

SEGments

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Scientific Expedition Group Inc.

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Cover Photo: Checking the stealth cameras at Bakara Conservation Park. Photo: Annette Vincent

Rear Cover Photo: A female golden orb weaver spider on its web. Just the body of the spiders appeared to be about 3 cm by 2 cm. 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 annual mallee-fowl monitoring over a weekend in the Murraylands.

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SEGments

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GUEST EDITORIAL

Recycling is good and occasionally we will recycle an article from SEGments' archives. This Editorial by SEG's past Chairman Bob Sharrad AM is one worth rereading.

Some of you will know that I have a soft spot for reptiles and find them, in the main, attractive, interesting and worthy of study. But of course not everyone shares my views on these beasties as I found out some years ago when addressing a group of University students on local wildlife. I began my talk by showing one of my best slides which showed the head of a particularly attractive gecko showing its extraordinarily patterned eye. I was astonished when several people said, "yuk" and one left the room, claiming loudly that she felt sick. Another, on observing that I also had some suspicious looking cages, warned me that she might also have to leave if a nasty beast was revealed. It turned out that for some of them, creatures that were acceptable make up a tiny proportion of the animal kingdom. I was unprepared for this violent reaction: mostly I had spoken to young children or older adults (over 60's) who almost invariably loved my "show and tell". This active dislike for so much of the diversity of nature is actually fairly common I fear, though rarely expressed so forcefully. Of course it's quite normal to loath some creatures. Who can admire a disease causing parasite, for example? But why would a harmless, colourful gecko evoke such dislike?

This antipathy may also extend to native plants. Any discussion of street trees in Adelaide will lead to a few astonishingly hate-filled diatribes about gumtrees and other apparently murderous, vindictive, destructive, ugly Australian natives. Interestingly a few of the people that dislike our own trees may be quite fond of foreign plants and may even be keen gardeners. I hasten to add here though that those who express such views about our biota are probably in a minority. More I hope have positive attitudes to the diversity of nature.

It's not really that surprising I suppose. Most Australians come from other lands or at least their parents do, most live in cities and few spend much time in natural areas or on farms. We rarely get exposed directly to nature for prolonged periods. The books we read and the TV programs we watch often come from overseas and the plants, animals and landscapes depicted are very different from those in the Australian countryside. It's no wonder that many of us still act like aliens, ignorant of and often fearful of the strange antipodean biota.

The fact that many Australians are not in touch with nature presents a great challenge to conservationists. People will not want to preserve habitats and wildlife unless they know something about them and value them. This is why organisations like SEG are so important. We work to take people (particularly the young) into the field to experience nature at first hand, and many of you will have seen the quickening of interest in natural history in such individuals. We also provide readable and attractively illustrated information about local natural history in our quarterly journal SEGments. Keep up the good work expeditioners!

Dr Bob Sharrad AM SEG Committee sharrads1@bigpond.com

BUILDING NEW HABITATS TO PREVENT SPECIES LOSSES

Associate Professor David Paton AM

I was asked to provide a summary of BioR's progress on reconstructing habitats and the following is based on a 7 minute pitch presented at a 10 x 10 philanthropy event in February.

Sitting on Adelaide's doorstep is the Mt Lofty region. Few know this, but this region is listed as one of 15 biodiversity hotspots in Australia. Despite this listing, many of the plants and animals that live here face imminent extinction. Charismatic, colourful species, like the Scarlet Robin, Restless Flycatcher and Diamond Firetail will not be around in the future.

The primary reason why these species will disappear, along with many others, is because we have cleared too much native vegetation. South Australia was aware of this risk 40 years ago, and the State legislated to prevent further largescale vegetation clearance in the 1980s – by then just 10% remained.

Despite ceasing to clear native vegetation from the 1980s, many species, particularly woodland birds, have continued to decline. Why? Because there is insufficient habitat left. The Mt Lofty region used to support 110 woodland bird species. With just 10% of the habitat remaining, half of these bird species will disappear. Ten species have already vanished and a further 50 species will vanish. BUT they don't have to.

The good news is that it is not too late to prevent these imminent losses because there is a lag between the clearing of native vegetation and eventual disappearance of plants and animals. Many species can hang on for many decades in the remaining snippets of native vegetation, but nevertheless they slowly decline and eventually disappear. This period when species slowly disappear is known as 'paying the extinction debt' (this is a debt that current generations pass to future generations). But equally, this period provides a 'window of opportunity' to stop the imminent loss of species, which can be achieved by putting back woodland habitat on some of the cleared land before the species vanish.

