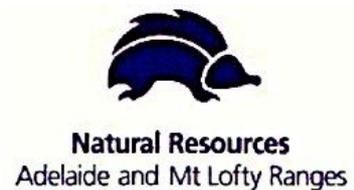


Almanda Report 2019



A Friends of Scott Creek Conservation Park Project



The Friends of Scott Creek Conservation Park

Almanda Project

To restore threatened wetlands in Scott Creek Conservation Park by rehabilitating upland swamps, bogs, spring-fed gullies and seasonal creeklines.



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Introduction

Scott Creek Conservation Park is a significant conservation area that is home to many threatened species of the Mount Lofty Ranges. The park is an important link in the vegetation corridors of the hills and was once part of a major travelling route for the Peramangk Peoples¹.

The Almanda Project² commenced in July 2014 with the aim of restoring rare and beautiful native habitat along eight riparian areas (wetland areas along watercourses) of the Scott Creek sub-catchment within Scott Creek Conservation Park. The Almanda Project is named after the Almanda Swamp and Creek system in the centre of the park, where historic ruins of an old silver mine, established in 1868, can still be seen today.

This report is the fifth annual report on the Almanda Project, marking the half way point of our ten year restoration project.

The Almanda Report 2019 begins with the President's Report, where Peter Watton summarises progress in all aspects of the Project, from grants and fundraising, to on-ground volunteer and contractor work. More details of the work being done in each of the major creek systems within the Park follows this, including that done by both volunteers and contractors.

This report is a tribute to all those people who are part of restoring the beautiful and rare natural diversity in this exceptional part of South Australia.

By Anna Dutkiewicz

Right: Water gently flowing down Blackwater Creek during one of our bush gardening sessions in August 2018.



¹ https://www.parks.sa.gov.au/find-a-park/Browse_by_region/Adelaide_Hills/scott-creek-conservation-park

² The Almanda Project is described in more detail in the *Almanda Report 2015* written by Tom Hands and John Wamsley available at <http://www.johnwamsley.com/Books.html>.

President's Report

ALMANDA PROJECT – PROGRESS REPORT – June 2019

In last year's report, I emphasised the importance of following up on previous primary weed control undertaken in the Park. Planning for this follow-up work is particularly important when any significant new funding for contractor input is received.

This year, we were thrilled to receive extra Blackberry control funding through Mark Fagan, District Officer for Natural Resources Adelaide and Mount Lofty Ranges, together with two substantial donations of \$10,000 each (see under Funding and Publicity later in this report). This was in addition to other on-going and new grant funding.

When allocating the funding to contractor work, it is more important to focus on weed infestations in better quality native vegetation, as this is better able to resist future re-infestation than equivalent work undertaken amongst more degraded, weedy vegetation.

We are mindful of prospective future funding support, which may enable paid contractor follow-up, rather than just relying on the Friends' volunteer time. In this regard, a commitment from one of the donors to repeat their donation over the next two years is very important, plus reserve funds in our bank account and likely new grant availability.

It was again challenging to ensure our volunteer bush gardening efforts maintained the necessary follow-up actions across the 712 hectare Park. You will see from the map included under the Our Volunteers part of this report that we did indeed travel far and wide.

While some areas receive regular annual or more frequent visits, others can usually be maintained with visits every couple of years, as most of the weeds don't flower and produce seeds until their second year. Of course, with such a large area to cover, the odd weed does escape our best efforts while patrolling and manages to set seed, but we like to think that this is the exception rather than the rule.

Once again I would like to extend my thanks to Jenny Dawes for the time she puts into planning our working bee schedule, ensuring we do get to all the core parts of the Park to work on previous weed infestations and patrol the broad areas for outlier weeds. These activities are also organised to provide our volunteers with a variety of weeds and locations, so that we aren't doing the same thing in the same place one activity after the other. As they say, variety is the spice of life.

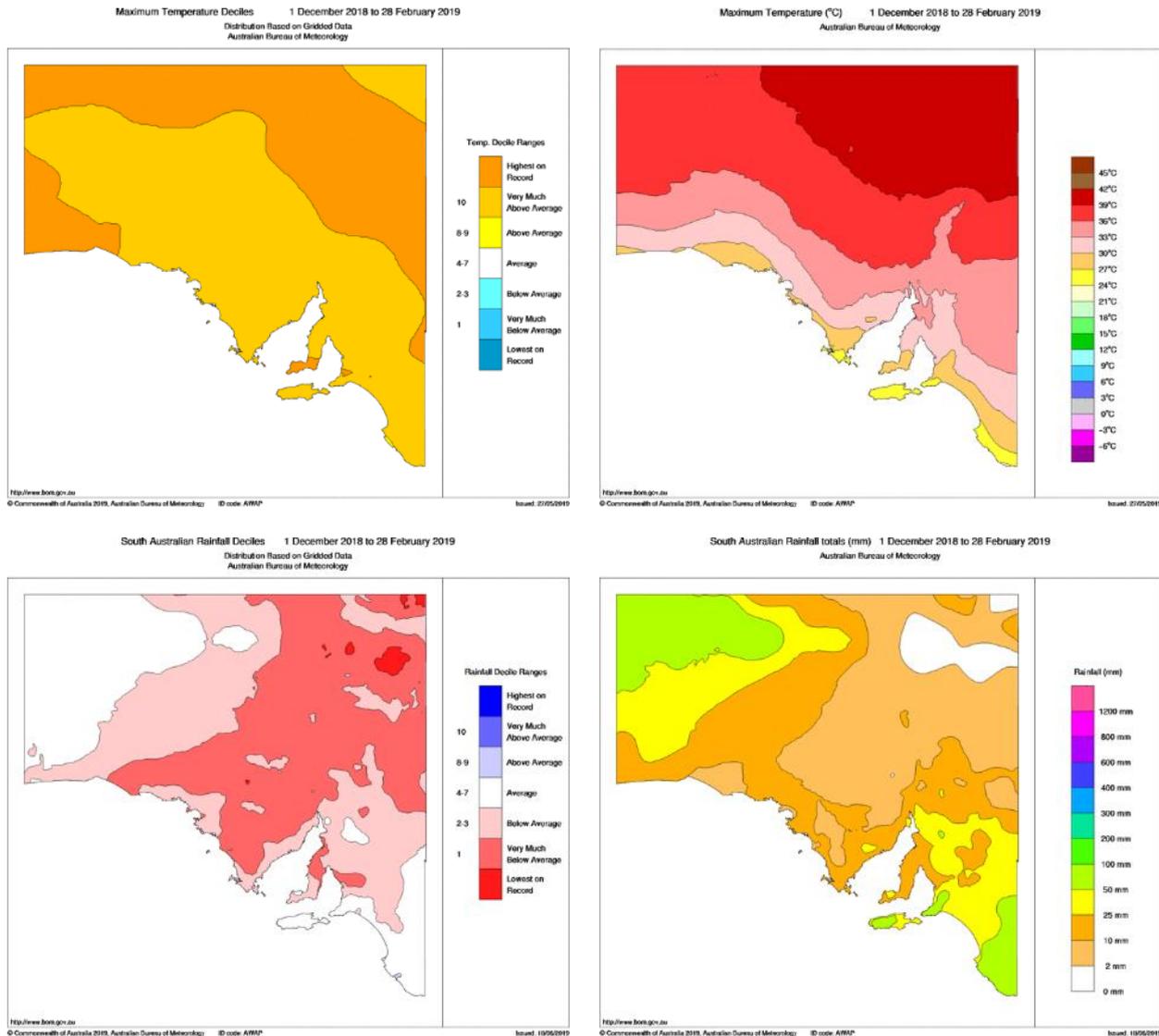
Once again, 2018-2019 provided Adelaide with a hot and dry summer and early autumn. According to the Bureau of Meteorology website:³

Rainfall in summer was below average to very much below average in most central and northeastern districts, making it South Australia's driest summer since 1985–86. Heatwaves in December and January resulted in numerous sites setting new high

³ <http://www.bom.gov.au/climate/current/season/sa/archive/201902.summary.shtml>

temperature records during summer 2018–19. For mean maximum temperature, it was South Australia's hottest summer on record and third-warmest for mean minimum temperature.

At Mount Lofty, the mean maximum temperature for summer 2018-2019 was 4.6°C above average, while rainfall was 82.8mm, representing 66% of the average summer rainfall of 125.5mm.



This weather had a definite impact on much of the vegetation in the Park, with a number of native species suffering. In particular, there were numerous deaths of Messmate Stringybark (*Eucalyptus obliqua*) and quite a few larger Silver Banksia (*Banksia marginata*) seen throughout the Park. Of course, the resilience of our native vegetation once again shone through once the rains did finally arrive, and things greened up again very quickly. The impact on flowering is, perhaps, yet to be determined, but botanist Bob Bates has noticed the low flowering rate of orchid species in many areas of the Adelaide region.

On the weed side of things, many seedlings died during the summer drought, which thankfully reduced the number we need to deal with. Others, however, were simply stressed, so that some programmed spraying had to be delayed until next season. This is because most herbicides are only effective when the target pest plant is actively growing and not under stress.

Right: Blackberry fruit dried out before fully forming in some areas of the Park.



Fundraising and Publicity

During the fifth year of the Almanda Project, fundraising once more focussed on new grant applications and utilising existing funding provided for the second year of the three year Work Plan under the NR AMLR Land Management Program.

There were no other specific fundraising activities and, with the frustration of not being able to obtain tax deductibility for the funds raised at the 2016 Wirrapunga Open Garden through the Friends of Parks Inc. Gift Fund, those funds were instead donated to Warrawong Sanctuary. This helped further the work of its new owners in returning this iconic conservation reserve to its former condition.

Too late to ensure this donation came to the Almanda Project, in December I received an email from the Landcare Association of SA promoting a new "Fund Landcare" platform launched by Landcare Australia⁴.

The email contained the following message from Rob Novotny, Head of Fundraising, Landcare Australia:

"During the 2018 National Landcare Conference in October, the Landcare Australia fundraising team launched a new fundraising platform called Fund Landcare.

This platform has been designed to help Landcare groups throughout Australia raise funds for their own group using Landcare Australia's DGR (deductible gift recipient) status.

Fund Landcare enables Landcare groups to set up their own campaign and raise funds directly for their group.

Using Fund Landcare, groups will be able to:

- *Set up crowdfunding pages to raise funds for particular projects.*
- *Set up fundraising events for groups and individuals.*
- *Set up fundraising challenges. This could be for groups and individuals who have created their own challenge or for groups and individuals who want to take part in an existing challenge, such as running an event.*

⁴ Landcare Australia website: <https://fundlandcare.org.au/>

Creating a campaign on the platform is easy for Landcare groups and there are plenty of resources to assist the groups on how to set up a campaign or how to fundraise and maximise their asking strategy.

Why not check Fund Landcare out for yourself at fundlandcare.org.au."

...and...

"We are really excited to offer this platform to the Landcare community and hope that it will help many groups raise much-needed funds."

I too was really excited after I contacted Rob and he confirmed that our Friends group could access the Fund Landcare platform. We are now able to set up our own fundraising page on the Fund Landcare website, so that we can run a particular fundraising event, with Landcare Australia as the auspice so that we can access their DGR policy. There is a 5% administration fee that applies, 2.5% to the third party platform, and 2.5% to Landcare Australia to run and improve the platform.

Information about the Fund Landcare platform came at the perfect time for us, as we were contacted by a local wanting to make a tax deductible donation to our group from their family foundation to assist our work restoring Scott Creek CP. We thank the Carthew and Fisher families for their support through the Carthew Foundation with their very generous donation of \$10,000 and their commitment to donate the same amount for the next two years.

After reading about the access to Fund Landcare to enable tax deductible donations to our Almanda Project, we were contacted by another party wanting to donate a further \$10,000 to continue our valuable work restoring the Park. While not wanting to be publicly acknowledged, the donor is an existing member of the Friends group who has spent many hours over the years walking through the Park, particularly enjoying the birdlife.

I have been in contact with Landcare Australia regarding setting up the Almanda Project on their website to help raise awareness and, potentially, fundraising for the project around the timing of our open day, which we plan to hold in spring this year. The aim will be to take advantage of the spring flowering of our native vegetation, although this will also mean the Almanda Valley and Almanda Creek will be significantly wetter under foot.



The three year Work Plan mentioned above was part of the Scott Creek Conservation Park Plan (SCCP Plan); funding included \$20,000 through Sustainable Landscapes, managed by District Officer Mark Fagan, and \$5,000 funding through the Volunteer Support Program, managed by Volunteer Support Officer Sophie Bass, who is filling in for Kat Hill while she is on maternity leave.

Left: Mark Fagan inspecting Blackberry treatment in Mackereth Creek.

This funding was supplemented by an additional \$8,000 for Blackberry control in the park, and a separate roadsides budget enabled treatment of Watsonia along the Gurr Road edge of the Park.

We were successful in three separate grant applications:

- Adelaide Hills Council Environment Grant 2018-19 for \$2,500 – Sollya control in the lower slopes on the west side of Helipad Hill,
- NRM Community Environment Grant 2018-19 for \$5,000 – \$2,000 of this will be used to fund publicity materials for the group and a bushcare workshop for neighbouring landholders, with the remaining \$3,000 used to control Cape Tulip and large woody weeds in Almanda Valley, one of the key project areas of the Almanda Project and site of our annual open days,
- DEW on-park Volunteer Support Grant for \$5,000 – Erica, Broom, Sollya and Blackberry control in the Panhandle, supplementing existing work funded in this area and new work being undertaken on adjoining SA Water land.

Once again a huge thank you to all who contributed this invaluable financial support for the Almanda Project this year, without which progress would be all the slower.

The Contractors

While last year a substantial amount of our funding was received quite late, this year we were able to allocate it across the full twelve months, meaning we were able to plan for the majority of the contractor work to take place at the optimal time.

We didn't, however, anticipate the long dry summer and early autumn that we endured, which meant that Blackberry, in particular, tended to have quite dry, shrivelled foliage in the latter part of the spray treatment season. The exceptions were some of the populations growing in the deeper, shaded valleys, which remained relatively lush. The result was that some areas were left for treatment next year, when we hope to get some of the spraying and follow-up done earlier in summer. Montpellier Broom in the Panhandle was also unable to be sprayed because of a lack of foliage and later grazing of what little leaf they did have.

The large volume of funded work was again distributed between existing contractors, and I would like to express my thanks to contractor principals and their staff for their significant contributions to restoration work in the park. Thank you Kieran Brewer (South Australian Indigenous Flora), Tony Patterson (Better Bushland), Russell Troon (Environmental Contracting Services) and Matt Endacott (Trees For Life Works).

BushRAT Monitoring

Once again, this year we have not paid for any BushRAT monitoring in the Park. We will continue to postpone re-monitoring previous sites, so that results of weed control work and regeneration of native vegetation can be better determined. Making use of our own volunteer training and capacity, I conducted the vegetation assessment and BushRAT monitoring in Cave Creek, so that we had baseline data in advance of the extensive contractor work undertaken in this creek system during the 2018-19 year.

The survey revealed three distinct vegetation associations within the creekline, based on species composition and condition. In addition to *Eucalyptus fasciculosa* (Pink Gum) with a Rare state conservation rating, there were 23 species that have Adelaide and Mount Lofty Ranges regional status. These include two Vulnerable species, a small area with *Glyceria australis* (Australian Sweet-grass) and a very large population of *Tetralaria capillaris* (Hair Sedge), together with four species with Rare status and 17 that are Near Threatened.

The sections at either end have extensive Blackberry infestations through the bottom of the creekline. This was the focus of funded contractor work in upper section this year. There are other highly invasive weeds present, but these are in low numbers and will be targeted by our volunteers within the scheduled working bee activities.

The middle section was in substantially better condition, with only scrambling Blackberry through the diverse native understorey. This is expected to respond rapidly to treatment by contractors that will be programmed next year.

See the full BushRAT monitoring results later in this report.

Our Volunteers

This year our Hands On Team has again gained a couple of new regular members. This is the key ingredient for having a robust and sustainable group, to enable us to continue the critical work restoring Scott Creek CP, particularly as a couple of our longer-serving members become less able to attend these sessions regularly.

The old adage that many hands make light work was never truer. If we can rely on a good number of volunteers turning up to each of our bush gardening days, in addition to getting more work done, it provides us all with added motivation and encouragement to keep coming out and continuing the work that the group started when it was formed in 1990.



Above left: Undaunted by the head high Tree Heath in Greenhood north, March 2019.



Above right: Enjoying a well-earned break during the same activity, photos Jenny Dawes.

We have the three regular Bush Gardening Days (working bees) scheduled in the Park each month, taking place on the first Tuesday, second Sunday and fourth Saturday. We have been averaging around ten volunteers at the weekend days, with a smaller group on the Tuesdays.

Under the guidance of John Wamsley, the Almanda Creek bush gardening group now meet on most Tuesdays as well as Wednesdays, to work in this showcase site for the Almanda Project. They have already worked up to the boundary with SA Water land, along Dorset Vale Road, and are keen to continue up to the corner at Matthews Road, and then upstream along Scott Creek. This will join up with the part of Scott Creek that is already in the Park, where our group already works, with contractor assistance.



Above left: Ian and Jenny removing Tree Heath below Echidna Track.



