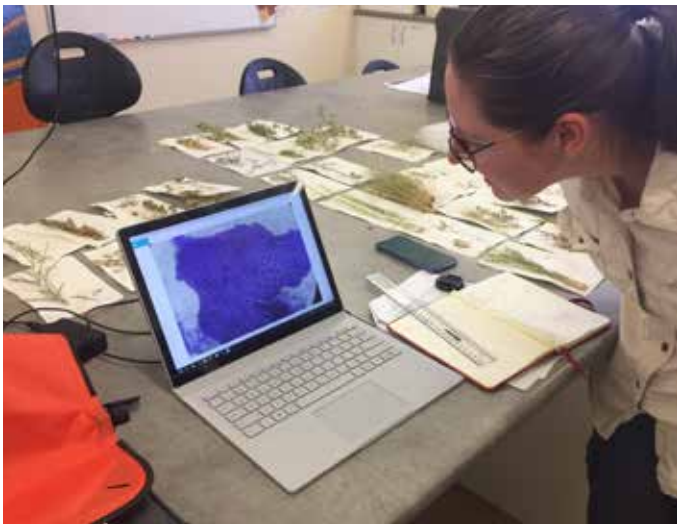
RESEARCH

Research report

Arid Recovery conducted two internal research projects during the year. Melissa Jensen led a project to measure western barred bandicoot home range in areas with and without quolls and over summer and winter. She found that bandicoot movement varied substantially with season. Stick-nest rats were the subject of several integrated studies to understand their decline. Research intern Poppy Walker assessed change in rat diet between the early establishment phase in 2003 and the present to learn how rats may be resource stressed. University of Adelaide PhD student Isabelle Onley is studying stick-nes rat genetics to isolate where on the genome the current rat population at Arid Recovery differs from the original founders to identify potential adaptive traits. She is also assessing the thermal extremes rats are exposed to and how different nests provide a range of buffering properties.

A third ARC Linkage grant was awarded in 2019 for our prey naivety research collaboration with UNSW, UCLA and Bush Heritage. Research officer Leanne Van der Weyde was recruited to manage the project's on ground work. The drought has led to population declines of bettongs and bilbies in the Red Lake paddock. A subset have been removed into the soft-release pen in the Main Exclosure where they are being intermixed with predator-naive animals with the intent to measure predator-awareness traits in their offspring to test whether training is selected for or learned.

Hugh McGregor (UTas, Threatened Species Recovery Hub) published the results of a landscape-scale test of prey switching, measuring the non-target impacts of rabbit biocontrol. When rabbit density was dramatically reduced, some feral cats switched to targeting small native mammals, while others exited the experimental paddock or starved. Cats were also more likely to take meat baits after rabbit control, suggeting that cat management should occur simultaneously with rabbit control to limit unintended impacts to native animals.



Analysing stick-nest rat scats to measure diet. Photo: Ines Badman

Measuring a western barred bandicoot foot

Newly published work demonstrated the effect of conservation fencing on dispersal of small mammals beyond the fence into the surrounding landscape. A complimentary piece of research identified that feral cat activity increases closer to the fence, and that this effect has increased over time, indicating that cats are attracted to native prey dispersing from fenced reserves.

John Read with 10 out of 20 Felixers setting up for the efficacy trial. Photo: Kath Tuft

Twenty-one scientific papers were produced from Arid Recovery Research in 2019-20. A highlight was a publication on the effectiveness of feral cat control technology, the Felixer grooming trap. Twenty Felixers were set within a 36,000 ha compartment in which the number of feral cats was known, and some of them collared. The Felixers successfully fired on cats 33 times with no non-target firings. The two collared cats that passed a Felixer were killed by the device. The study demonstrated the efficacy and target-specificity of Felixers for feral cat control.

Community

INTERNSHIPS

Three Conservation Internships and a Research Internship were offered to recent science graduates in 2019-20. Katherine Best joined the team in 2019. She made a major contribution to monitoring the quoll reintroduction, including testing how quolls interact with fences. Poppy Walker (research intern) spent many hours in the lab developing reference slides and preparing scats to analyse stick-nest rat diet. Antoria Wilson and Jannico Kelk joined us in 2020 and have contributed enormously both to fencing and incursion management, and to developing digital communications to reach more people during COVID-19.