If we want to keep the species that exist today in the Mt Lofty Ranges for the future, then, in the next 100 years or so, we need to increase the cover of native vegetation across the region from its lowly 10% to around 30%. This is a staggering 150,000 ha of additional habitat needed and delivering it is achievable with everyone's help, but, it requires us to take collective action now. Let me illustrate how you can be a part of the positive change needed to turn things around for this region's biodiversity.

BioR is about re-establishing the habitats that our wildlife need to survive. We don't just plant trees and hope the wildlife comes – we reconstruct what the animals need

and underpin this with monitoring and ecological research so that the habitats are also self-sustaining and resilient.

With BioR's current capacity, we can comfortably plant about 10 ha of cleared land per annum with a diverse mix of plant species. In 10 years, we aim to be doing 100 ha per annum and in 25 years, at least 1000 ha per year. And, if we reach these targets and continue growing our activities, then we will deliver the 150,000 ha that are needed within 100 years. But we need you all to help and that help is needed now and not in 10 or 20 years.

BioR is a grass-roots organisation and has been around for a decade reconstructing about 250 ha of habitat, some of which now successfully supports some of our declining woodland birds. For example Cygnet Park Sanctuary on Kangaroo Island was set aside for restoration about 15 years ago and now supports an additional 175 ha of diverse habitat across what were bare paddocks. In less than 10 years those bare paddocks have gone from supporting <1 bird per hectare (mainly magpies) to around 10 birds per hectare. Of the 30-40 species of birds being supported by the plantings, 13 are species that are now listed as being vulnerable or endangered following the fires on Kangaroo Island. Similarly, the numbers of Glossy Black Cockatoos that the property supports has jumped dramatically from 2-4 in 2007; to 16-20 in the years immediately prior to 2019-2020 fires; to 30-40 after the fire. The latter number is approaching 10% of the total population. BioR is now looking to deliver similar outcomes across the Mt Lofty region, and has started restoring habitat on a 550 ha area known as Frahns Farm, near Monarto.

Of all the things that have given me hope in recent years, it has been the growing number of volunteers helping us and their enthusiasm. For example, BioR has over 300 committed volunteers that come to our annual planting festivals – they get their hands dirty, they come with their families, they connect to nature and above all they enjoy themselves while delivering environmental outcomes. They range in age from 2 to over 80, span all walks of life, and they are critical to delivering the outcomes in terms of large areas of new and functional habitat. Critical because building new woodland habitats takes many decades, perhaps more than 100 years, and requires successive generations to commit and in that way build intergenerational ownership. To deliver the areas of habitat required we will need to grow that volunteer base substantially.

Another key component to growing our capacity is securing additional funding. One feasible funding mechanism involves individuals offsetting their ecological footprint. We each need to give something back to nature, by reducing the amount of land that has been altered to support our collective lifestyles. Offsetting an ecological footprint costs about a dollar a day. This is not beyond us.

What does a dollar a day deliver for an individual in terms of a tangible asset? About 1 ha of woodland habitat, which can be re-established over an individual's life. With enough people supporting our movement by contributing their 1 ha of habitat, we can make a real difference - one you could see from outer space. Already one can see the substantial contribution that the plantings at Cygnet Park Sanctuary are making to Kangaroo Island's cover of native vegetation.

With your help, and only with your help, we can grow the biodiversity of the Mt Lofty region and save our wildlife from extinction, including the charismatic woodland birds like the Scarlet Robin, leaving a lasting legacy for future generations, so they won't just see our wildlife as museum specimens of



Aerial views of Cygnet Park Sanctuary in 2009 (left) and 2018 (right) at two scales (top four images) and the locations of birds detected during a census undertaken in 2009 and another undertaken in 2018 (bottom images) before and after habitat reestablishment

species lost, but as part of a healthy, biodiverse planet.

Each and every one of us needs to ask ourselves this question. Do I want to live in a region, a region listed as a biodiversity hot spot, where we just stand by and watch our biodiversity collapse?

If the answer to that question is YES, or you opt for the default answer of doing nothing (and I hope that is not the case), then you and your descendants will live in a State where future generations will only have photos and boxes of museum specimens to remind them of what this region once had.

If the answer to that question is NO, you want our region's biodiversity to flourish for future generations to enjoy, then consider how you can help and become involved.

