

bushland news



Issue 104 **Summer** 2017-18 *Time of Birak and Bunuru in the Noongar calendar.*



The state of **landcare** in Western Australia



Department of **Biodiversity,
Conservation and Attractions**



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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A new look for *Bushland News*

As you'll have noticed, *Bushland News* has a new, updated format. We've reorientated our pages for optimised electronic use, in addition to interactive content links, and of course, bigger photos!

We would love to have your [feedback](#).

Next issue

Autumn *Bushland News*

Autumn *Bushland News* contributions should be sent to [Urban Nature](#) by **Friday 2 March 2018**.

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.

The State of Landcare in WA

by Louise Duxbury

The WA Landcare Network (WALN) has produced the first overview of the 'State of landcare in WA' in the more than 30 year history of the movement. Why? Landcare has made a big difference to the way we see the environment and has been widely adopted overseas, but in Australia it is under threat when we all need it to grow.

Community landcare covers the broad range of volunteer community groups and individuals, not-for-profit groups and supporting professionals that work to restore, improve and protect the natural environment and resources. It is about engaging the whole community, including the government and private sector, to take action together.

The [report](#) is a first draft with an updated version already underway. While the report shows that this 35-year-old movement is still very much a positive force, the unparalleled growth in the number of groups active in landcare, typical of the earlier years and the on-ground change they achieved, has faltered in some areas while growing in others. The report attempts to analyse trends across a number of movement health indicators. An important finding is that comprehensive data is not available in most areas.

The number and spread of active groups

The overall number of active landcare groups in WA appears to have dropped from a peak of 700–800 in 2000 to around 500 in 2017.



The main decline has been in agricultural and pastoral areas, with a significant drop recorded. At the same time there has been an increase in grower groups, many with a sustainable production focus that equates well with the landcare ethic.

In contrast, and reflecting an increase in general environmental awareness, there has been an increase in groups in urban, coastal, peri-urban and the more closely settled South West and where Native Title rights have been resolved. The significant increase in Traditional Owner engagement in 'caring for country' programs has been supported strongly by increased Federal funding for salaries and capacity.

Funding, support structures and processes

Funding for landcare is short-term and unreliable. There has been a significant shift in the scale, scope and direction of funding for programs from all levels of government over the past 10–15 years, from bottom-up, local-scale to the regional delivery model and targeted investment that doesn't provide well for community capacity. The report suggests that all approaches are needed and competition be avoided between local groups and regional delivery.

There has been a significant increase in Traditional Owner engagement in caring for country projects across WA. Here the newly formed Nowanup Rangers take charge of 26,000 seedlings as part of two State NRM funded projects: Gondwana Link's Nowanup Rangers and Greening Australia's Eco-cultural Restoration. Photo – Errol Eades.

Monitoring landcare's impact

The report also highlights the lack of a central database to report on the impact of past and future community landcare. There are no robust measures to collate community effort on improving soil health, fencing waterways and remnant vegetation, planting perennial pastures and vegetation, protecting coastal areas, surveying and protecting flora and fauna, monitoring water quality, developing new farming practices, nurturing traditional practices caring for country, and building local capability to deal with change.

Statutory protection for landcare values

Significant staff reductions in key agencies and a lack of capacity to enforce regulations and guidelines have diminished protection mechanisms.

Landcare is a self-help model leveraging the positive motivation of WA communities to care for land, water, bush, coast and oceans. It has survived to date but indeed a lot more could be achieved if more consistent and locally- based support was provided across WA.

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Seven years of managing watsonia around the rare wild native rose (*Diplolaena andrewsii*) in John Forrest National Park

by Kate Brown and Cathy Bourke

Around 600 individual wild native rose plants (*Diplolaena andrewsii*) are known across only two populations 17km apart on the Darling Scarp. A major threat to both populations is competition from weeds particularly watsonia (*Watsonia meriana*). Fire appears to facilitate invasion of watsonia with profuse flowering post fire followed by prolific seed set, bulbil production and seedling recruitment in the years following the burn.

Trials established in 2010 with the herbicide 2-2 DPA in John Forrest National Park were very effective at controlling watsonia around wild native rose in the first year of treatment. However, over the following three years, across both treatment and controls (no herbicide) there was a dramatic decline in the number of live adult plants of wild native rose. By 2014, the number of live adult plants in control plots had decreased by 97.5 per cent and in the herbicide treatment plots by 96.8 per cent. Given the decline occurred across treatment and controls, it does not appear to be related to the herbicide application. The last fire across our study site was in 2004 and what is known about the ecology of Rutaceae in southern Australia indicates that some small shrubs in the family may survive for only 10 years after fire. So the indications are that the decline across the site is linked to time since fire.

Interestingly there was quite prolific seedling recruitment in 2014. This occurred mainly in the herbicide treatment sites where there was no longer competition from watsonia. In 2016 and 2017 a number of those seedlings went onto flower and set seed, increasing the number of adult plants in the population and returning viable seed to the soil seedbank.

Continued next page ...



*The threatened wild native rose is known from only two populations both impacted by the invasion of weedy watsonia. It appears that fire influences the persistence of both the rare species and its major weedy threat and indicates that managing watsonia is integral to ensuring successful recruitment of wild native rose, between and after fires.
Photo – Kate Brown.*

It seems where we are controlling watsonia, wild native rose is better persisting between fires and hopefully will recruit more prolifically following the next fire.

While fire may play a role in persistence of the species over time, fire also facilitates recruitment and persistence of watsonia. Control of watsonia before fire is integral to preventing spread and establishment of the weed and to ensuring successful post fire recruitment of wild native rose.

The habitat of the species is protected in one of the oldest national parks in WA. By attempting to understand appropriate management for wild native rose and its critical habitat we may also gain a better understanding of appropriate management of fire and weeds across John Forest National Park.

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Urban Nature held a number of field days this spring to discuss management programs underway at our demonstration sites across the region. Here at Greater Brixton Street a group of those involved in the Perth NRM funded Resilient Landscapes project met to observe and discuss the results obtained so far. This included representatives from WA Planning Commission, Department of Biodiversity, Conservation and Attractions, the weed management contractor and local community groups Friends of Brixton Street Wetlands, Friends of Alison Baird Reserve and the Armadale Gosnells Landcare Group. Other field days were held at Talbot Road Nature Reserve to review management outcomes and Bandicoot Brook Reserve where the local community was invited on a nature walk to discover its natural values. Photo – Julia Cullity.