STARLIGHT DINNERS

This year Arid Recovery hosted two starlight dinners alongside the Roxby Downs Rotary Club and Roxbylink. The dinners include a sunset walk , three course meal under the stars, campfire conversations and a spotlight walk. These dinners provide a great combination between educating guests on Arid Recoverys' work and showing off what the outback has to offer.

TEAM BUILDING EVENINGS

BHP are a great support to the Arid Recovery Project and we are delighted we can provide a space they can utilise for team building exercises . Throughout the year we have hosted multiple dinners and activities (including greater stick-nest rat nest surveys) for a variety of BHP teams. This not only strengthens internal connections but also our partnerships with them.

DADS & KIDS

In August we were thrilled to be able to hold another Dads & Kids event in collaboration with Time For Wellbeing & Strengthening Our Families. It is aimed at strengthening relationships between dads and their kids in a fun environment. This event is always a family favourite with scavenger hunts, running races, tracking activities, snake awareness, camp fires and a sausage sizzle. Each event continues to have a great response, often booking out, and we look forward to holding more in the future.

WORKING BEES

Working bees are a fantastic way to get larger jobs completed. We have held two over the last year, building a testing pen to understand how quolls climb the fence and adding foot netting to the soft release pen in the Main Exclosure to hold bettongs for the prey naivety project. These jobs allowed us to continue vital research on the behavior of both species. Thank you to both our staff and volunteers for coming out on your days off. Your help certainly made these jobs a lot easier.

⬆ Research intern Poppy Walker analysing stick-nest rat scats to measure diet. Photo: Ines Badman

⬆ Adelaide Royal Geopgraphic Starlight DInner

⬆ Working bee constructing quoll testing pen.

⬆ Roxby Downs Area School students at Far North Science Hub event 'Re-energised'.

⬆ 2020 interns: Antoria Wilson (above), Jannico Kelk (below).

TOURS

Despite having an extended break in our tour season due to COVID-19, tours have still been popular. The Roxby Downs Discovery Tour has not operated since last year due to restrictions, however with the help of Roxbylink we have adapted by screening a 20 minute movie showcasing the mine and having more Sunset Tours available. This availability is possible due to having two tour guides this season who have an enthusiastic outlook on Arid Recovery's work and are eager to share it with guests. With over 1,000 guests attending our tours we have had some great feedback including this response from one of our guests *"We could not have asked for anything more from our guides. The night was truly a highlight of our trip and we would recommend it to anyone visiting Roxby Downs."*

EDUCATION

Last year face to face education was in full swing. Engaging classes and community groups each week through market days, snake awareness sessions, radio sessions, native plant work, forums and events. However, that has not been the case over the last 6 months. COVID-19 completely flipped the way we engaged and educated not only the local but also the wider community. As for many other community groups, we had to adapt quickly and be strategic about how we could work around restrictions. We came up with two interactive facbook themes: #BackyardBuddies and #FootprintFriday. Backyard buddies was (and still is) posted every Wednesday morning showcasing a cool critter that lives in the area and listing facts about them. For Footprint Friday we posted a picture of a footprint and the online community had to use their skills to guess who it belonged to, revealing the answer in the afternoon. Other ways we connected with our community were through blogs, new video content, zoom presentations with School of The Air kids and classroom content for both at home and school use. Even though our engagement has looked different we have had a great response to these changes. It has also allowed us to broaden our connections across the country.

WORLD FAMOUS WATER FOUNTAINS

In early January at the drought's peak, Arid Recovery shared the blueprints for the water fountains being used in drought relief work in the hopes others could build them for animals affected by bush fires. This went viral on social media, reaching over 1.5 million people. It even ended up in the UK news. We were flooded with messages, calls, news articles and shares from people all over sharing their creations with us. It was incredible to see the community come together and help each other in such a hard time.

EVENTS

Events have been on the quieter side since COVID-19, however we managed to hold a few throughout the year. We hosted two collaborative events with the Far North Science Hub, including Re-Energised (renewable energy event) and Fossil Education; as well as a Dads & Kids event. We also attended other events such as Nature Play, market days and one of our favorites, the Roxby Downs Christmas Pageant. As things start to settle in South Australia the planning for events has begun again and we look forward to getting back out in the community.

