SEGments

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Scientific Expedition Group Inc.

Cover Photo: Sturt Desert Pea *Swainsonia formosa*. Photo: Isobel Barrett

Rear Cover Photo: A pademelon (*Thylogale billardierii*) on Maria Island, Tasmania Photo: Alun Thomas

The Scientific Expedition Group is a not-for-profit organisation which began in 1984. SEG undertakes several expeditions each year to record scientific information on wildlife and the environment in many parts of South Australia.

A major expedition to conduct a biodiversity survey occurs each year over two weeks. Scientific experts lead volunteers in surveying mammals, reptiles, invertebrates, vegetation, birds and physical geography. The data collected on each survey are archived with the relevant State scientific institutions to ensure they are available to anyone interested in our State's environment.

In addition to the major expedition, a number of trips for the Vulkathunha-Gammon Ranges Scientific Project are organised annually. A long term study of rainfall on the ranges and of water flow in arid-zone creeks is undertaken. All data are supplied to the Department for Environment and Water and to the Bureau of Meteorology and are available for analysis.

SEG conducts four-day biodiversity surveys at eight different sites each autumn and spring in the Heritage Area of scrub on "Minnawarra" farm near Myponga. Data collected are entered into the Biological Data Base of SA. SEG also conducts mallee-fowl monitoring in the Murraylands.

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SEGments

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EDITORIAL - THIRTY YEARS OF COOKING THE BOOKS (or Playing with Figures)

The last 30 years have seen enormous changes in the way we handle money. Teenagers today probably have not seen a cheque book or possibly a bank note. Here is a brief summary of how I got to be involved with SEG and be its Treasurer and of the changes I have experienced as Treasurer.

In spring of 1987 I was involved with the Adelaide Bushwalkers. A fellow member of ABW, Dave Kemp, announced to the club that SEG were looking for natural science orientated people to lead a bio-survey of part of the Coongie Lakes system NW of Innamincka. I'm not gifted in science of any sort but I was an experienced bush walker with a bent for photography and knew a bit about gardening (Botany). So, with those credentials I applied for a leader's role. I was politely advised that my application was not successful.

In the autumn of 1988, Dave again asked the ABW membership if any would like to attend the SEG Coongie Lakes expedition that May as expeditioners, I again put up my hand, this time successfully.

My most memorable experiences were enjoying boating on Coongie Lake, taking sedimentary soil samples with Sally Wace, lazing around in a canoe on the NW branch of Cooper Creek watching birds fluttering around in the river gums and learning a bit about reptiles and the flora.

At the 1991 SEG AGM with no formal accounting experience other than handling heaps of other people's money during my business life I was elected to the committee as Treasurer, following the retirement of Treasurer, Joan Beer.

The December 1988 issue of SEGments provides an insight to the "simplicity" of the accounts during that era which included accounts for the Canunda Expedition. The annual accounts for year ending 30 June 1988 showing receipts for Canunda as $438.32, expenses $408.32, an excess over receipts of a mere $30.00. The accounts included incorporation expense of $82.00, SEGments printing and postage - $283.55 for the year (4 issues). Today the printing alone exceed $300 per issue.

The recording of income and expenses were hand written in a Cash Book and hand written in the ledger, receipts were hand written and all payments were by cheque. The early nineties saw the advent of personal pomputers (PC's). My first attempt on using this modern technology was on my business PC to record SEG's financial activity. Ten years later, we had internet banking, emails replaced phone calls and faxes, EFT became the way to pay bills and receive money and very few wanted a paper receipt.

Through the years SEG's financial affairs grew both in number and value with regular expeditions, GRaSP (later in 2005 re-named V-GRaSP) established in 1988, in 1994/5 Richard Willing and I were successful in registering a tax deductible gift fund account managed by the Scientific Expedition Foundation (SEF) with a Board of 6 Trustees. In 1999 of the long term Minnawarra Biodiversity Project began, all of these components were recorded in a separate "Expedition" account to that of its administrative activities.

With SEG's funds growing and online bank accounts offering daily interest appeared and term deposits on offer, SEG opened a 24 hour call account and deposited money on a term deposit. All of which added up to more accounting, cheque books, online transactions and auditing.

The Treasurer's job grew from the late 80's from one cheque book and one deposit book to four of each during the first two decades of the 21st century.

In early 2021 I indicated to the committee that my tenure was fast approaching its best by date and search for a replacement began, by mid-2022 a worthy successor was found in Peter Whitehead, a certified Accountant & Auditor. Peter joined the SEG committee and has taken over the keys to the money box.

I have thoroughly enjoyed my time as Treasurer and committee member of SEG and working with many knowledgeable science leaders; enjoyed the many field trips to parts of South Australia which I would never otherwise have seen and on the way learnt a lot about our wonderful natural environment. Thank you SEG.