Caltrop (*Tribulus terrestris*)

by Rebecca Ong

A search online for *Tribulus terrestris* brings up all sorts of articles regarding the plant's supposed ability to enhance male virility and vitality, with many more websites trying to sell you herbal tablets containing extracts from it. However, search a bit more and you'll find this prickly weed species, also known as cat-head, bindii or puncture vine, has become such a problem in WA that a number of shires in Perth, the South West and the Wheatbelt have now listed it as a prescribed pest plant under the *Local Government Act 1995*.

Why is it a major problem?

A weed of sandy soils and disturbed spaces, it is found throughout WA. It can be toxic to stock, and is a general nuisance around areas used by the public because of its sharp, spiny burrs. The extensive root system allows it to survive droughts and it can also outcompete native flora for moisture and nutrients.

Identification and description

Caltrop has long, wiry, trailing stems, covered with fine hairs. It is an annual herb, with usually prostrate stems radiating from a central taproot, however in shaded locations or amongst tall plants it may grow more upwards.

The greyish-green leaves consist of several leaflets arranged opposite each other along the stems and the small yellow flowers with five petals can be present all year round. Wedge-shaped burrs are formed in clusters of five, and each have four or more long sharp spines.

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Caltrop grows vigorously. This caltrop seedling, with the first flush of flowers, is at the best stage to physically hand remove or spray. Photo – Mike Norman

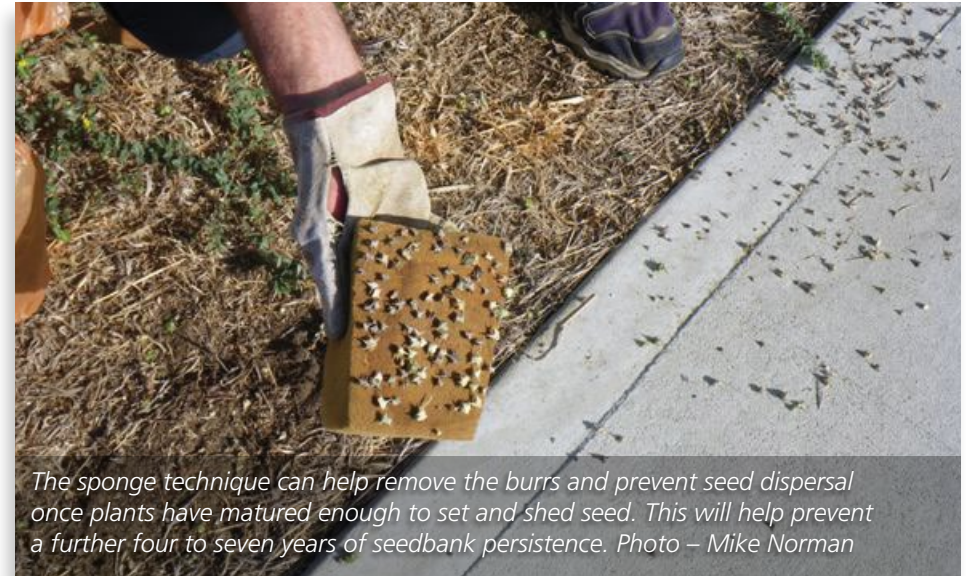
Caltrop is sometimes confused with doublegee (*Rumex hypogaeus*), however doublegee has a large, undivided green leaf similar in colour and shape to English spinach.

Lifecycle

Caltrop can germinate throughout the year particularly following summer rain. After three weeks the first flowers may be formed, quickly followed by the first fruits, or burrs, at five or six weeks. The sharp, spiny burrs continually develop throughout the summer and autumn, and are dispersed by tyres, water, machinery, animals (by adhesion), clothing, footwear and soil movement. The seedbank usually persists for around four to five years, but sometimes up to seven years.



Caltrop's seed capsules covered in sharp, spiny burrs help it disperse widely.
Photo – Mike Norman



The sponge technique can help remove the burrs and prevent seed dispersal once plants have matured enough to set and shed seed. This will help prevent a further four to seven years of seedbank persistence. Photo – Mike Norman

Management and control

The first step is to exclude dispersing agents as much as possible and close tracks to stop the spread. In a native bushland setting, it is then best to hand remove small, isolated populations, pulling plants from the root crown, bagging them and removing them from the site. Apply herbicide to areas containing large numbers of seedlings to prevent seed set – glyphosate at 1 per cent is effective in this case. For larger infestations, products containing 2,4-D, glyphosate and dicamba are effective, however caution should be expressed when applying any herbicide in a native bushland setting due to the potential for off-target damage. Diesel can be used on bare tracks as it kills the plants and seed located in the surface soil. Another technique, perfected by cyclist and bush regenerator Mike Norman, is to use a thick sponge to mop up any of shed seed.

Further information

See [Florabase](#) or the [Department of Primary Industries and Regional Development](#) websites.

Shedding light on the western brush wallaby by Leticia Povh

The biology and ecology of the western brush wallaby (*Notamacropus irma*) is poorly understood because of its shy nature and the fact that it cannot be captured using conventional trapping techniques. They are almost impossible to observe, and when you think you see one, it's gone like a flash! Our study determined the survival, home range establishment, and vegetation preference of wallabies relocated from Jandakot Airport to Harry Warring Marsupial Reserve.

A female released in Harry Warring Marsupial Reserve. Distinguishing features of the western-brush wallaby are their small size 10kg, black markings on their snout, paws and tail tip and their shy and elusive nature. Photo – Brian Chambers.

The western brush wallaby is a medium-size wallaby weighing no more than 10kg, characterised by a black mark on its face that reaches from the nose to the eyes; the forearms, feet and end of tail are also black, hence its alternative common name of 'black-gloved' wallaby. The colour of the wallaby ranges from white, grey, and black in part due to different texture furs. There is no observable sexual dimorphism, therefore males and females present similar colour and body size.

The [Priority 4](#) listed species is uncommon in the Perth region, where populations exist in larger remnant bushlands, including Jandakot airport. Available habitat at Jandakot Airport was reduced in 2015 by the clearing 131ha of remnant vegetation, with the relocation of brush wallabies a condition of development approval. Harry Waring Marsupial Reserve is a predator proof conservation reserve in Wattleup, with similar vegetation to Jandakot Airport, and was selected as the reintroduction site. The relocation was a collaborative project that involved experts from The University of Western Australia, Murdoch University, Jandakot Airport and Parks and Wildlife Service with the assistance of many volunteers.