Now many of you will already be doing things both professionally and voluntarily, be that as part of other organisations or in friends groups associated with helping to manage some of the threats to existing native vegetation and other wildlife. I applaud you for those contributions. But just setting aside remnant vegetation and managing the threats to the flora and fauna in those areas (even if done really well) will not stop many species from disappearing. The reason is this – there just isn't sufficient habitat remaining to support all of the species that should exist in the Mt Lofty region. Ultimately,

this region needs significant amounts of new habitat established to support the species we love. BioR aims to complement the other works and measures to arrest imminent biodiversity losses by re-constructing habitats.

In summary, the future of our biodiversity is not hopeless, and no one needs to feel overwhelmed by the enormity of the task. We each need to do our bit and build a movement for positive change. However, the time to play your part is now and if you are interested in helping build the new habitats for this region then connect with our team at BioR, follow us on social media and spread the word, subscribe to our E-newsletter, enlist as a volunteer and ultimately become engaged in what BioR is doing. Have conversations like the one above with your colleagues and friends to enlist their support.

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David Paton AM has had a lifelong interest in natural history and wildlife conservation with a focus on birds. For much of his professional life he undertook ecological research and taught ecology and conservation biology at the University of Adelaide. He is a Founding Director of BioR.



SEG is very grateful to our corporate sponsor Microchips Australia for its invaluable support to the Minnawarra Project.



DRONE FOR SCIENCE

Garry Trethewey

I've been to talks & lectures at uni where they talk about 'a cheap \$100,000 drone' with a \$950,000 camera mounted on it, and \$30,000 software and huge post-processing.

Mine was about \$1,000 all up. Nevertheless, it's a useful tripod. You can look at objects half-way up a cliff, or a 200 ha revegetation project, or incremental post-burn regrowth transects, or a programmed 'height above ground' photo series assessing spinifex quality.

If you have a project where you think a drone might be useful, contact me. We can talk about it, the laws of physics and the laws of DEW, CASA, etc and see what we can do.



garrytre@bigpond.com

SOCIABLE SKINKS – A STUDY OF GIDGEE SKINK SOCIAL COMPLEXITY Sarah Barker, Flinders University 2020 Recipient NFSA – Scientific Expedition Foundation RL & GK Willing Grant

A spikey skink living in rocks in semi-arid Australia may sites not sound like an ideal study species to many, but finding out about the living arrangements of these lizards may shed light pairs upon the evolution of sociality.

The Nature Foundation of South Australia's (NFSA) Witchelina Nature Reserve is home to a large population of gidgee skinks (*Egernia stokesii*). Unlike many other reptiles, gidgee skinks don't lay eggs, giving birth to litters of live young instead and providing low levels of parental care.

Cohabitating with family members in rock crevices within outcrops, these lizards are known for their group living. This level of social complexity is rare in reptiles which begs the question, why are gidgee skinks so much more social than other lizards?

It has been suggested that the lack of availability of shelter in such extreme conditions may have encouraged these lizards to aggregate and begin to tolerate each other. Consequently, when crevice availability is increased, we would expect an increase in resource sharing allowing larger family groups to form.

To test this hypothesis, my Honours project aims to compare groups of gidgee skinks with limited and increased availability of crevice habitat.

In 2015/2016, with the help of the NFSA and the Scientific Expedition Group volunteers, artificial habitat was created using wooden logs and metal sheeting to increase crevice availability. Following this, lizards have been caught each year, micro-chipped and sampled for DNA.

The movements of these animals can now be studied over the 5-year period comparing manipulated and natural

sites. Genetic material can be used to identify family groups and determine whether these animals breed in monogamous pairs.

By studying such complex social traits in a group of animals where this complexity is rare, we can understand how environmental factors affect the early evolution of sociality. As the end of the project nears, data are being analysed and we are finding some early trends. I look forward to updating you with some conclusions at the end of my study.

I would like to thank the Scientific Expedition Group for awarding me the NFSA/SEF R.L. and G.K. Willing Grant to fund my research and for the continued support.

sarah.barker@flinders.edu.au





Sarah holding gidgee skinks next to an artificial habitat at Witchelina



Gidgee skink in its natural habitat under a rock crevice

DUNCAN MACKENZIE OAM – A MAN OF MANY SKILLS

Duncan grew up in Geelong where his interest in ecology piqued early. At twelve years old he presented his research from a project on birds to the school assembly, which sparked his lifelong involvement in nature and bird photography. Duncan recalls many weekends spent out bush as "the best years of my life." Since then his interest has never waned.

