bushland news

urban nature

Issue 108 **Summer** 2018-2019 *Time of Birak and Bunuru in the Noongar calendar.*

Celebrating community:

Swan Alcoa Landcare Program

Photo – Unice Robinson

GOVERNMENT OF WESTERN AUSTRALIA

Department of **Biodiversity, Conservation and Attractions**

PARKS AND WILDLIFE SERVICE

***Bushland News** is a quarterly newsletter of Urban Nature, a Department of Biodiversity, Conservation and Attractions Parks and Wildlife Service program to support community involvement in bushland conservation.*

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Next issue

Autumn Bushland News

Autumn *Bushland News* contributions should be sent to Urban Nature by **11 March 2019**.

Bushland News seeks original contributions. If your submission has been or may be published elsewhere please let us know. Compiled and edited by Julia Cullity.

Celebrating community achievements with Swan Alcoa Landcare Program *by Michelle Crow*

The Swan Alcoa Landcare Program (SALP) is an exceptional model of industry, government and community working together to improve the health of the Swan Canning Catchment.

The success of the partnership between the Department of Biodiversity, Conservation and Attractions (DBCA), Alcoa of Australia and Perth NRM was recognised when it won the 2017 State Landcare Award and was a finalist in the 2018 National Landcare Awards.

Established in 1998, SALP provides a simple platform for community groups to access funding for a variety of urban and peri-urban landcare initiatives in the Swan Canning Catchment. Over the last 20 years, around 40 community groups have received over $8.5 million to plant 2.6 million seedlings and undertake over 5000ha of weed control in 1351 projects. This has resulted in revegetation of over 1970ha of degraded land.

The program has amassed some 200,000 volunteer hours which clearly demonstrates how the cumulative efforts of the community can make a significant difference. Projects have ranged from weed control and revegetation of waterways and bushland, to feral bee removal and installation of boxes to provide bird nesting opportunities, managing feral pig populations and dieback treatment.

Volunteers like the Friends of Mary Carroll Wetland (FMCW) have reached some extraordinary achievements in their Bush Forever site. Since 1975, with support from the City of Gosnells and Armadale Gosnells Landcare Group (AGLG), the group has steadily restored this seasonal wetland.

SALP's 20th Anniversary Celebration Awards recognised environmental champions who have dedicated their time and efforts in restoration of the Swan Canning Catchment. Here Nick Cook (left) represents Friends of Lake Claremont's Zac Hardisty, the winner of the Budding Landcare Award for volunteers under 30 who have demonstrated outstanding enthusiasm in the delivery of SALP projects. The Cam Clay Community Partner Award was won by Chittering Landcare, represented by Rosanna Hindmarsh. Federal Minister for the Environment, Melissa Price (centre). The Ian Colquhoun Lifetime Achievement Award was awarded to Una Bell for her dedication to environmental conservation and education. The Outstanding Advocate Award went to Brian Doy (right), formerly of Alcoa and a driving force behind SALP at the outset. Photo – Perth NRM.

Cover photo: A pair of sacred kingfishers at Mary Carroll Wetland. After years of restoration work, including SALP grants to plant 23,500 seedlings and continue weeding, The Friends of Mary Carroll Wetland are seeing an increase in the numbers of sacred kingfishers, as well as the return of other species such as fairy wrens and grey fantails. Photo – Unice Robinson.

Continued next page ...

The group's restorations efforts have been significantly enhanced by the SALP funding it has received since 2010. Friends coordinator Unice Robinson said "The additional money from SALP has enabled a greater intensity of weed control and planting of over 23,500 native seedlings in the wetland." This longstanding partnership and dedication of the FMCW has been rewarded with the return of the fairy wren and grey fantail to the wetland. "That has been absolutely amazing, the grey fantails are nesting this year and we're delighted to also see an increase in sacred kingfishers too," she said.

The unique foresight of SALP to invest in projects over many years gives community groups and land managers certainty their restoration efforts will receive the maintenance needed to flourish.

A landmark achievement after 14 years of SALP investment with AGLG has been the hand back of site management of several AGLG restoration sites to the City of Gosnells. "AGLG has conducted significant work over an extensive time period and there is no doubt they are leaving these sites in a far better condition than when they first became involved," said Paul Reed from the City of Gosnells.

The generous contribution made by community volunteers and their partners adds significantly to building ecological corridors throughout the Swan Region. SALP funded partnerships have helped community groups return weed infested drains to living streams, create parklands from rubbish tips and seen wildlife such as turtles and birds return to our neighbourhoods. Along the way an enduring connection between a global corporation, state and local governments and a network of dedicated volunteers has been forged.

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Clifton Hills Primary School planting day with AGLG at the City of Gosnells Southern River Confluence site. Photo – Narelle Mewburn.

Urban Nature update

by Julia Cullity

It's been a big change as we farewell Kate Brown, the ecologist who has been working with the Urban Nature team for the last 15 years. We'd like to thank Kate for her great contribution to developing new knowledge and management techniques for Perth's bushlands and sharing it with us all. We will miss her but wish her all the best for her next projects and adventures. It's great to know that Kate will still join us, as a volunteer, on projects like the Brixton Street Field Herbarium and island restoration with the Friends of Penguin Island.

Over spring we have been working closely with our local natural resource management groups, Perth NRM, SERCUL, Ellen Brockman Integrated Catchment Group and the Peel Harvey Catchment Council. With National Landcare Program funding we have begun restoration projects in the banksia woodlands and clay-based wetlands at Lake Wannamal Nature Reserve. This funding will also allow for continuing the management works at the claypans of the Greater Brixton Street Wetlands and the tuart and banksia woodlands and wetlands at Paganoni Swamp and assist the amazing groups of volunteers from the Friends of Brixton Street Wetlands and the Friends of Paganoni Swamp. There have been ongoing discussions with Landcare SJ and the Lowlands Conservation Association to secure funding for ongoing restoration projects along the Serpentine River. Baldivis Secondary College led by teacher Jo Tregonning (familiar name, yes, Jo was the editor of Bushland News 2005–2013) is keen to get involved with these riverine restoration works. This spring we recorded the baseline data on weed invasion and vegetation condition for Lake Wannamal that will provide guidance in the future management of this reserve. We are also developing a project with the Peel Harvey Catchment Council to better understand the distribution and extent of banksia woodlands in the Peel-Harvey region. We want to capture local knowledge – stay tuned.

The Urban Nature team loses a member but welcomes a new volunteer, Kate Brown. Here Kate (left), Julia and Grazyna are leaving Penguin Island after the last restoration workday of this year in November. We collected seed and weeded around our previously established plantings. After taking a break over summer we will be back in April next year with monthly workdays. Get in touch if you'd like to join us at Penguin Island. Photo – Dave Mitchell.

Spring is the peak wildflower season and we ran bushland plant identification workshops with the South West Group and the cities of Kwinana and Melville. Initially it was a one-off, but with so much initial interest we ran three workshops during spring. With close to 2000 native plant species in Perth, it was rewarding to help set people up with skills and resources to keep learning more about local plants.

In the classroom sessions for this spring's Bushland Plant ID workshop series we had plant specimens, hand lenses, the microscope and favourite books and online resources all in operation to check out features of some of our major plant families. Then it was out into the bush for a guided walk to identify plants in the wild. Photo – Angela Jakob.

Mapping of Banksia Woodland Threatened Ecological Community (TEC) boundaries at Lake Wannamal Nature Reserve. Ground-truthing is required to verify that the site meets the key diagnostic characteristics and condition thresholds to be the described TEC. Parks and Wildlife Service staff Anne Harris (left), Julia Cullity and Veronica Wilson undertaking site survey. Photo – Grazyna Paczkowska.

I don't think we can be friends!

Interactions between wallabies and feral goats at Avon Valley National Park

by Rebecca Kay, Nicole Willers, Rebecca Ong and Rebecca Warner

Avon Valley National Park contains rocky outcrops outlining deep river valleys, with open woodlands and shrublands of wandoo, jarrah and sheoak. Photo – Michael Phillips

Avon Valley National Park, to the north-east of Perth, is characterised by rocky outcrops outlining deep river valleys with open woodlands and shrublands. It is home to a small population of threatened black-flanked rock-wallabies (*Petrogale lateralis lateralis*) and the priority-listed western brush-wallabies (*Macropus Irma*) have been sighted across the park. Feral goats are regularly sighted in mobs of more than 50 animals. Goats are known to overgraze vegetation, cause land degradation, and compete with native species for resources. They are a major threat to biodiversity, inhabiting at least 28% of Australia and federal government estimates in 2011 have suggested there are more than 2.6 million across the country.

The Parks and Wildlife Service has been managing and monitoring wallabies and goats at Avon Valley National Park for almost 10 years. Since 2010, goats have been trapped annually using water points in summer and to date more than 700 goats have been removed. Rock-wallabies were monitored in 2012 through 2017 and with a wider fauna monitoring program also targeting brush-wallabies in 2016.

Habitat specialists

Rock-wallabies are limited to a few small rocky outcrops in the park that have enough cave structure for them to shelter in. This habitat is actively managed, including prescribed burning to reduce the risk of a catastrophic wildfire and fox baiting to reduce the impacts of the introduced predator.

In 2012, remote cameras indicated that a small population of rock-wallabies were persisting, with evidence of breeding and recruitment. However, in 2015 scat surveys reflected a continued presence of rock-wallabies but a clear decline in numbers from 2012, and a significant increase in the presence of goat scats.

Rock-wallabies (left) and brush-wallabies can be difficult to tell apart. The most obvious differences are size– rock-wallabies are smaller– and their preferred habitat. Rock-wallabies, like this mother and juvenile, won't be found far from granite cave habitat. Brush wallabies (right) are distributed more widely.

To investigate this, we set up a remote camera survey from 2015–2018 specifically targeting the abundance of goats and rock-wallabies.

The results demonstrated that goats were the most frequently detected species in the rock-wallaby habitat, spending large amounts of time utilising caves and rocky outcrops. Activity was highest in 2016, which may be linked with greater food availability after an unusually mild summer. Unfortunately, there were very low detections of rock-wallabies across all years. Goats have been implicated in population declines of rock-wallabies elsewhere, and this appears to be happening in Avon Valley, with goats out-competing rock-wallabies for cave habitat.

Given the impact the goats appeared to be having on the rock-wallabies, we wondered what impact they may be having on brush-wallabies in the park.

Habitat generalists, or are they?