Graeme Oats.
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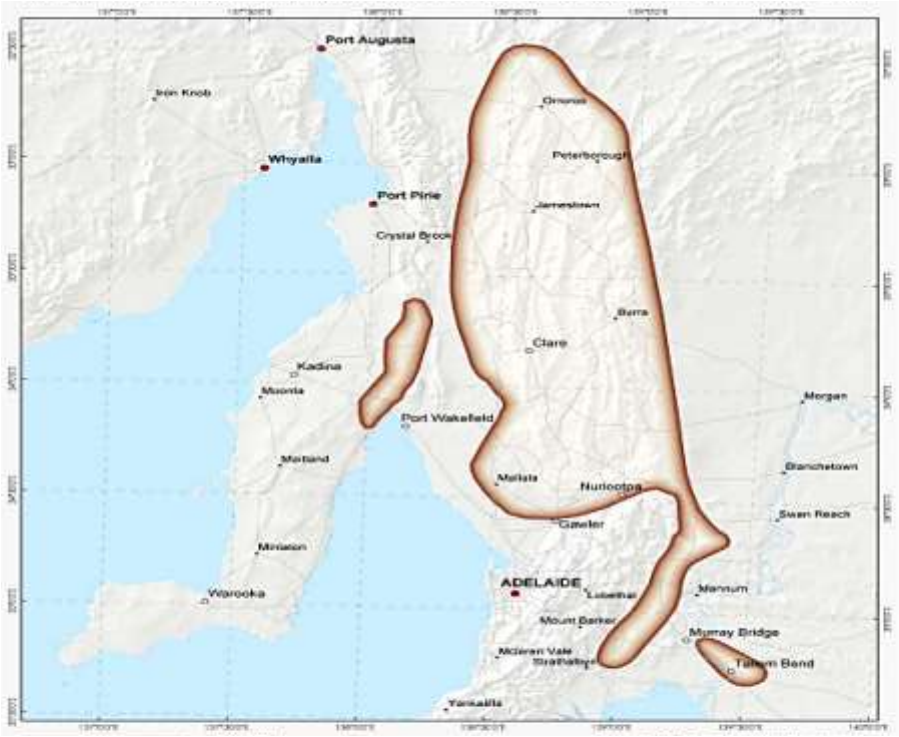
SOIL MICRO-ORGANISM DISTRIBUTION IN IRON GRASS GRASSLANDS AND ITS EFFECT ON GRASS SPECIES

Sophie Hoffmann

Iron grass natural temperate grasslands support a variety of animal and plant species including many small native grasses and herbaceous plants. The former range of these grasslands could have covered one million hectares of South Australia, but most of this range has been degraded due to human activity, and now the remnants of this ecosystem cover a fraction of this area. Iron grass grasslands are now critically endangered, and are protected under the Environmental Biodiversity Protection and Conservation Act. The characteristic plant species in this grassland is iron grass (scientific name *Lomandra*), a long-lived tussock plant with spiky leaves that is native to Australia. Previous research has shown that iron grass forms patches of soil below it with higher nutrient concentrations than surrounding soil in these grasslands. This discovery led to the question of whether Iron grass also creates diverse communities of microorganisms in soil below tussocks.

Soil microbes are the smallest living organisms that exist in the soil, and many of these coexist with plants. Archaea, Bacteria and Fungi are the major groups of soil microbes, all of which are extremely diverse in their metabolism and function. Although they are small, soil microbes are plentiful and have many important ecological roles. Microbes have roles as decomposers and can cycle most elements in the soil and some have relationships with plants that are complex and fascinating. They can affect resource requirements of plants by increasing the uptake of certain nutrients or transferring nutrients between plants. The soil microbe community can also include plant pathogens that take nutrients from plants.

Plants can also interact with soil microbes, and do this through litter and chemicals released from roots into the soil. These include simple organic molecules which may not be specific to certain microbe species and more complex metabolites that can act as signalling molecules specific to certain microbes. This means that different plant species can create different communities of microbes in the soil. These interactions can result in plants and microbes living together in harmony or death due to competition for resources. Invasive plant species have a tendency to create microbe



Areas in South Australia where iron-grass Natural Temperate Grassland may occur

A degraded iron grass grassland (top) and a healthier iron grass grassland (below)

communities that benefit themselves, and inhibit the establishment of native species.

Human impacts including farming and grazing can also degrade the natural soil microbial community, which makes restoration of areas that have been grazed or farmed difficult.

My honours project aimed to answer questions about how we can help to conserve and help this ecosystem to recover using the power of microbial communities. Does iron grass have an effect on the microbial community? Is the microbial community in this ecosystem disrupted where there is less iron grass?

To learn about the microbial community in iron grass grasslands, soil samples from under iron grass and in bare spaces in the grassland were taken and the microbial assemblage was examined using DNA sequencing.

