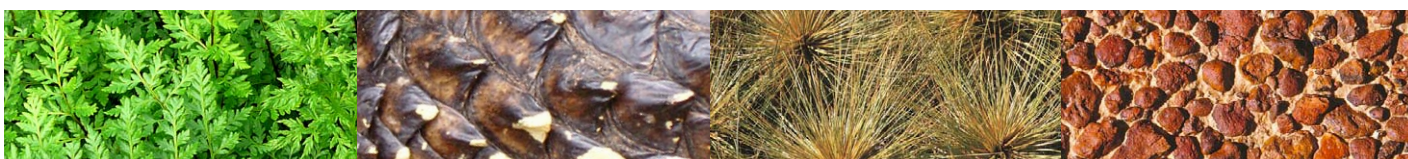




NEWSLETTER OF THE NATURE CONSERVATION SOCIETY OF SOUTH AUSTRALIA



THIS ISSUE:

In the Chair

Nature Advocate's Report

Projects Update

Creature Feature: Yellow-tailed
Black Cockatoo

FEATURES:

Conservation Biology Grant Report: Diet of wild deer in
South Australia

Long term monitoring documents grazing impacts and a
decline of Silver Banksia in Charleston Conservation Park

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IN THE CHAIR

I apologise. Too much time has passed since our last edition of *Xanthopus*. Truth-be-told we have struggled in recent years to publish quarterly issues. The newsletter used to be our sole method of communication with our members. This is no longer the case. In addition, we now engage with our members and general public via a number of other communication platforms (website, social media, email). Each of these communication methods fills a different need, but all take time to do well.

For that reason, we the Management Committee recently decided to reduce the frequency of our *Xanthopus* publication. Instead of being a quarterly publication, it will now be biannual.

DOCUMENTARY FILM: KANGAROO: A LOVE-HATE STORY

On March 15th I attended the Adelaide premiere of the documentary: 'Kangaroo: A love hate story'. The six other audience members present at this screening, as well as the general reaction of the Australian media to this film, suggest that the message of this film isn't being taken too seriously in Australia. Probably because our own experiences and understanding don't mesh with that portrayed by the film-makers.

Unfortunately, the target audience for this film is not Australia, but rather American and European audiences that don't have a well-informed position against which to judge this film. These countries are large export markets for the commercial kangaroo industry. Movement against the consumption of kangaroo products in these countries could have a devastating impact on the viability of the commercial industry.

Disappointingly, the tactics adopted in this documentary are very similar to those used by climate change denialists: the dissemination of public misinformation, manufactured uncertainty, cherry-picking of facts, propagation of conspiracy theories, frequent use of so called 'experts', and effective use of sound-bites taken out of context. The movie also suffers from several illogical and circular arguments.

Four species of kangaroo are harvested commercially on mainland Australia: eastern grey *Macropus giganteus* and western grey kangaroos *M. fuliginosus*, red kangaroos *M. rufus*, and euro or common wallaroos *M. robustus*.

Population estimates for the four harvested species fluctuated between 17 million and 57 million between 1980 and 2009.

In 2016, the population in commercial harvest zones was estimated at 47.2 million; two kangaroos for every Australian.

The film-makers also take issue with the accuracy and precision of these population estimates, but fail to acknowledge that these estimates are purposely conservative (i.e. populations are likely to be higher than estimated).

From watching the film, they want you believe that these commercial species are threatened, declining, and possibly even endangered. This couldn't be further from reality. Since settlement, we have laid on abundant food (pasture and crops) and water (dams and waterpoints) sources. And removed their predator, the dingo, south of the dog fence. Most states and territories are struggling to grapple with overabundant kangaroo populations. At a time when we need a strong commercial kangaroo harvest industry more than ever; it is on its knees.

There are however, a few points with which the film-makers and myself agree.

- Firstly, animal welfare is non-negotiable component of conservation management and any wild harvest industry. All animals deserve fair and equal consideration of their rights and all animals deserve humane deaths, but this doesn't necessitate that all rights be treated equally (I added the last bit).
- Secondly, to placate animal welfare concerns in relation to pouch young euthanasia, the commercial industry is increasingly stipulating a male-only harvest. The effects of such a measure on the behaviour and population demography of kangaroo populations are largely unknown and need to be investigated further.
- Lastly, the use of cell fencing in pastoral regions, also known as barrier or cluster fencing, needs to be tightly regulated and possibly banned.

The Nature Conservation Society of South Australia has a vested interest in the success of the commercial kangaroo harvest industry. Not because we have any commercial stake, but because we view the industry as having an important role to play in management of overabundant kangaroo populations in southern Australia.

Love, protect and respect

Michael Stead, President



CONTENTS

In the Chair	2
Nature Advocate's Report.	3
National Parks Australia Council Nov '17 Meeting	4
Projects Update	6
CBG report: Diet of wild deer in South Australia..	7

Long term monitoring documents grazing impacts and a decline of Silver Banksia in Charleston Conservation Park.	8
Creature Feature: Yellow-tailed Black Cockatoo.	10
People and Events.	11



NATURE ADVOCATE'S REPORT

The following provides an overview of some of the key issues for our advocacy work since the previous newsletter.