Above right: Digging up Bella Donna Lilies from Mackereth Creek.

With regard to this area of SA Water land, its long overdue transfer over to the Park is now within sight. See the section later in this report about Mackereth Cottage.

In addition to the volunteers who contribute to the on-ground work in the Park during the above bush gardening activities, there are several who venture out separately to patrol areas to plan future works or do some knapsack spraying, following up on previous weed control by the group or contractors. This is particularly important as we extend the areas where primary control of Blackberry takes place, to ensure they don't return to the weed infested creeklines they once were. Thanks to Jenny Dawes and Glenn Giles who assist me with these activities. Additional work was completed in Almanda Creek, Almanda Valley east, Cave Creek, Echidna Track, Flax Creek, Fox Bog, Logania Creek, Kangaroo Gully, Mackereth Creek, Mineshaft Track, North Viminaria Creek, Panhandle south and Scott Creek paddock.

Right: Glenn spraying Erica amongst Prickly Tea-tree near Blackwater Dam.



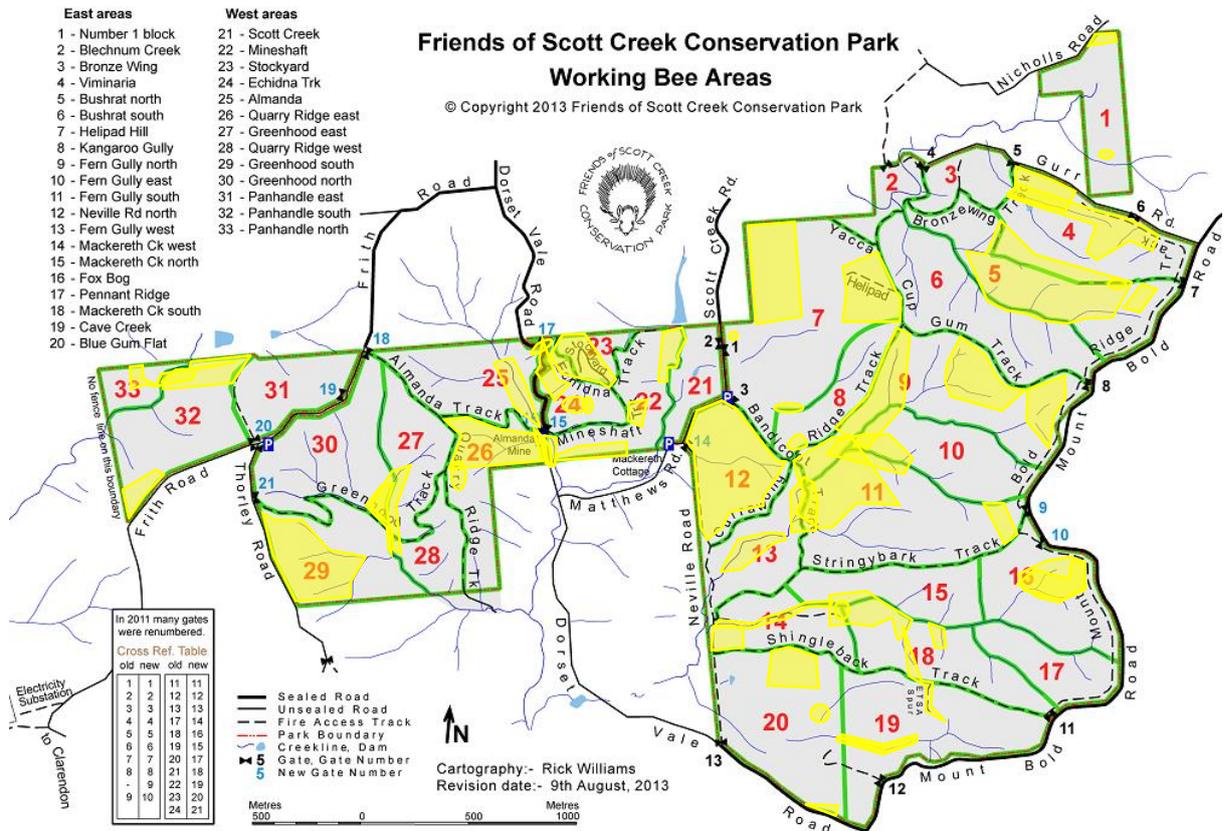
There are also a small number of the team who work behind the scenes keeping the group running smoothly, including Donella Peters as Treasurer and Minute Secretary at our meetings, Jim Spiker as Vice President and Correspondence Secretary, Jenny Dawes as Chair of our meetings and Working Bee Coordinator, and Lorraine Billett as Membership Secretary. Thanks also to all of the members of the group who attend our general meetings held every couple of months.



Above: What a place to spend time, achieving important restoration work in the Park and having a view like this to enjoy during morning tea with like-minded people.

The all-important in-kind value of our volunteer work ensures we meet the requirements of grant funding applications. Generally this requires our group to match funding on a “dollar for dollar” basis.

This financial year, we reported to DEW that the Friends have contributed a total of 2,951 volunteer hours, including 1,481.5 hours of on-ground restoration work. Currently, DEW value these hours at \$41.72 per hour, which means our group contributed a significant \$123,115.72 in total and \$61,808.18 specifically to on-ground restoration work.

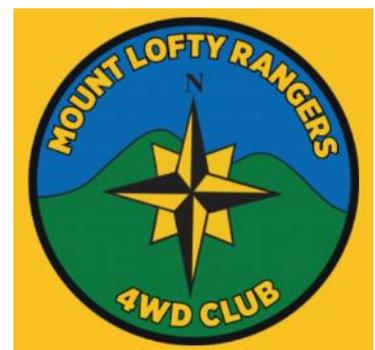


Above: Map of Scott Creek CP showing the main areas where on-ground work was completed by the Friends group during the 2018-2019 year.

Clean Up Scott Creek Day

A wonderful effort to “Clean Up Scott Creek Conservation Park” took place on Sunday March 17th. It was initiated by the Mt Lofty Rangers 4WD Club⁵ who had helped the Friends out previously some years ago.

Starting at 8.30 am, their enthusiastic energetic team of 11 adults and one child was joined by 10 of the park’s Friends. After a total of 94 hours of work, four trailer loads of litter had been collected!



Three of the trailers were piled high with metal left behind from when the land was divided into many small properties: old fencing wire, some corrugated iron sheets and steel water piping, etc. A lot of old wire tree guards were also collected. All this was taken away to be recycled. The other trailer was filled with rubbish: polypipe, unusable remains from earlier revegetation projects and some other debris.

⁵ <http://mountloftyrangers.com.au/>

Everyone worked so well that they had time to enjoy a morning tea break together and later an early lunch. The club generously provided a sausage sizzle and the Friends offered sliced fruit and cake. The Friends prioritise their bushcare over these activities, so they really appreciated the club's willing support in this way. They are pleased it has reduced the number of hazards for the wildlife living in the Park.

To thank the club, they were presented with a copy of the Friends' lovely 25th Anniversary Book about the Park.

Clean Up Scott Creek Day report by Jenny Dawes



Some of the trailer loads of rubbish and recycling removed from the Park with the help of the Mount Lofty Rangers 4WD Club and lunchtime entertainment by a young member.



The Amazing Story of Mazus

The Almanda Project has now completed its fifth year. To best describe its successes, rather than enter into complex botanical descriptions and lists, let us just look at one of its many successes – the story of Swamp Mazus – *Mazus pumilio*.



Above: Swamp Mazus – photo John Wamsley.

It belongs to the family SCROPHULARIACEAE, which also contains some other interesting plants such as Veronica and Gratiola.

Swamp Mazus is described as 'vulnerable' in South Australia. It occurs in the South East with one record in the Mount Lofty Ranges at Scott Creek Conservation Park. This single occurrence we will refer to as Mazus.

The story of Mazus begins in January 2002 when it was discovered by A. M. Prescott. There was just one small colony in Fox Bog at Scott Creek Conservation Park. Fox Bog was a 'hanging swamp' in the upper tributaries of Mackereth Creek in the Park. It was home to a number of rare plants including Mazus. Unfortunately due to climate change, Fox Bog is a bog no more. It has dried out. There is no *Mazus pumilio* growing in Fox Bog today.

Another wetland in Scott Creek Conservation Park is called 'Almanda'. It consists of Almanda Swamp, which is a permanent swamp filled by a number of springs within the swamp, and Almanda Creek, one of the few permanent creeks within the Park. Unfortunately the Almanda Creek was completely infested with invasive weeds such as blackberry and phalaris. Although it was permanently wet, other than the manna gums there were no rare plants in Almanda Creek.

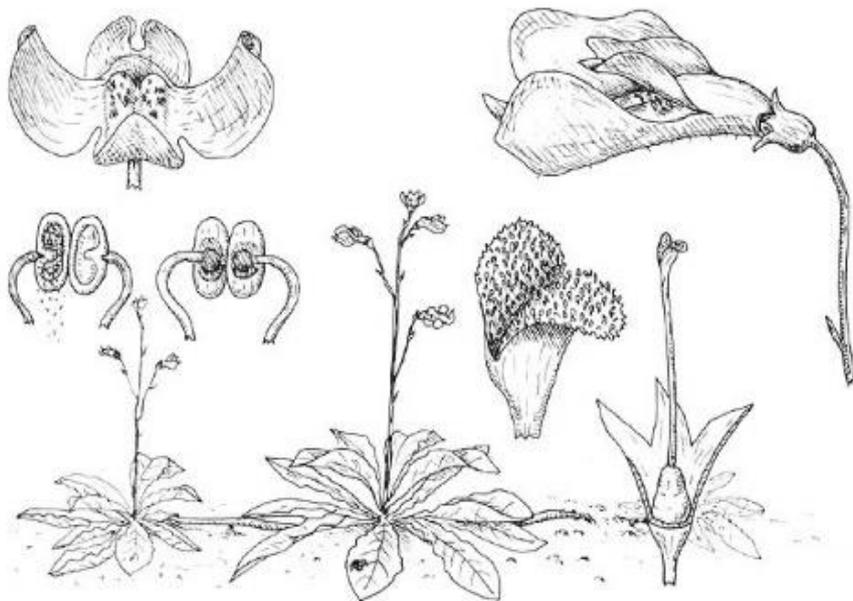


Image source – *Electronic Flora of South Australia*

The third party to this story was a small group of dedicated volunteers called the Friends of Scott Creek Conservation Park. In this story we should probably call them 'Friends of Mazus'. This group could see the problem Mazus was facing but simply did not have, and could not raise, the resources necessary to do much about it. So they developed the Almanda Project.

The Almanda Project was simple enough. Just write it all up in a way people can understand and ask the Community to help. Today Almanda Creek is a beautiful indigenous garden. Mazus is thriving along its banks.

Together with a number of her rare friends such as: The Mount Lofty Speedwell (Nationally endangered), Lax Twig-rush (rare), Fishbone Water-fern (rare), Matted St John's Wort (rare), Slender Mint (rare), Australian Caraway (rare), Shade Tussock-grass (rare), King Fern (endangered), Native Broom (rare), Matted Lobelia (vulnerable), Soft Twig Rush (rare) and many more including the Shrubby Fireweed, Pink Ground-berry, Tassel Sedge and Australian Sweet-grass.

We call it real gardening but others just say it is proactive conservation.

The Amazing Story of Mazus by John Wamsley



Above: Swamp Mazus and friends – *photo John Wamsley.*

Mackereth Cottage

In mid-January we were involved in a tour of a number of parks and revegetation projects in the hills and Fleurieu Peninsula region organised by the Minister for the Environment and Water David Speirs. The tour through sites within the Heysen and Finniss state electorates was arranged in conjunction with local MPs Josh Teague⁶ and David Basham, with our part of the trip coordinated by April Cooke, Advisor to Josh Teague.



Minister David Speirs flanked left to right by Jen Pitman, David Basham, Josh Teague, Peter Watton, John Wamsley and Brent Lores.⁵

Despite forecast hot weather and a fire ban, the weather was quite pleasant when the Minister arrived for our one hour timeslot starting at 8.30am, with cloud cover greatly assisting.

We met at the car park next to the old Mackereth Cottage ruins on Matthews Road and, after a general chat about the history of the Park, the Friends group and some of the strong biodiversity values of the Park, we walked down to the adjacent creekline of Scott Creek and then along the road to the cottage. At this point we explained the long-standing plans to have this parcel of SA Water land handed over to DEW for inclusion in the Park. The Minister was keen to know what was holding up the process, which was explained by Jen Pitman on behalf of DEW.

After more discussion about the cottage we drove around the corner to the Almanda Mine car park, where we carried on the conversation and walked along Almanda Creek, guided by John W. Here John explained some of the methodology being used by the Almanda Creek bush gardening group, to transform the previously Blackberry infested creekline to the now relatively weed free and biodiverse riparian system on display.

The on-going need for follow-up was stressed, as bushcare is a forever job.

⁶ Facebook: <https://www.facebook.com/JoshTeagueHeysen/> photos from Josh Teague & David Speirs Facebook posts

In May we received a follow-up visit from the Minister, with particular regard to the transfer of the SA Water land to DEW for inclusion in the Park. Once more this visit was arranged with us by April, with Josh⁷ also in attendance. We greatly appreciate their strong and continued support of our group and Scott Creek CP.



Above: Minister David Speirs and MP Josh Teague with Don, Peter, Jenny, John and Senior Ranger Brent in front of Mackereth Cottage⁷.

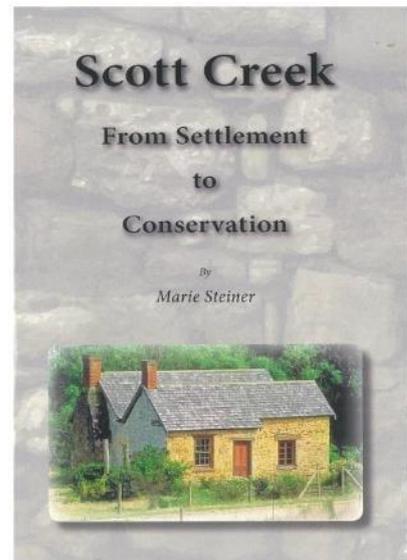
It was interesting to see that the transfer of this section of SA Water land, together with two other, larger nearby sections was highlighted in the 1999 Management Plan for the Park. Now, 20 years later, due to the intervention by the Minister, this part at least is to be a reality. There are still a few steps to go, but now it seems to be more re-surveying to check the road alignment and then conveyancing and the Land Titles Office transfer.

The very same morning of the visit, Jenny was able to pick up the re-print of Marie Steiner's history book *Scott Creek From Settlement to Conservation* from the printer, so that we could present a copy each to Minister David Speirs and Josh Teague. This book was first published in 2000, so it was good to get our supply topped up again with this second print run.

⁷ photos from Josh Teague Facebook post

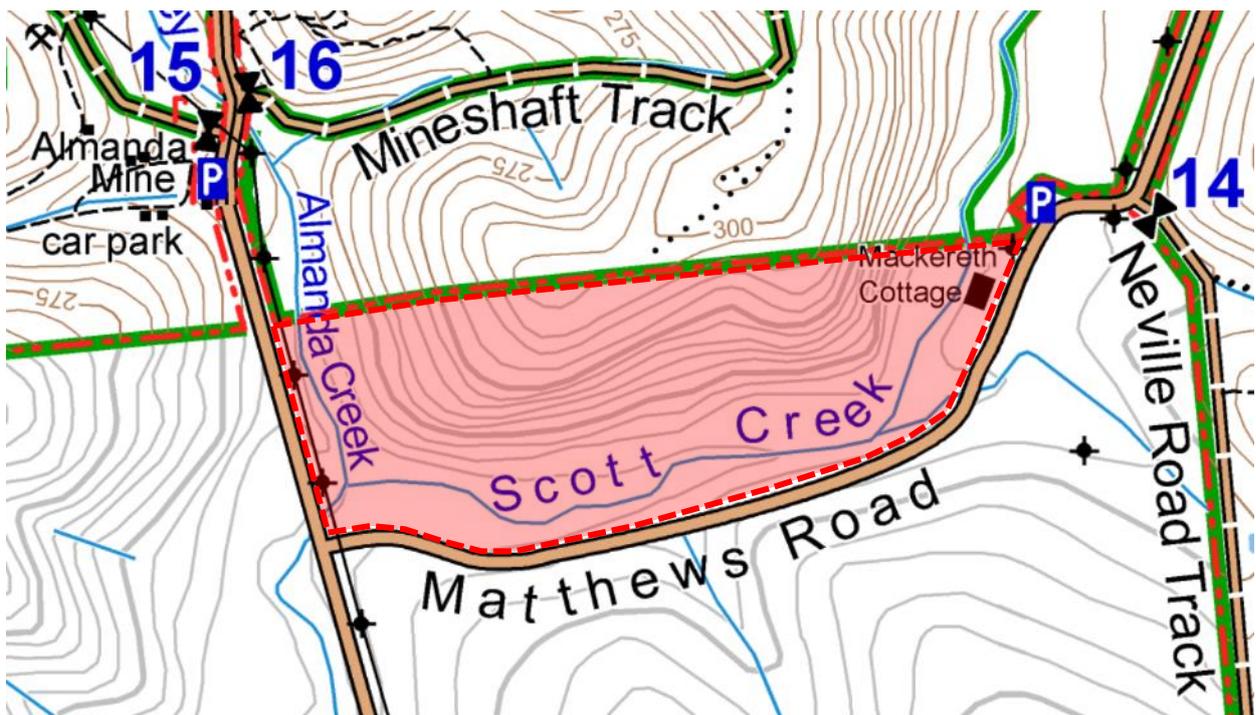
We expect there to be an increase in attention on the Park's European heritage once the Mackereth Cottage ruins are incorporated in the Park. At that point we will also need to make some serious plans regarding the potential to stabilise and, if possible, restore the Cottage.