The results of this analysis showed that the microbial community varied significantly in soil below Iron grass when compared to surrounding soil. The community of microbes was also significantly different in remnant grassland when compared to a more degraded site. The difference was particularly clear in the fungal community and less so in the bacterial community. I predict that this is because there is some overlap in the bacterial species that exist below iron grass regardless of where it occurs.

In conjunction with the analysis of the microbial community, the establishment and growth of a native and an invasive grass species that live in this grassland was evaluated after they had been grown in different soils. The soil treatments included inoculation with soil collected from under Iron grass tussocks and bare spaces in the remnant grassland, and a sterile control. The two grasses investigated were the invasive wild oat (*Avena barbata)* and native wallaby grass (*Rytidosperma auriculatum)*. The two plant species responded in contrasting ways to the microbial assemblages from the healthy grassland. The invasive grass had a lower biomass when exposed to microbes in soil taken from a remnant site when compared to its biomass in sterile soil. The native grass struggled to survive in the sterile soil, but did much better when exposed to microbes.

This work provides some key information about the plant -microbe interactions in these grasslands. The fact that there is a different microbe community in the more degraded site suggests that grazing in the area and the greater density of weeds has left an imprint on the microbe community in the soil. Whether this has a positive or negative effect on native plants needs more rigorous testing, but based on the higher density of invasive plant species in this site, I predict that the soil microbe community would benefit weeds more than native plants. The other key finding is that microbes from any remnant grassland site improved the growth of a native plant species over sterile soil. This suggests that symbiotic microbes are critical for the establishment of native plant species, and this will require further research and consideration in restoration. This research also suggests that soil microbes could be used to prevent invasion of invasive species in remnant vegetation which is vital to conserve, especially where remnant sites are limited.

Soil collection for analysis and potting

There is a lack of knowledge on which key species from the soil microbial assemblage are important for native species establishment and growth. This is where I believe future research in this field should be focused. Learning more about the parts of the microbial community that are important for native species growth would make restoration much more effective. Research should also be focused on how to alter microbial communities in invaded areas to favour native plant

Grasses growing in the glasshouse

species for better restoration outcomes. So how do we study this? This field is still in a stage of describing what microbial species are present in the soil, with a massive portion of species undescribed. Research on this topic is rapidly uncovering new species, and the next step would be to determine the genetics and function of newly discovered species, and learn how to culture a favourable community of organisms. Finding key microbial species in key ecosystems that benefit multiple native plant species across Australia would be a fantastic goal for future research on soil microbes. Such research would have a vital consequence for agriculture.

A gilled mushroom growing in the grassland

Special thanks to my supervisor José M. Facelli and the University of Adelaide, as well as the Murraylands and Riverland Landscape board for funding this work.

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MINNAWARRA BIODIVERSITY SURVEY DATES 2023

Autumn

Wednesday April 25th to Sunday 29th

Spring

Saturday 7th October to Wednesday October 11th

(note that this is not the October Long Weekend because of the full moon on the Friday before the long weekend)

Come for half a day, one day or several days.

Minnawarra is situated on the southern Fleurieu Peninsula

For further information and registration forms, contact:

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SEG V-GRASP REPORT 26 - 28/10/2022
Garry Trethewey

This will be less a scientific report than usual, more a reflection on wider issues and my own interests.

Having spent a bit of time at Arkaroola and Balcanoona (north-east and south-east Gammons) over the past couple of years, this report will include some comparisons between those places and the Arcoona Creek area, north-west Gammons.

As regular readers know, SEG V-GRASP is a long term Citizen Science project gathering hydrological and biological data from the Vulkathunha-Gammon Ranges, North Flinders Ranges.

'Citizen Science' by virtue of the fact that most participants are retired, and contribute time and money. When the SEG V-GRASP Project started, 1988, participants were generally employed in related fields and the project was generally better funded by governments bodies. The sinking lid had not yet sunk, and the term 'Citizen Science' had not yet become 'a thing'.

Because the tasks involved are often technically and geographically separate, and because we all have busy lives even in retirement, we tend not to all be there at the same time. On this trip, no hydrology, or electronic communications were attended. We did 'the photopoints', which also includes other biological observations

The plan was to meet at Arkaroola, and pop around to Arcoona Creek next day, but with the moving target of rain, road closures, and road repairs, (this is when the Witchelina trip was cancelled), we met at Leigh Creek.

Our plan was to do the following:

- Get sandalwood *Santalum spicatum* seeds.
- Do regular veg photopoints
- Monitor the progress of *Codonocarpus pyramidalis* - find new ones, describe & photograph all.
- Observe and record anything else that looks interesting.

In the last few reports I've remarked upon the lack of herbivores, and the trend for grasses to grow uneaten. This, plus lack of shading under skeletal dead Callitris, has produced a crop of grasses such that it was hard to find a place to put a tent were we wouldn't be plagued by thigh high spear grass.