ADVOCACY FOR THE SA STATE ELECTION

Advocacy for the environment in the lead up to the State election was spearheaded by the *South Australian Nature Alliance* (SANA), of which NCSSA is a member. SANA called on all candidates to commit to stronger environmental policies based on a platform outlined in *South Australia: Our Future*, and produced a 'scorecard' comparing the four major parties. The results were published [online](#) in the lead up to the election.

As part of these efforts, we met with the then Environment Minister, Ian Hunter, and also attended a SANA meeting with the Shadow Environment Spokesperson David Speirs, where we focused on better protection for our native vegetation, improved fire management practices and more support for multi-year, multi-partner landscape-scale conservation projects.

Now that David Speirs has been elected and confirmed in the role of Minister for the Environment, we have congratulated him and together to protect South Australia's nature.

THE NATURE OF SA

The conversation regarding future directions for nature conservation in South Australia, known as *The Nature of SA*, is continuing. One of the emerging themes from this work is that a strong relationship with the natural world is fundamental for our personal wellbeing and foundational to our ability to steward nature.

This has led to the establishment of **Amongst It**, an experiment looking for better ways to connect people to nature in positive, everyday ways and to celebrate how important nature is to the identity South Australia. In 2018, *Amongst It* is supporting nine projects that try a variety of ways to deepen individual connection to nature and to more widely celebrate how highly valued nature already is in South Australia. Details of these projects are at <http://www.amongstsa.org.au/projects/> - so we encourage you to get amongst it!

DRAFT NATIONAL STRATEGY FOR BIODIVERSITY CONSERVATION

The national strategy for biodiversity conservation, *Australia's strategy for nature 2018-2030*, was released for consultation and we, like many other not-for-profit groups, were deeply concerned about the document.

Our feedback highlighted that it lacked any specific targets or commitments to action, and concluded that we could not support it in its current form.



Nullarbor parks landscape Photo: H.Vonow

MANAGEMENT PLANS

Management of protected areas continues to be one of the highest priorities for NCSSA, as it has been since we first formed in 1962.

Over the past few months we have provided comments on the *Simpson Desert Conservation Park and Regional Reserve Draft Management Plan* and the *Yellabinna and Warra Manda Parks and Nullarbor Parks Draft Management Plans*.

We sought the inclusion of accurate, detailed information on the conservation values of these areas, where it was lacking, and highlighted the importance of protecting biodiversity, particularly threatened species, in these areas. We supported that these plans both had a strong focus on the aspirations of Traditional Custodians.

Another plan we examined was the *Eyre Peninsula Regional Roadside Vegetation Draft Management Plan*. This is the first regional roadside vegetation management plan that has been developed in SA, an approach likely to be adopted in other regions. Our submission expressed our concern by the proposed increased height and width of clearance envelopes, increased age of regrowth and routine use of high impact clearance methods proposed in the plan, given the conservation significance of roadside vegetation on Eyre Peninsula.

MEETINGS WITH THE ENVIRONMENT MINISTER

Michael Stead, Jeff Foulkes and Julia Peacock met with the former Minister Hunter in November 2017 and February 2018, as part of our regular forums for discussion of current nature conservation issues. Plans for a State Planning Policy for Biodiversity and the state feral deer and pig policies were discussed, in addition to election issues.

Julia Peacock

Nature Advocate

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NATIONAL PARKS AUSTRALIA COUNCIL – NOVEMBER 2017 MEETING, ADELAIDE

In November 2017, we hosted a three day meeting of the **National Parks Australia Council** (NPAC), the national body to coordinate and represent the views of a range of State and Territory non-government organisations concerned with protecting the natural environment and furthering acquisition of land to be protected within national parks.

NPAC provides a forum for regular communication between State and Territory *National Parks Associations* and acts as a united voice supporting conservation of the National Reserve System across Australia. We have been a member of NPAC since its formation and are currently the only South Australian representative on the Council.

A common issue for all members discussed at this meeting was the push for more nature-based tourism inside our parks. Whilst NPAC supports people connecting with nature and recognises that certain visitation activities can be compatible with conservation, it is imperative that the natural values for which parks are declared remain central and are not compromised by infrastructure or other developments designed to support access by visitors. To this end, the meeting heard a presentation from Chris Thomas, Parks and Tourism Manager, from the former Department of Environment Water & Natural Resources (DEWNR), on 'Nature-based Tourism in Protected Areas' including the recent "nature like nowhere else" campaign.

To get a feel for the issues first hand, the group then visited *Onkaparinga National Park*, where \$1.7 million had been invested in various new pieces of infrastructure, including a campground and a lookout. This was one of about 40 projects that was part of the State Government's \$10.4 million investment in parks through the "Connecting residents with nature initiative", which involved co-designing improvements with the community.