Duncan is a biologist, an ecologist and an ornithologist. He harbours a wealth of knowledge derived from decades of work in ecotourism and land management and conservation. He is the author of over 450 publications, an avid bird photographer and an internationally accredited photographic judge.

Duncan is a member of the management committee of the Scientific Expedition Group (SEG) and has been a member of SEG since the 1990's, assisting with and running a number of field trips, including the early work done on the biodiversity of un-developed road reserves in the Southern Fleurieu Peninsula and the early days of the Minnawarra Biodiversity Project, which has been going for 20 years.

Duncan has had long and distinguished community service. He is the Immediate Past Chairman of BirdLife Australia Gluepot Reserve (23 years) and is a Life Member of BirdLife Australia. He is on the board of BirdLife Australia and was recently appointed by the Environment Minister to be the first Chairman of the Management Committee of the Adelaide International Bird Sanctuary.

Duncan is the President of SA Friends of Parks Inc., and is a member of the South Australian Parks and Wilderness Council. He is a member of the Volunteering SA/NT Strategy Working Group and is a past Chairman of Ecotourism Australia (8 years) and the South Australian Tourism Industry Council (8 years). He is a member of the State Council of the Landcare Association of SA.

In January 2020, Duncan was appointed to the "Wildlife, Ecosystems and Habitat Recovery Task Force" to assist SA in planning and instituting long-term fire recovery and the DEW 'Nature Based Tourism Reference Group'.

Duncan has given long and distinguished service to Kiwanis, and he is a past Australia District Governor and International Chairman of Kiwanis International. During his 40 years with Kiwanis, Duncan managed an international health project to eliminate Iodine Deficiency Disorders (IDD) from the world by the year 2000. This was undertaken in partnership with UNICEF and he spent the best part of five years overseas, helping Kiwanis fundraise over US\$120 million, writing IDD manuals and papers, lecturing/training, undertaking discussions with the health ministers of countries affected by IDD and in the general international promotion of the IDD project.

Duncan was a biological research scientist with the Australian National Antarctic Research Expeditions (ANARE) and spent a number of years in Antarctica leading research into royal penguins, elephant seals, fur seals and albatrosses. He was then seconded by the Australian Government to Adelaide where he helped set-up and manage the biology Division of the Mawson Institute for Antarctic Research at the University of Adelaide. He was recently appointed to the National Council of the Australian National Antarctic Research Expedition Club (ANARE).



Duncan's professional skills have been in the development, organization and management of large commercial and community organizations and scientific research projects, both in Australia and overseas. His expertise covers the areas of fundraising, marketing and communications, business and finance, organizational development and system analysis.

SEG is very grateful for Duncan's long service on the management committee where he contributes his wealth of knowledge on conservation issues and volunteer management.

The Editors are grateful to Birdlife Australia for permission to reprint much of their article "Such is Birdlife" printed in the September 2020 edition of *Australian Birdlife*.

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STOPPING THE BELL TOLLING ON A THREATENED FROG

FrogWatch SA

The Southern Bell Frog, Litoria raniformis, is a large frog which historically was widely distributed throughout the Murray Valley and South East of South Australia, as well as in the eastern states and Tasmania. However, since the late 1970s it has undergone major population declines and it is now listed as a vulnerable species under the National Parks and Wildlife Act 1972 here in South Australia, and nationally under the Environment Protection and Biodiversity Conservation Act 1999.

One of the main reasons for the decline of this species seems to be the lack of watering that has occurred to their wetlands following the installation of locks and weirs, and other water management methods in the Murray Valley.

However, a partnership between not-for-profit organisations and the local community with support from the Foundation for Australia's Most Endangered Species (FAME), government departments and universities is working towards increasing the population of this charismatic amphibian.

With the correct permits in place, a number of Southern Bell Frog tadpoles was carefully collected from select locations in the Riverland in late 2019 and transferred to a purpose-built the loud, growling call of the Southern Bell Frogs will once conservation facility at Clayton Bay. There local community volunteers from the Clayton Bay Nursery and Environment Group have worked with scientists to care for those tadpoles and rear them into fully developed frogs.

The tadpoles from the different locations were housed separately to minimise the possible spread of diseases and to maintain the genetic diversity of the stock.

given the all clear and approved for release into the enclosures.