A plan will also need to be prepared to prioritise vegetation management within the area, including a strategy for treatment of significant areas of Blackberry and Blue Periwinkle within the main creekline, and the numerous Weeping Willow and Desert Ash. Consideration needs to be given to the staged removal of the trees, as there may be unintended consequences that result from removing the shade these trees presently provide. Being deciduous, preventing the autumn leaf fall with its resultant nutrient load into the creek will be an instant benefit.



Above: Presenting copies of Marie Steiner's history book⁶.

Below: The section of SA Water land being transferred to DEW for inclusion in the Park.



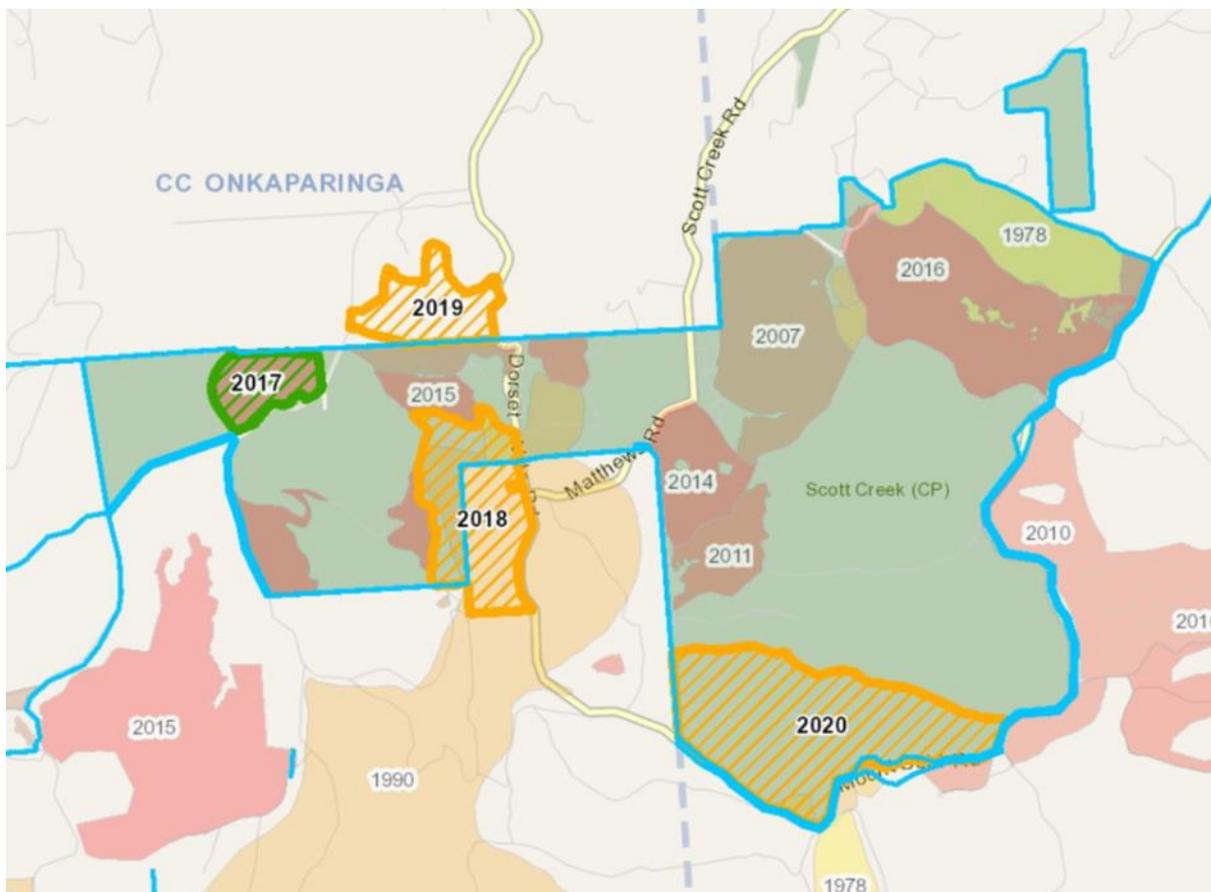
Prescribed Burning

During the 2018-2019 year, a prescribed burn was planned for the section of Scott Creek CP south of Almanda Track and between Quarry Ridge Track to the west and Dorset Vale Road to the east. This will also extend into SA Water land to the south.

Originally this burn was to take place during the previous year, but weather conditions prevented this happening. Once again in 2019, the conditions were not conducive to running this burn during autumn, so it has been delayed again.

Also this autumn, three private landholders were to have a prescribed burn on their properties adjacent to the north of the Park on Dorset Vale Road, but this has also been delayed.

In autumn 2020 another prescribed burn is planned for the Cave Creek area in the Park, south of Shingleback Track. The map below shows both the proposed and historical prescribed burns in the area surrounding Scott Creek CP⁸.



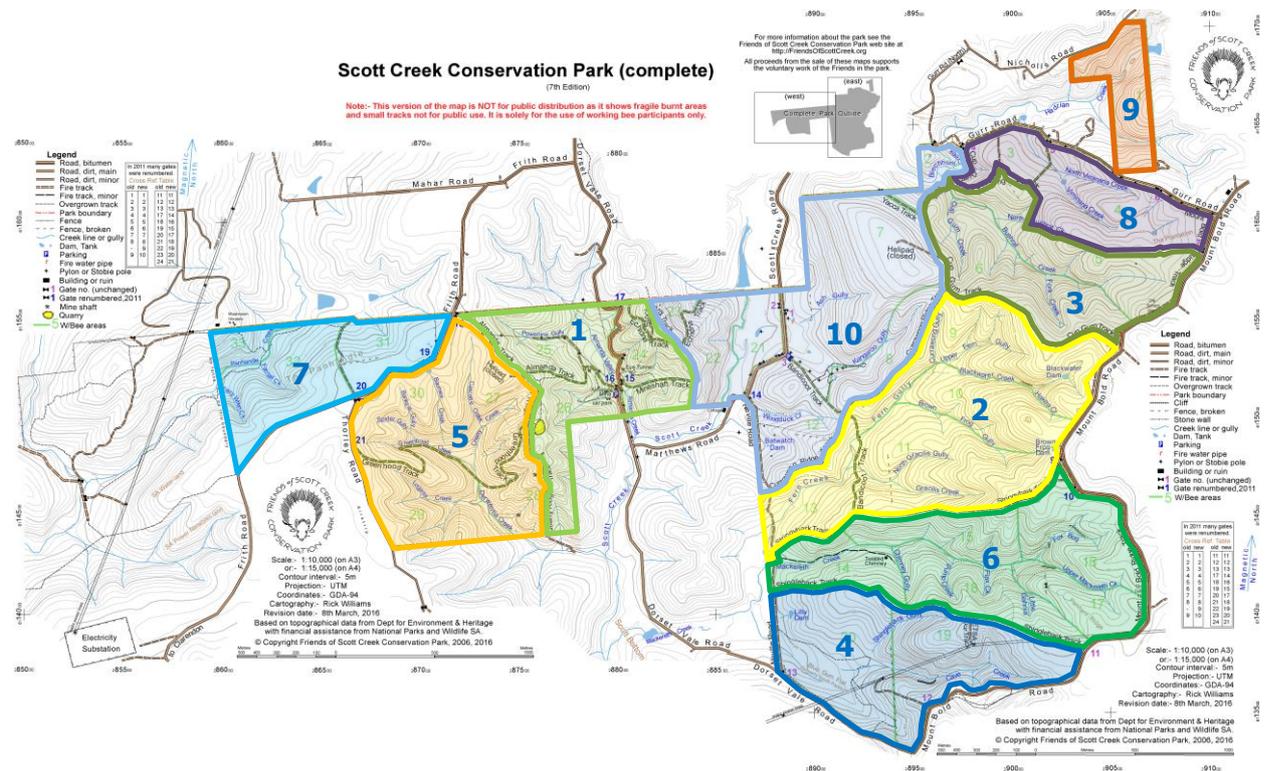
Peter Watton
President
Friends of Scott Creek Conservation Park

⁸ <https://www.environment.sa.gov.au/topics/fire-management/bushfire-risk-and-recovery/fire-management-maps>

The Almanda Project 2018-2019

REPORT ON PROGRESS BY CREEK SYSTEM

This section of the Almanda Report summarises the on-ground vegetation management undertaken across Scott Creek CP, incorporating volunteer, contractor and DEW fire management unit. The Almanda Project formally incorporates all restoration work within the Park, recognising that all of this work impacts on the original objectives of the project, to restore the eight headwater creek systems and threats to flora and fauna species within them.



Map of Scott Creek Conservation Park showing the major creek systems

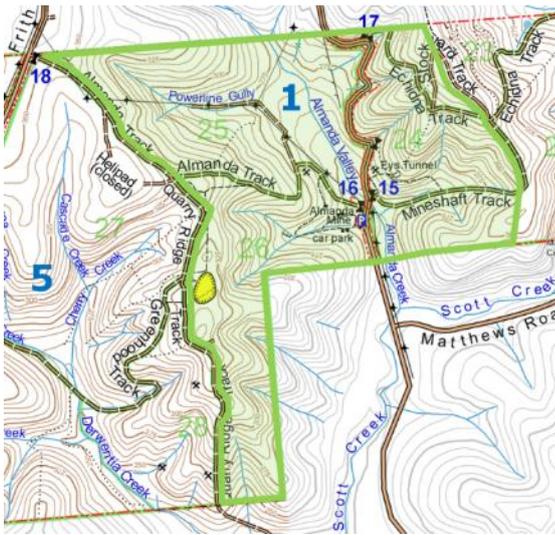
This reporting period, contractors undertook work in nine creek systems within the Park, while volunteers again spread their follow-up weed management throughout all major parts of the Park and all ten creek systems. The DEW fire management unit concentrated its work in the Bushrat Creek System.

As mentioned earlier in the Report, Peter Watton conducted BushRAT monitoring in Cave Creek this year, to ensure baseline data was obtained prior to major Blackberry treatment undertaken during the control season in early autumn 2019.



Above: Planning contractor work in the Panhandle with Sophie and Jenny.

Almanda Swamp and Creek System



The Almanda Swamp and Creek System is the showcase site for our Almanda Project. This is the location of our annual open day, where we open up the doors to the Park and invite people in to see what we are doing and show our progress to date.

This is a spring-fed system, with two main tributaries at the northern end of Almanda Valley, with others coming in from either side of Dorset Vale Road. The springs within the valley generally keep this area wet and Almanda Creek running throughout the year.

The valley has a broad expanse of riparian vegetation, with a variety of rushes and sedges in the northern half, Common Reed (*Phragmites australis*) through the centre and southern end, along with Silky Tea-tree (*Leptospermum lanigerum*) and Narrow-leaf Bulrush (*Typha domingensis*) just before the creek passes under the road. South Australian Indigenous Flora was contracted to follow-up the Blackberry spraying they did through this valley last year. The Common Reed through the valley was over three metres tall in places, so tracks were again slashed to gain access for the spraying. Once more, funding this year was provided by the NR AMLR Volunteer Support Program.

An application under the NR AMLR Community Environment Grants 2018-19 scheme was successful, with \$5,000 (ex-GST) approved for our project called 'engaging the community with the Almanda Project'. Unlike most grants, where the Friends group participates in publicity activities as part of our in-kind contribution, this grant required that at least 10% of funds go towards training and publicity.

Our grant application ended up assigning \$2,000 (or 40%) towards acquiring a pull-up banner and two tear-drop banners for use at field days and publicity events, along with arranging a bushcare workshop for local private landholders. This will give owners of bushland properties valuable training to assist them in the management of their native vegetation, which will in turn broaden the reach of the Almanda Project into areas surrounding the Park.



Above: Blunt Greenhood (*Pterostylis curta*).

The remaining \$3,000 (or 60%) will be used to engage a contractor to commence broadscale treatment of Cape Tulip in Almanda Valley and treat some of the deciduous trees growing in the creeklines. Cape Tulip, like most bulb weeds, will require treatment over consecutive years to achieve good results. Not all bulbs produce growth each year so, no matter how thorough the weed control is, there will always be more bulbs that produce growth the following year.

Woody weeds growing on the edges of Almanda Valley and along the hillsides continue to be maintained by volunteer working bees. This year Erica, Boneseed and Broom were treated by the Friends, while Bridal Creeper and Soursob were sprayed by Peter along the eastern side of the valley and Blackberry was sprayed in some of the minor side gullies by Glenn.



Above left: An area of Blackberry cut up and scattered alongside Almanda Creek.



Above right: Weedy grasses have been removed from between the creek and road.

As previously mentioned, Almanda Creek, where it flows along the eastern side of Dorset Vale Road, is now getting a large amount of intensive management by the small team of volunteers who go out weekly to work in this showcase creekline. Under John Wamsley's guidance, there are generally now between one and four volunteers doing some bush gardening here both Tuesdays and Wednesdays each week.

The aim is to remove every weed that impacts on the regeneration of the native riparian plants, no matter how small they are. The regenerative ability of the native plants is incredible in a wetland area once they have been freed from the threat of the weeds, and they rapidly recolonise the areas. Unfortunately, the weeds also grow very well in these situations, so there is much follow-up required.

Right: John Wamsley shared the wonderful story about the native bees that spend the night sleeping within the flowers of the Buttercup, which close at night-time and re-open with the morning sun.



Anyone wishing to get involved in these extra bush gardening activities would be most welcome. All it takes is two or three hours of your time, whenever you can spare it. The group is keen to continue their work into the adjacent SA Water land once it is handed over to the Park.

There remains much follow-up work to be done on Montpellier Broom, due to the large amount of seedling germination where large plants were previously removed, and on Blackberry, which covered large parts of the creekline when work started here. There are also many herbaceous weeds that grow in this wet and fertile area, including Water Cress, Trefoil, Soursob, Cleavers, thistles and introduced grasses. Peter and Glenn sprayed some of the pasture grasses between the creek and the roadside, to make the follow-up hand weeding a little easier, while Glenn also sprayed a patch of Blackberry in this area, which has since been cut up and scattered by the weekly team.



Above left: Our bush gardening team enjoying morning tea off Mineshaft Track.



Above right: Blackberry sprayed by TFL Works behind Eys Tunnel.

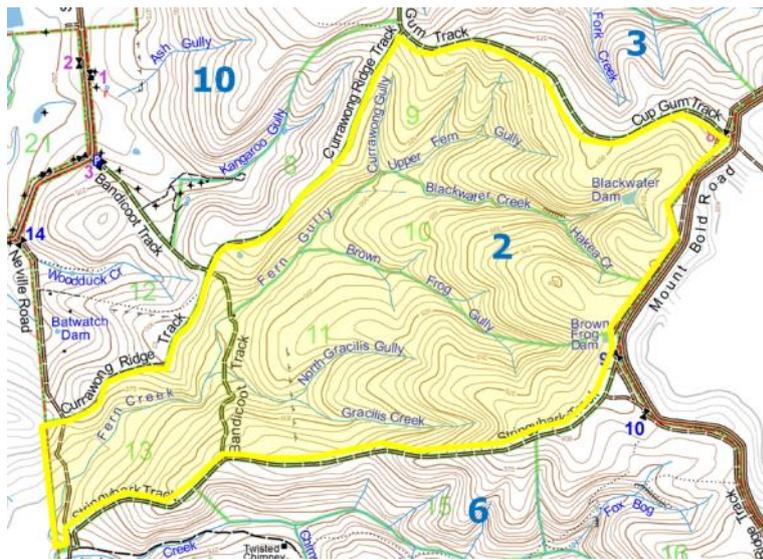
In the gully behind Eys Tunnel, Trees For Life Works were engaged to spray Blackberry, funded by part of the Carthew Family Foundation donation. Volunteers conducted several working bees in the same area and on other hillsides east of Dorset Vale Road. They removed Boneseed and Erica around Mineshaft and Echidna Track, and a wide variety of weeds around Stockyard Track. These included the regular suspects, like Boneseed, English and Montpellier Broom and some Blackberry, but also some Aunt Eliza, Agapanthus and Aloe, the types of weeds that are common around old house sites in the Park.

Boneseed, Erica, Broadleaf Cotton-bush, Dog Rose and Olive were all treated by the Friends during activities in the area behind the Almanda car park, up to Quarry Ridge Track.

Right: A Spotted Pardalote looking for breakfast near Almanda Track.



Blackwater and Fern Gully System



This large creek system is fed by a number of gullies coming from the eastern edge of the Park along Mount Bold Road, with a narrow catchment from Currawong Ridge Track in the Park to the west. Gracilis, North Gracilis, Brown Frog and Blackwater Creeks all feed into Fern Creek, and there has been substantial work done in this system during the year.