The herbivores have not recovered since the drought in this area. In the three days after we turned off the Copley - Balcanoona Road, we saw no goats and very few euros. In the east of the Gammons, and at Arkaroola, there are more euros and goats, I suspect because of the springs and artificial water points emplaced during the drought, and the grasses aren't quite so prolific.

Our first task was to get sandalwood (*Santalum spicatum*) seeds for a revegetation project by "Friends of the Vulkathunha-Gammon Ranges National Park". I'd been told about a sandalwood tree at a particular spot that some years ago, but what we found was five, enclosed in a solid 8 meter square exclosure, all very dead with a 2 or 3 centimeter layer of old seeds beneath. Given the state of decomposition, I think the 2018-19 drought killed them. It struck me that this points up one of the dilemmas of conservation - protect the trees from goats and roos, but at the cost of stopping emu's access, so not spreading seeds. None were germinated, and all looked pretty mouldy, but we scooped up handfuls just in case some were still viable. Later, it turned out they were not.

Old sandalwood seeds which subsequently proved to be non-viable.

Then we put on packs for the walk up the creek. Given the lush post-drought growth, I'd expected to walk through an area of dense datura (*Leichardtii sp*) just before the creek, where it has appeared after rain on other occasions, but there was none. Another generalisation - organisms don't respond consistently to what seems (to me) to be the same conditions. Sometimes after rain there'll be a flush of something germinating, or flowering, or breeding, and other times not.

Examples:

- *Callitris glaucophylla* on alluvial flats have died, and herbivores have died, so shrubby understory and grasses flourish.
- in the past I've seen Callitris come up like a lawn after rain. In places along Arcoona Creek there are a few individual shin or waist high babies, but in the dead Callitris forests, zero regeneration.
- after the millennium drought came enormous numbers of insects and big orb-weaver spiders. On the plateau they were so dense that webs crossed through each other, and we needed a stick to break a path. After this drought, it's rare to walk through a spider's web.
- *Eremophila subfloccosa* has spread substantially since the end of the drought.

- 35 or so *Codonocarpus pyramidalis* trees have come up after this drought, but not after the Millennium Drought. At Arkaroola it was the reverse.
- at Arkaroola and up Doctor Chewing's Creek, I've looked at hundreds of *Santalum lanceolatum* that have no fruit, only galls where fruit should be. In fact, after one of the old people told me where to find actual fruit, I found only three fruit on ~30 trees. This obviously isn't a sustainable state of affairs, and I'm hopeful that it's a temporary result of the drought. But it raises the issue of unexplained or delayed extinctions.
- although recently I reported that there were only a few, and clearly defined, cohorts of *Acacia aneura*, I think I'll contradict that now. While those cohorts remain, I'm now seeing trees ranging from below ankle height fairly evenly spread to head height.
- on the plateau, bindweed (*Convolvulus sp*) is growing prolifically, burying other plants or covering bare ground.

I'm re-thinking the popular construction of the ecological consequences of drought. Although we generally think of an intense drought as hurting everything, perhaps it can be re-characterised as wiping a slate clean, or pressing the re-set button, with some animals and plants having a chance to flourish, unimpeded, afterwards.

I'll talk about stream flow now. And for convenience I'll quote Arkaroola's rainfall, reported by BOM, http://www.bom.gov.au/climate/dwo/IDCJDW5004.latest.shtml rather than our GRASP data, which is harder to access. There was 15mm in August, 12mm in September, and 37mm in October up to the 26th, including 13mm in the week before our trip. At the creek, the stream-gauge pool had grown from 2 meters to an ongoing stream over the pebbles. It occurred to me that with the flow, Spangled Perch (*Leiopotherapon unicolor)* might have made their way up the creek, as has happened a few other times of high flow, but we saw no fish on this trip.

At the creek, the stream-gauge pool had grown from 2 metres to an ongoing stream over the pebbles

Later we found Wild Ass Waterhole flowing out through cobbles about 20cm above the overflow, and the water muddy. Measured with an impromptu Secchi disk (a red & white range pole) we found the range pole disappeared at 60cm, so a proper Secchi disk might do so at 70cm.

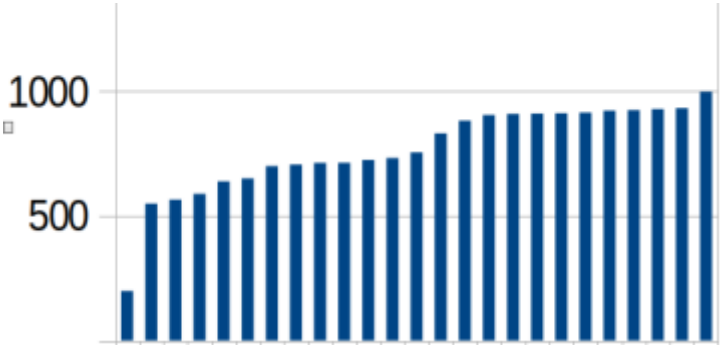
One of our intended tasks was to get samples of algae (*Nitella sonderi)* for the herbarium, but the depth and turbidity made this impossible.