But how did we manage to relocate an untrappable species? Well, for two months we used motion activated cameras to test two different sizes of Thomas traps and different baits, mainly fruit-based, at Jandakot Airport. Pictures revealed that western brush wallabies readily eat pears and watermelon, which attracted them to the traps; however, they do not walk into traps. Therefore, we ended up mustering the wallabies using a technique used by Mike Bamford in the past to capture western brush wallabies at Whiteman Park, and it worked! We mustered 14 adult wallabies, and after a short drive to their new home, we anaesthetised them and fitted them with GPS

tracking collars to monitor them for six months.

Following their release four mortalities occurred but unfortunately post-mortems did not determine the cause of death. Two female western brush wallabies had home ranges that completely overlapped those of two males, suggesting that they might have formed pairs. The wallabies selected banksia woodland with dense understorey habitats such as *Hibbertia hypericoides* (yellow buttercups) and *Stirlingia latifolia* (blueboy) association, reflecting the presence of their preferred food. David Algar's PhD thesis studied the diet of western brush wallabies in Harry Waring Marsupial Reserve in 1986, and reported that their major dietary items were typically found in banksia woodlands with the understorey associations described above. In contrast, they avoided *Melaleuca* associations, most likely as they lacked their food resources. They also avoided recently-burnt areas, which is contrary to reports that western brush wallabies prefer recently burnt areas.

Although our study sheds light on the western brush wallaby, our knowledge is still very limited. The main threats to the ongoing viability of the wallabies are not well understood. Populations that contain only a small number of animals are potentially at risk to local extinction from fire, drought and disease, as well as inbreeding and loss of genetic diversity. Habitat modification continues in south-west WA and more research into the ecology of this species will assist us in managing it into the future.

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Leticia radio-collaring a western brush wallaby just prior to release. Leticia is an enthusiastic wildlife biologist who has worked with otters and primates in the Atlantic Forest, mammals in the Amazon and moved to WA to work on western brush wallabies. Photo – Peter Adams

Further reading

Algar D (1986) *An ecological study of macropodid marsupial species on a reserve*. PhD thesis, UWA.

Bamford MJ and Bamford AR (1999) A study of the brush or black-gloved wallaby *Macropus irma* (Jourdan 1837) in Whiteman Park. *Whiteman Park*.

Wann JM and Bell DT (1997) Dietary preferences of the black-gloved wallaby (*Macropus irma*) and the western grey kangaroo (*M. fuliginosus*) in Whiteman Park, Perth, Western Australia. *Journal of the Royal Society of Western Australia*, 80, 55-62.

Tuart woodlands nomination as a threatened ecological community

The 'Tuart (*Eucalyptus gomphocephala*) woodlands and forests of the Swan Coastal Plain' ecological community is being considered for possible listing as threatened under the Federal *Environment Protection and Biodiversity Conservation Act 1999*.

Tuart woodlands and forests only occur on the Swan Coastal Plain of Western Australia. Listing would help to protect and restore this ecological community, which has been extensively cleared and is affected by other threats such as weeds and loss of native animals. The Threatened Species Scientific Committee proposes to include this ecological community in the category of critically endangered.

[The draft Conservation Advice](#) is now available. Public comments were provided to the Committee and Federal Environment Minister and closed in mid-December 2017. The Minister will decide in 2018 whether to list the ecological community and in what conservation category. This will be based on whether the ecological community meets the criteria for listing and whether listing would assist its survival.



Tuart woodland at Paganoni Swamp. Photo – Kate Brown.

Echidna CSI

by *Tahlia Perry*

Echidnas are iconic native Australian mammals and one of only three egg laying mammals. Despite this, we know little about their distribution and genetic diversity and need this information to understand how they are affected by environmental changes.

The Echidna Conservation Science Initiative – EchidnaCSI – is a new smartphone [app-based](#) citizen science project combining molecular biology, ecology, community engagement and education. EchidnaCSI encourages the public to take photos of wild echidnas to provide information that will contribute to understanding more about their distributions throughout Australia. The app also provides information and instructions about how to identify and send in echidna scats. From these scats we are currently establishing DNA and hormone extraction protocols to investigate diet, population genetic information as well as variation in breeding season and stress levels.

EchidnaCSI was launched in September 2017 and has had more than 1300 downloads and more than 800 submissions of data, including both sightings and scats. We are currently creating



Echidna scats have a very distinct long cylinder shape, they are dry in texture and you can usually see some ant and termite exoskeletons throughout. These features make echidna scats easy to spot and distinguish from the pellet-like scats of other native mammals. Photo – Peggy Rismiller.

genetic tests to investigate echidna diet and generating protocols to analyse hormones involved in reproduction and stress. This project combines community engagement and molecular analysis to unlock fundamental biology of echidnas in Australia and will provide important information to inform policy and conservation regarding these enigmatic mammals.

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Echidna Watch

[Echidna watch](#) is a local project running out of the Chittering Landcare Centre. It is using community sightings to establish a basic understanding of the numbers of echidna's in the Chittering area. Contact Adrian Botha by [email](#) and let him know of your sightings. Please send through the time, location, habitat type and the situation where you saw this elusive creature.

Fund raising for the western ringtail possum

The South West Catchment Council has launched a [crowdfunding](#) campaign to help save the critically endangered western ringtail possum. Running from November 2017 to April 2018 they are hoping to raise \$30,000. Funds raised will be spent on research, rescued animals' rehabilitation and habitat restoration.

- \$5 will buy a transponder tag for monitoring possums in the wild
- \$30 will buy a week's worth of milk for sick or injured possums.
- \$35 will buy a specialised nest box
- \$50 will buy 64 Peppermint tree seedlings for revegetating habitat.

It's estimated that there are only 8,000 of these marsupials left in the wild and that is WA's south west.

Don't let those ticks go to waste

The University of Sydney are researching tick borne disease in Australia. They are asking for people to keep live ticks in the freezer and when they have a few to send them by overnight post to the university. They will use these specimens to help identify known and novel micro-organisms in Australian ticks, a stepping stone towards understanding what role these tick-borne micro-organisms have in human disease. Summer is an active time for tick bites, so if you do find them on yourself or animals use these [collecting instructions](#) so all that discomfort is not in vain.