In particular, additional funding was available for Blackberry

control from NR AMLR Sustainable Landscapes budget this year, and part of this funded long-line spraying of Blackberry in Gracilis Creek and Brown Frog Creek by Environmental Contracting Services. These two creeklines are within really good quality native vegetation across the hillsides, but had substantial Blackberry infestations in the deep gullies that were starting to spread up the side slopes. It was decided that, with the availability of the extra funding, it was worth dealing with these infestations before they got further out of hand. The quality of the native vegetation should enable these creeklines to regenerate well with a follow-up treatment by contractor knapsack spraying next year.



Above left: Long-line spraying of Blackberry got to this part of Brown Frog Creek in 2019.



Above right: Our bush gardeners have a cuppa amongst Boneseed removed earlier.

Part of the funds from the Carthew Foundation donation was allocated to South Australian Indigenous Flora, to follow-up previous Blackberry spraying in Blackwater Creek and Upper Fern Gully. Other woody weeds were opportunistically treated, including Boneseed, English and Montpellier Broom and a discrete patch of Gorse.

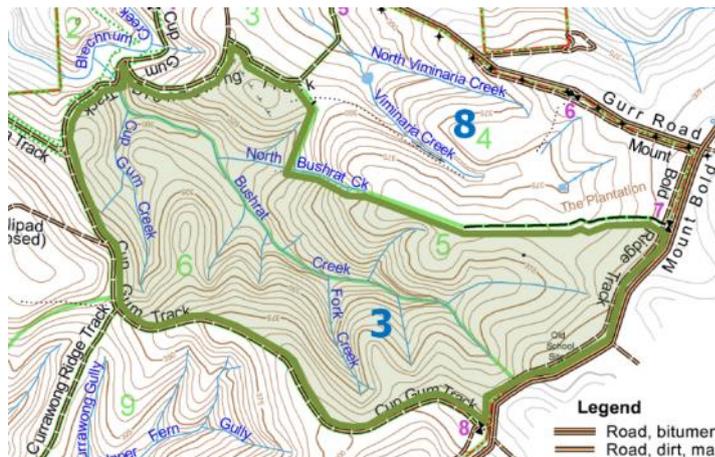
The same funding source enabled Trees For Life Works to complete spraying the large patch of Blackberry in Fern Gully, mostly west of Bandicoot Track. This included the large patches in the open that had been started by volunteers the previous year, plus what was growing in amongst the Bracken Fern alongside the creekline.

Volunteers contributed several working bees and many hours working on Boneseed and Erica across all of the hills and creeklines in this system, together with Montpellier and English Broom around Blackwater Dam and some *Acacia longifolia* and Stinkweed in the western part around Fern Creek. Thanks to the Friends long-term follow-up patrolling the hillsides, these remain clear of large infestations of weeds, although we do occasionally come across patches of regrowth woody weeds in addition to the outlier individuals. The larger patch of mature Boneseed found in the mid-section of Brown Frog Creek, which was mentioned in last year's report, is to be treated by contractors later this winter.



Above: The spectacular view from Cup Gum Track, near Tom Hands memorial seat, south to the Willunga hills and coastline, taken on a beautiful June morning at a working bee.

Bushrat Creek System



Following the prescribed burn in Bushrat Creek in November 2016, the majority of follow-up weed control in this system was again undertaken by the DEW Fire Management Unit (FMU). Records show a total of 283 hours were spent by FMU staff during the year, with teams up to eight working at a time. There are two team leaders, Craig and Attila, each team having three other members.

Below is a summary of the hours spent on each weed species, in order of most to least:

Weed species	Total Person hours
Montpellier Broom	98.25
Erica	92.00
Boneseed	64.25
English Broom	12.00
Blackberry	10.25
Watsonia	3.00
<i>Acacia longifolia</i>	1.25
South African Daisy	0.75
Sweet Pittosporum	0.25
Other miscellaneous weeds	1.00

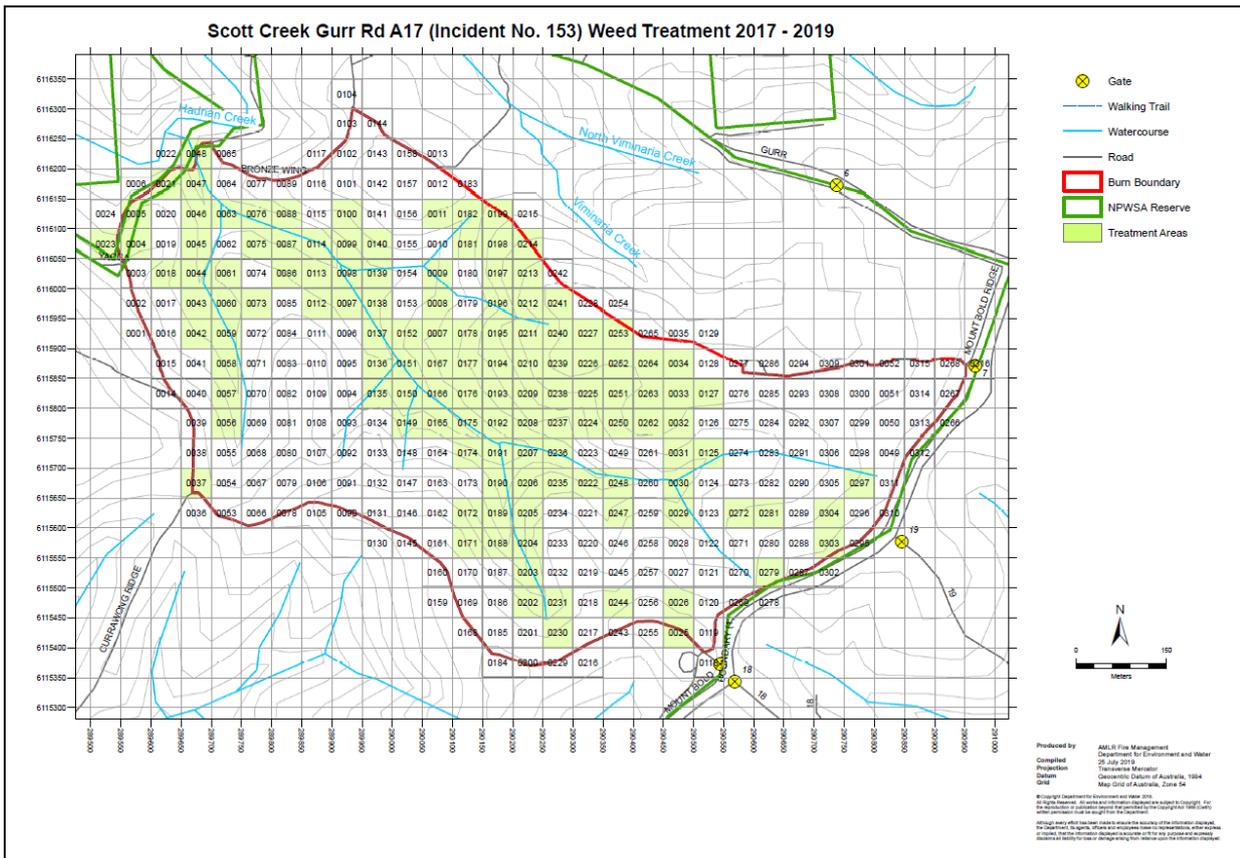
To keep accurate records of the weed control completed, the burn site is divided into 50m x 50m quadrats, and hours recorded for each weed species worked on within each quadrat. This is the most efficient method of tracking the amount of work done and where the main weed infestations are within the area. The green shading indicates quadrats where weeds have been treated, but others are still patrolled.



Above left: Australian Golden Orb-Weaving Spider (*Nephila edulis*).



Above right: Climbing Sundew (*Drosera macrantha* ssp. *planchonii*).



Some funding from the NR AMLR Volunteer Support Program again supported contractor work by South Australian Indigenous Flora, following up treatment of Blackberry along some of Bushrat Creek and its side gullies that were not burnt, in addition to opportunistic control of Montpellier Broom, Boneseed, South African Daisy and Fleabane. While the latter two are not priority weeds for control post-burn, it was good to get some of the larger infestations spot sprayed and outliers hand weeded to manage their dominance. Work was also done on the Erica forest north of the junction of Bushrat and North Bushrat Creeks.

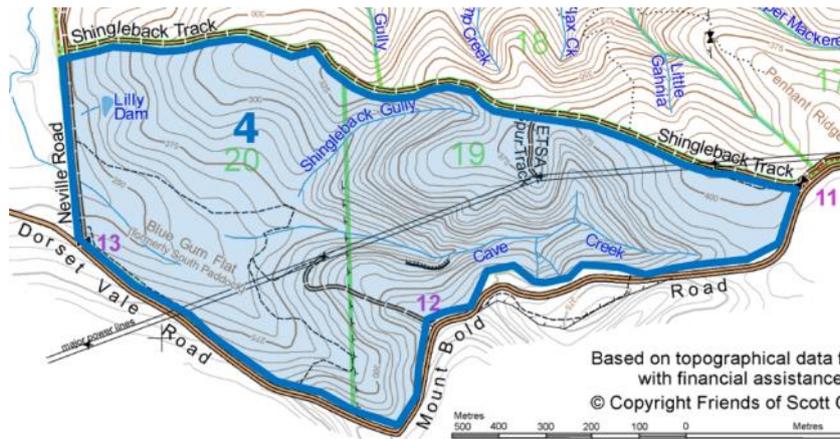
Scattered *Watsonia* at the top of Bushrat Creek near gate 7 was sprayed by Trees For Life Works with a selective herbicide. Funded by NR AMLR, *Watsonia* was targeted in several areas at this end of the Park.

With most weed control in this creek system done by the FMU, volunteers concentrated on the Erica patch near gate 7.

Right: The old stone ruins above Bushrat Creek.



Cave Creek System



This was the third year that contractors worked in Cave Creek but, with the extra Blackberry funding available from NR AMLR Sustainable Landscapes budget, it was decided to get the large infestation at the eastern creek junction sprayed by Environmental Contracting Services using long-line.

When a relatively large amount of funding becomes unexpectedly available, it is very welcome but does present a challenge. There is always the potential for treating more Blackberry than the Friends group can follow-up on. In this case however, we were confident that follow-up by contractors could be resourced with the funding from the third year of the three year Work Plan approved under the NR AMLR Land Management Program, plus the two \$10,000 donations, one of which is to be repeated in each of the next two years.

As mentioned earlier in this report, before the Blackberry was sprayed this year, BushRAT monitoring was undertaken in Cave Creek by Peter. This was to help monitor expected changes to bushland condition now that this major weed control was being programmed. The BushRAT assessment report can be found later in this Almanda Report.

Volunteers worked on Boneseed, Broadleaf Cotton-bush and Olive in a couple of working bees, on the northern side of Blue Gum Flats, below Shingleback Track. There was also some opportunistic removal of Boneseed, Montpellier Broom and small Olive during the field surveys undertaken as part of the BushRAT monitoring.

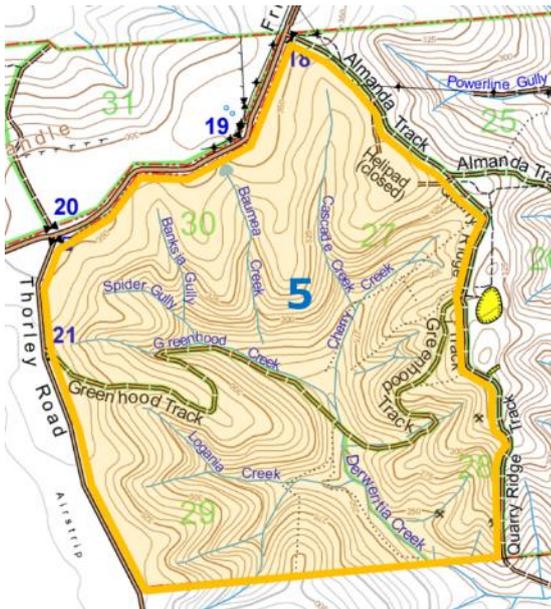


Above left: An Olive drilled and filled during a working bee in February.



Above right: Prickly Moses (*Acacia verticillata* ssp. *ovoidea*).

Derwentia Creek System



The Derwentia Creek System has all of its headwaters within the Park, bounded by ridgelines of Frith Road to the north, Thorley Road the west and Quarry Ridge Track to the east. This area of the Park has been managed by the Friends group for some time now, including follow-up spraying of Blackberry along the creeklines.

There is, however, an area up Cherry Creek that still required extra Blackberry work so, when the opportunity came up to have some additional spraying done by contractors, it was quickly taken up. A further part of the Carthew Foundation donation was used to engage Trees For Life Works to do the knapsack spraying, as

a part of several smaller spray jobs in the Park. This meant they could all be completed within a few days rather than over several weekends or even months, which would have been the case if the volunteers had to do it around other scheduled activities in the Park.

Three bush gardening activities were spent in this section of the Park. The main focus was patrolling for and treating regrowth and outlier Boneseed, Erica, Olive, Broadleaf Cotton-bush, Dog Rose and some smaller patches of Blackberry.



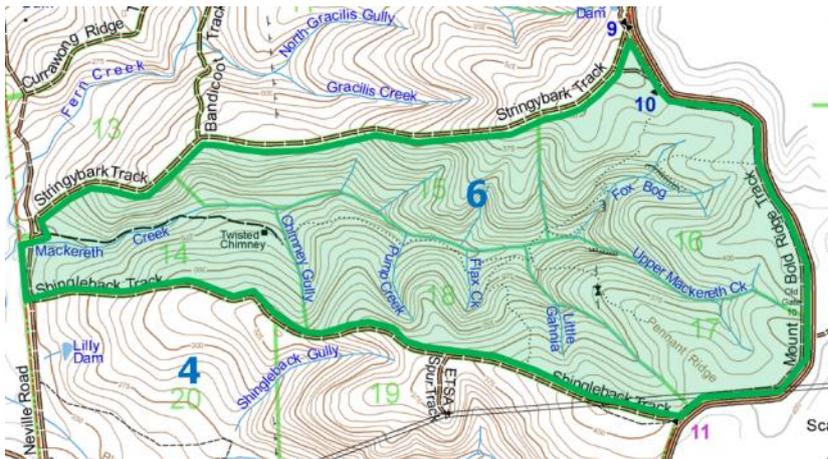
Right: Heigh-ho, Heigh-ho, it's home from work we go...back for morning tea...

Below left: Slender Mint (*Mentha diemenica*).

Below right: Sleepy Lizard.



Fox Bog and Mackereth Creek



There was additional funding put into Blackberry spraying in Fox Bog and Mackereth Creek this year. Funding came from the three year Work Plan, from the NR AMLR Volunteer Support Program for Fox Bog and Sustainable Landscapes for Mackereth Creek, working from the Twisted Chimney to about Flax Creek. From that point

upstream to the bottom of Fox Bog and into Upper Mackereth Creek, more funds were applied from the Carthew Foundation donation to pay for the work. This year the work was done by South Australian Indigenous Flora.

The follow-up spraying of Blackberry in Mackereth Creek, from Neville Road to the Twisted Chimney, was again undertaken by volunteers, with Peter and Glenn covering the ground from opposite ends. Boneseed was hand weeded opportunistically as they went. On a separate occasion they also sprayed Blackberry in the upper parts of Fox Bog, prior to the contractor work taking place. Other weeds worked on by the Friends during two bush gardening activities in Mackereth Creek were Boneseed, Dog Rose, Fleabane and Belladonna Lily.



Above left: Yellow-footed Antechinus.



Above right: Morning tea at the Twisted Chimney community log in February.

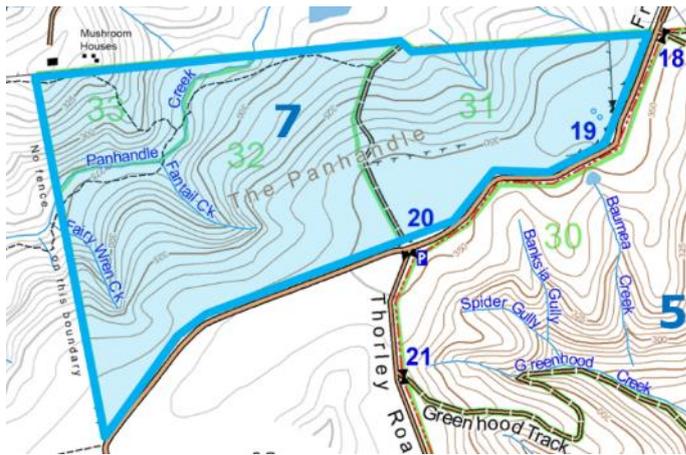
Last year it was reported that Peter was conducting a spray trial on an isolated patch of Periwinkle growing in a degraded area next to Mount Bold Ridge Track. On 17th October 2017, the area was divided into four, with one quadrat left as the control and the other three sprayed with different spray mixtures. The trial site was checked several times during the year before and, on 22nd September 2018, the middle treatment was assessed as having given the most thorough control. This mixture was 10ml/L glyphosate 360g/L plus 2ml/L Pulse. There appeared to be little benefit to adding metsulphuron methyl to the glyphosate, while the triclopyr control was a lot more patchy.

On the September 2018 visit, all trial quadrats, including the control, were sprayed with the glyphosate and Pulse mixture, with the results shown in the follow-up photos of 9th December 2018.