I've occasionally heard people assert things like 'That [50cm high] mulga is probably 40 years old', and wondered about both growth rates and the validity of such statements. One result of having taken regular photos is to test this. Just up the hill from Wild Ass Waterhole, on a rocky hillside well above any semi-permanent water, is a group of three meter high *Acacia aneura*. In one of our early images, 07/1989, they can be seen, less than knee high. Thus they've grown about 3 meters in 30 years.

The *Codonocarpus pyramidalis* growth has slowed down. But because we can only make educated guesses at their age, based on the notion that 'we would have seen it as we walked past' on previous trips, we're keen on finding and tracking the smallest babies we can. We have a few candidates, that might turn out to be something else, or that might turn out to be suckers. So far, 34 definites. Almost all are on alluvial creek flats, and almost all without flowers or fruit. None are browsed, in spite of euros making beds under 3 of them. But I wonder what goats &/or food shortage will do later.

Walker et al, 2015, drew my attention to the precarious situation of *Ctenophorus decresii*, now reclassified as *Ctenophorus modestus* in this area. They seem to be doing well at higher altitudes, with 6 being seen this year on the rocky ridge north to south over North Tusk, 900mASL. This includes two gravid females, but surprisingly, no coloured males. Last year we also saw a couple of young *C. modestus* on the plateau, 920mASL, 1.5km south of North Tusk, more clayey with rock outcrops, and not classical *C. modestus* territory. But I don't think I have ever seen one more than half way down North Tusk. I've also seen a few at Arkaroola, again only at higher elevations, although there are two reports of 'them' on Arkaroola Creek at 250 meters.

Figure 1. 25 Reported sightings of *Ctenophorus modestus* north of the Copley - Balcanoona Rd and elevation ASL for each in metres.



Data from Naturemaps appears to confirm a preference for elevation. Fig 1 shows all 25 reported sightings north of the Copley - Balcanoona Rd and elevation ASL for each. However, it could be argued that most of the relevant country is elevated, and C. modestus prefer a particular architecture formed in hard rock, so this graph might represent geography and geology more than elevation preference.

Consistent with SEG V-GRASP's history of embracing new and improved technology, I'm finding I'm using iNaturalist more often. I've found that taking happy-snaps of whatever grabs my attention and putting them on iNaturalist is consciousness-raising for me, and useful for other people. For example, I took a happy-snap of a pretty Hibbertia, which was identified by someone competent (not always the case) as *Hibbertia crinita*. In my mind, Hibbertias are a common and forgettable background, so I was surprised to find none on my Arkaroola plant list. In fact a search of Atlas of Living Australia shows zero of genus Hibbertia on Arkaroola, and a paucity in the Gammons. For *H. crinita* there are five records in the Gammons, all gathered in 1999 by the same professional observers, and with meaningful coordinates (again, not always the case), showing that they live on exposed rocky ridge-tops. That trend - high quartzite ridgetops - continues south throughout the Flinders with increasing frequency and declining elevation through the Mt Lofty Ranges, to Kangaroo Island, and then going along the Great Divide to the NSW - Qld border.

https://spatial.ala.org.au/?q=lsid:https:%2F%2Fid.biodiversity.org.au%2Fnode%2Fapni%2F2899370

Similarly, happy-snaps of what I thought was 'a pretty water-weed' have resulted in significant specimens being collected for the Herbarium, the aforementioned algae (*Nitella sonderi*)

https://www.inaturalist.org/observations/119377958

And some of an interesting plant that I hadn't seen before have resulted in one of my images appearing on ALA. https://bie.ala.org.au/species/https://id.biodiversity.org.au/node/apni/2898003

I've gleaned several lessons from all this. First is that because we go to places that most people don't, we see things that most people don't, or at least extend known ranges away from main roads. Second, in spite of my lack of professional knowledge, if I think something might be interesting, then it might be.

Third, when using ALA (or any dataset), I've learned to be very careful to vet each record before using it, for species mis-identifications, and for poor location descriptions. I've already alluded to two species, *H. crinita* and *C. modestus* that seem to be elevation dependent, and similarly, *Acacia araneosa* appear to only grow on a very specific rock substrate. When attempting to confirm these from ALA, a location error of one kilometer makes all the difference, but many of ALA's records show bigger locality uncertainty. I've recently read a paper that mentions a *Capparis michellii* growing in the middle of Lake Frome, the author not having been aware that the location uncertainty was 125km.