One by one the young frogs were caught from their tanks and a best guess was made of their gender, which can be very tricky with juveniles.

All of the males from one Riverland location were released into one enclosure, with the females from the same location released in the other enclosure.

For the next re-location this was swapped, so the males and females in each of the two enclosures are from different locations. Hopefully we were accurate enough with our sexing that there will be a good mix of genetics and low levels of interbreeding.

These frogs will now live out their days in the enclosures, well fed by the volunteers and happily breeding away.

It is also planned to build additional enclosures so that even more breeding frogs can be maintained.

Their disease-free offspring will be reared in the tadpole tanks and, once old enough, used to repopulate carefully managed wetlands throughout the Lower Lakes. We hope that again be heard throughout the region.

Re-printed with kind permission of **FrogWatch SA**



On Tuesday 22 September 2020 a milestone was reached when 32 frogs were transferred to the two outside enclosures where they will live, safely away from predators while also being exposed to the natural elements. These individuals will serve as the basis for a new breeding colony.

Before they could be released into the breeding ponds, the team needed to ensure the frogs were free from chytrid fungus; a disease which has been shown to cause significant deaths of amphibians around the world. Therefore, swabs were collected from the frogs' skins and sent off to be tested. It took a couple of weeks to get the results back but happily the frogs were



Southern Bell Frog Litoria raniformis

ASSESSING THE IMPACT OF HABITAT AVAILABILITY AND PREFERENCE FOR LITTLE PENGUINS' DISTRIBUTION Larissa lasiello

2018 Recipient NFSA – Scientific Expedition Foundation RL & GK Willing Grant

Investigating the ecology of a species and the spatial requirements needed for their survival within an environment can improve and further develop conservation measures. Scale-dependent interactions are important to consider as many factors can influence an individual's survival, each with a varying degree of impact depending on the scale at which they occur.

In this Honours project I investigated habitat preference of little penguins (*Eudyptula minor*) across eleven colonies in South Australia. Table 1 shows the eleven surveyed islands and little penguin population estimates. Eleven populations of little penguins were surveyed, one per island. I examined their breeding habitat preference at the meso scale (distribution between the colonies), the topo scale (nest site density within colony), and the micro scale (characteristics of the individual nests).

The results from this study showed that none of the meso characteristics (distance to the nearest colony, island size, water depths, maximum height, and number of landing sites) explained little penguins' population size (low, high). None of the topo characteristics (distance to nearest colony, vegetation cover, dominate shrubs species, dominate ground plant species, predator presence, competitor presence, slope and distance to nearest landing site) explained little penguins' nesting density. But this may have been due to an error with the statistical analysis therefore this data is currently under revision. At the micro scale a total of 408 nests were measured across the surveyed islands.

The most common vegetation species found above a nest was the Nitre bush (*Nitraria* sp.; a native species). Rock nests were the most common nest type and represented 64% of all nests found. Within the 30 m x 30 m quadrats, African boxthorn was the overall most dominate weed (occurring in 61% of the quadrats).

For 78% of the surveyed islands (excluding English and Smith Islands, as no penguins were present), active nests were found at higher densities on the northern side of the island, and for the remaining 22% active nests were found towards the southern side of the island.

My study also presents new population estimates for eleven South Australian little penguin colonies, nine of which were little studied or data deficient. It was confirmed that little penguins are extinct on English and Smith Islands, and that little penguins are breeding on Louth Island, which was not considered to be a breeding colony previously. Our population surveys on Wardang, Spilbsy and Hareby Islands differed significantly from previous estimations, and suggest that the Spilbsy Island population may not have declined as much as



A pair of little penguins on nest. Photo: L Iasiello



Larissa on location with seals in the background

previously believed. However, additional surveys across multiple years are needed to confirm these trends.

The population estimates from this study have now updated the status of little penguins on the islands included in this project using more reliable survey methods, and creating more precise baseline data for future monitoring.

Acknowledgements

I would like to thank my supervisor Dr Diane Colombelli-Negrel for guiding me through my Honours project. I would like to show my appreciation to all those who helped me collect my data. Special thanks to Sarah-Lena Reinhold for her contribution on the islands in the Spencer Gulf and Bianca Johnson for her help on Troubridge, Wardang and Goose Islands.