Understanding the fauna of Baigup Wetlands

by Penny Lee

Baigup Wetland Interest Group (BWIG) had a focus on fauna this spring. With funding from State NRM we've held a number of community events and commissioned a fauna survey to update fauna lists from the early 1990s. The project was launched in September with a well-attended community workshop where Whadjuk Noongar Elders Marie Taylor and Noel Nannup shared stories and knowledge about Aboriginal relationships with the land and our Natural Areas fauna consultant Sharon Hynes demonstrated the equipment to be used during the November survey. A night walk, later in September, delighted some participants who hadn't experienced the excitement and simple pleasure of a bush walk at night. Following this was a community bird survey in October which also included our Curtin Volunteer! students and was led by BWIG Birdlife members Penny Lee and Rick Curtis. Many thanks to Rod Smith for bringing binoculars from Birdlife WA. In the first week of November BWIG members helped dig in trap lines, record findings and video the action during the search for terrestrial and aquatic invertebrates, fish, reptiles and mammals. We also surveyed local residents seeking current and historical fauna information. With the consultants' report not due until next year, two early highlights were peacock spiders and the native fish, Swan River goby, in one of the freshwater pools.

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Another highlight was evidence of the western glossy swamp skink, a species known to be declining in the metropolitan area. This great egret is contributing to a small local decline of western glossy skink at Baigup Wetlands. It's all part of the food web. Photo – John Baas.

Amazon frogbit!

by Dan Friesen

If you manage or frequent a wetland or waterway keep your eyes out for this pesky intruder. Amazon frogbit (*Limnobium laevigatum*) is a freshwater aquarium trade plant that can have a devastating impact on our local waterways. First discovered in Leige St Wetland in 2013 it has since been found in a total of four unique sites, persisting now only in the Balannup and Baileys drain system. Regular and thorough treatments currently have it under control, however those unusual heavy February rains may have allowed it to travel further down the system than we may be aware of. Amazon frogbit has the ability to quickly get out of control, choking our waterways and threatening their health. You can identify Amazon frogbit by the squishy bladder that allows it to float under the leaf of the plant. If you think you've spotted it or would like [more information](#) please contact SERCUL.

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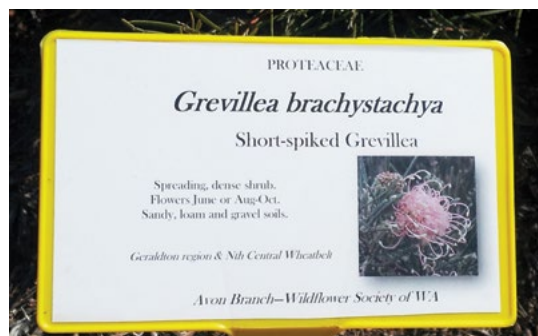
Amazon frogbit at Yangebup Lake two months after a very small juvenile population was discovered. Photo – Dan Friesen.

Adding value to our bushland garden

by Kathy Boladeras

The historic town of York, 100km east of Perth, boasts a unique bushland garden. Originally a clay pit for brickmaking, the site was later used as a disposal area for the earthquake-damaged York Royal Hotel. Fast-track to 1993, when local identities Joanna Seabrook and Adelphe King saw its potential as a native garden for the enjoyment of the public and commenced planting. Gradually, the garden grew: paths, terracing and a pergola were added. In 2005 the Avon Branch of the Wildflower Society assumed responsibility for its maintenance and ongoing development.

Now with over 300 species from all parts of WA flourishing there and attracting increasing numbers of visitors, the need for plant identification signage has become a priority for the branch. Using funds raised at the Branch's annual plant sale, plastic label stakes and sticky poly laser labels were purchased and the task of creating a distinctive, informative sign for each species began. High quality photographs taken by Audrey Sole throughout the year as species are in flower, are cropped and inserted onto labels by Kathy Boladeras, using Publisher software. Each species is researched using [FloraBase](#), with scientific and common names, a brief description, flowering times and distribution included on the label. This year over 180 signs have been placed in the



The Avon Branch of the Wildflower Society of WA have added signage to enhance visitors' experience of the bushland garden and promote the use of native species in our area. Each sign is printed on water-resistant poly laser labels on a laser printer and should be easy enough to replace if damaged or when faded.
Photo – Kathy Boladeras

Bushland Garden and already there has been positive feedback from visitors able to access information on certain plants that have caught their attention.

Time will tell how long the poly laser labels stand up to the hot sun before fading, but once the signs have been created it will be a simple matter of printing new ones and sticking them over the old ones. We hope the addition of signage will enhance visitors' experience of the bushland garden and promote the use of native species in our area.

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Quenda thriving in Stirling

by Jo Taylor

Recent monitoring of quendas, relocated by Parks and Wildlife Service in Star Swamp, Cottonwood and Dianella Regional Open Space bushlands, has shown very successful results.

The City of Stirling's Natural Areas team recently undertook quenda surveys as part of its annual fauna survey program. Star Swamp, in its second year of relocation, saw 30 new quenda micro-chipped from the original ten released. Twenty-four of the 30 relocated to Dianella and Cottonwood seven months ago, were recaptured with 10 new animals micro-chipped. All were in excellent health with the majority of females carrying 3–4 pouch young.

One female abandoned her pouch young, which were furred and weighed 48–60g. Under the care of Jo Taylor, the City's Conservation Officer and certified wildlife carer, the male and two females are thriving and now weigh approximately 240g. They will be micro-chipped and released in Dianella before Christmas.

The successful survival and population increase is due to the City's diligent fox and cat control program, protective fencing, and community education.



City of Stirling conservation student intern, Jake Lawrence, scanning for micro-chip with volunteer, David Pike, collecting data. Photo – Jo Taylor

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Joondalup natural areas bus tour

by Don Poynton

In mid-October, 27 volunteers from 15 friends groups in the City of Joondalup joined staff from the City's Natural Areas team on a bus tour of four reserves to view the spring flowers and recent projects.

The feral-proof fence around Craigie Open Space has been functional for more than two years. As a result, the number of quendas has expanded from the original release of around 60 several years ago to more than 100 today.

Volunteers from the Friends of Harman Park in Sorrento are currently conducting direct seeding trials with and without smoked water. In another initiative, the group is experimenting with low hessian walls to prevent erosion and lawn grass seed from entering the bush islands after heavy rain.

Elevated Porteous Park, another small reserve in Sorrento, surprised first-time visitors with its views of Rottneest and Fremantle, and the Perth city skyline. The highlight was the finding of a white specimen of the fringe lily, *Thysanotus manglesianus*.