Dead mulga with grass below

Fourth, although I've used the term 'happy-snaps', I've learned the value of taking carefully curated images. I tend to take one of the plant in context, one full frame of the plant, and one or more of each of buds, flowers, fruit, leaves, stems, galls, insects or anything else useful for identification, and include a ballpoint pen or a wife for a scale. I've worked out how to geo-reference them, and I've worked out how to get all related images onto a single iNat 'observation'. Although I can't identify anything with certainty, I'm pretty happy about the quality of my iNat submissions.

Reference

Walker et al, 2015, Has contemporary climate change played a role in population declines of the lizard *Ctenophorus decresii* from semi-arid Australia?

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THE 5 VARIETIES OF *SWAINSONA FORMOSA* – STURT'S DESERT PEA

MEMBER OF THE FABACEA FAMILY

Isobel Barrett

On a trip to Oocaboolina, 24-30 July 2022, we spent an afternoon in search of the Sturt Desert Pea and weren't disappointed. As we walked along the side of the creek near the Italowie Camp Ground the brilliant red flowers with shiny black centres were all around us and creeping up the hillsides giving an awe-inspiring display. I wondered if William Dampier in 1699 and Charles Sturt in 1844 had the same feelings when they first saw this unique looking flower.

As we reluctantly walked back to the cars, I found a patch of red and black Sturt Desert Peas that surrounded a plant of completely pink ones, the first like this any of us had seen. There was great excitement.

A few weeks later at Balcanoona, 19-26 August, we enjoyed a trip to Lake Frome. I had been told by a friend that white Sturt Desert Peas could be found somewhere along this 38km drive. The sides of the road abounded with colour, a striking red which appeared to stretch for a few hundred metres and other patches dotting the landscape along the

way. It seemed the extra rain this year had given rise to a colourful display.

Being unsuccessful that day, I took some time another afternoon, with Judy Harvey, to explore yet again and was overjoyed when finding a plant of Sturt Desert Peas with creamy white petals and a pink purple centre or boss.

Hoping I would find more I kept searching. My efforts were rewarded, but in an unexpected way, as I came across

plants with all red flowers, reminiscent of the all pink ones and another plant which had completely gone to seed.

Now I was hoping to find an all pink again but to my delight and amazement a patch of beautiful Tricolour flowers were intermingled with the red and black. The top of the flower is red; the bottom is purple black and the lower petals pure white with a red outline. To me, they were just as striking as the red and black.

As we returned to Balcanoona I wondered what Isaac Swainson, the naturalist, after whom the flowers have their botanical name, would have thought about these mutations.

Back at Balcanoona there was enthusiasm to also see the plants, so we set off again. It was just as thrilling to see them for a second time.

In a paper published online on 11 April 2018, by The Board of the Botanic Gardens & State Herbarium (Adelaide, South Australia);

"The Adnyamathanha word for the species, ngarapanha, can be translated as 'little liar', as it was thought to deceive locals into thinking there was water nearby. This name is fitting in a botanical sense as well, as the Sturt Pea is quite distinct from its closest relatives and has often deceived botanists. It's large, striking red flowers are very different from the other species in the genus *Swainsona salisb* (Swainsona salisb is the common pea flower found in a variety of colours)

It seems the Sturt Desert Pea has underlying secrets of not only colour but also formation.

All photos in this article by Isobel Barrett.

This article is reprinted with permission from Friends of Vulkathunha– Gammon Ranges National Park Inc. Newsletter No. 24. January 2023

MINNAWARRA BIODIVERSITY SURVEY—SPRING 2022

Janet Furler

The Spring survey 2022 was held from 29th September to 3rd October.

This was, for once, an example of the weather doing its best for us. In the midst of an exceptionally wet spring we had fine days between 13 and 23 degrees, nights between 7 and 11 degrees and no rain. There was an inch (25mm) of rain 2 days before we started, and again the day after we finished. And an inch or more each week until the end of November!

Although the weather was good for trapping, the rain led to logistical trouble from the start due to the expectation of transport not only getting people to the sites but getting them home again. The three vehicles with the heftiest tread were used. They are the most farmy ones, and two of them have no doors. While I am not usually too concerned about which vehicles participants travel in, I had an extra level of concern on the Friday morning.

The committee extended an invitation to our current Patron, Mr Rod Bunten, to attend our survey. He agreed to attend on the Friday morning and stay for lunch. We were delighted to be able to show him around and answer all his questions. We decided the Patronal Party would consist of Richard Willing, Alun Thomas and Mr Rod Bunten, in a combination of Alun's 4wd for the easy bits and a cut down Suzuki Vitara buggy for the soggy bits. A grand time was had by all. Lunch was entertaining, with Mr Bunten providing an endless store of tales of diplomatic life.

We ended up with three rounds rather than the usual two, as some sites needed a longer walk in. This allowed us to clear the sites in a timely manner.

Part of the Survey team on the Friday. From left, Anthea Habel, Rod Bunten, Richard Willing, Phil Davill, Janet Davill, Peter Reuter, Janet Furler, Fred Bartholomaeus and Alun Thomas. Tilly the dog.