NCSSA Conservation Ecologist Nicki de Preu, President Michael Stead and Nature Advocate Julia Peacock at Onkaparinga Gorge NP. Photo: J.Peacock



NPAC members on the new lookout at Punchbowl waterhole, at Onkaparinga Gorge NP. Photo: J.Peacock

Field trip to Onkaparinga National Park to look at new infrastructure to encourage greater visitation.

..part of the State Government's \$10.4 million investment in parks through the "Connecting residents with nature" initiative, which was co-designed with the community.

NPAC members discussed the importance of protecting the conservation values of reserves from the possible negative impacts of visitation, particularly of higher-impact activities such as horse and mountain bike riding.

The group also heard from Kirstin Abley, Fire Ecologist, DEWNR, who talked about prescribed burning. This is also an issue of concern to all member groups of NPAC, particularly regarding how ecological concerns are addressed in planning and implementation.

The group visited *Stipiturus Conservation Park* to hear Luke Price, Threatened Fauna Ecologist with DEWNR, explain some of the challenges involved in managing the threatened species within the park area, particularly with regards to fire regime.

This also provided an opportunity to hear from Ben Taylor, Senior Wetland Ecologist with the *Nature Glenelg Trust*, about their efforts to re-instate the previous hydrology of this swamp area by blocking drains in the strategic locations.

A presentation on the *Adelaide International Bird Sanctuary* by Ian Falkenberg, Operations Manager Adelaide International Bird Sanctuary, DEWNR, which highlighted the challenges of protecting important bird habitat from activities like unrestricted four wheel drive and motorbike riding, was also well-received.

NPAC MEETING CONT.

A key part of the meeting was strategic discussions about the NPAC policy platform *Nature for Life*, which is supported by the following 5 briefing papers, currently entitled:

1. **Completing the CAR Terrestrial Reserve network**, which seeks the allocation of adequate resources to assist the state and territories in completing strategic acquisition to the national reserve system.
2. **A Matter of National Significance**, about the listing protected areas that comprise the National Reserve System as Matters of National Environmental Significance under the EPBC Act, with provision for other protected areas to be listed voluntarily.
3. **Marine Protected Areas** which calls for the establishment of a National Representative System of Marine Protected Areas that is comprehensive, adequate and effective, and is managed equitably and effectively.
4. **Connecting Nature**, which calls for support of nationwide bio-link projects, which enhance connectivity between key habitats.
5. **Maintaining the Conservation Values of the National Reserve System** by developing national conservation land management standards that ensure that all NRS protected areas, including National Parks, retain the values that led to their gazettal

Field trip to *Stipiturus Conservation Park* to learn about efforts to re-instate the hydrology of this former swamp area and to protect its threatened species, which include the Mount Lofty Ranges Southern Emu-wren and Murfet's Leek Orchid, particularly with regard to fire ecology.

These papers are available on the NPAC website, and short summaries of each one are currently in preparation.

They will be used to campaign for better outcomes for nature, particularly in the lead up to the next federal election.

NCSSA wishes acknowledge the effort and time of Nicki de Preu in organising the meeting.

We thank DEWNR for its support by providing speakers.

Julia Peacock
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NPAC members listening to Luke Price, Threatened Fauna Ecologist, at Stipiturus Conservation Park. Photos: J.Peacock



PROJECTS UPDATE

The summer period has been quite busy in the office, preparing grant applications for both the *SmartFarms Program* and the *National Landcare Program 2 (NLP2)*.

We submitted applications to *SmartFarms* to continue working with horticulturalists to maintain or establish habitat for the Yellowish Sedge-skipper around market gardens, as well as a major project to continue a WildEyre grazing management trial and Sheoak Grassy Woodland recovery for a five year period. We were also a partner in a project submitted by N&Y to develop and monitor a Rewilding project on southern YP.

In addition, we also contributed costings and expertise for components of projects to participate in NLP2 programs for six of the states NRM regions. Hopefully the recipients of the grants will be known in early May so solid work programs can be put in place.

MOUNT LOFTY RANGES WOODLAND BIRD MONITORING PROGRAM

2017 Monitoring Season

The 2017 monitoring of 166 sites took place between early August 2017 and January 2018, the 18th consecutive year of monitoring. The monitoring was conducted by 13 experienced observers. Although inevitably some monitoring re-visits had to be rescheduled due to hot weather and fire bans, climatic conditions in 2017 were much better than in 2016.

For the 2017 monitoring all the site maps and other relevant documents were scanned to make it possible to issue them electronically. This meant that allocating sites was considerably streamlined as observers didn't need to physically visit the NCSSA office to pick up or return maps, datasheets and book sites in and out.

This new system was very successful and much appreciated by the observers. This procedure had to be hastily implemented at the time and the intention is to make further improvements for the 2018 monitoring season.

The full 2017 dataset was uploaded to BDBSA on 27th March 2018 and consisted of 499 visits and 6915 species records.