Brush-wallabies were thought to occur more widely than the habitat specific rock-wallabies, but it was unknown how widely distributed they were, or what vegetation types they occurred in. To determine this, 30 remote cameras were deployed in autumn 2016 in randomised locations across the park.

The brush-wallaby was the most broadly detected species across the park, being found at the greatest number of sites and habitat types. Goats also had a high detection rate, however this was concentrated within the river valley area close to water sources, and up in the granite outcrops, confirming that goats are spending most of their time concentrated in the same habitat as rock-wallabies.

Continued next page ...

Table one: autumn 2016 remote camera survey

Common Name	Detection frequency (per 1000 camera days)	Number camera sites detected (n=30)
brush-wallaby	32.4	20
goat	23.3	5
rock-wallaby	2.5	1

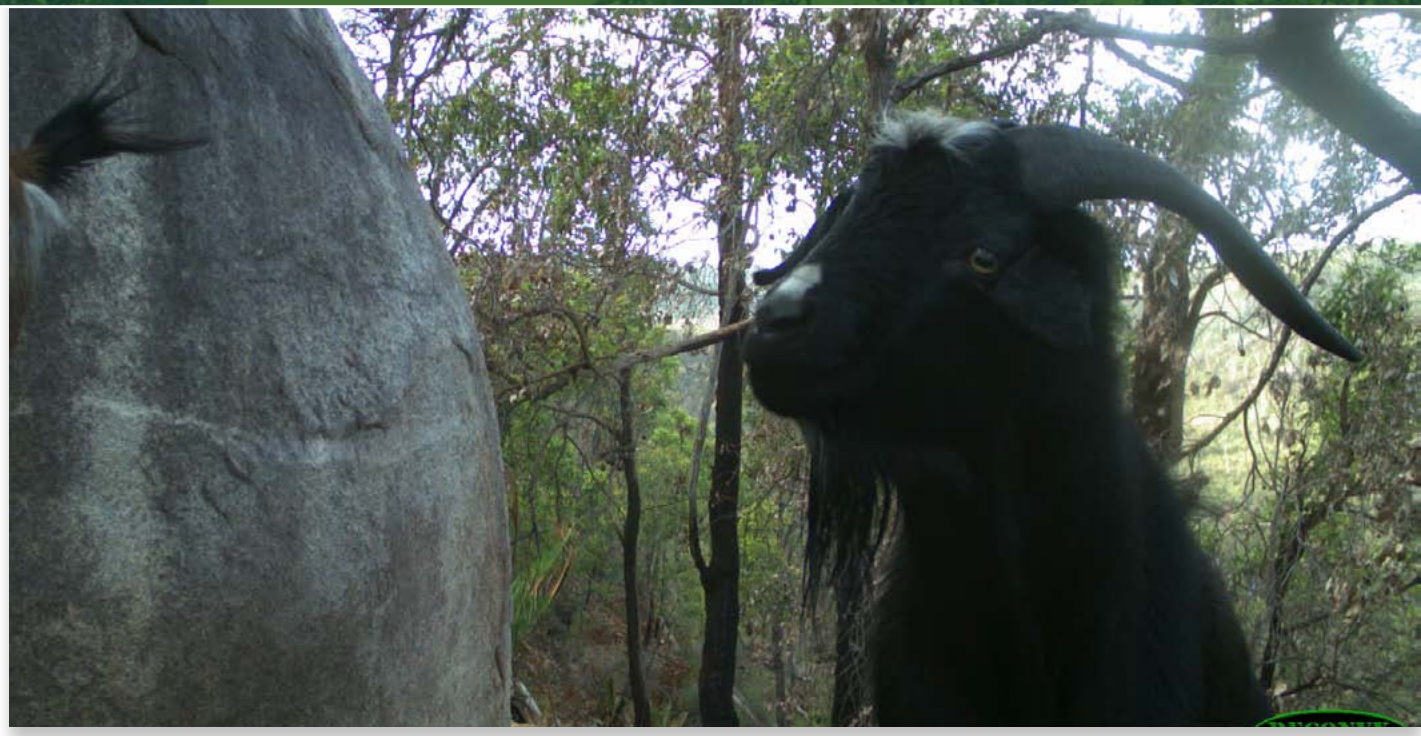
Brush-wallabies showed a distinct preference for young vegetation ages, whereas goats preferred the older vegetation ages. Most goat sightings were in vegetation ages greater than six years since the last fire.

Table two: detection rates by fuel age

Fuel age (years)	brush-wallaby	goat
1 (n=12)	49.5	*25.6
2 (n=8)	19.4	0
>6 (n=10)	31.1	74.4

The high number of goats within the area mapped as 1-year old fuel age seems unusual but is explained by the presence of rocky outcrops and small patches of long-unburnt vegetation at these particular monitoring sites.

Brush-wallabies were detected in a greater range of vegetation types, generally preferring tall woodlands and shrublands with some mid-storey vegetation structure, while the goats preferred areas with minimal mid-storey vegetation or granite outcrops. Interestingly, goats and brush-wallabies were not seen at the same camera sites. It is not known if this is a result of displacement, avoidance, competition or simply habitat-partitioning.



Feral goats are known to be a major threat to biodiversity, inhabiting at least 28% of Australia and federal government estimates in 2011 have suggested there are more than 2.6 million across the country. Avon Valley National Park is no exception with mobs of 50 regularly sighted. To counter this we have set up monitoring and management programs to identify areas the goats prefer to use and fine-tune our goat control program.

Management Implications

The broader camera survey verified the main areas in the park that the goats utilise, and the goat control program has been refined in response to this. A trial of ground-based shooting in cooperation with the West Australian Field and Game Association was undertaken during spring 2016 where an additional 28 goats were removed from the park, and this work has continued on a private lease nearby.

More information

Pearson, D. J. (2013). Recovery plan for five species of rock wallabies Blackfooted rock wallaby (*Petrogale lateralis*), Rothschild rock wallaby (*Petrogale rothschildi*), Short-eared rock wallaby (*Petrogale brachyotis*), Monjon (*Petrogale burbidgei*) and Nabarlek (*Petrogale concinna*) 2012-2022. Department of Parks and Wildlife, Perth, WA.

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Monitoring **restoration success** at Ken Hurst Park

by Eddy Wajon and Julia Cullity

Author Eddy Wajon with a surviving planted Banksia menziesii flowering for the first time. Photo – Donna Wajon

For many years, the Friends of Ken Hurst Park have been monitoring the survival of plantings and the recruitment and survival of native species in their restoration sites. Prior to 2014, survival ranged from zero to 50%. The major trend is that the number of species and overall numbers surviving drops with each year from the time of planting. This article discusses the results of planting from 2014 to 2016 and makes comparisons to earlier results.

Ken Hurst Park is a Bush Forever site in Leeming in the City of Melville made up of banksia woodland and seasonal vegetated wetlands. With the majority of the park in excellent to very good vegetation condition, our revegetation sites are mostly closing unused tracks or in small disturbed clearings surrounded by intact bushland.

Planting techniques

Prior to 2014, we planted using standard techniques of digging holes with trowels and using tree guards to protect seedlings from strong winds and kangaroos, to provide warmth in winter and to encourage condensation of moisture in the early morning. From 2014, we trialled more disruptive planting techniques incorporating deep soil disturbance using augers and long thin shovels to see if this increased survival rates by reducing soil compaction to aid water and root penetration.

The provision of water is crucial to the survival of plants in these Bassendean sands and one of the biggest headaches to the success of revegetation in Ken Hurst Park. We watered at planting, using either a 1000L water tanker with pump and hose, or carrying water in 10-20L jerry cans. Carrying water in jerry cans by hand is a nightmare, but even the water tanker was not sufficient to adequately water all the tubestock.

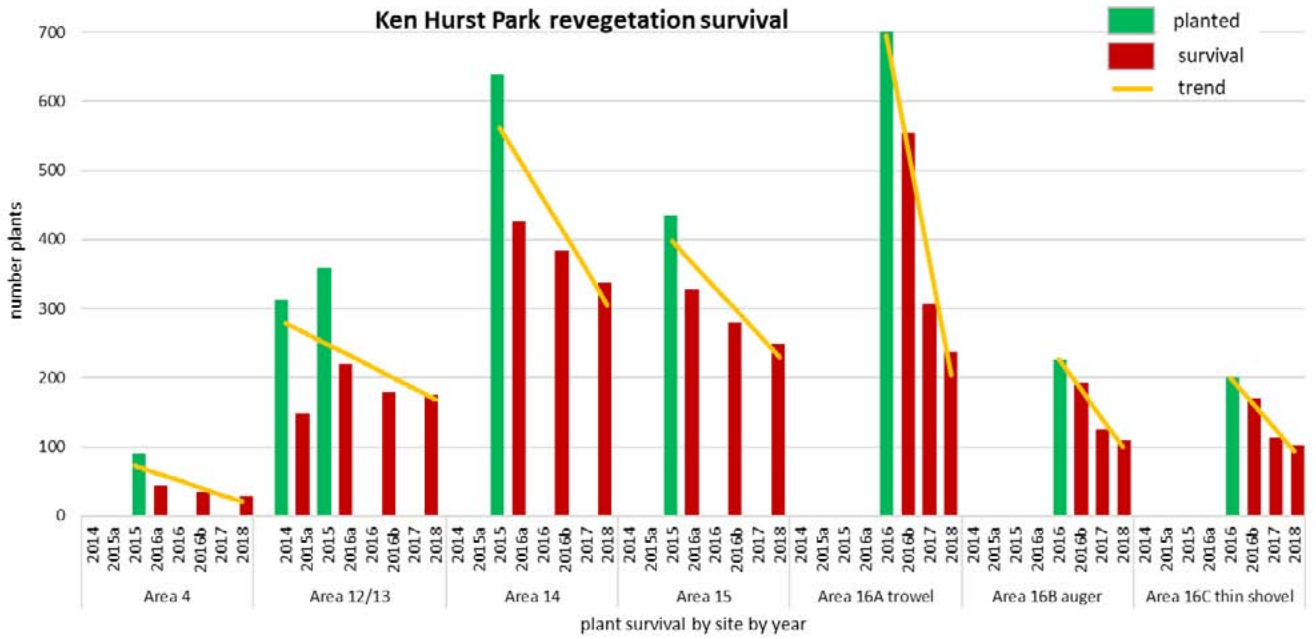
In addition, we employed a contractor to water planted tubestock once a month after planting, using a water tanker with a pump and a long hose to deliver 3L of water (containing a soil wetter and bioprime botanical extracts) per plant in a very time-consuming operation. In 2014 and 2015, watering was undertaken between November and March. In 2016, watering was planned to occur from May to September to provide adequate water to plants during their establishment and better prepare for the hot dry summer. However, 2016 was a wetter winter than it had been for several years, so watering was only undertaken between significant rain events.