An Antechinus flavipes trapped at Site 2 with young in its pouch

There was a good range of participants, with SEG regulars and keen kids bringing parents along. A great turnout on pack-up day had all the traps washed and packed by lunchtime, for which I am very grateful.

Catches

We caught 18 *Antechinus flavipes*, 75 *Rattus fuscipes* (bush rats), 32 *Rattus lutreolus* (swamp rats), a mouse (*Mus musculus*), a skink (*Lampropholis guichenoti*) and two frogs (*Littoria ewingii* and *Limnodynastes dumerilli*).

Of the 125 native mammals, 48 were microchipped from previous surveys. The proportion of *A. flavipes* was 66% (12 of 18), both species of *Rattus* were 33% (25 of 75 *fuscipes*, 11 of 32 *lutreolus*).

Three of the wetter sites (1, 4, 5) had no *A. flavipes*. Can it get too wet for them?

We have been awarded a grant to buy replacement traps for our Elliott traps, which have been significantly damaged by our vigorous rat populations, which have chewed holes in the aluminium. The replacements are Pilkarra brand, almost the same design. They will look gorgeous, at least for the first survey, until they get chewed!

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Scrubby Peak in the Gawler Ranges. Painted by Andrew Barr

MY INTRODUCTION TO SEG

Andrew Barr

In 2007 I went to the South Australian Museum in the city. I discovered that the Scientific Expedition Group was part of a National Science Week display, I met one of the members, John Love, who gave me information and a pamphlet. I went to a meeting and joined the organization as a volunteer. I prepared my camping gear as I wanted to go on the next expedition with the SEG group.

I got my first chance to go on a Scientific Expedition Group expedition in 2007 to the Gawler Ranges at a region called Scrubby Peak. This was my first trip to a South Australian desert area. I did not know what to expect as I was from Canada and had very little knowledge of the plants and animals that were in this desert environment but I was with an experienced crew, so I was ready to learn about the new plants and animals. I had my camera and took numerous photographs.

We set up traplines in different locations where I picked up plant specimens and pasted them in my notebook. During lunch break I would attempt to draw them.

I was told to be careful of snakes. Coming from Canada we only have nonpoisonous garter snakes. I was a little frightened and very careful. We caught a legless lizard in one of our pitfall trap that looked like a snake. As I took a photograph of it on the ground It put on a defensive display like a cobra. What an unusual creature. Another lizard that I found fascinating was the shingle back lizard.

We came across many old mallee fowl nests scattered through the scrubby landscape. I was amazed that a bird could make such a large excavation.

Bat nets were also arranged in different locations.

When I was at university, I studied geology and worked in the Canadian mountains during summer vacations. Australia is an old different continent. I was fascinated by the strange rock formations that I came cross such as the majestic columnar pillars of basalt for which the Gawler Ranges are famous. The Organ Pipes in the Gawler Ranges are a must to add to your list when you visit there.

In 2008 I went with SEG to Marqualpie about 80 km north of Innamincka. I would pick a plant and lay it out on white paper and sketch it with coloured pencils, then show the sketch to the botanist for an opinion and ask for the species name and record it. These plant sketches featured in an article that I wrote for an editorial in SEGments entitled “Science and Art: a tradition in Australia” Editorial SEGments No. 26.1 June 2010.

Legless Lizard

Shingle back or stumpy tail lizard

Mallee fowl mound in the Gawler Ranges

A microbat caught in the Gawler Ranges

A harp net set to trap microbats in the Gawler Ranges

The Organ Pipes in the Gawler Ranges

Magnificent Basalt in the Gawler Ranges

After these expeditions I have taken part in many other biodiversity surveys around South Australia with SEG. While I am on these surveys, I make many sketches and take many photographs of the landscape. These are the subject matter for most of my new paintings.

Besides assisting on the surveys and doing my photography, painting and sketching I assist on the kitchens. For me all this work is very fulfilling. I have certainly learned a lot about the Australian Outback on SEG expeditions.