The tour concluded with a walk through Shepherds Bush Reserve, one of the City's top-five priority natural areas. The



The Joondalup natural areas bus tour gave council staff and local friends groups the chance to meet, discuss and visit each other's project sites. Four sites were visited beginning at Craigie Open Space. Photo – Don Poynton

City has recently upgraded the footpaths and installed interpretative signage. Participants also viewed areas which volunteers from the recently re-established Friends of Shepherds Bush had cleared and planted with new seedlings during the winter.

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Native land snails of WA

by Corey Whisson and Lisa Kirkendale

An often overlooked, yet critically important native faunal group in Western Australia is land snails, given their herbivorous role in the decomposition process and as a food source for larger predators. Of course, it is the introduced land snails (e.g. brown and green garden snails and Italian snail) that are most commonly encountered, given their association with house-hold gardens, lawns and orchards. However, some native land snails are large, globose and more common than you think!

The native land snail fauna of WA is incredibly diverse and, in terms of size, can be coarsely grouped into the macro land-snails (moderately large, shells greater than 1cm) and micro land-snails (microscopic shells, usually less than 1cm). Furthermore, these land snails have different origins, some groups have recently arrived in Australia (post-gondwanan with an Asian origin) while other groups are considered much older (of gondwanan supercontinent ancestry).

In WA, the large, macro land-snails comprise two main families. In the Kimberley, Pilbara and inland arid areas exists the diverse Camaenidae, a suspected post-gondwanan group containing many genera and numerous species. Largely confined to the moist south-west corner of WA are the gondwanan Bothriembryontidae, containing the sole genus *Bothriembryon* with 36 described species, some of which are regarded as short-range endemics (SRE). Eight of these are [listed](#) as threatened species domestically and internationally. This genus has been a major research focus of the Western Australian Museum and Netherlands Centre for Biodiversity in recent years.

Bothriembryon identification and ecology

The *Bothriembryon* animal resembles a typical garden snail having a soft, large foot; slightly rounded head and two pairs of anterior tentacles. The shell is more distinctive, being approximately 1-5cm in length and ovate to elongate-conical in shape. The shell colour can vary from monotone to comprising colourful axial flames or spiral bands and sculpture can be smooth, spiral lined or coarsely nodulose. The microscopic honeycomb sculpture of the shell tip (termed protoconch) is a distinguishing feature of *Bothriembryon* land snails.



Tip of the shell of a Bothriembryon snail. The honeycomb sculpture in the centre of the image is characteristic of this ancient, gondwanan genus largely confined to south west WA. Photo – Corey Whisson, WA Museum.

Bothriembryon live in a variety of habitats from coastal heath and woodlands to rocky mountainous areas and outcrops. Like all land snails they are susceptible to desiccation, so they will bury during the hot and dry summer, sealing their shell by creating a calcareous epiphragm (or trapdoor). Once the winter rains arrive, they will emerge to feed, mate and lay eggs.

Bothriembryon in Kings Park

Perth residents do not have to go far to observe these old and beautiful *Bothriembryon* snails, as the woodlands and rocky scree slopes of Kings Park harbour

Continued next page ...

three amazing species. It is however best to do this in winter when the snails have emerged from burrowing. It is believed *Bothriembryon* are most active at night, but they can often be seen on the bitumen walk paths in the early morning.

The golden snail *Bothriembryon bulla* can usually be found among litter in banksia–sheoak woodland, whereas the slightly smaller *Bothriembryon kendricki* seems to prefer marri–jarrah woodland. The park is also home to the rather interesting scarp snail *Bothriembryon indutus* which is confined to the steep limestone scree-slopes of Mount Eliza. This is a small population of the species, which otherwise occurs along the Darling Range further east.

Much work still remains to be done on *Bothriembryon* and the WA Museum is working toward the first molecular phylogeny of the genus. This work involves sampling and comparing the same gene regions (DNA) from as many snail species as possible to estimate relationships among species. For the land snail enthusiast, a field guide on all WA land snails is due for release in early 2018, so please stay tuned!

More information

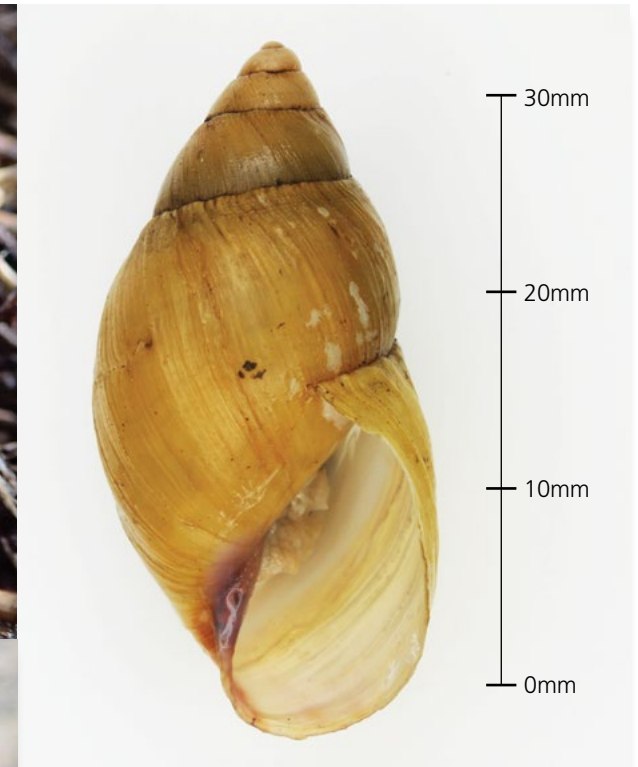
Breure ASH, Whisson C (2012) Annotated type catalogue of *Bothriembryon* (Mollusca, Gastropoda, Orthalicoidea) in Australian museums, with a compilation of types in other museums. [ZooKeys](#) 194, 41–80.

Contact

Corey Whisson

Department of Aquatic Zoology,
Western Australian Museum

email corey.whisson@museum.wa.gov.au



A night or early morning walk in Kings Park this winter may reveal three native land snail species. A somewhat shy *Bothriembryon bulla* (above left) is seen among litter, note the light coloured foot and pale shell.

B. kendricki (left) is crawling on a bitumen path in the early morning, note the grey foot and dark coloured shell.

At Kings Park *B. indutus* (above) is only found on the scarp. From its shell, note the elongate shape and purple coloration at the base.