Further watering was not undertaken in 2017 and 2018. Plant guards were also not removed from any of the plants until more than a year after planting because there was evidence of substantial browsing by kangaroos. This was not totally successful, as kangaroos continued to push the plastic bag towards the ground in the process of lowering their heads.

Monitoring methods

We planted close to 2800 plants between 2014 and 2016. We kept a record of the numbers of each species planted in the different revegetation areas. Each year in summer or autumn, all surviving plants in the different revegetation areas were counted and tallied by species for each area. Some areas have been monitored at different times depending on the availability of volunteers.

We also recorded natural regeneration each year by counting the number of plants of each species germinating from seed in, or falling on, the soil in the revegetation areas, though individual plants were not tracked.



Graph one: *Plant survival in absolute numbers at Ken Hurst Park revegetation areas planted in 2014–16. Green columns show the numbers of tubestock planted and red columns show the surviving plants at each monitoring date. The trend line is in yellow. The sites were monitored at different time frames due to volunteer availability. Dates followed by 'a' were monitored before winter and dates followed by 'b' were monitored after winter in that year. Areas 4–15 were situated in the northern banksia woodland and Areas 16A–C in the southern banksia/paperbark woodland. Note that Area 12/13, which was planted over two years, records both surviving plants plus new tubestock in the column for the second planting in 2015.*

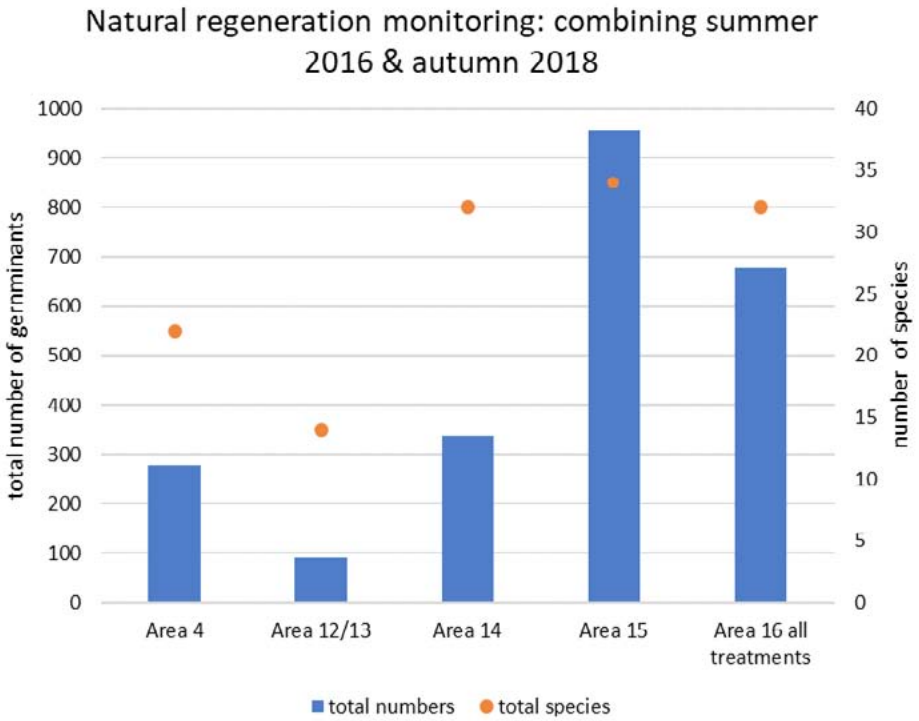
Plant survival

Graph one shows the number of plants in each area counted at each monitoring session between 2014 and 2018. The most recent monitoring took place in March-April 2018. The trend of diminishing survival over time is evident in all areas with the survival of all species and overall numbers surviving dropping each year since planting in 2014 to 2016.

Survival of tubestock planted in one section of the northern banksia woodland (areas 4, 12/13) averaged 33% (range 31–33%). The average survival of tubestock planted in a different area (areas 14, 15) was 54% (range 53–57%). The tubestock planted in the southern banksia/paperbark dampland (areas 16A–C) had an average survival of 40% with a range 34–51%. The slight survival difference between the different planting techniques in this area (digging small holes with trowels or using potti putkis; disturbing the ground first with specially designed long thin shovels; and pre-augering the soil) was not statistically significant (p= 0.3).

The range of overall survival in different areas was 30–58% with the median 35% and an average of 44%. This should be compared with tubestock planting in other areas of Ken Hurst Park in 2011-2013 where survival in April 2018 in the northern banksia woodland ranged from 21% to 41% with a mean of 31%. Survival of tubestock planted in 2011–2013 in the southern banksia/paperbark dampland area averaged 12% in March 2016.

Of course, the average survival of tubestock hides differences between different species. A total of 48 banksia woodland species were planted. The majority of the 2800 tubestock were from a wide range of understory shrubs, a third were dominant canopy trees, and a small proportion was herbs. In Table one, species are listed in order of greatest survival ranging from *Patersonia occidentalis* and *Regelia ciliata* with about 100% survival to *Rhagodia baccata* with 0% survival.



Graph two: *Number of individuals and number of species of self-germinating plants in different planting areas. Total numbers counted in blue columns and total number of species as orange markers.*


Photo – Eddy Wajon.

Table one: Percentage survival by species averaged across all areas

>75%	*Patersonia occidentalis, Regelia ciliata, Melaleuca thymoides, Jacksonia furcellata*
50–75%	*Eucalyptus todtiana, Xanthorrhoea preissii, Acanthocarpus preissii, Allocasuarina humilis, Bossiaea eriocarpa, Verticordia densiflora, Banksia ilicifolia, Dasypogon bromeliifolius, Scholtzia involucrata, Daviesia physodes, Eremaea pauciflora, Dampiera linearis, Hibbertia hypericoides, Melaleuca preissiana*
25-49%	*Calytrix fraseri, Hypocalymma robustum, Banksia menziesii, Melaleuca seriata, Dryandra lindleyana, Macrozamia fraseri, Banksia attenuata, Gastrolobium capitatum, Acacia pulchella, Lechenaultia floribunda, Conostylis aculeata, Stirlingia latifolia, Eucalyptus marginata*
10-25%	*Allocasuarina fraseriana, Cyathochaeta avenacea, Phlebocarya ciliata, Daviesia nudiflora, Hovea trisperma, Dianella revoluta, Hardenbergia comptoniana, Melaleuca lateritia, Kennedia prostrata, Acacia huegelii, Daviesia triflora, Hovea pungens*
<10%	*Beaufortia elegans, Gompholobium scabrum, Calytrix flavescens, Nuytsia floribunda, Rhagodia baccata*

A very pleasing feature of the restoration activities was the appearance of a wide range of self-germinating plants. Over the four years of monitoring, a total of 4250 plants from 56 species were recorded naturally regenerating from seed or suckers. Whether any of these were individuals seen on more than one occasion was not recorded. About half of these species were those in our planting list, with the other half not being in our planting list. The most common self-germinating plants were *Podotheca gnaphalioides* (an annual), *Dampiera linearis* (a sucker), *Hibbertia subvaginata* (a short-lived plant), *Gompholobium tomentosum* (a legume) and *Banksia attenuata*.

The combined data on self-germinating plants from summer 2016 and autumn 2018 is shown in Graph 2. This shows the variation in natural regeneration experienced between the sites, though this is greatly influenced by size of the different areas. It should also be noted that there was a peak in self-germinating plants seen in summer, as this included annuals that were not seen in autumn.

Survival of these self-germinating plants was also variable, with some deaths. However, there was high germination and survival of *Banksia attenuata* from soil-stored seed along a couple of the tracks on the north side of the railway line, and many plants are now well established. The total number of germinating perennial plants is less than the number of surviving tubestock, but they contribute significantly to the vegetative cover.

Conclusions and comments

We have yet to achieve average tubestock survival rates greater than 50%. Earlier planting (May versus July), watering in winter, a relatively wet winter in 2016 and substantial rain in summer 2017 did not appear to have substantially increased tubestock survival in the northern dryland banksia woodland over what we have achieved in previous planting campaigns. However, tubestock survival in the southern dampland banksia woodland did appear to have been considerably better (40% from planting in 2016 compared to 12% from planting in 2011–13), though the method of planting did not seem to be responsible.

Some planted species seem to survive better than others though this did depend on whether it was a dryland or dampland environment. For example, banksia survival was poor (20–30%) in the dampland environment, and good in the dryland environment (25–70%).

Overall, the survival of tubestock from our planting in 2014–16 was disappointing and lower than hoped for given watering, including in winter, relatively wet winters and summers, and the more disruptive planting methods used. The continuing relatively low tubestock survival could potentially be due to the following factors:

- Inadequate watering and soil moisture, particularly over summer
- Soil water repellency, especially in the dampland area
- Leaving plastic plant guards in place during the heat of summer
- Residual soil compaction
- Herbivory by kangaroos and rabbits

The following strategies may need to be employed to improve tubestock survival in Ken Hurst Park:

- Watering once a week for the first 12 months. This would be very labour intensive if done by hand and using volunteers, or very expensive using contactors, even when using a 1000L tanker. Alternatively, an irrigation system with a network of pipes, a tank and a pump could be installed. However, this is expensive, prone to theft and very labour intensive to install.
- Removing plastic plant guards by September despite the high predation and damage caused by kangaroos.
- Using wire mesh plant guards. However, these do not provide warmth or water harvesting services in winter, are harder to install and not as easy to recycle/repack.
- Using core flute plant guards. However, these are very expensive and do not necessarily avoid the issue of overheating inside the plant guard.
- Placing mulch/leaf litter around the tubestock. The problems with this are sourcing suitable, locally native and sterile material, either commercially or from site.

With the majority of Ken Hurst Park in excellent to very good vegetation condition, our revegetation sites are mostly closing unused tracks or in small disturbed clearings surrounded by intact bushland. Here the Friends of Ken Hurst Park are planting tubestock at Area 14. Photo – Jane Hilton.

