

bushland news



Issue 122 **Winter 2022** *Time of Makuru and Djilba in the Noongar calendar.*

Building community capacity to care for urban bushland



Photo – Colma Keating.



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.

Contents

<i>Building community capacity to care for urban bushland</i>	3	<i>Regional reports</i>	19
<i>Urban Nature update</i>	5	<i>Loss of graceful sun-moth in coastal reserve</i>	19
<i>Weedwatch – Onion weed (Asphodelus fistulosus) and dune onion weed (Trachyandra divaricata)</i>	7	<i>Friends of Warwick Bushland</i>	20
<i>Econote – FrogID citizen science: making giant leaps in frog conservation</i>	11	<i>Feature – Wildlife community comes together to help quenda with debilitating skin disease</i>	21
<i>Polyphagous shot-hole borer: a perfect invader</i>	13	<i>Groups in profile – Dreams can fly</i>	23
<i>NatureLinks: transitioning Perth to a nature-linked city</i>	15	<i>What's on</i>	25
<i>New technology to target feral cats in the south-west forests</i>	16	<i>WA Coastal Awards for Excellence</i>	28
<i>Many ears make light work!</i>	17	<i>Funding opportunities</i>	30
<i>Graphic design for landcare</i>	17	<i>Resources</i>	31
<i>Outdoor learning helps kids consciously connect</i>	18	<i>Look out for ... orange fans</i>	33

Are your details correct?

To continue your subscription when you change your email address, update your details on our [webpage](#). A subscription to *Bushland News* is free.

Contacts

Urban Nature office

Julia Cullity 0400 017 977
Grazyna Paczkowska 9442 0322
Anna Wisolith 0477 333 519
Email urban.nature@dbca.wa.gov.au

Parks and Wildlife Service

Parks and Wildlife Service, Swan Region Office
Cnr Australia II Drive and Hackett Drive, Crawley WA 6009
Locked Bag 104, Bentley Delivery Centre, WA 6983
This publication is available in alternative formats on request. Current and archived issues of *Bushland News* are available at pws.dbca.wa.gov.au/bushlandnews

Next issue

Spring *Bushland News*

Spring *Bushland News* contributions should be sent to [Urban Nature](#) by **10 August 2022**. *Bushland News* seeks original contributions. If your submission has been or may be published elsewhere please let us know. Compiled and edited by Anna Wisolith and Julia Cullity.