Photos – Lisa Kirkendale and Corey Whisson, WA Museum.

CoastSWaP bringing coastal managers together

by Joanne Ludbrook

The South West and Peel Coastal Management Group (CoastSWaP) is a volunteer network of coastal stakeholders along Australia's South West coast from Mandurah to Walpole.

Since 1990, CoastSWaP continues to care for and protect the coastal and near shore marine environment. This is achieved by bringing together and assisting key stakeholders to share information, develop partnerships and address issues within the region.

CoastSWaP has ensured that coastal managers and communities work together to identify shared challenges and support practical solutions for over 36 years. The Coast SWaP aim is to:

1. compile and share relevant information in areas such as coastal management, coastal adaptation planning, community engagement and governance and;
2. strengthen a strong regional coastal stakeholder network, including the Committee, a project officer and a 200 strong network of organisational members.

CoastSWaP has run 19 forums over the past four years with over 150 stakeholders. There are also several case studies available on the [website](#).

The CoastSWaP network brings together coastal managers, community groups and the general community, local governments, NRM/Landcare, the commercial sector, Traditional Owners and State and Federal government agencies. This allows the network to identify key priorities including: collaborate on new project ideas and applications, share best practice, attend and facilitate community events, seek input and share traditional knowledge, support sustainable recreation, development and use of the coastal zone and assist in the preparation of regional strategies and support state initiatives. CoastSWaP does not focus on site specific on-ground work projects or manage any long-term coastal programs.

Continued next page ...



Participant's round table updates at the Cape to Cape sub-regional forum 2016. Photo – CoastSWaP

Many coastal issues exist across organisational boundaries, by bringing key people and organisations together, they can combine resources and assets and develop initiatives which tackle the issues on a larger scale more efficiently and effectively.

It is often difficult for volunteers, staff and organisations to find the time or resources to effectively share information to other stakeholders who may find this useful. By providing regular forums with key stakeholders, the opportunity exists for this type of information to be shared along with other discussions regarding coastal planning and management topics. This promotes possibilities to develop partnerships and co-operative initiatives.

Our coastal [stakeholder forums](#) have a relatively simple format. Each stakeholder presents a brief update on their organisation's issues, priorities and actions. Other stakeholders are given an opportunity to ask questions, comment or make suggestions and the discussion can continue or move on to the next presenter as time permits. This is when vital knowledge and experience can be shared; a new staff or group member meets a wide range of stakeholders involved, a local government planner finds out some important information from an environmental officer, the community group members share experiences that assist with planning and implementation of an on ground project.

Our [case studies](#) grew from the need to share the information gathered from the sub-regional forums to the network as a whole. In 2015 we gained funding that allowed us to collate and publish case studies on effective coastal management methods such as revegetation techniques or off-road vehicle management, through to snapshots of coastal



Remote coastal cliffs near Windy Harbour. Photo – Gary Middle.

adaptation planning or the status of coastcare and coastal management in the Peel Harvey and South West regions.

We were delighted when recent achievements of CoastSWaP were recognised with the Community Group Award in the 2017 WA Coastal Awards. Our current focus has been hosting a series of sub-regional forums during November and December 2017 in the coastal zone from Cape Naturaliste to Augusta and in 2018 we will be developing case studies to promote

the potential solutions to the issues that were raised. New member organisations are welcome, please get in contact with us.

Contact

Joanne Ludbrook

CoastSWaP

email info@coastswap.org.au

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

Recurrent activities



Saturdays 15 minutes before sunrise

Research into bird populations with the **Herdsmen 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.



Saturdays 8am–9am

Guided walks with Friends of **Lake Gwelup**.
Third Saturday of each month. Meet at Scout Hall Carpark (near the tennis courts), Huntriss Rd, Gwelup.



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.



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.



Saturdays 8.00am–10.00am

Bushcare activities with Swan Estuary Reserves Action Group at **Alfred Cove** Nature Reserve.
Fourth Saturday of each month.
Contact: Cathie 9339 2439 oneill@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 Alridge Rd, Booragoon.
Contact: Mary-Ann 9316 9716 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 oneill@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, Sundays 9am–12 noon

Koala maintenance at **Yanchep** National Park.
Contact: Ciara 9303 7771



Sundays 8am–9am

Guided walks with Friends of **Marangaroo**.
Fourth Sunday of each month. Meet at Gate 3, Decourcy Wy, Marangaroo.



Sundays 8am–10am

Bushcare activities every Sunday with Friends of **Shenton Park** Bushland.
Contact: Dani 9381 3470 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 8.30am–9.30am

Guided walks followed by meeting with Friends of **Mirrabooka**. First Sunday of each month.
Contact: Jan 9344 2872



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 [website](http://www.lakeclaremont.com.au)



Sundays 9am–11am

Bushcare activities with **Cottesloe** Coastcare.
First Sunday of each month.
Contact: Robyn 9384 7668 info@cottesloecoastcare.org
[website](http://www.cottesloecoastcare.org)



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 **Sapphire Cove** Nature Reserve, Halls Head. Last Sunday of each month.
Contact Barry bjsdoongin@gmail.com [website](http://www.sapphirecove.com.au)



Sundays 9.45am–12 noon

Bushcare activities with the Friends of **Piesse Brook**.
Third Sunday of each month.
Contact: Gerry 9293 2517
Bridget bhogarth@ozemail.com.au



Sundays 1pm–4pm

WA Gould League's **Herdsmen 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: 9258 7301 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: Cathie 9339 2439 oneillc@westnet.com.au



Tuesdays and Thursdays, 8am–10am

Coastcare activities with **Stirling** Natural Environment CoastCare (SNEC). Contact: Sheldon 0488 190 651 or 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



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 9am–11am

Bushcare activities on the fourth Thursday of each month at **Baldivis** Children's Forest. Contact: education@baldivis-childrens-forest.org.au [website](#)



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



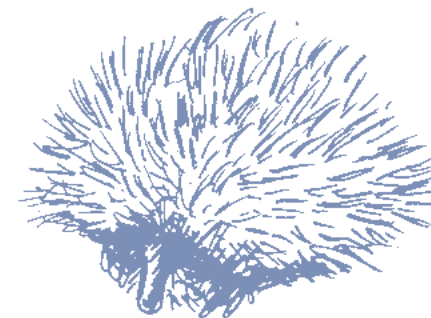
Thursdays 7.30pm

Talks with **Murdoch** Branch of the **Wildflower Society** to share passion and knowledge of nature. First Thursday each month. Cockburn Wetlands Education Centre. Contact: Pawel 0410 305 034 [facebook](#)



Fridays 8am

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



Fridays 7.30pm

Talks with **Eastern Hills** Branch of the **Wildflower Society**. Fourth Friday each month, not December. Octagonal Hall, 52 McGlew St, Glen Forrest. \$2 entry, visitors welcome. Also art and photography, propagation, excursions, open gardens, library and herbarium. Contact: Cathy 0404 959 654 catherine.ann.car@gmail.com



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](#)



Birdlife Australia – check calendar

Holds regular **talks** and **excursions** each month. [website](#)



WA Naturalists – check calendar

Holds regular **excursions, photo groups** and **campouts** each month. [View](#) their calendar for activities of four branches.