The alternative may be to source and plant large numbers of tubestock, using potti puttkis, dispense with plant guards and allow nature to take its course. This would be much less labour intensive and expensive than the current strategies, and the absolute number of survivors may be the same. The real serious concern is that similar strategies have been used in the past with very poor success due in large part to kangaroo herbivory. A mid- course may be to use wire mesh plant guards as well to reduce kangaroo herbivory.

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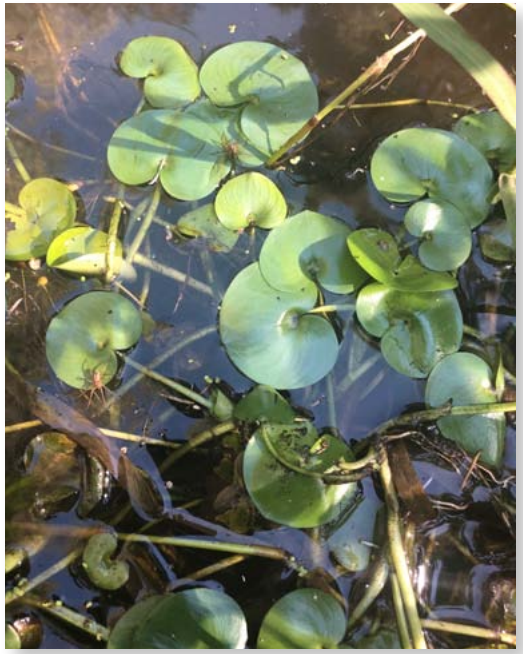
Aquatic Weed Warning!

by Dan Friesen

It's warming up and as temperatures rise aquatic weeds make the most of the sun with some species capable of doubling their biomass every 2 to 4 days. Amazon frogbit (*Limnobium laevigatum*) is one such pest, first discovered by SERCUL in our urban waterways in 2013, it has since been found across nine separate systems across Perth, with each infestation the result of a suspected aquarium being released into our waterways.



Water poppy is an emergent, spreading water plant with floating oval to round leaves. It has lemon-yellow flowers with black centres produced in late spring through summer. Photo – Dan Friesen.

Amazon frogbit is free-floating with an inconspicuous pale, green flower. Juvenile leaves, about the size of a five cent piece, have an enlarged spongelike bulge on the underside of the leaf, that helps it to float. The densely packed adult leaves grow up to 10cm, often forming rafts, and the underside bulges on the leaves become less distinct. Photo – Dan Friesen.

Salvinia molesta is a free-floating fern with often overlapping and deeply folded fronds. The rows of waxy hairs on the upper surface of the frond are eggbeater-shaped and they repel water and assist with floatation. Underneath the water, the brown root-like growth on the underside is actually a modified frond that acts as a root. As a fern, it doesn't produce flowers. Photo – Peter Maloney.

FameLab talking science

Armed only with their wits, a few props and just three minutes, contestants from around Australia will take part in FameLab 2019, the science communication competition out to discover Australia's leading early career researchers. Applications are open 7 January – 15 February for charismatic scientists who can inspire people to see the world from new perspectives. For the rest of us the Perth semi-final will be held 17 April at the WA Maritime Museum with the final on 8 May at the State Theatre Centre, Perth. The winner will head to the UK to compete for the global title.

Amazon frogbit has recently been listed as a declared pest and can now be reported through the MyPestGuide. Select 'Amazon frogbit' under the 'Send report' option. Salvinia Molesta is another declared pest and a weed of national significance and has this year also seen an increase of releases into our urban waterways, If you discover this in your local wetland be sure to contact your local council and report it. A new threat? Watch out for this new and relatively unknown species water poppy (*Hydrocleys nymphoides*) as it's only recently been discovered in an urban drain and little is known about what impacts it could have in our systems.

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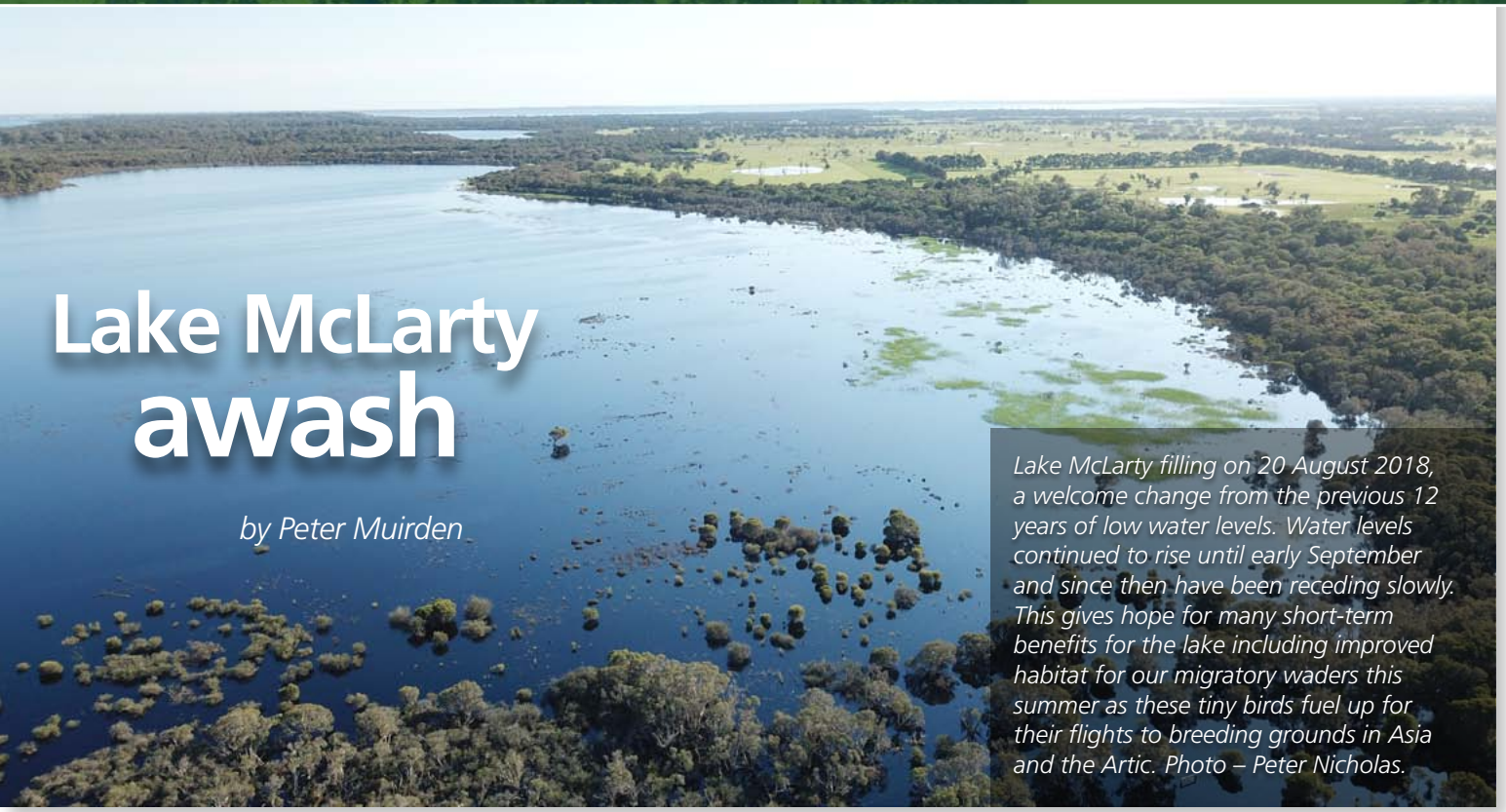
Lake McLarty awash

by Peter Muirden



Lake McLarty filling on 20 August 2018, a welcome change from the previous 12 years of low water levels. Water levels continued to rise until early September and since then have been receding slowly. This gives hope for many short-term benefits for the lake including improved habitat for our migratory waders this summer as these tiny birds fuel up for their flights to breeding grounds in Asia and the Artic. Photo – Peter Nicholas.

During the past 12 years, Lake McLarty has suffered with a lack of water; just like many other lakes on the Swan Coastal Plain. The lake is part of the Peel-Yalgorup Ramsar System and has worried many of its stakeholders in State and local government, NRM and the community. The lack of water has driven issues of reduced hydroperiod, terrestrialisation, acid sulfate soils, poor water quality, algal blooms and particularly the loss of its migratory wader birds.

However, this winter the lake received consistent rainfall, the highest since 2000, recording 690mm of winter-only rainfall. Fortunately, this corresponded to significant inundation and lake levels are already the fourth highest since records began in 1993. The water levels peaked on 9 September 2018 with water levels dropping slowly, only 16cm in the next two months. The biggest outcome is now it's likely that the lake will have water in it until mid-April 2019.

This has given much hope to all of us who will be watching the impacts of the inundation closely; hopeful for many short-term benefits and delaying the need for intervention until our technical understanding of the lake is improved.

Contact

Peter Muirden
Parks and Wildlife Service
email peter.muirden@gmail.com

ABC Citizen Science Project for National Science Week

The ABC is interested in potential citizen science partners and projects for the National Science Week citizen science projects, for both 2019 and 2020. These projects will receive the support of the ABC's expertise in citizen science engagement and usability, plus considerable media attention.

The citizen science project needs to be:

- an online project, i.e. does not include sampling kits or extensive fieldwork;
- on a topic that is of interest and relevant to most Australians, i.e. not just one interest group or location;
- easy enough for people without a science background to participate in;
- feasible to run in August (when Science Week is on).

Email a less than one page proposal plus a short CV to Kylie Andrews by 22 January 2019.

Contact

Kylie Andrews
ABC
phone (02) 8333 2473
email kylie.andrews@abc.net.au

Persistence of rakali in Lake Goollelal, Yellagonga Regional Park *by Heidi Khojasteh and Alice Reaveley*

The City of Joondalup and DBCA undertook a targeted rakali survey in May 2018, ten years since the last survey, to ascertain whether rakali are persisting in Yellagonga Regional Park. Rakali or water rat (*Hydromys chrysogaster*), a priority 4 species, is WA's only aquatic freshwater mammal. The initial 2008 survey indicated that a sizable population may inhabit Lake Goollelal because six rakali were captured in three nights of trapping. The 2018 project involved a higher survey effort with more traps deployed and an additional survey night. But although evidence of chewed crustaceans and midden piles were observed close to some trap locations, no rakali were captured.