The aim of the trial was to see what would be the best treatment for Periwinkle in more sensitive areas of the Park. The triclopyr results suggest that this herbicide might still be worth applying as a first treatment in sensitive areas where we need to reduce off-target damage to sensitive native vegetation, in particular the herbaceous ground flora.

Weed Species		Control Method
Periwinkle		Spraying
South – 10L glyphosate 360g/L @ 100ml + metsulfuron methyl 600 @ 0.3g + Pulse @ 20ml	Middle – 10L glyphosate 360g/L @ 100ml + Pulse @ 20ml	North – 10L triclopyr 600 @ 17ml + Pulse @ 20ml
Approx 5x13x4x13=58.5m ²	Approx 3x14x2x13=33.75m ²	Approx 2x14x4x14=42m ²
Looking west	Looking west	Looking west
		
17 th October 2017	17 th October 2017	17 th October 2017
		
22 nd September 2018	22 nd September 2018	22 nd September 2018
		
9 th December 2018	9 th December 2018	9 th December 2018

Panhandle Creek System



The contractor work in the Panhandle was once again completed by Better Bushland.

Work funded by NR AMLR Volunteer Support Program focussed on follow-up of last year's Erica control and some isolated patches of Blackberry, Sollya and Boneseed in the north-west corner of the area. A reasonably large patch of Boneseed was also found and despatched on the east side of the

walking track. Once the follow-up had been completed, work moved on to extending the main Erica weed front. This work was complemented by the funding of more Erica control on the adjacent SA Water land to the west.

NR AMLR Sustainable Landscapes again funded Bridal Creeper spraying along the west side of the track from gate 20 to the northern fenceline and then west covering the lower part of the area. Several small patches of Watsonia were also sprayed in the north-west corner. Planned spraying of Montpellier Broom regrowth that had been slashed didn't eventuate, as there was little leaf on the plants following the long dry summer and grazing by Kangaroos.

There was one scheduled working bee in the Panhandle, including a patrol for Montpellier Broom regrowth through the northern edge of the area west of the gate 20 track. From there the team headed up the track towards the north-west corner of the area, where they patrolled for Boneseed, Erica and Sollya. Another informal patrol inside the fenceline next to Frith Road removed some Boneseed while taking waypoints to guide future contractor work on various larger woody weeds and more Bridal Creeper.

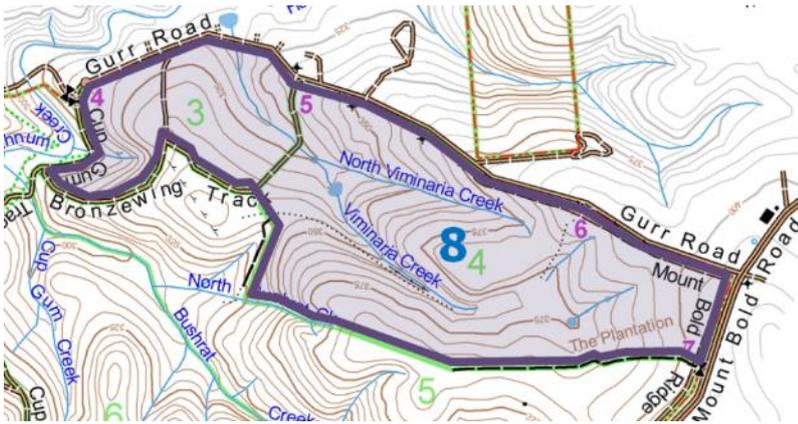


Above left: Bridal Creeper and other herbaceous weeds often grow around the base of Native Cherries (*Exocarpos cupressiformis*).



Above right: Blackberry has been regularly cut back from a walking trail leading to adjoining SA Water land, there is illegal horse riding in the Park here.

Viminaria Creek System



As part of the Watsonia control funded by NR AMLR, a number of patches, large and small, were sprayed with a selective herbicide in the section of Viminaria Creek system near Gurr Road.

There were three working bees scheduled in Viminaria Creek system, two working

between gates 5 and 6 on Gurr Road and a third in the bottom corner near gate 4. These activities concentrated on treatment of Boneseed, Erica, English Broom and *Acacia longifolia*. Smaller patches of Watsonia were also dug up and either bulbs removed or left to dry out on top of other vegetation or rocks. It is very important to ensure the bulbs and their roots are not left in contact with bare ground, otherwise the Watsonia can often take root again.

Peter followed up previous contractor work, spraying Blackberry growing in North Viminaria Creek, with one session working downstream from gate 6 and the other working upstream from gate 5. It was pleasing that just about the entire creekline was covered by two knapsacks of spraying (23 litres total), but will be good to follow-up next season again.

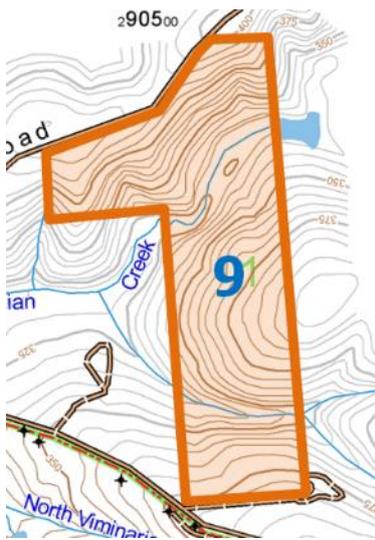
Right: Dragon-fly.

Below left: Watsonia near the northern Gurr Road fenceline prior to treatment.

Below right: The same area of Watsonia, sprayed one month earlier.



Number 1 Block



Trees For Life Works were again engaged to undertake contractor work in Number 1 Block this year. *Watsonia* was sprayed using a selective herbicide in the area between Gurr Road and the southern creekline and *Erica* was treated on the sides of this creekline, partly follow-up of previous work and partly primary control.

Blackberry was sprayed along the northern creekline using knap-sack sprayers, after the very successful long-line spraying last year. Woody weeds, including Montpellier Broom and *Erica*, were dealt with on the edges of the creek, and several very large Willows were drilled and filled in the creekline itself.

The contractor work was funded by NR AMLR Sustainable Landscapes and again added to other work done on adjacent private landholder properties.



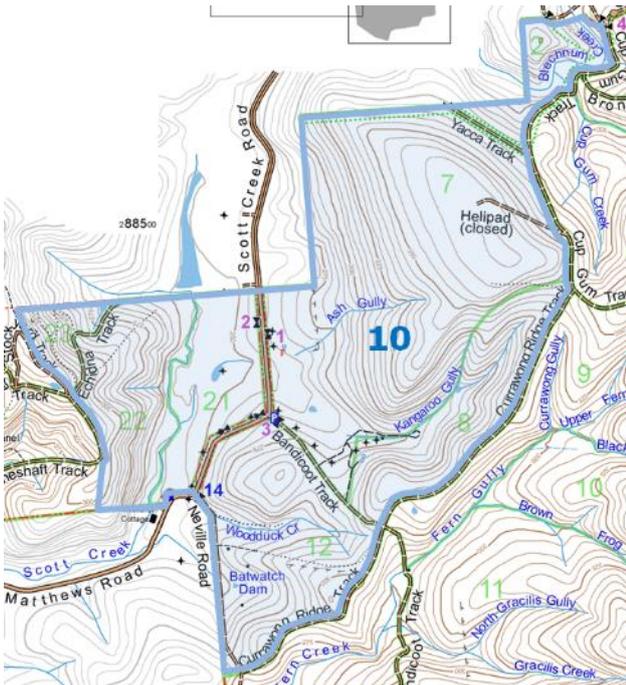
Above left & right: Large multi-stemmed Willows were drilled and filled in the northern creekline of Number 1 Block.

Below left: Leopard Sun-orchid (*Thelymitra benthamiana*).

Below right: The Broom Gall Mite (*Aceria genistae*) has appeared in populations of English Broom in the top of Number 1 Block.



Scott Creek System



NR AMLR Sustainable Landscapes funded work in Scott Creek by Trees For Life Works again this year. The Blackberry control up the western hillside last year was very successful, but alongside and in the creekline there was still a lot to do this year. In part this is simply because Scott Creek flows throughout the year. These creekline areas were a particular focus this year. Work on Willow and fruit trees were followed up and extended, with basal bark treatment used in most cases.

Work also continued in Blechnum Creek, which passes through the Park from the north, at the bottom of Gurr Road, and back out, through private property, from which it finds its way into Scott Creek

north of the Park. Blackberry and Montpellier Broom were both followed up within the western half of the creekline, but more is to be done in the north-eastern half.



Above left: The nationally endangered Southern Brown Bandicoot (*Isoodon obesulus obesulus*), Scott Creek CP is a stronghold of this species.

Above right: Bracken Fern (*Pteridium esculentum ssp. esculentum*).

Right: Spotted Donkey-orchid (*Diuris pardina*).



Trees For Life Works were contracted to treat Sollya, which flourished in the western slopes of Helipad Hill after a prescribed burn in 2007. This work was funded by the Adelaide Hills Council Community Development Grant, after the Friends group attempted to manage the infestation with a couple of working bees in each of the last two years, but were unable to get on top of it.

After the first working bee by volunteers this year, it was decided to spend the second one mapping the outer edges of the larger infestation for the contractors. Outliers and individuals that were found were treated, but the rest simply had waypoints recorded. These were provided to the contractor so that they could concentrate their efforts on the core area, which resulted in the most efficient use of available funding.

The Friends patrolled the top of Helipad Hill for Boneseed and *Acacia longifolia*, while Peter followed up his previous years' spraying of Blackberry in Kangaroo Gully. Another bush gardening activity was spent in the area surrounding Woodduck Creek, which included a visit to remove some of the Rock Rose growing at the old ranger house near gate 1. This patch was later sprayed in conjunction with the second of the above Sollya working bees. Being the first attempt to spray it, we are unsure how effective the treatment will be.

In the areas adjacent to Scott Creek itself, Glenn removed Aloe next to Scott Creek Road and spent the better part of a day working on Olive, Boneseed, Dog Rose and South African Daisy on the hillside between Mineshaft Track and the creekline. A group working bee worked in the north-east corner of the area, below Stockyard Track, where a wide variety of weeds were treated, including Boneseed, English and Montpellier Broom, and a few *Agapanthus*, Aloe and Aunt Eliza bulbs.



Above: Ants passing, like two ships in the night.

Above right: Grey Fan-tail.

Right: Pink Gum (*Eucalyptus fasciculosa*).





Above: Rough-bark Manna Gum (*Eucalyptus viminalis* ssp. *cygnetensis*) along Scott Creek.



Above left: These Erica looked like seedlings, but had been broken off above the lignotuber instead of below, so they survived and regrew from the base.



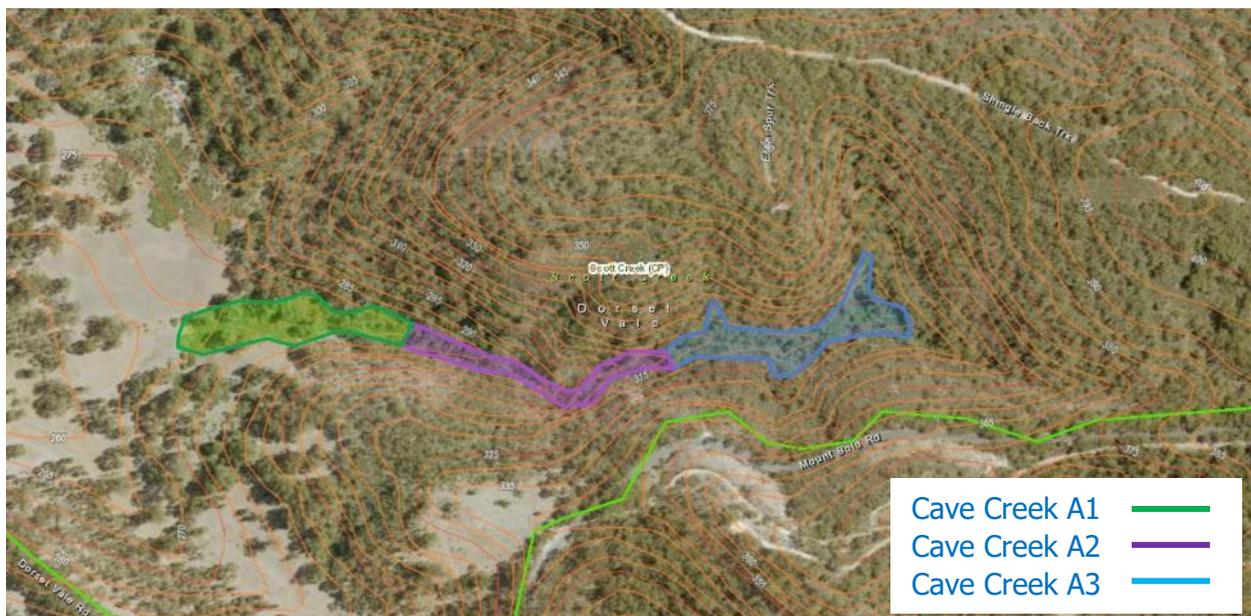
Above right: These germinating seeds from a Boneseed were spotted during a working bee, they were promptly removed and disposed of.

BushRAT Monitoring at Cave Creek

During the 2018-2019 financial year, additional funding was provided for work in Cave Creek, including long-line spray treatment of the major infestation located at the upper creekline junction. It was decided that BushRAT (Bushland Rapid Assessment Techniques) monitoring of the creek system should be a priority, to ensure expected significant changes in bushland condition were captured.

This creek system has not had primary Blackberry control done in the past, though the upper tributary to the north had knapsack spraying amongst Red-fruit Cutting-grass (*Gahnia sieberiana*) over the previous two years, to restrict its spread further up and beyond the creekline.

BushRAT is a method developed by the Native Vegetation Management Unit of the SA Department for Environment and Water (DEW), in conjunction with the Nature Conservation Society of South Australia (NCSSA) to assess the biodiversity value of patches of native vegetation. Different vegetation associations are identified within each patch and then linked with and compared to a 'benchmark' vegetation community in a relatively undisturbed state. Each identified vegetation association is termed a 'site', within which a representative one hectare quadrat is surveyed. One datasheet is completed for each site.



Three 'components' of the biodiversity value of the site are measured and scored: vegetation condition, conservation value and landscape context. Vegetation condition is the main component for which field data is gathered.

When assessing the vegetation associations, firstly the structural formation and dominant overstorey species is determined, of which there was only one in the Cave Creek system. Secondly, further divisions need to be made if the understorey is markedly different in species composition or condition. In this case, the understorey resulted in three separate vegetation associations being assessed.

The survey focused on the creekline itself and not the hillsides, which meant the sites were generally small, due to being linear and relatively short. In addition to the creekline, weed management will extend into the areas surrounding it.

Key Indicators

When a site is assessed using BushRAT, the condition attribute scores are assessed against the scores from the benchmark communities. Benchmark vegetation communities have been identified for South Australia, based on those developed by the NCSSA for its Bushland Condition Monitoring (BCM) method. The benchmarks represent each vegetation community in a relatively undisturbed state.

Native:exotic biomass – is a good way of quantifying the severity of weed infestation and the quality of a patch of native vegetation and can be used to gauge the success of long term management. If an area is in moderate condition it would be expected that a score of ≤ 5 (41-50% native) would be assigned, but if a severe weed infestation is occurring an area may receive a biomass score of 0-2 (0-20% native). It would be expected that over time, areas under management may increase in native biomass percentage and areas in already good condition with a score of ≥ 8 will be maintained (see Table).

Vegetation Association identified on site (refer to map)	Assigned "Benchmark" Vegetation Community (as per BCM)	Is the Benchmark Community the desired 'goal state'? Y/N (refer to 2.7)	Size (ha)	Vegetation Condition Score	Native:exotic Biomass	Conservation Significance Score	Landscape Context Score	Unit Biodiversity Score	Total Biodiversity Score
Cave Creek A1	SMLR 5.2 – Steep Creek in Stringybark Forest	Y	0.71	53	5	24	14	91	64.6
Cave Creek A2	SMLR 5.2 – Steep Creek in Stringybark Forest	Y	0.43	74	10	22	14	110	47.3
Cave Creek A3	SMLR 5.2 – Steep Creek in Stringybark Forest	Y	0.76	69	3	25	14	108	82.1

Regeneration – is another key indicator used to score indigenous perennial plant species regenerating. This is usually attributed to good management strategies and when native biomass begins to increase from a poorer condition.

Weed scores – this category is also another key indicator of habitat condition and response to management. Weed scores are the total cover multiplied by the threat category. The total is then given a score on a scale of 0-15. For example, for SMLR 5.2 – Steep Creekline in Stringybark Forest, if the score equals 54+ the score assigned is zero, but if the total equals 22-24 then a score of 8 is assigned, 0-6 a score of 15. The higher the score, therefore, indicates lower weed cover and/or not many red alert weeds. Refer to scoresheets at the bottom of each report.