Building community capacity to care for urban bushland

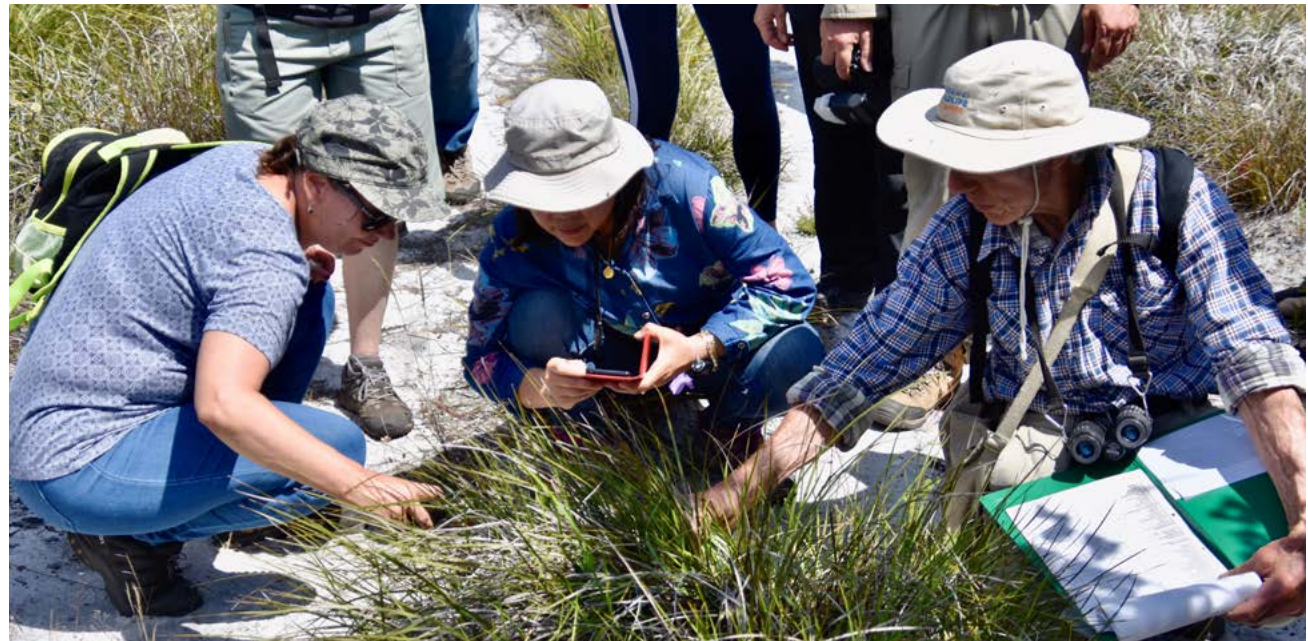
By Christine Richardson

Urban Bushland Council (UBC) is pleased to introduce Johanna Riddell, our new project officer who will work part-time for the next 12 months on building community capacity to care for urban bushland. Johanna brings a wealth of experience to the role having worked most recently with the Friends of Lake Claremont when she was a bushcare officer for the Town of Claremont and as a teacher at the Bold Park Community School where she coordinated courses about the United Nations Sustainable Development Goals.

The project

Friends groups that are active, viable and influential are better able to advocate for and protect their bushland. Through this project, supported by funding from the Western Australian Government's [State NRM Program](#), UBC will facilitate the establishment of new friends groups for bushland sites where there is no friends group, work with some friends groups that are encountering problems with volunteer recruitment and help friends groups be more successful through capacity

Cover photo: Friends groups advocate for bushland and protect their local patches with on-ground management activities. Many also make friends amongst the group and get the social benefits of volunteering. Not everyone is an oldie, but many friends groups are ageing, and renewal is a shared concern. Here the Canning River Residents Environment Protection Association are enjoying a cuppa after a weeding busy bee and waving to heaven, thinking of Ken who had recently passed away and is greatly missed. Photo – Colma Keating.



Nature appreciation can strike at any age. David James from the Friends of Forrestdale (right) is leading a nature walk and intriguing young and older alike with the intricacies of bushland. Photo – Margaret Owen.

building workshops. What we learn during this process will become a volunteer recruitment and retention plan for our members and beyond.

Who are the Urban Bushland Council?

[UBC](#) is the peak community organisation in Western Australia for urban bushland recognition and protection.

We are entirely volunteer led and have a membership of more than 80 community conservation groups and more than 100 individual supporters.

We estimate that we currently have a reach to about 5,000 people involved in conservation volunteering. We provide resources, educational events, and support to our member groups, and we advocate to government for improved protection of our urban bushland.

It is through projects such as this that UBC can provide additional support to our members.

Continued next page ...



Joining a friends group can take you to some amazing patches of bushland that you might not be aware exist in your local area. Here Friends of Coolbinia Bushland are setting up photopoints under the guidance of Friends of Wireless Hill's Margaret Matthews (right) in a tiny, but special patch of banksia woodland that remains in their long-established suburb. Photo – Margaret Owen.



Meet Johanna, UBC's new project officer who is keen to work with volunteers in generating strategies to help build and sustain friends groups. Photo – Johanna Riddell.

What we want to deliver through the project

The overarching outcome will be that there is a stronger feeling within our member groups about their capacity to care and continue to care for their bushland and make a difference to its biodiversity values. And through the recruitment of new volunteers into these friends groups, we will have brought community members not currently involved in local bushcare into their local bushland and engaging with their local group.

Before and after surveys will help us develop a template 'friends group rejuvenation plan' for use with other UBC groups. We will promote the model to all other member groups so that they can approach succession planning in a continuous manner. Similarly, through structured interviews to understand how new groups start successfully, we will revise our [Setting up Friends Groups](#) manual for contemporary use.

We will have workshop content and protocols developed with the ability to roll out either pro bono or at low cost. All these resources will be available on our UBC [website](#).

We look forward to a productive year ahead.

Contact

Johanna Riddell
 Urban Bushland Council
 email project@bushlandperth.org.au
 phone 9420 7207
[Facebook](#)

Why is the project important?

Care of bushland is labour and time intensive and requires specific knowledge.

UBC's member groups play an important role in the management of biodiverse local bushland, by supplementing the management delivered by local government. There are also significant bushlands that will face increasing threats without a friends group as a community advocate.

UBC member groups have identified renewal as their issue of greatest concern, particularly ageing of membership. New ways to translate community concern for conservation into local action needs to be found to attract volunteers across age groups.

What's in the project work plan?

We will be working with long-established friends groups: [Friends of Lake Gwelup](#), [Friends of Trigg Bushland](#), [Friends of Star Swamp Bushland](#) as a hub and separately with [Friends of Wireless Hill](#), and with new group [Friends of Erindale Road Bushland](#). We will also be working with others to form a new friends group for a [Bush Forever](#) site currently without volunteer support.

At the start of the project we will investigate the latest trends in volunteering and will consult with groups such as [Perth NRM](#), [SERCU](#), [Volunteering WA](#), university guilds, [McCusker Centre UWA](#), and [Bloom](#). The ideas learnt in this stage will be important when working with friends groups.