When deploying traps this year we observed evidence of dogs frequenting the lake's edge and water bird predation possibly by foxes and feral or domestic cats, which limited suitable areas where traps could be installed. We also noted that the structure of vegetation surrounding the lake's edge facilitated easy visibility and exposure, which may be connected to a loss of fringing vegetation since the 2008 survey, due to increased public use in the area.

The co-managers of 1400ha Yellagonga Regional Park, cities of Joondalup and Wanneroo and DBCA continue to conduct regular feral animal monitoring and control along with revegetation projects to assist with providing suitable habitat for fauna such as rakali.

The survival of rakali is significantly dependent on the persistence of urban wetland ecosystems, such as those within the Yellagonga Regional Park, and the community is encouraged to continue to report possible rakali sightings to land managers to inform rakali conservation and monitoring.

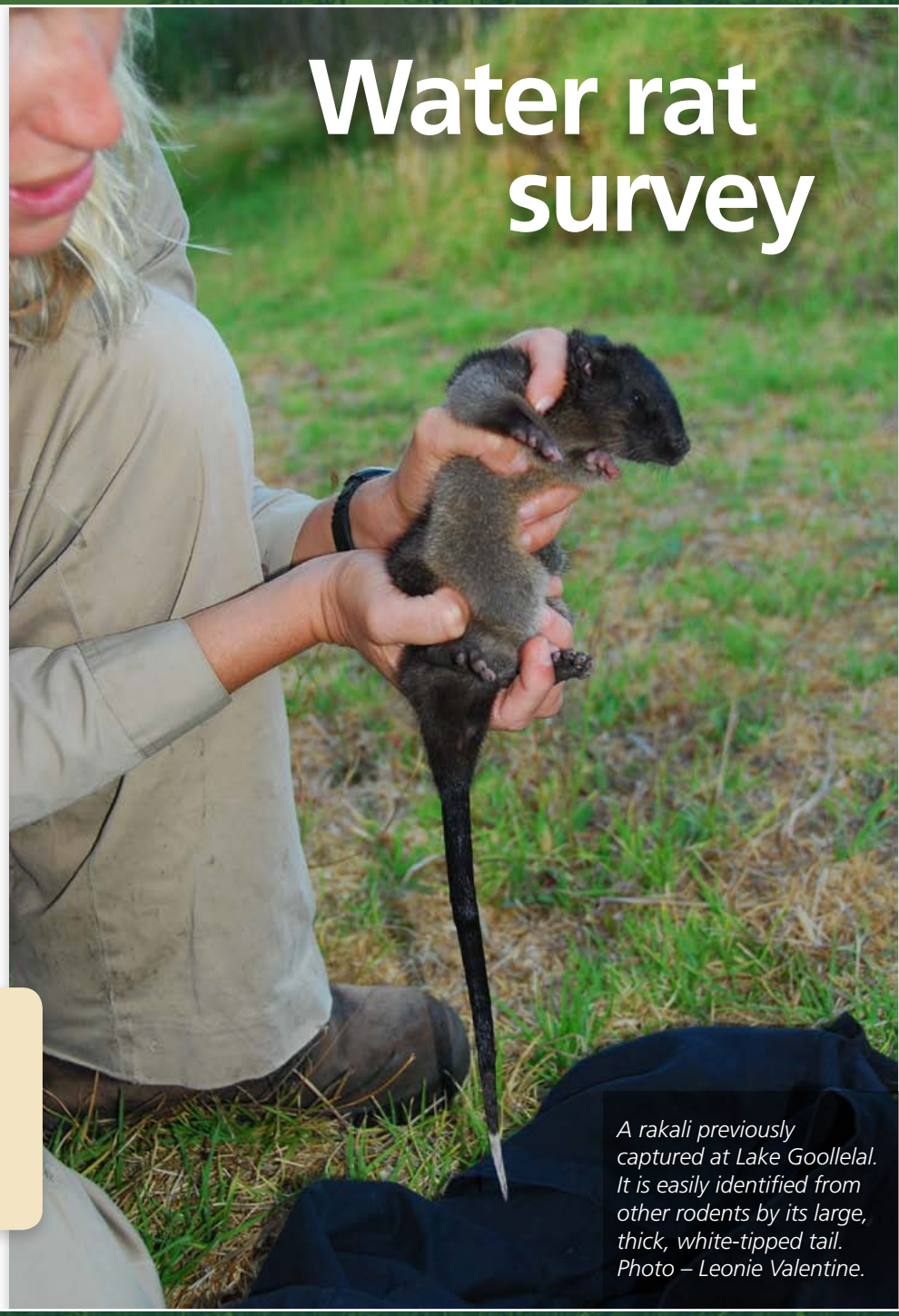
Contact

Heidi Khojasteh
City of Joondalup
email Heidi.Khojasteh@joondalup.wa.gov.au

Alice Reaveley
Parks and Wildlife Service
email Alice.Reaveley@dbca.wa.gov.au

Report in!

*Please send us your regional report (200 words) and a photo by **Monday 11 March 2019.** Text may be edited in response to volume of submitted reports.*



A rakali previously captured at Lake Goollelal. It is easily identified from other rodents by its large, thick, white-tipped tail. Photo – Leonie Valentine.

Bungendore Park spring roundup

by John Cartwright

Our annual Walk and Weed event was held on 16 September. For this event we invite community members to help remove weeds for a selected area and along the way our members point and name the various native plants. Ten new people came along to help. After a particularly wet winter there was a proliferation of wildflowers and unfortunately weeds. This year we tackled an area on the south east corner of the park about 1km from the main entrance in Admiral Road, Bedfordale. We removed mainly arum lilies and blackberry. After a hard morning's work everyone enjoyed their morning tea.

Our ever-popular bush breakfast in the park was held on Sunday, 11 November. Fifty-four adults and nine children attended the breakfast. We are ever thankful to the Armadale-Kelmscott Lions Club members who turn out early in the morning to prepare the cooked breakfast on their mobile barbeque. This is our major fundraising event and this year we decided to hold a silent auction for the items donated by local businesses which was quite successful. We had recognised that this day was Remembrance Day and 100 years since the end of World War I. One of our members did research to find out the names of the young men of Bedfordale who enlisted to serve King and Country. Thirty-one men enlisted of whom nine lost their lives. On the day a roll call honouring these men was called, followed by a minute's silence. After the breakfast many of the guests took the opportunity to take a stroll into the park ably led by two members of the Armadale Wildflower Society.

In other news, our group applied for and received a grant from the Parks of the Darling Range Advisory Committee that will be used to update one of our very popular brochures. The brochure will be available in July 2019. And as part of our Macroinvertebrate Survey 2 grant, Mr David Knowles of Spineless Wonders has been carrying out scientific studies of the macroinvertebrates that inhabit the wandoo woodlands and granite outcrops on the western scarp of the park.

Our annual bush breakfast in the park is an ever-popular event where we invite the community to join us for breakfast and then a stroll. This year 63 people came to enjoy the bush in springtime, some for the first time. Photo – Alex Leach.

Contact

John Cartwright
Bungendore Park Environmental Group
email stellmarcher@gmail.com

Friends of Mosman Park summer activities

Hot weather sees the Friends of Mosman Park Bushland with members of Rocky Bay indoors, sorting seed for future planting back into bushland. Photo – Sue Conlan.

Volunteers in Mosman Park Bushland never like to give up a weekly bush busy bee for hot weather. Forecasts of more than 35 degrees see our group join forces with local Rocky Bay members for some seed sorting in air conditioned comfort. The coordinator of the Friends of Mosman Park Bushland, Sue Conlan applies for an annual licence to collect seeds from Mosman Park bushland which are grown by local nursery APACE and then planted back. Sue used to have her dining tables covered with bushland seeds over summer to sort when she had a moment. Her daughter was a carer at Rocky Bay and suggested that some of the Rocky Bay members, although wheelchair bound, would have sufficient movement in their hands to sort some of the seeds. We make this an annual practice as we all benefit from the activity. Rocky Bay feel like they are contributing to community and Mosman Park residents who may not be able to participate in bushland busy bees can participate here. It also gives us an understanding of the lives of disabled people and how we can make a difference to their day.

Contact

Sue Conlan
Friends of Mosman Park Bushland
email mail@mosmanparkbushland.org

Noongar Walk and Talk at Bandicoot Brook Bushland *by Megan LeRoy*

Local elder Harry Nannup and Mandjoorgoordap Dreaming's George Walley shared their knowledge of bush medicine, food and materials during a 'Walk and Talk' event they led at Bandicoot Brook Bushland in Waroona on the 21 June 2018. Thirty participants, including students from Waroona District High School's Bushranger Program, participated in the Peel-Harvey Catchment Council organised event.

Participants had the opportunity to try different bush foods and harvest it themselves. They also learnt about the use of marri gum as medicine, and how to make glue from balga resin. Learning from local Noongar people helped the participants build a personal connection to this special bushland site and similar areas on the eastern side of the Swan Coastal Plain.

Bandicoot Brook Bushland is a 55ha local treasure on South West Highway on the border of the shires of Murray and Waroona and contains four State and nationally recognised threatened ecological plant communities. The communities support important assemblages of plants and animals that are rare in the fragmented landscape of the Swan Coastal Plain, mostly due to surrounding historical land cleared for farming and settlement.

We acknowledge the cultural significance of these bushlands to the Noongar people and welcome their teachings, so together we can protect our amazing natural areas. The event was funded by the National Landcare Program with support from the Western Australian Government's State Natural Resource Program.

*George Walley and two of the Waroona District High School Bushrangers digging for bush food, blood root (*Haemodorum *sp.). The bloodroot was passed around for anyone game enough to taste. George warned that it was a polarising taste but one you won't forget. Numerous people screwed up their faces, and George remarked that this was a particularly spicy example. Noongar people used bloodroots as a medicine and to flavour other foods. Photo – Roz D'Raine.*

Contact

Megan LeRoy
Peel Harvey Catchment Council
email megan.leroy@peel-harvey.org.au

Swan Estuary Reserves Action Group *by Margaret Matassa*

"I can't believe it's right here in front of me!" said the British tourist who was volunteering for a day with us. "An Osprey just sitting there – that's so amazing."

For myself, I still remember the awe I felt in seeing the nugget-sized, wading-bird, world travellers just returned from Siberia to the Alfred Cove sand bars, their need to feed so great that their beaks prodded like sewing-machine needles in and out of the soft mud.