Name of site: Cave Creek A1**Location:** Western end of Cave Creek

Description of Vegetation Association and species: *Eucalyptus viminalis* ssp. *cygnetensis* (Rough-bark Manna Gum) +/- *E. fasciculosa* (Pink Gum) & *E. leucoxylon* ssp. *leucoxylon* (South Australian Blue Gum) Open Woodland over a creekline with a dominant layer of *Pteridium esculentum* ssp. *esculentum* (Bracken Fern) and *Rubus anglocandicans* (Blackberry) with areas of *Leptospermum continentale* (Prickly Tea-tree) becoming more dominant as the gully narrows in the eastern part of this zone. Here the native understorey becomes more diverse, including *Bursaria spinosa* ssp. *spinosa*, (Sweet Bursaria), *Banksia marginata* (Silver Banksia) and *Gahnia sieberiana* (Red-fruit Cutting-grass) and a variety of other shrubs, grasses, rushes and sedges.

Conservation Significance Data:

Plant species	Common Name	Recorded during survey (Y)	Recent ⁹ BDBSA data/ other source (Y)	Conservation status		
				AUS	SA	AMLR
<i>Acrotriche fasciculiflora</i>	Mount Lofty Ground-berry	Y				RA
<i>Austrostipa setacea</i>	Corkscrew Spear-grass	Y				NT
<i>Dichelachne rara</i>	Loose Plume-grass	Y				NT
<i>Eucalyptus fasciculosa</i>	Pink Gum	Y			R	NT
<i>Eucalyptus leucoxylon</i> ssp. <i>leucoxylon</i>	South Australian Blue Gum	Y				NT
<i>Eucalyptus viminalis</i> ssp. <i>cygnetensis</i>	Rough-bark Manna Gum	Y				NT
<i>Gahnia sieberiana</i>	Red-fruit Cutting-grass	Y				NT
<i>Pelargonium littorale</i>	Native Pelargonium	Y				NT
<i>Prostanthera behriana</i>	Downy Mintbush	Y				RA
<i>Senecio phelleus</i>	Woodland Groundsel	Y				NT
Fauna species	Common Name	Recorded during survey (Y)	Suitable habitat &/ or recent BDBSA data (Y)	Conservation status		
				AUS	SA	AMLR
<i>Antechinus flavipes</i>	Yellow-footed Antechinus		Y		V	RA
<i>Calamanthus pyrrhopygius parkeri</i>	Chestnut-rumped Heathwren (Mount Lofty Ranges ssp)		Y	EN	E	EN
<i>Calyptorhynchus funereus</i>	Yellow-tailed Black-Cockatoo		Y		V	VU
<i>Chalcites lucidus</i>	Shining Bronze-cuckoo		Y			RA
<i>Corcorax melanorhamphos</i>	White-winged Chough		Y		R	RA
<i>Falcunculus frontatus</i>	Crested Shrike-tit		Y		R	EN
<i>Isoodon obesulus obesulus</i>	Southern Brown Bandicoot (SA Mainland)		Y	EN	V	EN
<i>Petroica boodang</i>	Scarlet Robin		Y			VU
<i>Phaps elegans</i>	Brush Bronzewing		Y			RA
<i>Pseudocheirus peregrinus</i>	Common Ringtail Possum		Y			RA
<i>Pseudophryne bibroni</i>	Brown Toadlet		Y		R	VU
<i>Rattus fuscipes</i>	Bush Rat		Y			RA
<i>Trichosurus vulpecula</i>	Common Brushtail Possum		Y		R	RA
<i>Zoothera lunulata</i>	Bassian Thrush		Y	VU	R	EN
Vegetation Association				Conservation status		
				AUS	SA	
<i>Eucalyptus viminalis</i> ssp. <i>cygnetensis</i> and/or <i>E. viminalis</i> ssp. <i>viminalis</i> Woodland					V	

AUS= EPBC Act Status, **SA**=South Australia NPW Act Status, **AMLR** = Regional Status for Adelaide and Mount Lofty Ranges¹⁰; RE = Regionally Extinct, CR = Critically Endangered, E or EN = Endangered, V or VU = Vulnerable, R or RA = Rare, NT = Near Threatened, LC = Least Concern, DD = Data Deficient, NE = Not Evaluated

⁹ Biological Databases of South Australia, DEWNR, Adelaide.

¹⁰ Definitions as per IUCN Red List Categories and Criteria, ratings from Gillam, S. and Urban, R. (2014) *Regional Species Conservation Assessment Project, Phase 1 Report: Regional Species Status Assessments, Adelaide and Mount Lofty Ranges NRM Region*. DEWNR, South Australia.

Site photograph location: Zone 54 H Easting 289386 Northing 6113742 (west)



Top 5 weeds to control:

Scientific Name	Common Name	Red Alert Weed? Y/N	Declared Plant? Y/N	Cover Rating	Threat Category
<i>*Rubus anglocandicans</i>	Blackberry	Y	Y	4	5
<i>*Asparagus asparagoides</i> f. <i>asparagoides</i>	Bridal Creeper	Y	Y	1a	5
<i>*Olea europaea</i> ssp. <i>europaea</i>	Olive	Y	Y	1	4
<i>*Genista monspessulana</i>	Montpellier Broom	Y	Y	1a	4
<i>*Rosa canina</i>	Dog Rose	Y	Y	1a	3

Management issues:

This part of the creek system appears to have been subjected to significant disturbances in the past, including grazing and other clearance, which has resulted in the presence of more exotic species than further upstream. The creekline has been eroded to create a deep channel at the western end, as it passes out of the gully surrounded by Stringybark Forest and into Blue Gum Flat. This may have been caused by the historical clearance of the native riparian vegetation, which would have previously maintained a stable creekline that resisted erosion.

The dominance of Blackberry in this western area, within the creekline itself and extending either side, will require significant long-term management and follow-up to achieve restoration goals, but it a lower priority than restoration of Cave Creek in the other two zones upstream. Initially, management should concentrate on woody weeds, like Montpellier Broom, Olive and Dog Rose, which occur in relatively low numbers, and control of Bridal Creeper. Blackberry management in the future could start in the eastern parts to push the weed front back downstream and from the hillsides back into the main creekline.



Above: Extensive Blackberry infestation amongst Bracken Fern, lower end of Cave Creek.

Below: View upstream, Blackberry more confined to the creekline itself, with Bracken Fern either side.



Plant Species List¹¹:

Scientific Name	Common Name	Conservation Status		
		AUS	SA	AMLR
<i>Acacia pycnantha</i>	Golden Wattle			LC
<i>Acaena echinata</i>	Sheep's Burr			LC
<i>Acaena novae-zelandiae</i>	Biddy-biddy			LC
<i>Acrotriche fasciculiflora</i>	Mount Lofty Ground-berry			RA
<i>Amyema miquelii</i>	Box Mistletoe			LC
<i>Austrostipa setacea</i>	Corkscrew Spear-grass			NT
<i>Banksia marginata</i>	Silver Banksia			LC
<i>Billardiera cymosa</i> ssp. <i>cymosa</i>	Sweet Apple-berry			LC
<i>Bursaria spinosa</i> ssp. <i>spinosa</i>	Sweet Bursaria			LC
<i>Carex appressa</i>	Tall Sedge			LC
<i>Carex breviculmis</i>	Short-stem Sedge			LC
<i>Carex tereticaulis</i>	Rush Sedge			LC
<i>Cassytha pubescens</i>	Downy Dodder-laurel			LC
<i>Dichelachne rara</i>	Loose Plume-grass			NT
<i>Dichondra repens</i>	Kidney Weed			LC
<i>Eucalyptus fasciculosa</i>	Pink Gum		R	NT
<i>Eucalyptus leucoxylon</i> ssp. <i>leucoxylon</i>	South Australian Blue Gum			NT
<i>Eucalyptus obliqua</i>	Messmate Stringybark			LC
<i>Eucalyptus viminalis</i> ssp. <i>cygnetensis</i>	Rough-bark Manna Gum			NT
<i>Exocarpos cupressiformis</i>	Native Cherry			LC
<i>Gahnia sieberiana</i>	Red-fruit Cutting-grass			NT
<i>Geranium retrorsum</i>	Grassland Geranium			LC
<i>Hibbertia exutiacies</i>	Prickly Guinea-flower			LC
<i>Hypericum gramineum</i>	Small St John's Wort			LC
<i>Ixodia achillaeoides</i> ssp. <i>alata</i>	Hills Daisy			LC
<i>Juncus pallidus</i>	Pale Rush			LC
<i>Juncus subsecundus</i>	Finger Rush			LC
<i>Leptospermum continentale</i>	Prickly Tea-tree			LC
<i>Microlaena stipoides</i> var. <i>stipoides</i>	Weeping Rice-grass			LC
<i>Oxalis perennans</i>	Native Sorrel			LC
<i>Pelargonium littorale</i>	Native Pelargonium			NT
<i>Pimelea linifolia</i> ssp. <i>linifolia</i>	Slender Riceflower			LC
<i>Prostanthera behriana</i>	Downy Mintbush			RA
<i>Pteridium esculentum</i> ssp. <i>esculentum</i>	Bracken Fern			LC
<i>Pultenaea daphnoides</i>	Large-leaf Bush Pea			LC
<i>Rytidosperma</i> sp.	Wallaby-grass			LC
<i>Senecio hispidissimus</i>	Rough Groundsel			LC
<i>Senecio phelleus</i>	Woodland Groundsel			NT
<i>Senecio picridioides</i>	Purple-leaf Groundsel			LC
<i>Xanthorrhoea semiplana</i> ssp. <i>semiplana</i>	Yacca			LC

¹¹ AUS= EPBC Act Status, SA=South Australia NPW Act Status, AMLR = Regional Status for Adelaide Mount Lofty Ranges

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Weeds, threat categories and cover ratings:

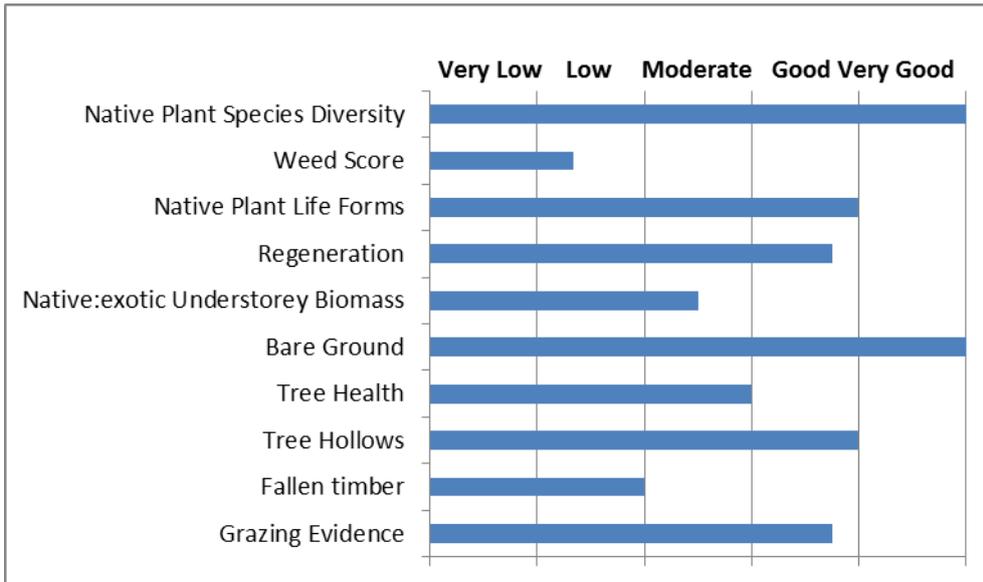
Scientific Name	Common Name	Status	Threat Rating	Cover Rating
<i>*Aira cupaniana</i>	Small Hair-grass		1	1a
<i>*Aira elegantissima</i>	Delicate Hair-grass		1	1a
<i>*Amaryllis belladonna</i>	Belladonna Lily		-	1a
<i>*Anthoxanthum odoratum</i>	Sweet Vernal Grass		3	1a
<i>*Asparagus asparagoides</i> f. <i>asparagoides</i>	Bridal Creeper	Declared	5	1a
<i>*Avena barbata</i>	Bearded Oat		2	1a
<i>*Briza maxima</i>	Large Quaking-grass		2	1a
<i>*Briza minor</i>	Lesser Quaking-grass		2	1a
<i>*Bromus diandrus</i>	Great Brome		1	1a
<i>*Carduus tenuiflorus</i>	Slender Thistle	Declared	2	1
<i>*Cirsium vulgare</i>	Spear Thistle	Declared	2	1
<i>*Cynosurus echinatus</i>	Rough Dog's-tail Grass		2	1a
<i>*Echium plantagineum</i>	Salvation Jane	Declared	2	1a
<i>*Ehrharta longiflora</i>	Annual Veldt Grass		2	1a
<i>*Galium aparine</i>	Cleavers		1	1
<i>*Genista monspessulana</i>	Montpellier Broom	Declared	4	1a
<i>*Holcus lanatus</i>	Yorkshire Fog		2	1a
<i>*Hypericum perforatum</i>	St John's Wort		3	1a
<i>*Hypochaeris radicata</i>	Rough Cat's Ear		2	1a
<i>*Lolium rigidum</i>	Rye Grasses		1	1a
<i>*Olea europaea</i> ssp. <i>europaea</i>	Olive	Declared	4	1
<i>*Pentameris pallida</i>	Pussy Tail		3	1a
<i>*Phalaris aquatica</i>	Phalaris		3	1a
<i>*Rosa canina</i>	Dog Rose	Declared	3	1
<i>*Rosa rubiginosa</i>	Sweet Briar	Declared	3	1
<i>*Rubus anglocandicans</i>	Blackberry	Declared	5	4
<i>*Rumex vulgaris</i>	Sorrel		1	1a
<i>*Senecio pterophorus</i>	African Daisy		3	1a
<i>*Solanum nigrum</i>	Black Nightshade		2	1a
<i>*Sonchus oleraceus</i>	Common Sow-thistle		1	1a
<i>*Stellaria media</i>	Chickweed		1	1a
<i>*Trifolium campestre</i>	Hop Clover		2	1a
<i>*Trifolium repens</i>	White Clover		2	1a
<i>*Vicia sativa</i> ssp. <i>sativa</i>	Common Vetch		2	1a

Right: Striated Pardalote.



BushRAT Score Sheet:

NVBMU Biodiversity Rapid Assessment Summary Scoresheet			
SITE: Scott Creek CP Cave Creek A1		RECORDER: PW DATE: 3-10/12/2018	
DESCRIPTION: Eucalyptus viminalis, E. obliqua, E. leucoxylon & E. fasciculosa Open Woodland / Gully Forest		BCM CODE: SMLR 5.2 - Steep Creekline in Stringybark Forest	
VEGETATION CONDITION SCORE (max. in brackets)		LANDSCAPE CONTEXT SCORE	
Native Plant Species Diversity (15) 40	15	2 pts if site is the only substantial connection between 2 or more remnants ¹	
Weed Score (15) 35	4	>20 ha, 1 pt if site is degraded (scattered trees in part, fragmented etc)	2
Native Plant Life Forms (10) 21	8	Site Shape Score	
Regeneration (8) 6	6	3 pts if Cleared perimeter:Area (km/km ²)<6, 2 pts if P:A 6 to<12, 1pt if P:A 12 to <18	3
Native:exotic Understorey Biomass (10)	5	Size of remnant¹ patch (incl. native veg on adjacent properties) score	
Bare Ground (3)	3	Patch size less than 2 ha 0 pts	
Tree Health (5)	3	Patch size 2-5 ha 1 pt	
Tree Hollows (5)	4	Patch size 5-10 ha 2 pts	
Fallen timber (5)	2	Patch size 10-20 ha 3 pts	
Grazing Evidence (4)	3	Patch size 20-100 ha 4 pts	
TOTAL (ADD UP ALL POINTS)	53	Patch size 100-500 ha 5 pts	
If community is naturally treeless x TOTAL by 1.23		Patch size >500 ha 6 pts	6
If community is not benchmarked for regen x 1.11		Distance to remnant area of more than 50 hectares score	
ADJUSTED TOTAL SCORE	53	>3km 0 pts	
		1-3km 1 pt	
CONSERVATION SIGNIFICANCE SCORE:	score	<1km 2 pts	
2 pts for each State-R, 4 pts for each State-V, 6 pts for each State-E or Nationally-V, 8 pts for each Nationally-E ecosystem/ecological community.	2	contiguous 3 pts	3
2 pts for each State-R, 4 pts for each State-V, 6 pts for each State-E or Nationally-V, 8 pts for each Nationally-E plant species present ² .	2	LANDSCAPE CONTEXT SCORE	14
1 pt for each State-R, 2 pts for each State-V, 3 pts for each State-E or Nationally-V, 4 pts for each Nationally-E fauna species for which suitable habitat is present. Double points for a sighting. ³	18	Sum adjusted Vegetation Condition, Conservation significance and Landscape Context Scores for the UNIT BIODIVERSITY SCORE	
% native vegetation remaining in IBRA Assoc. 0-2% = 5 pts; >2-5% = 4 pts; >5-10% = 3 pts; >10-20%= 2 pts; >20-50%= 1 pt; >50% = 0 pts	1		
1 pt if Site contains a riparian zone, 2 pts if contains swamp/wetland (+/- riparian zone)	1		
CONSERVATION SIGNIFICANCE SCORE	24		
		Total Biodiversity Score (UBS x size)	
		64.6	
Cleared perimeter(m)	Size(ha)	P:A Ratio	
0	0.71	0.00	
Total no. native species	Adjust for Spring⁴	Environmental Association	
40		Clarendon	
Weed species (Top 5 Cover x Invasiveness, annuals in bold)	Cover (max. 6)	Invasive Threat Category (max. 5)	C x I
<i>Rubus</i> sp.	4	5	20
<i>Asparagus asparagoides</i> f. <i>asparagoides</i>	1	5	5
<i>Genista monspessulana</i>	1	4	4
<i>Olea europaea</i> ssp. <i>europaea</i>	1	4	4
<i>Rosa canina</i>	1	3	3
		Total Cover x Threat Invasion	36



Above left: Downy Mintbush (*Prostanthera behriana*).