Some Records of Interest in 2017:

- Chestnut-rumped Heathwren: recorded at 3 sites (Cleland, Mt Bold & Cox Scrub)
- Diamond Firetail: at 2 sites (Sandy Creek & Cox Scrub)
- Beautiful Firetail: recorded at 1 site (Cox Scrub)
- Tawny-crowned Honeyeater: at 1 site (Cox Scrub)
- Spotted Pardalote: recorded at 13 sites (Cleland x 2 sites, Cox Scrub x 2 sites, Onkaparinga Gorge, Scott CP, Para Wirra x 3 sites & Old Kersbrook x 4 sites).
- Varied Sittella: recorded at 14 sites (Hazkett Rd, Cleland x 3 sites, Cox Scrub, Wicks Reserve, Bulloch

Hill, Mt Hayfield Track, Tugwell Rd, Mt Gawler, Bushland Park, Mt George, Twin Oaks & Stock Rd).

- Bassian Thrush: *none* recorded in 2017.

In addition, a grant was received through the University of Adelaide to re-visit BCM sites established with bird monitoring sites in 2006/7 and from this over 30 sites have been re-sampled. We have just received further funding from AMLR to re-sample a further 30 BCM sites at bird monitoring sites. These data (approx. 70 sites) will enable us to identify any habitat changes which may contribute to woodland bird decline.

'What is happening to the Woodland Birds of the Mt Lofty Ranges?' brochure.

The brochure is in the process of being updated to reflect current trends in the data. All major content and design have been finalised with the exception of some trend figures which is still to be included.

BUSH CONDITION MONITORING

Northern & Yorke BCM related Projects

A number of projects have been worked on to improve both the extent of BCM in the region and also the value of BCM reports to landholders and NRM officers in understanding how native vegetation responds to different management practises:

- Revision of Weed Threats
- Update of Northern & Yorke BCM manual
- Revision of BCM report template text
- Summary comparison of BCM sites revisited to date

Data for the *Southern Yorke Peninsula Restoration Program* BCM revisits has been entered. Data from almost 90 *Greening Australia* BCM sites have been captured and validated. This process was complicated by incomplete data sheets and taxonomic changes since data collection. A further 20 are to be entered and validated by the end of May.

A total of 30 historic BCM sites (>7 years since first visit) have been revisited this year and a summary of data comparisons are currently being prepared. Sites have been revisited in the same month as the initial visit to minimize variation and will be used to inform the best interval between re-sampling and the nature of change (good and bad) in the communities across the region. Detailed analysis of all the sites with at least two repeat visits will commence early in the new financial year.

Ten additional new sites will be established in the disjunct *Eucalyptus macrorhyncha* Red stringybark communities in the Clare Hills, a community not represented in the BCM data base. The closest communities dominated by this species are in the Grampians in Victoria.

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CONSERVATION BIOLOGY GRANT REPORT: DIET OF WILD DEER IN SOUTH AUSTRALIA

BACKGROUND

Deer were introduced to Australia in the 19th century for aesthetic and sporting purposes.

Populations of six species: fallow deer *Dama dama*, red deer *Cervus elaphus*, rusa deer *Cervus timorensis*, sambar *Cervus unicolor*, chital deer *Axis axis* and hog deer *Axis porcinus* are established in Australia, with at least one species occurring in every State and Territory.

Fallow deer, Red deer and Sambar are introduced deer species to South Australia.

There are wide range of perceived environmental impacts associated with deer across Australia, such as foraging and erosion. However little quantitative information exists on the potential impacts that foraging has to natural and agricultural environments. And the diversity of plant species consumed remains largely unknown.

To determine the potential impact of wild deer on natural and agricultural environments knowledge of habitat use and diet is required.

MATERIALS AND METHODS

This study investigated the diet of wild deer in South Australia using innovative DNA metabarcoding and high throughput *Next Generation Sequencing* techniques applied to stomach content samples.

Stomach samples (n=200) were collected from the common and widespread fallow and red deer, and the less common sambar. Sampling occurred from late Summer to late Autumn (December 2016 – May 2017), and encompassed four main sub-regions of south-eastern South Australia, where deer populations are most abundant – Fleurieu and Willunga Basin, South East, Adelaide and Mount Lofty Ranges, and Northern and Yorke. Recreational hunters and wildlife managers collected stomach samples from deer shot during pest management programs.

DNA derived from stomach contents was PCR amplified, using the *trnL* (UAA) intron of the chloroplast genome. The GenBank database for plant *trnL* DNA sequences was utilised in the identification of sequences derived from the stomach contents samples.

RESULTS AND DISCUSSION

Compared to traditional methods of diet analyses this approach was effective in enabling the identification of multitudes of taxa, representing a wide range of plants: native, naturalised, and agricultural crops and weeds.

The Summer-Autumn diet on the Fleurieu (from 39 samples) includes, for example:
Natives: *Acacia*, *Casuarina* (?), *Hakea*, *Brachyloma*, and wallaby grasses *Rytidosperma* spp.
Crops: Barley and Oats.