The Swan River Estuary's remaining riparian vegetation is particularly vital, giving haven to both water and bush birds and creatures on their travels, as well as filtering pollutants and nutrients from groundwater and run-off water before it enters the river. Nowhere can be more important than the corridors containing the Swan Estuary Marine Park foreshores at Pelican Point in Crawley, Alfred Cove in Attadale and Milyu in South Perth. Decades ago in response to community concern, the Government wisely designated these vital areas as class A nature reserves, and for the past nine years, our group, the Swan Estuary Reserves Action Group (SERAG) has actively worked to conserve, restore and protect their superb natural values.

In 2015 SERAG began work on this typha-affected area of Alfred Cove (left). Two years later this monoculture had been replaced with planted and natural regrowth of beautiful swathes of the samphires and shorerush of the coastal saltmarsh threatened ecological community. Photo – Margaret Matassa.

Swan Estuary Reserves Action Group Inc.

Continued next page ...

This is a unique and biodiverse place we live in, the envy of other capital cities around the world. Yet its amazing diversity arises from the very fragility of its life-forces – from the exhausted sandy soils, the uncertain rainfall patterns, the dramatic swings in temperatures and seasons.
This has given rise to amazing symbiotic relationships between different plant forms and between plants and insects and animals. If one is lost, so too the other. How vital it is that we grasp the last chances we have to save these wonders for future generations!

Our volunteers return week after week and month after month, not just to plant and weed and collect litter, but also to be refreshed by the beauty of the landscape and the special treasures to be found:

- a shy buff-banded rail bravely warning us away from weeding too close to her nest
- pardalote pairs flitting in and out of their little tree hollows and recently installed nesting boxes
- the flash of silver of the endangered fairy terns swooping over the shallows in search of fingerlings
- exquisite pink fairy orchids returning to recovered bush areas.

Along with maintaining the better riparian areas and a few pockets of old-growth native vegetation in adjacent reserves, we have also focused on heavily degraded sites – mostly hostile terrain of reclaimed rubbish tip, expanses of kikuyu and dredging infill – and are encouraged by our successes such as our work in restoring the heavily weed invaded sections of Alfred Cove back to coastal saltmarsh.

Retaining the viability and contiguity of this last significant area of coastal saltmarsh threatened ecological community and the native fauna it supports is one of the reasons why we and thousands of community members are opposed to the siting of a massive concrete wave park on the Alfred Cove Marine Park foreshore.

SERAG welcomes all comers who support our goals, whether just by the moral support of becoming a member, or by active involvement occasionally or regularly. Our calendar sets out our schedule of volunteering events. We would love you to join us, and importantly, we always finish with a cuppa onsite to allow ourselves time to appreciate our beautiful and ever-changing Swan Estuary reserves.

Riparian vegetation is particularly vital, giving haven to both water and bush birds and creatures on their travels, as well as filtering pollutants and nutrients from groundwater and run-off water before it enters the river. Coastal saltmarsh vegetation at Alfred Cove well used as habitat by water birds. Photo – Margaret Matassa.

Contact

Margaret Matassa
SERAG
phone 9330 1791
email matassa@bigpond.com

Opportunities for you to participate! Visitors always welcome but please confirm activities with contact person. Most activities are FREE!

Recurrent activities

Saturdays 15 minutes before sunrise
Research into bird populations with the **Herdsman Lake** Bird Banding Group. Contact: Bill 0438 910 252 calidris@iinet.net.au

Saturdays 8am–9am
Guided walks with Friends of **Koondoola**. Second Saturday of each month. Meet Gate 2, corner Koondoola and Burbridge Ave, Alexander Heights. Contact: David 9448 9192

Saturdays 8am–9am
Guided walks with Friends of **Lake Gwelup** naturalist David Pike. Third Saturday of each month. Meet at Scout Hall Carpark (near the tennis courts), Huntriss Rd, Gwelup. Contact: friendsoflakegwelup@gmail.com

Saturdays 8am–9am
Guided walks and meeting with Friends of **Landsdale**. First Saturday of each month. Meet at third gate Landsdale Rd, east of Landsdale Farm School, Darch. Contact: David 9448 9192

Saturdays 8am–9am
Guided walks with Friends of **Star Swamp**. Fourth Saturday of each month. Meet at the Henderson Environment Centre in Groat St, North Beach. Contact: Christine 0430 013 364

Saturdays 8am–9am
Guided walks with Friends of **Trigg Bushland**. Fifth Saturday of each month. Meet in St Mary's School carpark, off Elliot Rd Karrinyup. Contact: David 9448 9192

Saturdays 8am–10am
Bushcare activities with Swan Estuary Reserves Action Group at **Alfred Cove** Nature Reserve. Fourth Saturday of each month. Contact: Cathie 9339 2439 oneillc@westnet.com.au

Saturdays 8.30am–10.30am
Bushcare activities with the Friends of **Booragoon** and **Blue Gum Lakes**. First Saturday of each month. Meet at the boardwalk into Booragoon Lake on Aldridge Rd, Booragoon. **Weeds course** third Saturday of each month at Blue Gum Lake. Contact: Mary-Ann 0456 357 799 molly.olly1@bigpond.com

Saturdays 8.30am–10.30am
Bushcare activities with Swan Estuary Reserves Action Group at **Pelican Point, Crawley.** First Saturday of each month. Contact: Cathie 9339 2439 oneillc@westnet.com.au

Saturdays 9am
Bushcare activities with Friends of **Brixton Street** Wetlands. Third Saturday of each month. Meet Alton St, Kenwick. Contact: Regina 9459 2964 tjdrd@bigpond.net.au

Saturdays
Bushcare activities with Friends of **John Forrest National Park**. Equipment, instruction and morning tea provided. Starting times and tasks change according to the season. Contact: Jan 0409 299 861 joejanking1@bigpond.com

Saturdays and Tuesdays 9am–12 noon
Bushcare activities with Friends of **Yellagonga** Regional Park. Nursery and project work will commence in February each Saturday and Tuesday morning. Contact: friendsofyellagonga@bigpond.com

Saturdays, Sundays 9am–12 noon
Koala maintenance at **Yanchep** National Park. Contact: Ciara 9303 7771.

Sundays 8am–10am
Bushcare activities every Sunday with Friends of **Shenton Park** Bushland. Contact: Dani 0420 334 601 bojel@iinet.net.au

Sundays 8.30am
Bushcare activities with Friends of **Wireless Hill**. Second and fourth Sunday of each month. Meet at main carpark. Contact Margaret 0402 105 649 s3mmatthews@hotmail.com

Sundays 9am–11am
Friends of **Lake Claremont busy bee** and morning tea, second Sunday of each month. Meet at the south end of Strickland St, Swanbourne. Gloves and tools provided. Contact 0416 614 696 www.friendsoflakeclaremont.org

Sundays 9am–11am
Bushcare activities with **Cottesloe** Coastcare. First Sunday of each month. Contact: Robyn 9384 7668, info@cottesloecoastcare.org website

Sundays 9am–12 noon
Bushcare activities with the Friends of the **Spectacles** (Kwinana). Third Sunday of each month. Contact: Lynda 0419 983 956 fotsmail@gmail.com

Sundays 9am
Bushcare activities with the Friends of **Samphire Cove** Nature Reserve, Halls Head. Last Sunday of each month. Contact: Barry bjsdoongin@gmail.com website

Sundays 9.45am–12 noon
Bushcare activities with the Friends of **Piesse Brook**. Third Sunday of each month. Contact: Ken 9293 3159 bibbulman@hotmail.com 0402 243 351

Sundays 1pm–4pm
WA Gould League's **Herdsman Lake Wildlife Centre** holds **birdwalks, centre viewing and scooping**. First Sunday of each month. $2 adults, $1 kids & seniors, $5 family. Corner Selby St and Flynn St Wembley. Contact: 9387 6079 admin@wagouldleague.com.au

Sundays
Wilson Wetlands Action Group undertakes regular **work mornings** throughout the year on Sunday mornings. Contact: 0407 135 412 wilsonwetland@gmail.com

Activities Key

Hands on – bushland and wetland management activities.

Walks and tours – look, listen and enjoy guided walks and excursions

Skills development activities – talks, presentations, training courses and workshops.

Meetings and events – group meetings, expos, festivals and conferences.

Recurrent activities ... *continued*

Mondays 7am–8am
Norma's Monday Morning **Weeding Group**. Friends of **Lake Claremont** weekly hand weeding. Learn basic weeding techniques and identification. Meet at south end of Strickland St. Contact: 0413 282 515.

Mondays 8am–10am
Litter collection with Swan Estuary Reserves Action Group at **Milyu Nature Reserve, South Perth**. Second Monday of each month. Contact: Cathie 93392439 oneillc@westnet.com.au

Mondays, Wednesdays, Fridays 9am–12 noon
Bushcare activities and wetlands walk trail maintenance with **Yanchep National Park** Volunteers. Contact: Ciara 9303 7771

Tuesdays 7am–9am
Bushcare activities with Swan Estuary Reserves Action Group at **Alfred Cove Nature Reserve** each Tuesday. Contact: Margaret 9330 1791

Tuesdays 9am–11am and Saturday
Bushcare with Friends of **Allen Park** every Tuesday and first Saturday of the month. Contact: Lesley 9384 7983 Judy 9383 1501, foapbg@gmail.com or facebook

Tuesdays and Thursdays, 8am–10am
Coastcare activities with **Stirling** Natural Environment CoastCare (SNEC). Contact: Sheldon 0488 190 651 Rae 0419 191 710 website

Wednesdays and Saturdays 7.30am–9.30am
Bushcare activities with **Bicton** Environmental Action Group. Planting, weeding and foreshore cleanup. Various dates. Contact: Peter 0439 467 855 pneesham1@hotmail.com website

Thursdays 7.30am–9.30am and some Saturdays 8.30am–12 noon
Coastcare activities with Friends of **Sorrento Beach** and **Marmion Foreshore** followed by morning tea. Contact: Mike 0438 710 527

Thursdays 8am–9am
Bushcare activities every Thursday with **Byford** Enviro-Link. Contact: Kristy 9526 0199

Thursdays, Saturdays and Sundays 9am
Morning walks with Friends of **Bold Park** Bushland Volunteer Guides. Various dates. Contact: 9480 3996 friendsbp@bgpa.wa.gov.au website

Thursdays and Sundays 10am–12 noon
Kanyana Wildlife Centre, Discovery Centre **Tours**. Close encounters with native animals and interactive Discovery Centre. $20 or less. Bookings essential. Contact: 9291 3900 info@kanyanawildlife.org.au website

Thursdays or Fridays 9am–4pm
Wetland, bushcare and nursery activities with **Cockburn Wetlands** Centre. Contact: Denise 0412 081 540 denise@cockburnwetlands.org.au

Thursdays 7.30pm
Talks with **Murdoch** Branch of the **Wildflower Society** to share passion and knowledge of nature. First Thursday each month. Cockburn Wetlands Education Centre. Contact: Christine 0468 676 933 murdoch.branch@wildflowersociety.org.au Facebook

Fridays 8am
Bushcare activities at **Piney Lakes**. Volunteers need a site induction. Contact: Jacklyn.kelly@melville.wa.gov.au

Fridays and Sundays
Bushcare with Friends of **Mosman Park** Bushland every Friday and the second Sunday of each month. Site determined the week before. Hot days over 35 degrees sees us sorting seeds in air conditioning. Contact: mail@mosmanparkbushland.org

Fridays 7.30pm
Talks with **Eastern Hills** Branch of the **Wildflower Society**. Fourth Friday each month, not December/January, Octagonal Hall, 52 McGlew St, Glen Forrest. $2 entry, visitors welcome. Also art and photography, propagation, excursions, open gardens and library. Annual plant sale in May. Contact: eastern.hills.branch@wildflowersocietywa.org.au, facebook website.