Thanks to Barossa Helicopters and Rhyan Baffett for transport to the islands in the Spencer Gulf. Thanks to the local rangers on Wardang and Goose Islands (Jasmine Swales and Max Barr) for their help with the surveys. Thanks to Chris and Judy Johnson for access to Troubridge Island.

I would also like to thank all the organisations that have been so generous to contribute funds towards my Honours project. Due to the donations from Nature Foundation SA/SEF RL &GK Willing Grant, Birds SA, Australia Geographic Society, The Alongside Wildlife Foundation, Flinders University, and



Distribution of all eleven surveyed islands. Those islands marked with black circles represent well-studied little penguin colonies. Islands with the grey circles represent the little-studied little penguin colonies and those with white circles are data deficient

Adelaide & Mount Lofty Ranges Natural Resources Management Board, I was able to travel to numerous offshore islands to collect my data. Traveling to off-shore islands can be very expensive and limits the amount of research that can be done on them. The fact that I was able to receive the necessary funding to travel to eleven islands makes me feel overwhelmingly blessed and grateful.



Table 1. Population estimates and historical records for the South Australian little penguin colonies surveyed in this study.The colonies were surveyed between May 2016 and October 2018.

Colony	Historical Estimate	Latest Estimate, Prior to our study	2018 Estimate, my study	Overall Trend
Granite Island	approx. 100-1000 in 1962-1992	22 in 2015	44	Declined
Troubridge Island	3000-5000 in 1966- 1992	1966 in 2013	496	Declined
Emu Bay	298 in 2008	102 in 2013	56	Declined
Wardang Island	none	8000 in 2004	279	Unknown (data deficient)
Goose Island	Breeding colony present in 1981	20 in 2005	38	Unknown (data deficient)
Spilsby Island	few thousand in 2000- 2005	100 in 2011	410	Declined
English Island	Breeding colony present in 1980	0 in 2011	0	Extinct
Louth Island	none	recently sighted on island	50	Unknown (data deficient)
Rabbit Island	Breeding colony present in 1976	ND	8	Unknown (data deficient)
Hareby Island	Present in 1979	500 in 2008	60	Suspected stable
Smith Island	none	ND	0	Unknown (data deficient)

MINNAWARRA BIODIVERSITY SURVEYS 2021

Autumn — Wednesday 14th April to Sunday 18th April

Spring — Thursday 30th September to Monday 4th October.

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: Janet Furler on 0419 842 667 or <u>thefurlers@gmail.com</u>

SEG AND MALLEEFOWL MONITORING **Alun Thomas**

As part of the National Malleefowl Monitoring Program stealth cameras have been set up in various conservation parks in the Murray Mallee to get some idea of what types and numbers of animals, particularly predators, are in the parks which are of specific interest because of the malleefowl in them.

Malleefowl are found in semi-arid to arid shrublands and low woodlands, especially those dominated by mallee and/or acacias. They are a much-loved ground-dwelling bird and an ecosystem engineer, renowned for the large mounds that they build to incubate their eggs. The species is listed as threatened, endangered or critically endangered in all states of Australia in which they occur, as well as vulnerable nationally under the EPBC Act. They have undergone a sustained decline in numbers and overall range. Introduced predators such as cats and foxes are believed to be having a significant impact on remaining populations, by killing adults, while foxes also dig up nests to eat the eggs. While controlling these predators is the most common management strategy it is very expensive to implement in the remote arid landscapes in which the malleefowl occurs. More worryingly, the benefits of various methods of predator control for malleefowl recovery are unclear.

This adaptive management of feral predators project aims to better understand the effect of predator control in malleefowl habitat on both predator activity and malleefowl persistence. The research is being conducted as an experiment within an adaptive management framework. This will allow managers to trial practical on-ground techniques to learn about the effectiveness of predator control while continuing management to aid the recovery of malleefowl.

Our part of this project is to work with cameras set up within Bakara. These cameras have to be checked four times a year and their memory cards replaced.

in the Bakara Conservation Park, where we have been doing malleefowl surveys since 2008. Bakara Conservation Park is approximately 30 km east of Swan Reach on the road to Loxton. It was set up to conserve the malleefowl habitat. The landscape is a gently undulating calcrete plain with low easterly trending sand dunes and shallow depressions in the east dominated by mallee vegetation. An unusual feature of this park is that it is on the boundary between two types of dunes and this contributes to the high diversity in the numbers of plants growing there.

There are eight cameras set up in the park all within convenient walking distance of vehicular access. The furthest camera is about 400 to 500 metres from the nearest road.