Fallow deer, pre-sampling, with other herbivores. Photo: B. Page

Weeds: *Pinus*, clovers, plantain, vetches, thistles, weedy grasses (brome, cocksfoot, *Phalaris*).

There were a number of constraints with the method used relating to the identification of DNA sequences. Limitations to identification include the use of the *trnL* g/h barcoding region, and the accuracy of bioinformatics methods used in identification of the DNA sequences.

This study highlighted the advantages and limitations of using single target region DNA metabarcoding for large-scale studies of herbivore diet in Australia.

The method used to identify DNA sequences was limited by not assigning a level of confidence to taxonomic identification, availability of library reference sequences, and the short reads given by the *trnL* g/h region.

A more prudent approach could involve using a different method such as: Metagenome ANalyser (MEGAN), to assign sequences to the lowest common taxonomic level, implementing lowest common ancestor parameters, and using the NCBI nucleotide GenBank database. This method was trialed on a small sub-set of samples from the dataset to test its efficiency, and at face value the method was successful.

This is the first study of deer diet using DNA-based methods in Australia, and the first study of deer diet in South Australia, and it has demonstrated that DNA metabarcoding using *Next Generation Sequencing* allows for a more comprehensive study of the deer diet.

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B.Sc. honours Ecology and Environmental Science

Australian Centre for Ancient DNA

Invasion Science and Wildlife Ecology



LONG TERM MONITORING DOCUMENTS GRAZING IMPACTS AND A DECLINE OF SILVER BANKSIA IN CHARLESTON CONSERVATION PARK

For some time, concern has been expressed about the widespread decline of Silver Banksia *Banksia marginata* in the Mt Lofty Ranges (Paton 2011), and about the unnaturally high grazing impacts of western grey kangaroos (Paton pers comm, in Fedorowytsch 2017).

This concern has also applied to Charleston Conservation Park. This is a high rainfall park (800 mm annual average) and conserves Blue Gum *Eucalyptus leucoxylon* ssp *leucoxylon*, Rough-barked Manna Gum *E. viminalis* ssp *cygnetensis*, Red Gum *E. camaldulensis* ssp *camaldulensis* and Drooping Sheoak *Allocasuarina verticillata* woodlands. Aerial imagery taken in 1949 appears to show that the majority of the Park contained a well-developed shrub layer. Imagery taken in 2014, however, suggests the understorey shrub density, has been considerably reduced.

Anecdotal information and kangaroo-proof exclosures in the Park suggest that the decline in the shrub layer is due largely to sustained kangaroo grazing. Jody Gates (2017), for example, stated "the appearance of the [Charleston Conservation] park was quite astounding – it looks more like a manicured parkland than a conservation bushland. Kangaroos scattered in all directions....".

MONITORING

In response to the perceived decline in Banksias, and over-grazing by kangaroos in Charleston Conservation Park, two monitoring quadrats were established in February 2008 by Sonia Croft using the Nature Conservation Society's *Bushland Condition Monitoring Method*. This method quantifies regeneration, canopy health of the overstorey tree species, ground cover components, weed threat, native plant species diversity, plant life form structural diversity, and grazing impact on trees and shrubs.

At Charleston, the monitoring quadrats were aimed in particular at assessing trends in tree and shrub health, regeneration, and weed invasion. The quadrats were re-surveyed in 2018 by Sonia Croft along with *Friends of Charleston CP* members, Billy-Jo Brewer and Tony Vincent. The monitoring survey in 2008 followed 30% below-average rainfall in 2006 and 15% below-average rainfall in 2007 (Bureau of Meteorology Mt Pleasant Weather Station). In contrast, the 2018 survey followed 50% above-average annual rainfall in 2016 and average rainfall in 2017.

Quadrat 1 was located in the NW corner of the park in an area of Blue Gum woodland over an open low shrub and grassy/herbaceous understorey.

In 2008 there were 14 dead and four live *Banksia* present in the 30 m x 30 m quadrat. By February 2018, there were no live *Banksia* and evidence of only two standing dead banksias.

The single Sheoak recorded in 2008 was also no longer evident.

In 2008, Heath Tea-tree *Leptospermum myrsinoides* were the only shrubs > 0.5 m tall, present in the quadrat, and were estimated to cover 5% of the quadrat. By 2018, however, no shrubs > 0.5 m tall were present. Although the total number of Heath Tea-tree individuals appears to be the same or even higher in 2018 (at least 250 adults in an area 30 x 30 m), the majority of plants were less than 20 cm tall and inconspicuous. This was in stark contrast to an adjoining kangaroo grazing exclosure where Heath Tea-trees averaged 0.5 m tall, or more.

The numbers of Hairy Guinea-flower *Hibbertia crinita* individuals also appear to be similar in 2008 and 2018, but again almost all the Hairy Guinea-flowers were being grazed close to ground level.