barrandrew73@gmail.com

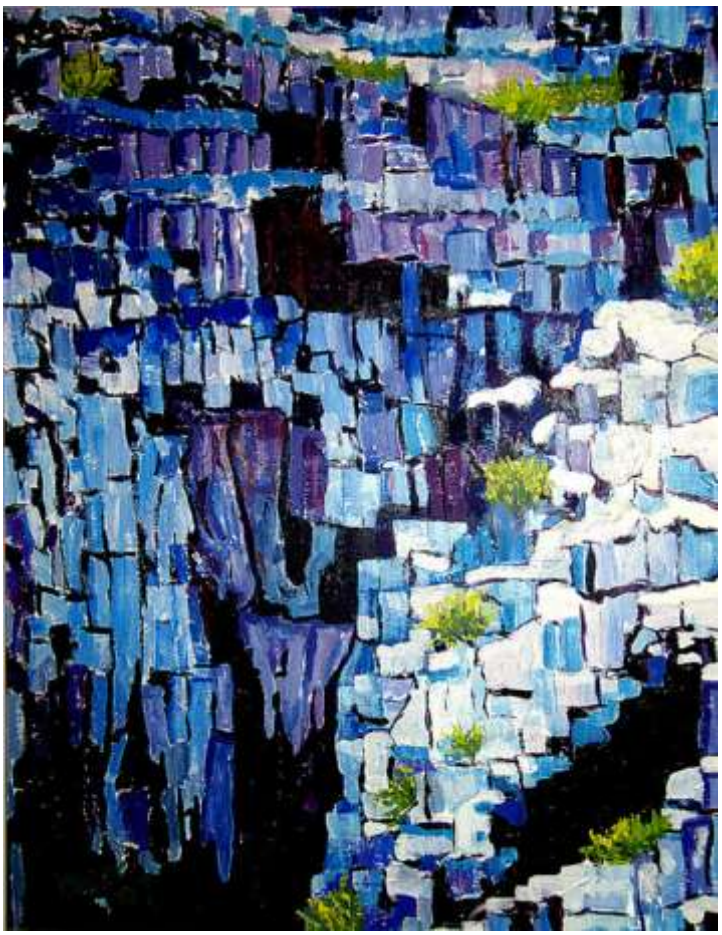
My photograph of pressed gum leaves and blossoms and my subsequent sketch

INFORMATION ABOUT THE ARTIST ANDREW BARR

Andrew Barr is a landscape painter and biological scientist and who records the fast-disappearing images found in nature in the remote regions of Australia. He uses impressionistic approaches to his paintings of the Australian outback sites that he has visited since his first expedition with SEG.

Born in Canada, he came to Australia in 1974 to begin teaching career at various tertiary institutions around this starkly beautiful country. He has developed a versatility of styles which keeps his paintings fresh and lively. His textured foliages, bright colours and sharp shadows capture the harsh vibrant colours of the Australian landscape.

Sketches and Paintings by Andrew Barr from his various SEG expeditions



The Blue cliff face

Gawler Ranges #1

Gawler Ranges #4

Bimbowrie Shearing Shed

Gawler Ranges #5

Flowering Desert Dune on Witchelina

Sketch of Erodiam sp

Red Gum Flower Sketch

Crimson Rosella

Sketch of Fat Tailed Dunnart

Juvenile crimson rosella

Witchelina Expedition

As many members already know SEG was to be carrying out a biological survey on Nature Foundation's Witchelina Reserve in late October and early November last year. Unfortunately more wet weather intervened and many roads to and within Witchelina became impassable. Within three days of the proposed departure date the expedition was postponed.

It is now proposed that the expedition be carried out in Autumn 2023. Dates are 14 to 23 April 2023.

If you are interested please send an email as soon as possible with your details to the SEG email scientificexpeditiongroup@gmail.com and we can inform you as plans are developed.

SCIENTIFIC EXPEDITION GROUP INC.

APPLICATION FOR MEMBERSHIP AND MEMBERSHIP RENEWAL for 2022 — 23

Membership is open to any persons, family or organisation interested in the following aims:

* The promotion and running of expeditions of a scientific, cultural and adventurous nature.
* The furthering of knowledge, understanding and appreciation of the natural environment.
* Promotion of the values and philosophy of wilderness.
* Enabling people to learn the skills required for planning and running expeditions, and to develop sound field techniques

SUBSCRIPTION RATES

Adult member - - - - - - - - - - - - - - - - - - $40.00
Concession cards/ student - - - - - - - - - $20.00
Family or Corporate membership - - - - $50.00

HARD COPY SEGments:- If you would like to receive a hard copy through Australia Post of our quarterly journal SEGments, please include in your payment an additional $30.00 for a SEGments subscription. All members will receive an electronic copy by email.

Name. . . . . .

Address . . . . . .

. . . .

Telephone (H) . . . . . (W) . . . . . .

E-mail . . . . . .

Details of scientific, cultural, and adventuring or other relevant skill or interests you may be prepared to share with the group:

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ELECTRONIC PAYMENT

If you have access to the internet, payment can be made using SEG's bank account at Bank of South Australia, details as follows:
Acc Name: Scientific Expedition Group Inc.
BSB: 105-086 Acc No.: 330629440

Please use your last name if possible to identify your payment **AND** also advise us by email that you have made a payment to our bank account via email to – scientificexpeditiongroup@gmail.com
Or send a cheque payable to Scientific Expedition Group Inc. with a photocopy of this page to:

The Secretary
Scientific Expedition Group Inc.
111 Franklin St,
Adelaide, SA 5000.

PLEASE NOTIFY ANY CHANGE OF POSTAL OR ELECTRONIC ADDRESS