Fridays and Saturdays 7pm–9pm
First Friday and second Saturday every month, **Nocturnal Tours**, **Kanyana Wildlife Centre**. Meet nocturnal native wildlife and hear about endangered species breeding programs. $20 or less. Bookings essential. Contact: 9291 3900 info@kanyanawildlife.org.au website

Check calendar
Birdlife Australia hold regular **talks** and **excursions** each month. View their calendar.

Check calendar
WA Naturalists hold regular **excursions, photo groups** and **campouts** each month. View their calendar for the activities of the four branches.

Check calendar
Wildflower Society of WA holds regular **talks**. View their calendar.

Please send us your January, February and March events by Monday 11 March 2019.

Activities Key

Hands on – bushland and wetland management activities.

Walks and tours – look, listen and enjoy guided walks and excursions

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What's on

January

2 Wednesday 7.30am
Birdwalk at Waterford Foreshore, **Salter Point**. Meet at Curtin University Boat Shed on Elderfield Rd. **Birdlife WA**

6 Sunday 7.30am
Birdwalk at Waterford Foreshore, **Salter Point**. Meet at Curtin University Boat Shed on Elderfield Rd. **Birdlife WA**

17 Thursday 7.30am
Birdwalk at **Baigup Wetlands**, Bayswater. Meet at car park near the rowing club at the end of Milne St. **Birdlife WA**

17 Thursday –18 Friday 8am–4pm
Shorebird Identification Workshop learn shorebird identification skills to allow you to participate in the annual Shorebird 2020 count 10 February 2019. Free, registrations essential sharon.meredith@peel-harvey.org.au.

22 Friday 9–10am
Celebrate BIRAK Noongar inspired activities on the coast for the school holidays, experience language, artefacts, beach bushtucker and a painting activity. Cottesloe foreshore next to the Cottesloe Surf Life Saving Club. Perfect for primary school aged kids. Bookings $10/child (parents and guardians FREE).

February

1 Friday 7.30pm
Quendas of Kings Park, Ryan Glowacki. Hew Roberts lecture theatre, UWA with WA Naturalists. Call John 9389 8289.

4 Monday 7.30am
Birdwalk at **Blackwall Reach** Bicton. Meet at junction of Kent St and Blackwall Reach Pde. **Birdlife WA**

7 Thursday 7.30pm
Restoring Greater Brixton Street Wetlands with **Kate Brown**. The Wetlands Centre, **Cockburn**. Email murdoch.secretary@wildflowersocietywa.org.au.

10 Sunday time to be announced
Darwin Day event for children and adults, **Point Walter**. Call Tanya 0412 196 216.

14 Thursday 7.30–9.30pm
Fire and Biodiversity – a complex conundrum, **Erica Shedley.** Armadale Field Study Centre $3. Email WildflowersArmadale@outlook.com.au.

16 Saturday 7.30am
Birdwalk at **Kogolup** Lake, Success. Meet in car park at Branch Circus. **Birdlife WA**

16 Saturday 10am –2pm
Green card training covers all aspects of safety for volunteers working in bushland areas in the City of Kalamunda, Shire of Mundaring and City of Swan. This accreditation is required for coordinators of friends groups and any volunteer using chemicals. Gooseberry Hill Multi-Use Hall. Contact Kate.Malden@emrc.org.au.

March

3 Sunday 7.30am
Birdwalk at **Lake Gwelup**, Gwelup. Meet in the car park corner Stoneman St. and Huntriss Rd. **Birdlife WA**

8 Friday 7.30pm
Native bees with **Terry Houston**. Hew Roberts lecture theatre, UWA with WA Naturalists. Call John 9389 8289.

21 Thursday 7.30am
Birdwalk at **Eric Singleton Bird Reserve**, Gwelup. Meet in the car park Leake St. **Birdlife WA**

Registration/contact details

Birdlife WA All walks are free, no need to book. Call 9383 7749 Monday–Friday 9.30am–12.30pm.

Highlights

7–24 January
Nearer to Nature Sparkling summer school holiday program.

16–18 January
Catchments, Corridors and Coasts 2019 three-day professional development introduction to environmental education initiatives across Perth. Registrations essential.

22–25 January
Rio Tinto **Earth Assist** school holiday program ages 15 and over. Bookings or 9335 2777.

1 Friday February
2019 WA Wetland Management Conference *Wetlands and Climate Change*. Registrations $20–$70.

8–11 February
Boorna Waanginy: The Trees Speak the extraordinary Perth Festival show of 2017 is back to transform Kings Park in an ecological sound and light spectacular over four nights.

10 February 7am –5pm
Shorebirds 2020 count is Australia's annual national shorebird monitoring program aiming to better understand the populations of the nation's shorebirds. Australia's migratory shorebird populations have declined by 70% in the past 30 years, information we have due to community monitoring programs such as these. Only for trained volunteers (free training workshop 17–18 January) email to register.

11–15 February 2019
Island Arks Symposium VI, *Finding the Balance* Rottnest

25–28 March 2019
Fostering Sustainable Behaviour Workshops with Environmental Psychologist, Dr Doug McKenzie-Mohr, Perth Zoo. Delivering introductory and advanced community-based social marketing training. Registrations.

Activities Key

Hands on – bushland and wetland management activities.

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Fund Landcare: a new way for Landcare groups to fundraise *by Rob Novotny*

Recently Landcare Australia launched a new fundraising platform called Fund Landcare. This platform has been designed to help Landcare groups throughout Australia raise funds for their own group using Landcare Australia's DGR status (deductible gift recipient) and receive tax deductible gifts. Fund Landcare enables Landcare groups to set up their own campaign and raise funds directly for their group.

Using Fund Landcare, groups will be able to:

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

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

Why not check Fund Landcare out for yourself. We are really excited to offer this platform to the Landcare community and hope that it will help many groups raise much-needed funds.

Contact

Rob Novotny
Landcare Australia
email rob.novotny@landcareaustralia.com.au

Coastwest 2019/20 provides grants of $5000–$50,000 to support coastal land managers and community organisations to rehabilitate, restore and enhance the Western Australian coast. Applications are likely to open in **February 2019**.

Foundation for National Parks and Wildlife Community Conservation Grants for field projects and educational projects. Applications **close 31 January 2019**.

NACC funding for Midwest Malleefowl Landowners with malleefowl on or near their properties can email Northern Agricultural Catchment Council to discuss restoration projects.

Bankwest Easy Grants each month 40 community groups are shortlisted for a $1000 Easy Grant that the public votes on.

Ian Potter Foundation Environment and Conservation grants for large grants >$100,000 for two themes; fostering biodiversity and water and/or land management. Applications open 25 March and **close 17 April 2019**.

CAWS Early Career Weed Scientist Travel Award to attend national or international conferences or short study tours. Applications **close 1 May 2019**.

Weeds Society of WA travel award up to $2000 for those engaged in weed management or research to travel for conferences or forums. Applications **close 20 March 2019**.

Albany Community Foundation provide funding for events, projects or programs that help make Albany a better place.

Aspire grants for individuals to attend an international conference. Applications **close 29 March 2019**.

Impact 100 WA provides large $100,000 grants to charities that will make a difference to the WA community. Applications are likely to **open end of March 2019**.

Local government community grants

These local governments provide small grants to their communities which can fund environmental groups' management and restoration projects. Eligibility varies.

Beverley **closes end January 2019**, Canning **closes 28 February 2019**, Cockburn **opens early February 2019**, Fremantle **opens March 2019**, Joodalup is likely to **open in March 2019**, Melville **closes March 2019**, Mandurah **closes 9 March 2019**, Serpentine Jarrahdale **opens January 2019**, Subiaco **closes 19 March**, Wanneroo **opens in February 2019**.

New publications

Birds of Western Australia Field Guide Neville SJ. *Woodslane Press*, 2018. $40. Includes detailed descriptive text, distribution maps and photographic illustrations of 486 species, covering the vast majority of sedentary birds and regular migratory birds of WA.

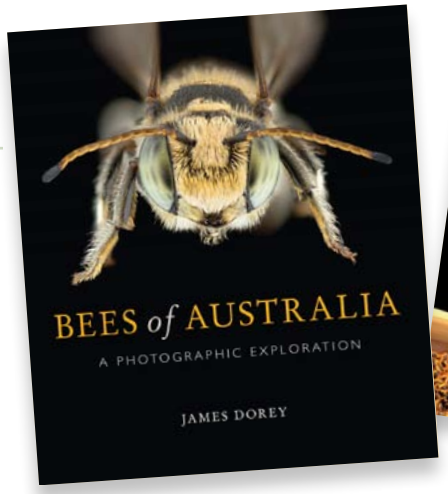
Shorebirds in action: an introduction to waders and their behaviour. Chandler, Richard. *Whittles Publishing*, 2017. $45.00. A book in two parts – firstly basic behavioural information, feeding, breeding, migration and physiological adaptations and then a photographic section that explains the behaviour being illustrated by species. With over three-quarters of the world's total it can be used for shorebird identification and recognition of their various plumages.