Wildflower Society of WA – check calendar

Holds regular **talks**. [website](#)

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.






February

-  **2 Friday 7.30pm**
Talk and AGM of WA Naturalists Club. Tony Friend on Numbats, Fox Lecture Theatre UWA.
Contact info@wanaturalists.org.au
-  **8 Thursday 1–4pm**
Seed collection seminar introduces you to on-ground techniques, processing, standards, storage and more. Lesmurdie Hall, 96 Gladys Rd, Lesmurdie.
Free [bookings](#).
-  **11 Sunday**
Darwin Day talk and excursion Point Walter with WA Naturalists Club. Kids welcome.
Bookings by email info@wanaturalists.org.au
-  **17 Saturday 10am–2pm**
Green Card Training covering all aspects of safety for volunteers working in bushland areas. Includes accreditation for volunteers wishing to use chemicals provided by the City of Kalamunda, Shire of Mundaring or City of Swan. Morning tea provided, West Swan Hall, Lot 1 West Swan Rd, Henley Brook. **BSFH**
-  **25 February**
Snorkelling excursion at **Coogee** with WA Naturalists Club.
Contact info@wanaturalists.org.au

Registration/contact details

BSFH Bush Skills for the Hills. Free workshops for the community. Registrations essential.
Contact: 9424 2216 environment@emrc.org.au

March

-  **4 Sunday**
Clean Up Australia Day
[Register](#) your site or [join](#) to find a clean up site near you.
-  **10 Saturday 10am–2pm**
Boobook Owls and Rodenticides Hear Murdoch University research findings on the link between rodenticide usage and the decline of boobook owls in Perth, meet a raptor or two courtesy Society for the Preservation of Raptors and take away easy tips to keep unwanted critters away without using poison. Morning tea provided, Jorgensen Park Pavilion, Crescent Rd, Kalamunda. **BSFH**
-  **17 Saturday 9am–11am**
Creating Fauna Attracting Gardens find out which animals inhabit your garden and what you can do to attract them, with Mike and Mandy Banford. Includes an outdoor session, not suitable for small children. Morning tea provided Octagonal Hall, 52 McGlew Rd, Glen Forrest. **BSFH**
-  **17 Saturday 9.30am–12.30pm**
Birds in your garden workshop on identification, behaviour, habitat and how to attract them to your garden. Spearwood library, 9 Coleville Cres, Spearwood.
[Bookings](#) essential 9411 3800.
-  **17 Saturday 7pm**
Project Numbat quiz night auctions, games and prizes, Melville Bowling Club, 592 Canning Highway, Alfred Cove. All proceeds go to the Williams Community Numbat, a giant numbat sculpture for the new Williams playground.
[Tickets](#) \$90 for a team of 6.

Please send us your April, May and June activities and events by 2 March 2018

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.

Highlights

2017– 28 January 9.30am–3pm

Little Footprint, Big Future explore this [free exhibition](#) to discover choices and actions that you can take in your everyday life to make a positive impact on the local environment that we all love. Museum of Geraldton.

8–24 January

Sparkling summer Nearer to Nature's school holiday program where fun, hands on activities bring kids of all ages up close and personal with our wonderful plants and animals in some very special places. Bookings essential 9295 2244.

15–19 January 2018

Australian Native Plants Society (Australia) biennial conference *Grass Roots to Mountain Tops*, Hobart. Visit [website](#).



Dolphin discovery for kids 4–7 years and Dolphin watch ages 13–16 are two new Sparkling summer activities in Nearer to Nature's school holiday program. Photo – Jill Francis.

16–25 January

Rio Tinto Earth Assist school holiday program for students over 15 wishing to complete community service hours and help conserve our natural environment. Book 9335 2777 or by email info@earthassist.org.au

January 17 – 19

Corridors, Catchments and Coasts provides a snapshot of environmental education in WA. Facilitating the development of networks with and between practitioners, and an awareness of the resources and support across WA to help address core environmental and sustainability issues in the State. [Register](#).

2 Friday February 9am – 4pm

2018 WA Wetland Management Conference: Wetlands for a sustainable urban future, Cockburn Wetlands Education Centre. The [conference](#) will feature keynote, plenary and poster presentations, and concurrent workshop sessions and interpretive tours of local restoration sites.

7–9 February 2018

Sharing your Outcomes | A Conference for the Citizen Science Community

University of South Australia, City West Campus, 55 North Terrace, Adelaide, South Australia. Visit [website](#).

11 February

Shorebird 2020, a national shorebird monitoring program. Register to volunteer counting shorebirds in the 26,000ha Peel-Yalgorup wetlands. Contact Sharon 6369 8800 or by [email](#).

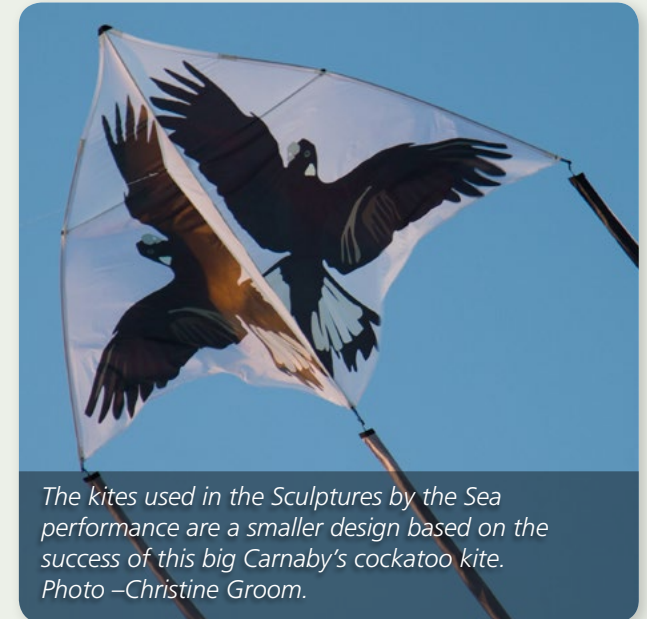
12–15 February 2018

Hydropolis 2018 Creating Water Sensitive Communities

10th international conference on water sensitive urban design, Crown Towers, Perth. Visit [website](#).