Knowledge gained throughout the project will be brought together to create a volunteer recruitment and retention plan able to be disseminated widely through the conservation volunteer community. Resources developed during the project will be converted into content for the UBC website. We will present the volunteer recruitment and retention plan to UBC member groups and other stakeholders in 2023.

Urban Nature Update By Julia Cullity

I'm back! After my 20-month secondment assisting regional conservation planning across the State, I then spent the past few months helping part-time with COVID contact tracing. It's been a fascinating time but now I'm happy to be back at Urban Nature. I'd like to thank Anna Wisoloth for her fantastic production and editing of *Bushland News*. I'll be trying everything I can to keep her on the team.

Change in schedule

You may have also noticed that this issue has come early. Yes, we have decided to align the four issues of *Bushland News* with the change of the seasons, so now we will be coming out at the beginning of June, September, December and March. I know we could have gone for the six Noongar seasons – but that would be seriously increasing our workload!

Celebrating Community Driven-Conservation

Urban Nature was delighted to bring a display to the event Celebrating Community-Driven Conservation, where we showed the [Find a Conservation Group](#) app and showcased [30 years of Bushland News](#). Held at the newly renovated Western Australian Museum Boola Bardip, the event saw us gather under the skeleton of the blue whale to acknowledge community contributions to bushland conservation, discuss pathways to strengthen and enable volunteers, allowed the audience to live survey their motivations and achievements using the [Mentimeter phone app](#), and listen to 'bright spots' stories of inspiration. The Welcome to Country by Uncle Neville Collard (pictured) was a great start to the day and the key note address from Adam Cross of Curtin University's [EcoHealth Network](#) examining the links between ecological restoration and public health gave a whole new perspective on some of the extra benefits we can gain from bushland conservation, even down to our physiological makeup! A big thank you to Perth NRM for hosting the event and extending an invitation to Urban Nature to participate.



Photo – Julia Cullity.

Monitoring dieback treatment at Paganoni Swamp By Julia Cullity

Paganoni Swamp is a Bush Forever site of more than 725ha of banksia and tuart woodlands, paperbark swamps and limestone heath in Karnup, north of Mandurah. Only 3.4% of the reserve is infected by [Phytophthora dieback](#) and the [Friends of Paganoni Swamp](#) have been working hard to prevent any further spread. Mapping of dieback extent and treatment with phosphite began in 2008 and has continued with treatments in the spring of 2012, 2014 and 2017. With this proactive treatment, the disease has been fairly well contained within the extent of the initial mapped boundary.

[Phosphite treatment](#) has been scientifically proven to be effective at controlling the impact of *Phytophthora* on bushland, but we wanted to know a little more. For the past nine years the Friends of Paganoni Swamp and Urban Nature have been monitoring a cohort of *Banksia menziesii* saplings to measure if phosphite spray dieback treatment affects the ability of these susceptible canopy species to survive and reproduce. We wanted to test our hypothesis that dieback treatment will increase the number of *B. menziesii* saplings that will reach reproductive age thus contributing seed to the seed bank and enabling a self-sustaining population.

Saplings were selected from three distinct groups:

1. Treatment: plants on the dieback front, up to 5m inside the front or 15m outside the front. All plants will receive a phosphite spray treatment.
2. Positive control: dieback infected, not receiving phosphite treatment. All plants are located more than 10m inside a dieback front.
3. Negative control: dieback free, not receiving phosphite treatment. All plants are located more than 30m outside a dieback front.



Ann Bellman from the Friends of Paganoni Swamp with the first of our 90 plants to have produced a seed. It took nine years to get here and this was one of the phosphite treated plants on the dieback disease front. Photo – Julia Cullity.

Thirty plants were selected from each group making a total of 90 individuals. Saplings were selected from a 2–5 year age group. Sapling age was estimated by checking the nodes, branching and new growth. Only healthy plants were selected to monitor, and any plants that had already flowered were excluded. Stamped, numbered aluminium tags were attached loosely with wire to the base of the plants and they are monitored yearly in autumn for survival, flowering, and seed production.

After nine years our experiment hasn't finished yet as most of these plants are only just reaching reproductive age. This is in stark contrast to the revegetation established as part of the Banksia Woodland Restoration Project where *Banksia menziesii* planted in cleared areas [were flowering after three years and fruiting after four](#). This is probably due to the competition from established plants or some [other complex interaction](#) in intact bushland.

Interim results are promising.

Treatment	Deaths	Flowering plants	Seeding plants
Uninfected, untreated	1	3	0
Infected, treated	0	2	1
Infected, untreated	6	3	0

From the group of uninfected and untreated plants, the one plant that had died had its stem broken off at the base presumably from trampling by kangaroos. In the group of infected, untreated plants, 20% of plants had died, some within a year of setting up the experiment and although three plants had flowered, none had produced a cone with seed. The infected and treated plants have not had any deaths and this year, of the two flowering plants, we had one plant that produced seed.