Statistics

1,098	Tour guests
1,394	People attending events
3,844	Hours volunteered
50	Media articles, newsletters, blogs
13,498	Facebook followers
498,264	People engaged via Facebook
54,492	Website visitors

2019-20 Financial Report

INTERPRETATION

Income was higher in 2020 depite losses in tourism revenue from Covid-19. The losses were offset by increases in support from BHP and Bush Heritage, and with savings from wages and support income from the tax office. Additional expenditure was made on addressing feral animal incursions with control operations and fence improvements.

Arid Recovery is in a strong financial position with an operating surplus of $47,134 and total equity of $608,300 at 30 June 2020.

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.

Balance sheet

ASSETS		
CURRENT ASSETS	**2020**	**2019**
Cash and cash equivalents	$387,524	$219,554
Trade and other receivables	$63,870	$166,730
Prepayments	$6,892	$0
Inventories	$19,786	$18,402
TOTAL CURRENT ASSETS	**$478,072**	**$404,686**
NON-CURRENT ASSETS		
Land & buildings	$255,000	$257,500
Plant & equipment	$108,288	$137,078
TOTAL NON-CURRENT ASSETS	**$363,288**	**$394,578**
TOTAL ASSETS	**$841,360**	**$799,264**
LIABILITIES		
CURRENT LIABILITIES		
Trade and other payables	$31,801	$28,775
Income in advance	$157,406	$150,000
Provisions	$16,019	$14,017
Credit card		
Lease liability	$14,187	$17,472
TOTAL CURRENT LIABILITIES	$219,413	$210,264
Lease liability - non-current	$13,647	$27,834
TOTAL NON-CURRENT LIABILITIES	$13,647	$27,834
TOTAL LIABILITIES	**$233,060**	**$238,098**
NET ASSETS	**$608,300**	**$561,166**
TRUST FUNDS		
Retained earnings	$608,300	$561,166
TOTAL EQUITY	**$608,300**	**$561,166**

Income and Expenses

REVENUE	2020	2019
Sponsorship contributions	$564,800	$539,000
Research income	$241	$2,727
Fundraising	$2,492	$7,830
Grant income	$10,000	$89,720
Donations	$34,674	$32,583
Tours and events	$16,192	$21,942
Interest income	$2,463	$5,701
Covid-19 related support	$71,828	$0
Other income	$27,600	$13,692
Total income	**$730,290**	**$713,195**
OPERATING EXPENSES		
Administration	($40,078)	($64,689)
Depreciation	($37,249)	($62,537)
Wages and Salaries	($411,967)	($479,410)
Motor vehicles	($24,805)	($34,141)
Research	($24,116)	($5,774)
Reserve maintenance	($32,934)	($7,596)
Fencing materials	($55,520)	($17,238)
Flora and fauna management	($44,453)	($35,374)
Volunteer and community	($12,034)	($8,572)
Total expenditure	**($683,156)**	**($715,331)**
OPERATING SURPLUS/(LOSS)	**$47,134**	**($2,136)**
Loss on property revaluation	$0	($91,250)
Net Comprehensive Income	**$47,134**	**($93,386)**

What better way to contribute to Arid Recovery than sponsoring the western quoll.

Adopt a western quoll

Your sponsorship includes:

- Certificate of sponsorship
- Regular updates on quoll conservation
- Our heartfelt thanks for you support of this beautiful intelligent native predator.

ⓘ Adopt a Stickie at www.aridrecovery.org.au/adopt

⬆ Juvenile western quoll

Donate

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

Volunteer

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

Thank you to the sponsors and supporters of Arid Recovery

BHP

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

THE UNIVERSITY OF ADELAIDE AUSTRALIA

BUSH HERITAGE AUSTRALIA

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

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

Alliance Airlines
Andamooka Yacht Club
Arid Lands Botanic Garden
Bianco
Blackwoods
BSH
Coates Hire
Conservation Volunteers Australia (CVA)
Delicious by Elke
Frankston Rotary Club
Global Leadership Foundation
Greyhound Australia
Holcim, Lavricks Engineering
Inspiring South Australia
Monodelphous Engineering
The Monitor Newspaper
MRL Group
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Port Augusta Prison
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Roxby Club
Roxby Fabrication & Engineering
Roxby Pest Management
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Spotless
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Time For Wellbeing
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