Where song began Low, Tim *Penguin Books*, 2017 $23. The story of the evolution of Australian song birds and how they spread globally after years of isolation. Our bird legacy shaped in Gondwana by the foods they consume, climate, soil and fire.

Australian native bees: a practical handbook. Dollin, Anne et al. *NSW Department of Primary Industries*, 2016. $35.00. Combining the expertise of many of Australia's leading native bee researchers, this book is a guide to observing and keeping Australia's broad range of native bee species.

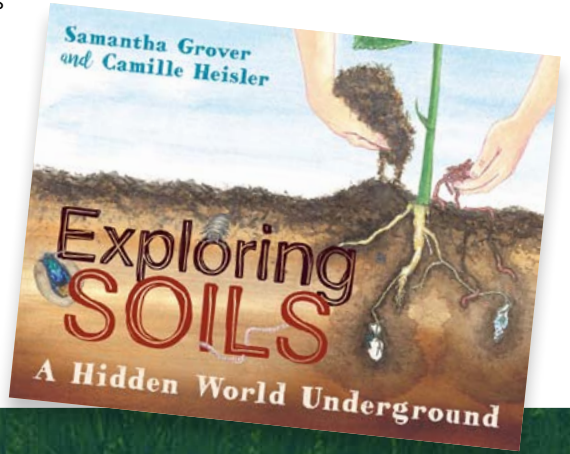
Bee Hotels for Australian Bees Prendergast, Kit self published $25 + postage. This 64p booklet provides information on bee hotel designs and cavity-nesting native bees as well as a section on favourite native bee flora and profiles of common species that inhabit bee hotels in WA. Available from amy.prendergast@postgrad.curtin.edu.au You may also like to contribute your native bee observations to the author's PhD project or join the discussion by visiting her facebook page Bees in the 'burbs in a biodiversity hotspot

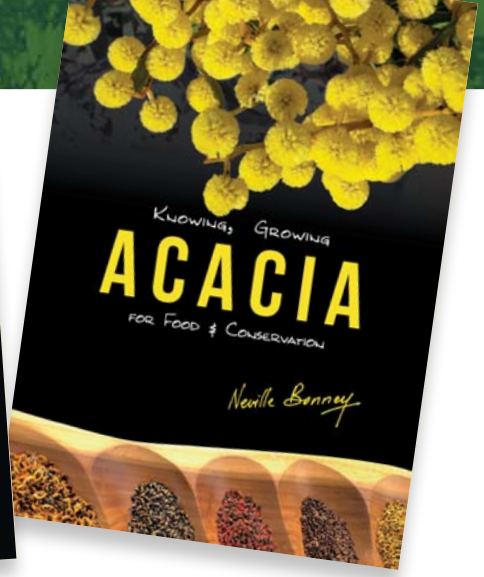
A guide to Native Bees of Australia Houston, Terry *CSIRO publishing*, 2018. $50. Providing a detailed introduction to the estimated 2000 species of Australian bees. Illustrated with stunning photographs, it describes the form and function of bees, their life-cycle stages, nest architecture, sociality and relationships with plants. It also contains systematic accounts of the five families and 58 genera of Australian bees. Photomicrographs (photos using microscopes) of morphological characters and identification keys allow identification of bees to genus level.



Bees of Australia: A Photographic Exploration Dorey James. *CSIRO*, 2018. $50. Bees of Australia introduces some of our incredible native bees, many of which, if you look closely, can be found in your own garden. Open this book wherever you like or read it from cover to cover. The combination of photography and contributions from some of Australia's leading bee researchers allows anyone to become enthralled by our native bees

Exploring Soils, A Hidden World Underground Grover, Samantha and Heisler Camille *CSIRO* 2017. $24.95. A children's book where James, an aspiring soil scientist, discovers that soil is not just dirt for digging in. He explores how plants and animals live in soil, how soils are formed, how they differ and the ways that soil is essential in our lives.





Knowing, growing Acacia for food and conservation Bonney, Neville 2018 $40. This practical guide explores the possibilities of growing some of the temperate and arid acacias as a food source and for conservation. It covers seed collection, propagation, Aboriginal language names, food and nutritional value and much more.

Rocky Outcrops in Australia: Ecology, Conservation and Management Michael David, Lindenmayer David. *CSIRO*, 2018. $49.95. Discover the incredible biodiversity on rocky outcrops and the importance of conserving these crucial landscape features. Learn why this habitat is important, the animals that live and depend on these formations, key threatening processes and how rocky outcrops can be managed to improve biodiversity conservation in agricultural landscapes, state forests and protected areas.

Recent research

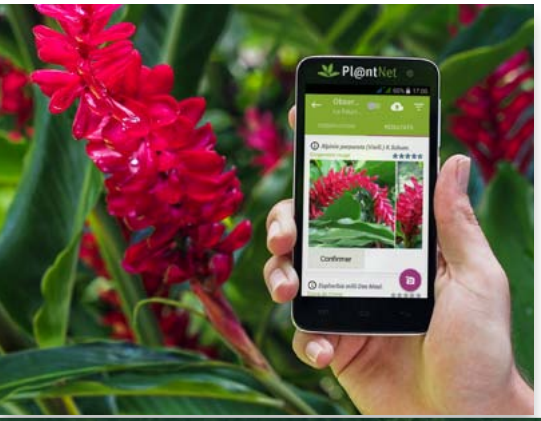
Goldingay RL, Taylor BD, Parkyn JL (2018) Movement of small mammals through a road-underpass is facilitated by a wildlife railing. *Australian Mammalogy*.

Hickman EJ, Yates CJ and Hopper SD (2017) Botanical illustration and photography: a southern hemisphere perspective *Australian Systematic Botany* 30, 291–325.

Wayne AF, Wilson BA and Woinarski JCZ (2017) Falling apart? Insights and lessons from three recent studies documenting rapid and severe decline in terrestrial mammal assemblages of northern, south-eastern and south-western Australia *Wildlife Research* 44(2) 114-126

Apps

My WeedWatcher website and mobile app enables users to identify weeds, conduct surveys on weeds of interest and report on the presence of declared weeds. The identification guide allows users to quickly search for a weed according to plant characteristics such as flower colour, leaf shape, and plant type. The survey/reporting feature enables users to map weeds, add images and record survey data such as weed density, weed counts, confidence of identification, and notes on control activities.



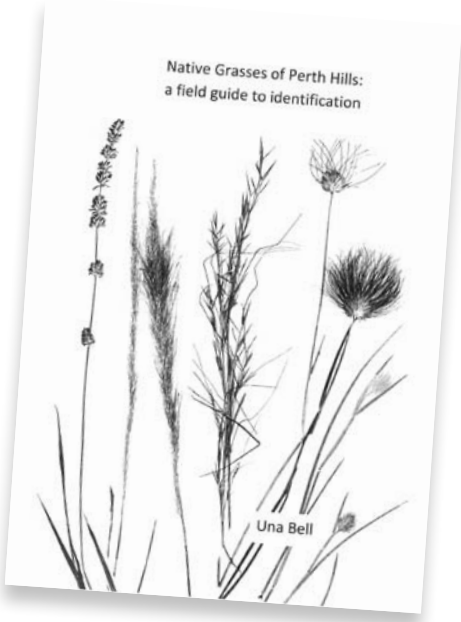
With the **Pl@ntNet** app, identify one plant from a picture, and be part of a citizen science project on plant biodiversity.

Website watch

The **Crowd and the Cloud** a 2017, four-part, US public television series on citizen science can now be viewed on the web.

Index of Biodiversity Surveys for Assessments is an online portal to capture and consolidate data contained in biodiversity survey reports to support assessments and compliance under the State *Environmental Protection Act 1986* and to provide a platform to make the information publicly available.

Native Grasses of Perth Hills Bell Una 2018. New book, free to download, to help identify and uncover the native grasses found in local bushland reserves in the Perth Hills. Another invaluable educational resource about local native grasses by author Una Bell winner of the SALP Ian Colquhoun Lifetime Achievement Award Bell for her dedication to environmental conservation and education.



Please keep to the path blog aims to make research about human behaviour more accessible to all who are interested in applying it to promote nature conservation. It reports the best contemporary and past research in short and engaging bytes. We read the best conservation psychology research so you don't have to.

Sharing Aboriginal Knowledge Northern Agricultural Catchment Council has developed two education resources for schools: Sharing Yamaji Knowledge and Sharing Noongar Knowledge. Aligning with the WA Science and Humanities and Social Sciences curriculum for students in pre-primary to Year 9 they include information on your local Aboriginal group, connection to Country, bush food, traditional ecological knowledge, caring for Country and changes to the environment post-colonisation. Developed in consultation with Noongar and Yamaji people these resources contain background information, videos and activities to engage learners and will complement incursions or excursions with Aboriginal members of your community.

The **Threatened Bird Index** shows that populations of threatened bird species in Australia have halved in the past 30 years, with migratory shorebirds down by an average 70%. A joint initiative of Threatened Species Recovery Hub with University of Queensland and Birdlife Australia, it follows 43 threatened bird species for which monitoring data is available. It will be updated annually and will be expanded to cover mammals and plants over the next few years. The online index allows for searches based on types of bird, state or territory, conservation status and time period.

Who's Who in the Landcare Zoo is WA Landcare Network's map of community based landcare groups across the state. Have a look at the webpage to make sure your group is one of the 500 listed.

Woody pear

by Julia Cullity

Photos – Kate Brown and Grazyna Paczkowska

The woody pear *Xylomelum occidentale* rings in the new year with large inflorescences of creamy-white flowers up to 8cm long held on the ends of its branches. It's a small twisted tree, fairly upright at 2–8m high. The woody fruits take several years to mature and are seen on the plant year-round as they take fire or the death of the plant to open. *Xylomelum* comes from the greek words *xylon* meaning wood and *melon* meaning fruit. *Occidentalis* means western and this distinguishes it from the other WA species. *X. angustifolium* is found in the northern sandplains and parts of the Wheatbelt and four other species grow in the eastern states.

Woody pear grows from Perth to Augusta in sandy and sandy-gravelly soils on the Swan Coastal Plain, Darling Scarp and into the hills. Although it has a wide distribution it doesn't tend to dominate, growing with banksias and sheoaks, and large populations are rarely found.

Noongar names for woody pear are danja and dumbung. Aboriginal people ate roasted seeds from the fruits and infusions of the leaves and bark were consumed to relieve pain.