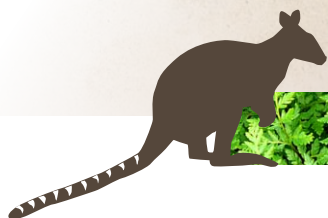
The other major, and concerning change in the monitoring quadrat, was the large increase in the exotic Pushtail Grass *Pentameris pallida*. Being a perennial grass it is permanently present and more likely to displace native groundcovers. The total cover of Pushtail Grass in the quadrat had risen from an estimated 5% in 2008 to at least 35%, with a corresponding decline in the less threatening annual Hair Grass *Aira* sp.

The ratio of native: weed ground cover had shifted from 5:4 with native cover slightly higher than weed cover in 2008, to a ratio of 8:14 with weeds almost double the native cover in 2018.

The high threat weed, South African Orchid *Disa bracteata* was also present in 2018, but not 2008. The above-ground absence in 2008 may have been due to the drier conditions, but it is also possible that the population of *Disa* is expanding within the Park.



Quadrat 1 Photo: S Croft



LONG TERM MONITORING ... IN CHARLESTON CONSERVATION PARK CONT.

However, positive changes in **quadrat 1** included a large increase in the number of Golden Wattle *Acacia pycnantha* seedlings and juveniles.

The Blue Gums in this area were relatively young adults and in excellent health, and had recorded increases in trunk circumference of at least 10% on average, and with no discernible decline in canopy health.

There also appears to have been a big increase in native grass cover from < 1% cover in 2008 to at least 5% cover in 2018. However, the highly palatable Kangaroo Grass *Themeda triandra* was severely grazed with the exception of two plants in a rocky crevice.

Quadrat 2 was located in an area of Blue Gum Open Woodland over a denser lower tree layer of Drooping Sheoak. This site contained a mid-dense shrub understorey dominated by Twiggy Daisy-bush *Olearia ramulosa*. As with Quadrat 1, live *Banksia* have also declined: in this case, from five live trees in 2008 to just one live *Banksia* in 2018, and with no seedlings present.

Pussytail Grass was also estimated to have increased in cover, namely from 3% to 7%. In addition, the canopy health of the 10 nearest Blue Gums had declined from a mean of 30% to 45%, including the death of two Blue Gums. No regeneration of Blue Gums was noted.

However, a positive change in condition was an increase in native plant species diversity from 32 to 41 species.

Although grazing pressure was high, the numbers of woody shrubs appears to be stable.

Heavy to severe grazing pressure was recorded on all Flame Heath *Astroloma humifusum* and Kangaroo Grass plants, and on about one third of the Heath Tea-tree plants. Numbers of shrubs for each species appeared to be similar in 2008 and 2018, or even slightly higher in 2018 for Heath Tea-tree.

MANAGEMENT IMPLICATIONS

The monitoring quadrats did show that there is some cause for optimism.

Although grazing pressure remains very high, the number of individuals of woody shrubs had not yet diminished in the two quadrats, albeit these individuals were highly grazed. Management to reduce grazing pressure, therefore could be expected to result in high levels of growth and, possibly, natural regeneration of shrubs.

High levels of weed invasion will be an ongoing major threat to the park's flora. Pussytail grass, in particular appears to have become established over large areas. Control of this weed at large scales remains a challenge.



Quadrat 2 Photo: S. Croft

The *Banksia* population within the park appears to be at critically low levels. There may be one or more reasons for the decline of *Banksia*, including loss of pollinators, grazing of seedlings and/or climate change. If losses are due to long-term declining rainfall, the decline may be hard to reverse. Active planting of *Banksia* is suggested, possibly using seeds from *Banksia* growing at a lower rainfall site.

Planting of Blue Gums in areas of declining Blue Gum health is also recommended.

Without active management there is likely to be a lack of seedling recruitment due to kangaroo grazing and a lack of seed production due to reduced shrub biomass. This will continue the progressive change from a woodland forest to a grassy shrubland.

REFERENCES

Fedorwytch, T (2017) Bigger appetite for kangaroo meat needed to rein in booming roo numbers, ecologist say. <http://www.abc.net.au/news/2017-09-10/cull-kangaroos-and-eat-their-meat-scientist-urges/8887432>

Gates, J (2017). The impacts of kangaroo grazing on birds – have your say. Birds SA. <https://birdssa.asn.au/2017/10/the-impacts-of-kangaroo-grazing-on-birds-have-your-say/>

Paton, P (2011) The future of silver banksia *Banksia marginata*. *Xanthopus* 29(4), 7-11.

**Sonia Croft,
Billy-Jo Brewer and Tony Vincent**

CREATURE *feature*

YELLOW-TAILED BLACK COCKATOO

Yellow-tailed black cockatoo *Calyptorhynchus funereus* are raucous and noisy, and often heard before they are seen. Populations of this iconic and much loved bird appear to have recovered in recent decades; however, this belies their vulnerability.