Below left: New Holland Honeyeater with a breakfast snack.



Above right: Digging may be evidence of small native mammal presence.

Below right: Prickly Guinea-flower (*Hibbertia exutiacies*).



Name of site: Cave Creek A2

Location: Mid-section of Cave Creek

Description of Vegetation Association and species:

Eucalyptus fasciculosa (Pink Gum) +/- *E. obliqua* (Messmate Stringybark) Open Woodland over a steep creekline with heathy understorey including *Banksia marginata* (Silver Banksia), *Bursaria spinosa* ssp. *spinosa* (Sweet Bursaria), *Hibbertia* spp. (Guinea-flower), *Leptospermum continentale* (Prickly Tea-tree), *Olearia ramulosa* (Twiggy Daisy-bush), *Lepidosperma viscidum* (Sticky Sword-sedge) and a variety of other shrubs, grasses, herbs, rushes and sedges. The central part of this zone narrows to a steep, rocky cascading creekline with few trees and larger shrubs.

Conservation Significance Data:

Plant species	Common Name	Recorded during survey (Y)	Recent ¹² BDBSA data/ other source (Y)	Conservation status		
				AUS	SA	AMLR
<i>Acacia verticillata</i> ssp. <i>ovoidea</i>	Prickly Moses	Y				NT
<i>Acaena ovina</i>	Downy Sheep's Burr	Y				NT
<i>Acrotriche fasciculiflora</i>	Mount Lofty Ground-berry	Y				RA
<i>Arthropodium fimbriatum</i>	Nodding Vanilla-lily	Y				NT
<i>Austrostipa setacea</i>	Corkscrew Spear-grass	Y				NT
<i>Eucalyptus fasciculosa</i>	Pink Gum	Y			R	NT
<i>Euchiton involucreatus</i>	Star Cudweed	Y				NT
<i>Glyceria australis</i>	Australian Sweet-grass	Y				VU
<i>Juncus pauciflorus</i>	Loose-flower Rush	Y				NT
<i>Spyridium parvifolium</i>	Dusty Miller	Y				NT
<i>Tricoryne elatior</i>	Yellow Rush-lily	Y				NT
Fauna species	Common Name	Recorded during survey (Y)	Suitable habitat &/ or recent BDBSA data (Y)	Conservation status		
				AUS	SA	AMLR
<i>Antechinus flavipes</i>	Yellow-footed Antechinus		Y		V	RA
<i>Calamanthus pyrrhopygius parkeri</i>	Chestnut-rumped Heathwren (ML Ranges ssp)		Y	EN	E	EN
<i>Calyptorhynchus funereus</i>	Yellow-tailed Black-Cockatoo		Y		V	VU
<i>Chalcites lucidus</i>	Shining Bronze-cuckoo		Y			RA
<i>Corcorax melanorhamphos</i>	White-winged Chough		Y		R	RA
<i>Falcunculus frontatus</i>	Crested Shrike-tit		Y		R	EN
<i>Isoodon obesulus obesulus</i>	Southern Brown Bandicoot (SA Mainland)		Y	EN	V	EN
<i>Petroica boodang</i>	Scarlet Robin		Y			VU
<i>Phaps elegans</i>	Brush Bronzewing		Y			RA
<i>Pseudocheirus peregrinus</i>	Common Ringtail Possum		Y			RA
<i>Pseudophryne bibroni</i>	Brown Toadlet		Y		R	VU
<i>Rattus fuscipes</i>	Bush Rat		Y			RA
<i>Trichosurus vulpecula</i>	Common Brushtail Possum		Y		R	RA
<i>Zoothera lunulata</i>	Bassian Thrush		Y	VU	R	EN
Vegetation Association				Conservation status		
				AUS	SA	

AUS= EPBC Act Status, **SA**=South Australia NPW Act Status, **AMLR** = Regional Status for Adelaide and Mount Lofty Ranges¹³

RE = Regionally Extinct, CR = Critically Endangered, E or EN = Endangered, V or VU = Vulnerable, R or RA = Rare, NT = Near Threatened, LC = Least Concern, DD = Data Deficient, NE = Not Evaluated

¹² Biological Databases of South Australia, DEWNR, Adelaide.

¹³ Definitions as per IUCN Red List Categories and Criteria, ratings from Gillam, S. and Urban, R. (2014) *Regional Species Conservation Assessment Project, Phase 1 Report: Regional Species Status Assessments, Adelaide and Mount Lofty Ranges NRM Region*. Department of Environment, Water and Natural Resources, South Australia.

Site photograph location: Zone 54 H Easting 289519 Northing 6113696 (east)



Top 5 weeds to control:

Scientific Name	Common Name	Red Alert Weed? Y/N	Declared Plant? Y/N	Cover Rating	Threat Category
<i>*Rubus anglocandicans</i>	Blackberry	Y	Y	2	5
<i>*Olea europaea</i> ssp. <i>europaea</i>	Olive	Y	Y	1	4
<i>*Chrysanthemoides monilifera</i> ssp. <i>monilifera</i>	Boneseed	Y	Y	1a	4
<i>*Erica arborea</i>	Tree Heath	Y	Y	1a	4
<i>*Rosa canina</i>	Dog Rose	Y	Y	1a	3

Management issues:

This part of the creek system is the most intact and least disturbed and weedy. There is a relatively small area below the rocky cascade where most of the woody weeds occur (waypoint 54 H 289559 6113692). Blackberry appears as only small scattered outliers along most of the creekline itself, but there is a larger patch below the cave in the rocky escarpment on the south side of the creekline (waypoint 54 H 289580 6113673), which occurs where a small dam wall had been built across the creek using rock and stone. A number of valuable native riparian plants, including Australian Sweet-grass also occur here.

The high diversity of native riparian plant species and heathy understorey makes control of Blackberry and all woody weeds a high priority in this zone.



Above left: The area behind the dam has a small patch of Australian Sweet-grass.



Above right: The small rock wall that was built to dam Cave Creek.

Plant Species List¹⁴:

Scientific Name	Common Name	Conservation Status		
		AUS	SA	AMLR
<i>Acacia pycnantha</i>	Golden Wattle			LC
<i>Acacia verticillata</i> ssp. <i>ovoidea</i>	Prickly Moses			NT
<i>Acaena ovina</i>	Downy Sheep's Burr			NT
<i>Acrotriche fasciculiflora</i>	Mount Lofty Ground-berry			RA
<i>Acrotriche serrulata</i>	Cushion Ground-berry			LC
<i>Allocasuarina muelleriana</i> ssp. <i>muelleriana</i>	Common Oak-bush			LC
<i>Arthropodium fimbriatum</i>	Nodding Vanilla-lily			NT
<i>Arthropodium strictum</i>	Common Vanilla-lily			LC
<i>Austrostipa setacea</i>	Corkscrew Spear-grass			NT
<i>Banksia marginata</i>	Silver Banksia			LC
<i>Bursaria spinosa</i> ssp. <i>spinosa</i>	Sweet Bursaria			LC
<i>Carex breviculmis</i>	Short-stem Sedge			LC
<i>Cassytha glabella</i> f. <i>dispar</i>	Slender Dodder-laurel			LC
<i>Cassytha pubescens</i>	Downy Dodder-laurel			LC
<i>Centrolepis strigosa</i> ssp. <i>strigosa</i>	Hairy Centrolepis			LC
<i>Chamaescilla corymbosa</i> var. <i>corymbosa</i>	Blue Squill			LC
<i>Cheilanthes austrotenuifolia</i>	Annual Rock-fern			LC
<i>Coronidium scorpioides</i>	Button Everlasting			LC
<i>Deyeuxia quadriseta</i>	Reed Bent-grass			LC
<i>Dianella revoluta</i> var. <i>revoluta</i>	Black-anther Flax-lily			LC
<i>Drosera auriculata</i>	Tall Sundew			LC

¹⁴ AUS= EPBC Act Status, SA=South Australia NPW Act Status, AMLR = Regional Status for Adelaide Mount Lofty Ranges

RE = Regionally Extinct, CR = Critically Endangered, E or EN = Endangered, V or VU = Vulnerable, R or RA = Rare, NT = Near Threatened, LC = Least Concern, DD = Data Deficient, NE = Not Evaluated, * = Introduced species

<i>Eleocharis acuta</i>	Common Spike-rush			LC
<i>Eucalyptus cosmophylla</i>	Cup Gum			LC
<i>Eucalyptus fasciculosa</i>	Pink Gum		R	NT
<i>Eucalyptus obliqua</i>	Messmate Stringybark			LC
<i>Euchiton collinus</i>	Creeping Cudweed			LC
<i>Euchiton involucratus</i>	Star Cudweed			NT
<i>Glyceria australis</i>	Australian Sweet-grass			VU
<i>Gonocarpus mezianus</i>	Broad-leaf Raspwort			LC
<i>Gonocarpus tetragynus</i>	Small-leaf Raspwort			LC
<i>Goodenia ovata</i>	Hop Goodenia			LC
<i>Gratiola peruviana</i>	Austral Brooklime			LC
<i>Hakea rostrata</i>	Beaked Hakea			LC
<i>Hibbertia exutiacies</i>	Prickly Guinea-flower			LC
<i>Hibbertia riparia</i>	Bristly Guinea-flower			LC
<i>Juncus pauciflorus</i>	Loose-flower Rush			NT
<i>Lachnagrostis filiformis</i>	Common Blown-grass			LC
<i>Lepidosperma semiteres</i>	Wire Rapier-sedge			LC
<i>Lepidosperma viscidum</i>	Sticky Sword-sedge			LC
<i>Leptospermum continentale</i>	Prickly Tea-tree			LC
<i>Leptospermum myrsinoides</i>	Heath Tea-tree			LC
<i>Lysiana exocarpi</i> ssp. <i>exocarpi</i>	Harlequin Mistletoe			LC
<i>Lythrum hyssopifolia</i>	Lesser Loosestrife			LC
<i>Microlaena stipoides</i> var. <i>stipoides</i>	Weeping Rice-grass			LC
<i>Olearia ramulosa</i>	Twiggy Daisy-bush			LC
<i>Pimelea humilis</i>	Low Riceflower			LC
<i>Pimelea linifolia</i> ssp. <i>linifolia</i>	Slender Riceflower			LC
<i>Platylobium obtusangulum</i>	Holly Flat-pea			LC
<i>Pteridium esculentum</i> ssp. <i>esculentum</i>	Bracken Fern			LC
<i>Ranunculus lappaceus</i>	Native Buttercup			LC
<i>Rytidosperma</i> sp.	Wallaby-grass			
<i>Schoenus apogon</i>	Common Bog-rush			LC
<i>Spyridium parvifolium</i>	Dusty Miller			NT
<i>Thelymitra</i> sp.	Sun-orchid			
<i>Themeda triandra</i>	Kangaroo Grass			LC
<i>Thysanotus patersonii</i>	Twining Fringe-lily			LC
<i>Tricoryne elatior</i>	Yellow Rush-lily			NT
<i>Xanthorrhoea semiplana</i> ssp. <i>semiplana</i>	Yacca			LC

Right: Common Bronzewing.

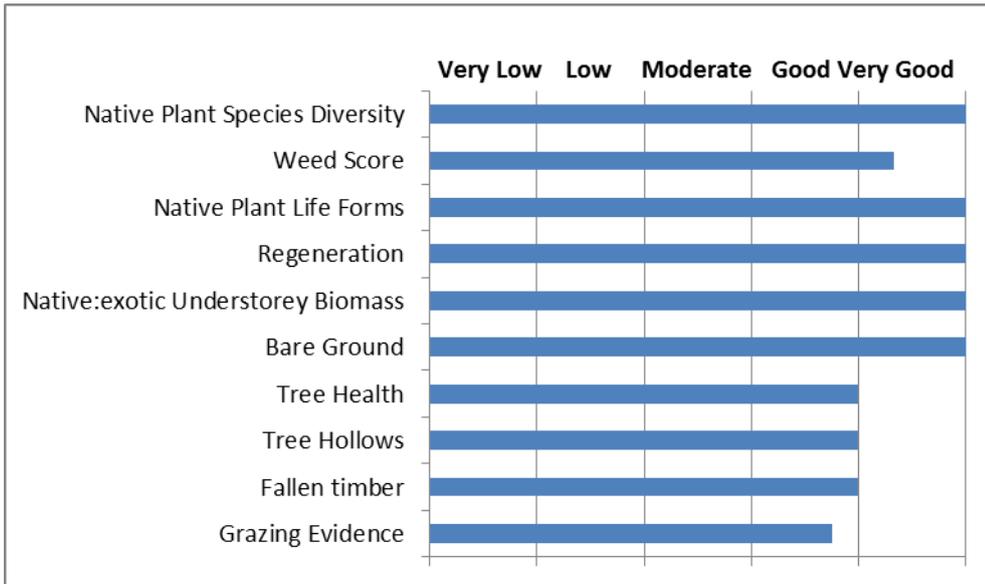


Weeds, threat categories and cover ratings:

Scientific Name	Common Name	Status	Threat Rating	Cover Rating
<i>*Chrysanthemoides monilifera</i> ssp. <i>monilifera</i>	Boneseed	Declared	4	1a
<i>*Erica arborea</i>	Tree Heath	Declared	4	1a
<i>*Hypochaeris glabra</i>	Smooth Cat's Ear		1	1a
<i>*Isolepis lavynsiana</i>	Tiny Flat-sedge		2	1a
<i>*Isolepis marginata</i>	Little Club-rush		2	1a
<i>*Olea europaea</i> ssp. <i>europaea</i>	Olive	Declared	4	1
<i>*Pentameris pallida</i>	Pussy Tail		3	1a
<i>*Plantago lanceolata</i> var. <i>lanceolata</i>	Ribwort		2	1a
<i>*Rosa canina</i>	Dog Rose	Declared	3	1a
<i>*Rubus anglocandicans</i>	Blackberry	Declared	5	2
<i>*Senecio pterophorus</i>	African Daisy		3	1a



Above: View from Cave Creek up to the cave after which it is named.



Above left: Downy Sheep's Burr (*Acaena ovina*).

Below left: Fungi.



Above right: Nodding Vanilla-lily (*Arthropodium fimbriatum*).

Below right: Beaked Hakea (*Hakea rostrata*).



Name of site: Cave Creek A3**Location:** Eastern end of Cave Creek**Description of Vegetation Association and species:**

Eucalyptus obliqua (Messmate Stringybark) +/- *E. fasciculosa* (Pink Gum) Open Woodland over a creek system that is dominated by *Rubus anglocandicans* (Blackberry). The Blackberry is growing amongst *Gahnia sieberiana* (Red-fruit Cutting-grass) in the creekline, either side of a broad triangular area at the junction of the two feeder creeklines at the top of the system. This has a number of *Salix cinerea* (Grey Sallow) and *Olea europaea* ssp. *europaea* (Olive) emerging from the Blackberry. The Blackberry extends through heathy understorey up the lower side slopes of the valley. Understorey species include *Acacia* spp. (Wattle), *Banksia marginata* (Silver Banksia), *Bursaria spinosa* ssp. *spinosa* (Sweet Bursaria), *Platylobium obtusangulum* (Holly Flat-pea), a small patch of *Leptospermum lanigerum* (Silky Tea-tree) and variety of other shrubs, grasses, herbs, rushes and sedges.