Helen Johnson and Alun Thomas checking a camera. Photo: Annette Vincent

SEG carried out the first camera check in conjunction with the mound survey in December 2020 and has recently completed a second check in March 2021. We will need to do SEG has been asked to take responsibility for the cameras subsequent checks in June and September. We are aiming to



Fox caught on a stealth camera in Bakara



Large malleefowl mound see by Janet and Phil Davill in their walk in Bakara

build up a team of experienced walkers so that the same people do not have to go every time.

In March we had three teams. The two teams that went to the more distant cameras did two cameras each and the other four cameras which are very close to the main access road were checked by the third team. The checking took two to three hours for each team. Because of the warmer weather some members chose to camp the night before so that the checking could be caried out before the day got too hot. In the cooler months it will be possible to make a day trip of it. Depending upon the route taken it can take from two and a half hours to three hours to drive there.

The teams for our March walks were Phill and Janet Davill in the first team, Helen Johnson, Annette Vincent and me in the second team and Doug and Kath Bickerton and Bob Vincent in the third.



Malleefowl seen on a stealth camera in Bakara

The first team saw a large malleefowl mound on their walk. They also had the job of replacing one of the cameras which was achieved successfully. It was necessary for the third team to replace a power supply system of solar panel and battery which again was achieved.

In my team we found that there was an intermittent fault with the power supply at one of the cameras we visited so we returned to the base camp, collected a spare power supply which had fortunately been supplied and then returned to the camera to replace the power supply. The camera worked well after that. On our walk we saw several spectacular huge golden orb weaver spiders on their webs. Just the body of the spiders appeared to be about 3 cm by 2 cm. Overall there were interesting walks.

SEG is planning to organise a group of expeditioners who know how to service the cameras so that the same people do not have to do them every time. Please advise on our email <u>scientificexpeditiongroup@gmail.com</u> if you would like to be included in the group.

More information on recovering malleefowl with adaptive management of feral predators can be found at https://www.nespthreatenedspecies.edu.au/projects/ recovering-malleefowl-with-adaptive-management-of-feralpredators

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AUSTRALIA FROM A YANKEE POINT OF VIEW Bobbie Rice

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A few years ago, while working out bush near Fitzroy Crossing, a friend wrote asking if I'd answer his matric project question' "In your wide experience of travelling in many places, what distinctive features and aspects of Australia do you find appealing?" Battling the desert heat [+50°C in the sand, my thermometer had just top ended itself], afternoon heatwaves, wind & willie-willies rattling my pad of paper, kamikaze flies investigating my ears, nostrils, mouth, eyes & sunglasses, & red bulldust that had altered my appearance (caked hair & coloured skin), much less made my dusty palm print readily identifiable on the paper (FBI would love it), I scribbled my reply, part of which I'll share with you.

To be blunt: the stark, naked contrast of the country. The Defiance of Mother Nature. Despite the bareness of many areas, I find contentment in seeing shrubs, scrub & trees (dead & alive) still standing - standing resident on the landscape. A different form of life & death than I've ever encountered.

What/where do the plants & animals of the Desert find water to survive, grow, flower & flourish? After being up in the outskirts of the Kimberlies for 3 months in the Pilbara, the Territory, Northern Flinders Ranges & Innamincka & Gulf of Carpentaria, I find it mind boggling that a few drops of rain will transform a barren landscape into colours of the rainbow in just a few hours or days. Blossoms & flowers come out from nowhere & the drab brown to red countryside is suddenly dancing with shades of red, green, purple, yellow, etc.

I've begun to understand the meaning of "water colours" versus dry colours just a change in colour texture & radiance. The dry desert glows by mid-afternoon - radiating & reflecting energy off its surface, the dark red browns, oranges & reds really begin to glow. By sunset, it's amazing the intense richness of colour. Perhaps it is the shadows of late afternoon that bring the colours out. During the afternoons & midmornings, the colours tend to blend & are dull without glow. Colour changes due to rock type, vegetation, & topography are evident but not as distinctive & sharp/crisp; the sun's brightness tends to merge the colours. Mornings are an awakening, colours appear dark & crisp, resulting from a combination of early morning shadows & humidity. Add a bit of water to the landscape & the land begins to glimmer & shine besides simply glowing. The radiance level has changed somewhat softening the harshness. The distinction of dry & water is in the eye & not immediately picked up - years of observation are needed. Scuba diving has really helped -the underwater colours of sponges & starfish become dull with aeration & drying. I feel privileged to work in the desert & the oceans from purely a colour point of view.