2–19 March 4.30pm–6.30pm

Fly a Kite for Carnaby's Cockatoo Conservation are looking for volunteers to be part of kite performances



The kites used in the Sculptures by the Sea performance are a smaller design based on the success of this big Carnaby's cockatoo kite. Photo –Christine Groom.

during Sculptures by the Sea, Cottesloe. Volunteers need to commit to one training session and a minimum of 3 performances, wind dependent, during the exhibition. [Register](#).

12–16 March

South Coast Festival of Birds 2018 tours, symposium, workshops and more. Visit the [program](#) online from January.

Sunday 8 April 2018

Great Cocky Count

Join this annual citizen science survey that counts black cockatoos across WA as they come in to roost at sunset. [Email](#) to report a roost site or register for the count.

18 April – 20 May

Australian Heritage Festival My Culture, My Story. [Register](#) events incorporating Australia's natural, Aboriginal and historic heritage for listing on their [website](#).

Funding Opportunities

Myer Foundation Sustainability and Environment Program's Capacity Building Grant Two-year funding (\$30,000–100,000) to increase capacity in organisations working in community gardening or urban biodiversity. Projects can address strategy, governance and leadership; management capacity; operational and resource development; and program design and impact. Open to [selected](#) LGAs in metropolitan Perth. [Expressions of interest](#) close 25 January 2018.

South West Community Capacity and Engagement Grants. Up to \$1000 is available for community capacity and engagement activities run by landcare and community groups before 31 May 2018. [Expressions of interest](#) opened in September 2017 and **close 2 April 2018** or until funds are extinguished.

FAME Foundation for Australia's Most Endangered Species seeks to fund on-ground conservation outcomes with a focus on seed-funding and innovation for Australian species most at risk of extinction. [Applications](#) open late February–March 2018.

Wettenhall Environment Trust provides support for projects making a positive different to the natural living environment. [Applications](#) open 20 March 2018.

Weeds Society of WA travel award up to \$2,000 for those engaged in weed management or research to travel for conferences or forums. [Applications](#) close 20 March.

Churchill Trust offers overseas travel to investigate a topic and inspire new ideas, innovation and excellence. [Applications](#) open 1 February.

Aspire grants for individuals to attend an international conference. [Applications](#) close 29 March 2018.

Lotterywest Heritage and conservation [grants](#) are open year-round.

Local government community grants

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

- [Albany](#) opens early 2018.
- [Beverly](#) 2-31 January.
- [Canning](#) closes 1 February.
- [Cockburn](#) closes 31 October.
- [Fremantle](#) opens February.
- [Gosnells](#) closes March.
- [Mandurah](#) closes 11 March.
- [Rockingham](#) closes end of February.
- [Swan](#) closes March.
- [Wanneroo](#) closes March.



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Department of Biodiversity,
Conservation and Attractions



Photo – Mark Brundrett.

New publications

Sentinel seabirds, A guide to using marine birds to monitor marine ecosystems in Western Australia. Dunlop JN Northern Agricultural Catchment Council 2017. [Free download](#). Compiles the results of numerous longitudinal studies which show the relationship between a changing oceanic environment and seabird populations, including seabirds as monitors of pollutant contamination in our marine food chains. The guide contains clear frameworks for establishing seabird monitoring programs aimed at addressing particular management issues, thereby laying the groundwork for this important work to continue.

Managing Australia's Pest Animals A Guide to Strategic Planning and Effective Management Braysher M. CSIRO Publishing, 2016. \$49.95. Provides the knowledge to effectively plan, prioritise, develop and apply best practice pest animal management in Australia.

Recent Research

Coleman N and Coleman S (2017) Methods of tick removal: A systematic review of the literature. [AMJ](#) 10(1), 53–62.

Fulton GR (2017) Owl survey of the Peel–Harvey Estuary in south-western Australia [Australian Journal of Zoology](#) 65(2) 71–76

Website watch

Weeds of WA is a new [Facebook group](#) for those interested in the naturalised flora of WA. A forum to assist in the identification of agricultural and environmental weeds, celebrate community weed management achievements, share ideas on weed management and advertise relevant events.

Canva a [website](#) where you can make great graphics for free to help promote your group or events. A simple design program where you choose from hundreds of professional templates to create social media graphics, presentations, flyers, posters, invitations and more.



Apps

Beachcombers Field Guide [app](#) describes some of the more common items you may find while beachcombing in WA's temperate waters and helps you learn more about the creatures that wash up onto the beach.

FrogID project Australia's first national frog identification project. Croaks, whistles, bleats and barks - every frog species makes a different sound. By recording a frog call with the Australian Museum's app, [FrogID](#), you can discover which frogs live around you and help count Australia's frogs. Or back at your desk you can become an audio DNA expert and help [validate](#) frog recordings from the field.

White-winged fairy-wrens

by Ron Johnstone

The male white-winged fairy-wren (*Malurus leucopterus leuconotus*) has spectacular nuptial plumage. This fellow is over four years old. Young two-year old males are brown like females, by their third year they have small patches of white and blue and attain full nuptial plumage in four years. In the south of their range eggs are laid from late August to early December and they live in clans each with a full plumaged nuptial male and usually several breeding females and brown males. It is not uncommon for the dominant male to stay in full colour all year round, moulting directly into it each autumn without passing through a non-breeding plumage. Other subordinate males may colour up as well in spring and summer.

White-winged fairy-wrens have experienced a recent expansion of their range southward from Lancelin and it is hard to explain their success when compared with the failure of the red-winged fairy-wren on the Swan Coastal Plain. Please send any of your white-winged fairy-wren sightings south of Lancelin on the Swan Coastal Plain to us by [email](mailto:) and include location, date and number of individuals sighted.



This male white-winged fairy wren was photographed at Mullallo beach last September. Photo – Gary Tate.