Conservation Significance Data:

Plant species	Common Name	Recorded during survey (Y)	Recent ¹⁵ BDBSA data/ other source (Y)	Conservation status		
				AUS	SA	AMLR
<i>Acacia provincialis</i>	Swamp Wattle	Y				NT
<i>Acacia verticillata</i> ssp. <i>ovoidea</i>	Prickly Moses	Y				NT
<i>Acrotriche fasciculiflora</i>	Mount Lofty Ground-berry	Y				RA
<i>Austrostipa setacea</i>	Corkscrew Spear-grass	Y				NT
<i>Eucalyptus fasciculosa</i>	Pink Gum	Y			R	NT
<i>Gahnia sieberiana</i>	Red-fruit Cutting-grass	Y				NT
<i>Leptospermum lanigerum</i>	Silky Tea-tree	Y				RA
<i>Senecio hypoleucus</i>	Pale Groundsel	Y				RA
<i>Senecio phelleus</i>	Woodland Groundsel	Y				NT
<i>Spyridium parvifolium</i>	Dusty Miller	Y				NT
<i>Tetraria capillaris</i>	Hair Sedge	Y				VU
Fauna species	Common Name	Recorded during survey (Y)	Suitable habitat & /or recent BDBSA data (Y)	Conservation status		
				AUS	SA	AMLR
<i>Antechinus flavipes</i>	Yellow-footed Antechinus		Y		V	RA
<i>Calamanthus pyrrhopygius parkeri</i>	Chestnut-rumped Heathwren (Mount Lofty Ranges ssp)		Y	EN	E	EN
<i>Calyptorhynchus funereus</i>	Yellow-tailed Black-Cockatoo		Y		V	VU
<i>Chalcites lucidus</i>	Shining Bronze-cuckoo		Y			RA
<i>Corcorax melanorhamphos</i>	White-winged Chough		Y		R	RA
<i>Falcunculus frontatus</i>	Crested Shrike-tit		Y		R	EN
<i>Isodon obesulus obesulus</i>	Southern Brown Bandicoot (SA Mainland)		Y	EN	V	EN
<i>Petroica boodang</i>	Scarlet Robin		Y			VU
<i>Phaps elegans</i>	Brush Bronzewing		Y			RA
<i>Pseudocheirus peregrinus</i>	Common Ringtail Possum		Y			RA
<i>Pseudophryne bibroni</i>	Brown Toadlet		Y		R	VU
<i>Rattus fuscipes</i>	Bush Rat		Y			RA
<i>Trichosurus vulpecula</i>	Common Brushtail Possum		Y		R	RA
<i>Zoothera lunulata</i>	Bassian Thrush		Y	VU	R	EN
Vegetation Association				Conservation status		
				AUS	SA	
<i>Leptospermum lanigerum</i> Closed Shrubland in non-saline wetlands					E	

¹⁵ Biological Databases of South Australia, DEWNR, Adelaide.

AUS= EPBC Act Status, **SA**=South Australia NPW Act Status, **AMLR** = Regional Status for Adelaide and Mount Lofty Ranges¹⁶

RE = Regionally Extinct, CR = Critically Endangered, E or EN = Endangered, V or VU = Vulnerable, R or RA = Rare, NT = Near Threatened, LC = Least Concern, DD = Data Deficient, NE = Not Evaluated

Site photograph location: Zone 54 H Easting 289854 Northing 6113764 (south)



Top 5 weeds to control:

Scientific Name	Common Name	Red Alert Weed? Y/N	Declared Plant? Y/N	Cover Rating	Threat Category
<i>*Rubus anglocandicans</i>	Blackberry	Y	Y	5	5
<i>*Salix cinerea</i>	Grey Sallow	Y	Y	2	4
<i>*Chrysanthemoides monilifera ssp. monilifera</i>	Boneseed	Y	Y	1a	4
<i>*Erica arborea</i>	Tree Heath	Y	Y	1a	4
<i>*Olea europaea ssp. europaea</i>	Olive	Y	Y	1a	4

¹⁶ Definitions as per IUCN Red List Categories and Criteria, ratings from Gillam, S. and Urban, R. (2014) *Regional Species Conservation Assessment Project, Phase 1 Report: Regional Species Status Assessments, Adelaide and Mount Lofty Ranges NRM Region*. Department of Environment, Water and Natural Resources, South Australia.

Management issues:

This part of the creek system is dominated by Blackberry. The Blackberry is very dense in the broad triangular section at the junction of the two feeder creeklines, but then grows amongst and over native understorey species around this, in particular Red-fruit Cutting-grass in the creekline and heathy shrub either side. There are a number of Grey Sallow (a Willow species) and large Olive in the weedy triangular section, with low numbers of other woody weeds scattered along the sides of the creekline.

Priority in this zone should be given to the sparse woody weeds first, though the Grey Sallow and Olive will be difficult to access until the Blackberry beneath them has been controlled. Blackberry amongst the native understorey species should be prioritised before the broad triangle. Particular emphasis could go towards the area around the Silky Tea-tree and large patch of Hair Sedge. Bob Bates states that this is the largest patch of Hair Sedge in the Southern Lofty botanical region.



Above left: Blackberry scrambling through the Red-fruit Cutting-grass (*Gahnia sieberiana*).



Above right: Dense Blackberry and Pussy Willow at the upper creek junction.

Plant Species List¹⁷:

Scientific Name	Common Name	Conservation Status		
		AUS	SA	AMLR
<i>Acacia myrtifolia</i>	Myrtle Wattle			LC
<i>Acacia provincialis</i>	Swamp Wattle			NT
<i>Acacia pycnantha</i>	Golden Wattle			LC
<i>Acacia verticillata ssp. ovoidea</i>	Prickly Moses			NT
<i>Acrotriche fasciculiflora</i>	Mount Lofty Ground-berry			RA
<i>Acrotriche serrulata</i>	Cushion Ground-berry			LC
<i>Adiantum aethiopicum</i>	Common Maiden-hair			LC
<i>Amyema miquelii</i>	Box Mistletoe			LC
<i>Austrostipa setacea</i>	Corkscrew Spear-grass			NT
<i>Banksia marginata</i>	Silver Banksia			LC

¹⁷ AUS= EPBC Act Status, SA=South Australia NPW Act Status, AMLR = Regional Status for Adelaide Mount Lofty Ranges

RE = Regionally Extinct, CR = Critically Endangered, E or EN = Endangered, V or VU = Vulnerable, R or RA = Rare, NT = Near Threatened, LC = Least Concern, DD = Data Deficient, NE = Not Evaluated, * = Introduced species

<i>Baumea juncea</i>	Bare Twig-rush			LC
<i>Bursaria spinosa</i> ssp. <i>spinosa</i>	Sweet Bursaria			LC
<i>Caesia calliantha</i>	Blue Grass-lily			LC
<i>Carex breviculmis</i>	Short-stem Sedge			LC
<i>Cassytha glabella</i> f. <i>dispar</i>	Slender Dodder-laurel			LC
<i>Cassytha pubescens</i>	Downy Dodder-laurel			LC
<i>Deyeuxia quadriseta</i>	Reed Bent-grass			LC
<i>Dianella revoluta</i> var. <i>revoluta</i>	Black-anther Flax-lily			LC
<i>Eucalyptus cosmophylla</i>	Cup Gum			LC
<i>Eucalyptus fasciculosa</i>	Pink Gum		R	NT
<i>Eucalyptus obliqua</i>	Messmate Stringybark			LC
<i>Exocarpos cupressiformis</i>	Native Cherry			LC
<i>Gahnia sieberiana</i>	Red-fruit Cutting-grass			NT
<i>Gonocarpus mezianus</i>	Broad-leaf Raspwort			LC
<i>Gonocarpus tetragynus</i>	Small-leaf Raspwort			LC
<i>Goodenia ovata</i>	Hop Goodenia			LC
<i>Hakea rostrata</i>	Beaked Hakea			LC
<i>Hibbertia exutiacies</i>	Prickly Guinea-flower			LC
<i>Lepidosperma carphoides</i>	Black Rapier-sedge			LC
<i>Lepidosperma semiteres</i>	Wire Rapier-sedge			LC
<i>Leptospermum continentale</i>	Prickly Tea-tree			LC
<i>Leptospermum lanigerum</i>	Silky Tea-tree			RA
<i>Microlaena stipoides</i> var. <i>stipoides</i>	Weeping Rice-grass			LC
<i>Olearia ramulosa</i>	Twiggy Daisy-bush			LC
<i>Pimelea linifolia</i> ssp. <i>linifolia</i>	Slender Riceflower			LC
<i>Platylobium obtusangulum</i>	Holly Flat-pea			LC
<i>Poa clelandii</i>	Matted Tussock-grass			LC
<i>Pteridium esculentum</i> ssp. <i>esculentum</i>	Bracken Fern			LC
<i>Pultenaea daphnoides</i>	Large-leaf Bush Pea			LC
<i>Schoenus breviculmis</i>	Matted Bog-rush			LC
<i>Senecio glomeratus</i>	Swamp Groundsel			
<i>Senecio hypoleucus</i>	Pale Groundsel			RA
<i>Senecio phelleus</i>	Woodland Groundsel			NT
<i>Spyridium parvifolium</i>	Dusty Miller			NT
<i>Tetraria capillaris</i>	Hair Sedge			VU
<i>Xanthorrhoea semiplana</i> ssp. <i>semiplana</i>	Yacca			LC

Right: One of the many species of ant in the Park.



Weeds, threat categories and cover ratings:

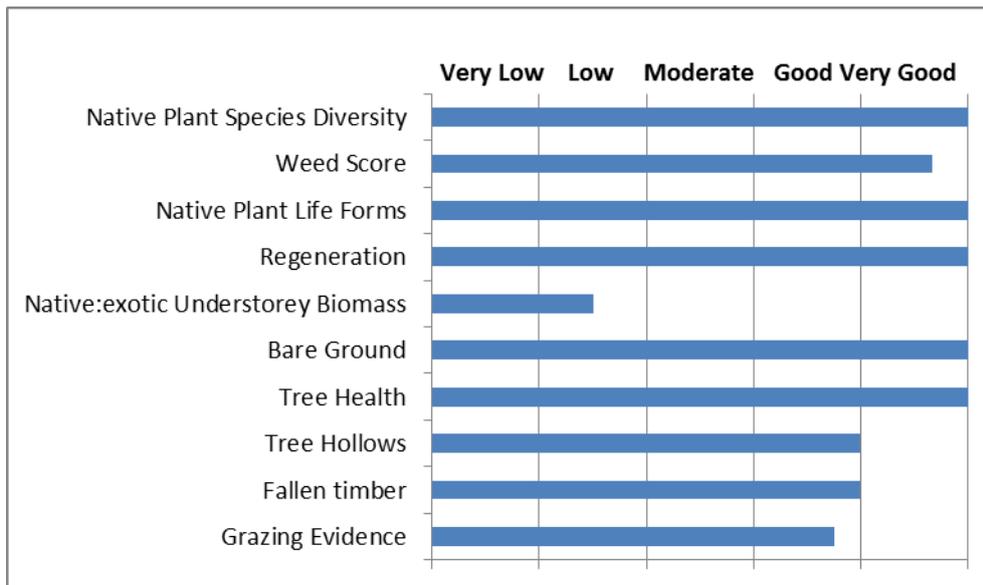
Scientific Name	Common Name	Status	Threat Rating	Cover Rating
* <i>Chrysanthemoides monilifera</i> ssp. <i>monilifera</i>	Boneseed	Declared	4	5
* <i>Erica arborea</i>	Tree Heath	Declared	4	1a
* <i>Holcus lanatus</i>	Yorkshire Fog		2	1a
* <i>Hypochaeris radicata</i>	Rough Cat's Ear		2	1a
* <i>Olea europaea</i> ssp. <i>europaea</i>	Olive	Declared	4	1
* <i>Rosa canina</i>	Dog Rose	Declared	3	1a
* <i>Rubus anglocandicans</i>	Blackberry	Declared	5	5
* <i>Salix cinerea</i>	Grey Sallow	Declared	4	2
* <i>Senecio pterophorus</i>	African Daisy		3	1a
* <i>Zantedeschia aethiopica</i>	White Arum Lily		3	1



Above: The large patch of Hair Sedge (*Tetraria capillaris*) growing alongside Cave Creek.

BushRAT Score Sheets:

NVBMU Biodiversity Rapid Assessment Summary Scoresheet			
SITE: Scott Creek CP Cave Creek A3		RECORDER: PW	DATE: 3-10/12/2018
DESCRIPTION: Eucalyptus obliqua & E. fasciculosa Open Woodland / Gully Forest		BCM CODE: SMLR 5.2 - Steep Creekline in Stringybark Forest	
VEGETATION CONDITION SCORE (max. in brackets)	score	LANDSCAPE CONTEXT SCORE	score
Native Plant Species Diversity (15) 46	15	2 pts if site is the only substantial connection between 2 or more remnants ¹	
Weed Score (15) 7	14	>20 ha, 1 pt if site is degraded (scattered trees in part, fragmented etc)	2
Native Plant Life Forms (10) 25	10	Site Shape Score	
Regeneration (8) 10	8	3 pts if Cleared perimeter:Area (km/km ²)<6, 2 pts if P:A 6 to<12, 1pt if P:A 12 to <18	3
Native:exotic Understorey Biomass (10)	3	Size of remnant¹ patch (incl. native veg on adjacent properties) score	
Bare Ground (3)	3	Patch size less than 2 ha 0 pts	
Tree Health (5)	5	Patch size 2-5 ha 1 pt	
Tree Hollows (5)	4	Patch size 5-10 ha 2 pts	
Fallen timber (5)	4	Patch size 10-20 ha 3 pts	
Grazing Evidence (4)	3	Patch size 20-100 ha 4 pts	
TOTAL (ADD UP ALL POINTS)	69	Patch size 100-500 ha 5 pts	
If community is naturally treeless x TOTAL by 1.23		Patch size >500 ha 6 pts	6
If community is not benchmarked for regen x 1.11		Distance to remnant area of more than 50 hectares score	
ADJUSTED TOTAL SCORE	69	>3km 0 pts	
CONSERVATION SIGNIFICANCE SCORE:	score	1-3km 1 pt	
2 pts for each State-R, 4 pts for each State-V, 6 pts for each State-E or Nationally-V, 8 pts for each Nationally-E ecosystem/ecological community.	2	<1km 2 pts	
2 pts for each State-R, 4 pts for each State-V, 6 pts for each State-E or Nationally-V, 8 pts for each Nationally-E plant species present ² .	2	contiguous 3 pts	3
1 pt for each State-R, 2 pts for each State-V, 3 pts for each State-E or Nationally-V, 4 pts for each Nationally-E fauna species for which suitable habitat is present. Double points for a sighting. ³	18	LANDSCAPE CONTEXT SCORE	14
% native vegetation remaining in IBRA Assoc. 0-2% = 5 pts; >2-5% = 4 pts; >5-10% = 3 pts; >10-20%= 2 pts; >20-50%= 1 pt; >50% = 0 pts	1	Sum adjusted Vegetation Condition, Conservation significance and Landscape Context Scores for the UNIT BIODIVERSITY SCORE	
1 pt if Site contains a riparian zone,			
2 pts if contains swamp/wetland (+/- riparian zone)	2		
CONSERVATION SIGNIFICANCE SCORE	25	Total Biodiversity Score (UBS x size) 82.1	
Cleared perimeter(m)	Size(ha)	P:A Ratio	
0	0.76	0.00	
Total no. native species	Adjust for Spring⁴	Environmental Association	
46		Clarendon	
Weed species (Top 5 Cover x Invasiveness, annuals in Cover (max. 6)	Cover (max. 6)	Invasive Threat Category (max. 5)	C x I
<i>Rubus</i> sp.	5	5	25
<i>Salix</i> sp. (<i>cinerea</i> or <i>rubens</i>)	2	4	8
<i>Chrysanthemoides monilifera</i> ssp. <i>monilifera</i>	1	4	4
<i>Erica arborea</i>	1	4	4
<i>Olea europaea</i> ssp. <i>europaea</i>	1	4	4
Total Cover x Threat Invasion			45



Above left: Wire Raper-sedge (*Lepidosperma semiteres*).



Above right: Large-leaf Bush Pea (*Pultenaea daphnoides*).

Below left: Pale Groundsel (*Senecio hypoleucus*).

Below right: Dusty Miller (*Spyridium parvifolium*).



Financials

Funds available at 1st July 2018 **\$12,588.25**

Income:

Donations ¹	\$19,756.40	
AHC grant funding (held by FoSCCP)	\$2,500.00	
DEW ² & NRM grant funding (held by FoP Inc)	\$5,500.00	
NRM other funding (held by NRM)	\$33,200.00	
Total Income		\$60,956.40

Expenditure:

Contractors (paid from FoSCCP account)	\$12,175.50	
Contractors (paid by NRM)	\$33,200.00	
Total Expenditure		\$45,395.50

Funds available at 30th June 2019 **\$28,169.15**

Volunteer Hours³ 1,625

Notes:

1. Excludes donation from Wirrapunga Open Garden September 2016, subsequently donated to Warrawong Sanctuary instead.
2. Excludes DEW on-park Volunteer Support Grant \$5,500 approved but funds not received yet.
3. Includes only on-ground and event volunteer hours, no administration, planning or reporting.
4. All figures GST inclusive where applicable.

List of Contributors

Adelaide Hills Council	Dave Fitch	Don Reid
Sophie Bass	Proo Geddes	Donna Reid
Bob Bates	Glenn Giles	Stephen Richards
Lorraine Billett	Petra Hanke	Danny Rohrlach
Sue Braddock Smith	Kat Hill	Chris Scholz
Kieran Brewer	Barb Howes	Scott Creek Primary School
John Butler	Jane Juttner	Paul Sgarretta
Rosemary Butler	Malcolm Kirkham	Joyce Short
Peter Charles	Kim Lau	David Speirs
Cherry Gardens CFS	Brent Lores	Jim Spiker
April Cooke	Jill McPherson	Josh Teague
Barb Copus	Richard Nesbit	Chris Thomson
Lara Copus	NR AMLR	Russell Troon
Steve Davey	Jasmin Packer	John Wamsley
Jenny Dawes	Ori Packer	Warrawong Wildlife Sanctuary
DEW	Tony Patterson	Kathy Watton
Anna Dutkiewicz	Donella Peters	Peter Watton
Matt Endacott	Les Peters	Rick Williams
Mark Fagan	Jen Pitman	
Chris Fitch	Ian Preston	

...and the many others who have joined in our efforts but whose names may have been overlooked in the above list.