Due to the disproportionate clearance and degradation of their native food sources, they are now almost wholly dependent on the cones of introduced commercial pine *Pinus* spp. plantations for feeding. The management of the Forestry SA pine plantations will be critical to the future of YTBC in South Australia. For example, exotic pine plantation removal in Western Australia has contributed to regional declines of between 30-50% in the closely related white-tailed black cockatoo *C. latirostris* over the course of 3-5 years.

Restoration of native food sources is problematic. Such is the productivity of introduced Aleppo pines *Pinus halepensis* as a food resource that for every mature pine removed, the equivalent of c. 2400 *Hakea* bushes would need to be planted to maintain equivalence (Way & Van Weenen 2008). For a population of c. 2000 birds in the Mount Lofty Ranges (MLR) this would equate to 13.6 million *Hakea* bushes.

Distribution and ecology

SA, NSW, VIC & TAS

In South Australia, there are three main subpopulations: Kangaroo Island and MLR, Eyre Peninsula (critically endangered), and South East. These subpopulation divisions are largely supported by genetic analyses (Normann 2009).

In autumn and winter the cockatoos coalesce into large flocks, sometimes comprising a thousand or more birds. This is the best time to census populations. Censuses in 2011 and 2012 estimated a population in excess of 2000 birds in the MLR. Nationally the population is estimated to be 6,000 – 13,500. During the breeding season (Oct. – Jan.) these aggregations dissolve into monogamous pairings and generally return to their traditional breeding areas. Unpaired birds and juveniles form small flocks at this time.

Biology

Males and females can be distinguished by the colouration of the eye ring and beak. Males have a pink eye-ring and black beak; females have a grey eye-ring and bone-coloured beak.

Longevity: 30-50 years; sexual maturity: c. 4 years

Weight: 0.6–0.9 kg; length: 55–65cm, wingspan: 100–110 cm.

Breeding: Monogamous, pair-bonding is strong. These are long-lived birds with a slow rate of reproduction and low mortality. YTBCs nest in large hollows in tall mature eucalypts, and generally return to traditional breeding areas annually. The proximity of suitable food resources to nest trees (i.e. < 10km) is particularly important to breeding success.

Breeding period in SA: Nov. – Jan.; two eggs laid; usually only one chick raised.

Incubation: 28-31 days; performed by female.

Fledging period: 3 months; the fledging is fed for a further 12-18 months.



A male YTBC feeding on pines, Flinders University campus.
Photo: Sam Matthews

Habitat

YTBCs inhabit sclerophyll forests and woodland becoming uncommon and localised in drier areas.

Diet

A mixture of native and introduced seeds and wood-boring invertebrate larvae is consumed.

Green pine cones *Pinus* spp. are preferred, usually when the cone has almost reached mature size, but has not browned.

Favoured native foods include *Hakea*, especially *H. carinata*, and *Banksia* species. The availability of these summer food resources is considered to be limiting populations in some regions.

Contrary to popular belief, YTBCs do not consume the fruits of Drooping sheoak *Allocasuarina verticillata*.

Conservation Status

IUCN Red List of Threatened Species: **Least Concern**;

South Australia: **Vulnerable**;

Eyre Peninsula: **Critically Endangered**

References

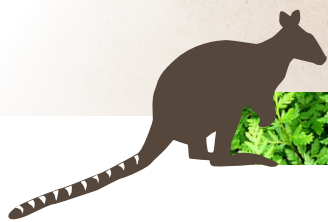
Carpenter, G. 2011, Yellow-tailed Black Cockatoo census in the Adelaide and Mount Lofty Ranges region, Government of South Australia.

Higgins, P. J. (Ed.) 1999, *Handbook of Australian, New Zealand and Antarctic Birds. Volume 4: Parrots to Dollarbird*, Oxford University Press, Melbourne.

Norman, J.A. 2009, Conservation Genetics of the Eyre Peninsula Yellow-tailed Black Cockatoo *Calyptorhynchus funereus*: Genetic Diversity, Population Connectivity and Inbreeding.

Way, S. L. and van Weenen, J. 2008, *Eyre Peninsula Yellow-tailed Black-Cockatoo (Calyptorhynchus funereus whitei) Regional Recovery Plan*. Department for Environment and Heritage, South Australia.

Michael Stead



NCSSA PEOPLE

MANAGEMENT COMMITTEE

President: Michael Stead

Vice-President: *vacant*

Secretary: Erinne Stirling

Assistant Secretary: *vacant*

Treasurer: Anna-Lucia Draper

General Committee: Janine Guy, Kelly Henderson, Robert Lawrence, and Helen Vonow

STAFF

Administrative Manager: Amanda Stewart

Conservation Programs Manager: Jeff Foulkes

Conservation Ecologist: Nicki de Preu

Nature Advocate: Julia Peacock

Threatened Plant Action Group Program Coordinator: Tim Jury

Bushland Condition Monitoring Project Officer: Peter Mahoney

Woodland Bird Project Coordinator: Ali Ben Kahn

Database & Website Project Officer: Lesley Parton

Other project staff: Ali Ben Kahn, Tom Bradley, Chris Butcher, Sonia Croft, Penny Paton.