I guess my favourite aspect of Australia is the Desert. One of my favourite desert images is a lone dead tree, barkless yet smoothed with time, twigless, twisted, gnarled-(arthritic) & bowed, with large cracked & hollowed branches & corella hole (home) trunk, standing defiantly on a reddish orange, sandy claypan, sand dune, plateau or plain (gibber plain). Why does this lone dead tree stand & leave its beautiful mark on the landscape? Dried yet making a statement of defiance.

Desert Waterholes: to see waterfowl & so much greenery surrounding the waterholes, meandering water courses, dendritic patterned drainage basins & then walk +300m away & get barrenness & sparse vegetation on & over the sand dunes. I get a better feeling for what it's like to be a tree - reaching down into the earth further & further & further to tap the water supply in the soil, to grow, to live & to survive flash floods & battling the lack of soil support from soil dehydration during drought.

The massive sand dunes -bright white, grey to reddish orange, some 10 - 20m - migrating & stationary - a dynamic & static system all in one (the individual movement of sand grains to form the dunes versus the somewhat stationary position of the dunes). To stand on top of or next to the dunes & listen to the winds or the deafening silence & feel the stillness in the air; to be pitted or "sand blasted". I can say "OUCH" to the pitting but what does one sand grain say to another when they collide & bump into each other & other moving/stationary objects.

With the desert waterholes, my original American bred concept of the Desert has been blown to bits. [America has some wonderful deserts, don't get me wrong. Australia' s deserts are just more romantic to me].

A waterhole in the desert with fish in it (yellow bellies cooked under coals with a bit of garlic & lemon).

A waterhole that beams with waterfowl, lined with old twisted, majestic gum or coolabah trees.

Soil is of hardened claypan & stones, bulldust or sand that swallows up vehicles & coat one's eye lashes, nostrils, lips & throat.

All found in the remote Desert.

A Desert in bloom - meadow-flowers squeezing up to the surface in between the minute crevasses of the sand grains, mud cracks, or stones or even human & animal footprints.

A Desert in bloom, changing over a few days from stark nakedness & dryness, crisp, stalky & bleak to the softening of earthy colours to a mud slurry which gobbles up 4WD vehicles & coats them with sticky, moisture laden, red to grey bull dust ... to greenery - a desert meadow of soft, fluffy, fragrant, multi-coloured, multi-speciated flora.

Desert in bloom – something before I came to Australia – I never saw, much less conceived.

The Desert Solitude continually drives me back to the deserts. How peaceful it is out in the Desert. So quiet. So consuming. Sometimes just seeing the wide open, vast landscape with no-man-made sculptures is absorbing - internalizing. A place of security where our 21st century anthropogenic culture doesn't belong.

The ruggedness of the Outback – one really needs to know how to survive, needs to go back to the basics. A different breed of people live in the Outback. Ingenuity is the law – one needs it to survive if equipment fails or whatever, because the local store is a few 10's to +100's km away & only carries the basic necessities of life. The people are rugged in appearance yet are warm, honest, trustworthy, willing & helpful. The sun & wind have creased their faces (particularly the eyes) & body, crusty looking in a sense. The variety of bush hats - all have one common trait - a dried, pointed crack someplace on the salt stained [white] leather. . It's sometimes incredible to see white shirts survive the bulldust environments.

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Bobbie Rice is a geologist/oceanographer by trade. After immigrating to Australia from USA in 1985, she settled in Adelaide and began her love affair with the Australia Outback, particularly the Flinders Ranges & northward to Innamincka-Coongie Lakes and Simpsons Deserts regions. Professional geological opportunities took her to remote mountainous/arid areas of NT & WA as well as the coastal/offshore areas of several SE Asian countries, the NW shelf of Australia and eastern Pacific Ocean.

Bobbie was introduced to SEG through Chris Wright and John Waterhouse back about 1987 when she became part of the setup crew for the long running SEG Gammon Ranges Project. She was editor for SEG in the early 1990s for a few years when the budget was limited, SEGments was posted (pre-digital era), and Group expeditions were just starting to be organized. Unfortunately, her dodgy knees have caught up with her and her hiking days are over. However, she still enjoys contributing what she can to SEG to assist others with "the outdoor experience; giving back what was given to her"

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www.ScientificExpeditionGroup.org

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