REGULAR VOLUNTEERS

Keith Lloyd (General office support and library),
Brian Knill (BCM database).

2018 CONSERVATION BIOLOGY GRANT

Once again we offered up to \$2,000 per successful student applicant for Honours or other post-graduate research with a Nature Conservation focus.

We look forward to sharing the fruits of their hard labour with you in future editions of *Xanthopus*.

Other meetings in 2018:

2nd Aug.: General Meeting with BSSA - speaker *TBA*

~13th Sep.: Annual General Meeting, NCSSA office.

General Meeting 10th May 2018

from 6pm (6.30 speaker)

Benham Lecture Theatre, Benham Building,
The University of Adelaide (adjacent Victoria Drive)

Joint meeting with the *Biology Society of SA (BSSA)*.

Awarding of Grants ~ the *NCSSA Conservation Biology Grant* and the *BSSA Field Biology Grant*.

Followed by presentations by some previous recipients of these grants:



Grant Recipient Presentations May 10th



Juliana Silva: **Gorse-mediated changes in soil during biological invasion**

Tahlia Perry: **Developing molecular indicators for the health and reproduction of our iconic Australian echidnas**





Adam Toomes: **Cunningham's skink: a threatened social lizard in South Australia**



Benham Lecture Theatre on the 10th May
Adelaide University
5:45 light refreshments
6:15 presentations

XANTHOPUS

The views presented in this newsletter are not necessarily those of the NCSSA

Copy deadline for the WINTER-SPRING edition is 30th July 2018.

Contributions in a variety of formats will be considered, but electronic submissions are preferred.

Editorial Team for this issue: Helen Vonow and Julia Peacock



ABOUT NCSSA

The Nature Conservation Society of South Australia is a voluntary organisation. It has members drawn from all parts of the State and all walks of life. One of the primary objectives of the NCSSA is to "foster the conservation of the State's wildlife and natural habitats".

Its activities include: protecting and managing habitats, particularly native vegetation, researching threatened species and habitats, working to ensure adequate park dedication, management and legislation, educating the community and all tiers of government, and cooperating with other conservation groups and land managers.

The Society has taken action on many varied environmental issues since its formation in 1962.

Surveys to support new reserve dedications

A major objective of the NCSSA has been to ensure that South Australia has a comprehensive and representative reserve system. This is a vital part of the system needed to ensure that the State's native plants and animals are conserved in their natural environment.

The Society has sought the addition of new reserves and opposed the withdrawal of existing reserves when necessary. It has been Society policy to put its case objectively, based on the facts available. Biological surveys carried out by members and other volunteers have continued to support the case for dedication of new reserves and promote conservation on private land.

Promoting conservation more widely

The Society has played a strong role in the formation and development of environmental legislation such as the original Native Vegetation Management Act in 1985 and the Native Vegetation Act 1991. It is now obvious that conservation reserves alone will not ensure the survival of all of the State's plants and animals, and that as much native habitat as remains is needed to conserve the biological diversity of South Australia. The Society has played a major role in the promotion of biodiversity conservation on a range of land tenures including Heritage Agreements and in integrating biodiversity objectives into the whole range of land management decisions.

Research about environmental issues

The Society conducts scientific research related to environmental protection and management. Studies done by, or on behalf of the Society, are published as reports and made available to the public through sale and distribution to libraries and government institutions. Grant funding supports this work, awarded on scientific merit from a number of grant sources.

Education and skill development about ecological matters

The Society is also active in public education through activities such as an extension program of biodiversity understanding and management workshops for rural landholders, biological skill and knowledge development for members, informative general meetings open to the public, and through its newsletter *Xanthopus*.

Getting involved with NCSSA activities

An elected Committee handles the Society's affairs. However it is not necessary to be a Committee member to play an active role in pursuing particular issues or topics of research on behalf of the Society. There are many opportunities to volunteer, such as assist on a survey, help manage a project, lead a members activity, or to promote the organisations activities.

The Society has its offices at **5 Milner Street, Hindmarsh, 5007**. The NCSSA is financed by subscriptions, sales of its publications, private donations, and State and Federal Government grants. Much of the work is voluntary, while a few part time staff ably support this volunteer work. Donations are always welcome and fully tax deductible

For more information please contact the office on **(08) 7127 4630**, or by **email: ncssa@ncssa.asn.au**.



THE NEWSLETTER OF THE NATURE
CONSERVATION SOCIETY OF SOUTH AUSTRALIA
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The Yellow-footed Rock Wallaby (*Petrogale xanthopus xanthopus*) is the NCSSA logo. This macropod inhabits rocky outcrops, cliffs and ridges in semi-arid country. The largest population of the species in South Australia is found in the Flinders Ranges.

The Yellow-footed Rock Wallaby is listed as Vulnerable under the National Parks and Wildlife Act 1972 (South Australia), and the EPBC Act.

The main threats to this species are competition from feral goats and rabbits and predation by foxes and feral cats.



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