Looks like we still have a way to go with this experiment. Will any untreated, infected plants seed before they die? And how well will our treated plants seed compared to the uninfected group? As a bonus it's interesting to follow how long it takes for bushland plants to achieve reproductive age.

Onion weed (*Asphodelus fistulosus*) and dune onion weed (*Trachyandra divaricata*)

By Anna Wisolith

Onion weed (*Asphodelus fistulosus*) and dune onion weed (*Trachyandra divaricata*) are two species that plague Western Australia's coastline. Belonging to the Asphodelaceae family, these related species are both capable of rapid invasion, producing abundant and highly germinable seed which makes them difficult to control once established. Prevention is better than cure and controlling new infestations as early as possible will give the best chance for eradication.

How can I tell the difference?

Asphodelus fistulosus and *Trachyandra divaricata* are both semi-succulent, tufted herbs with similar white flowers. This superficial likeness means they are often confused for one another, but you can tell them apart easily once you know what to look for. *Asphodelus fistulosus* has hollow, upright leaves and a narrow, compact flower head, while *Trachyandra divaricata* has flat, straplike and sprawling leaves, and its flowering stalks are widely branched.

An onion weed by any other name ...

Neither species has an onion-like bulb nor any oniony smell, but rather their common names are derived from their resemblance to onion leaves.

A number of other weeds, though distinct and unrelated, may also be called 'onion weed',

including [Allium triquetrum](#) and [Nothoscordum gracile](#) which are mainly garden weeds, and [Romulea rosea](#), a common weed of bushland, lawns, roadsides, and pastures.

Biology

Asphodelus fistulosus is a short-lived perennial or annual herb that grows to 40cm tall (80cm with its flowering stems). Its onion-like leaves are hollow and grow in a clump arising from a compact underground base. The flowering stems are also hollow, held upright, and branched towards the top with many small flowers. The flowers are white or pinkish with six petals, each with a brown or reddish central stripe. Each plant may produce as many as [13,200 seeds](#), which are highly germinable. Dispersal is mainly by the wind blowing dead plants bearing seed, but also through water, movement of soil, vehicles, machinery, animals, or agricultural produce. Seed remains viable in the soil for many years and germinates all year round, but with a main flush from late summer to autumn. Seedlings grow slowly and usually don't flower until around 18 months old. Many seedlings die over their first summer before they have a chance to flower, particularly in more arid areas, but once established are frost and drought-hardy. Flowering is from June to October, after which the flowering stems and some leaves die over



The flowers of *Trachyandra divaricata* (left) and *Asphodelus fistulosus* (right) are both white with six petals. Both species have a stripe running down the centre of each petal, which on *T. divaricata* are green, brown or purplish, and on *A. fistulosus* are reddish or brownish. *T. divaricata* flowers often have a pair of yellow spots near the base of each petal, as pictured here. *T. divaricata* has yellow anthers, while *A. fistulosus* has orange or brown anthers. Photos – © [williamdomenge9](#) and © [Morgan Lythe](#) [CC-BY-NC 4.0](#).

summer. New leaves and stems are produced from the base of the plant the following autumn, creating larger and more spreading clumps, though some plants act as annuals under favourable conditions, flowering and dying in their first year.

Trachyandra divaricata is a rhizomatous, perennial herb up to 35cm in height (70cm with its flowering stems). The leaves are shiny, flat and strap-like, can grow to 1m long and are held in lax, drooping clumps which often trail along the ground, so older plants may grow to cover a substantial area.

Continued next page ...

Its flowering stems are stout and widely branched, carrying abundant small, white or pale lilac six-petaled flowers. The petals have a green, brown, or purplish central stripe and often have a pair of yellow spots near the base. Flowering is from August to November. Fruit set is variable and may be affected by the age of the plant or weather conditions. Young plants have only a few inflorescences but older plants can develop an impressively large 'crown' of numerous tangled fruiting stems, producing [50,000 seeds per plant](#) each year. These highly germinable seeds are dispersed when the mature crown of fruiting stems breaks off and is blown around by the wind like a tumbleweed. When dried out, the hollow fruiting stems are buoyant and can remain afloat for several weeks, and seeds were found to remain marginally viable after [eight months of immersion in sea water](#). These adaptations for dispersal by water enable the weed to travel far distances creating new isolated populations along the coast. Germination can take place under a wide range of soil and shade conditions, though is inhibited by light, an adaptation to the blowing sand dunes where germination on the dry surface would be detrimental. Plants grow rapidly and can survive long periods of drought.

Where they grow

Asphodelus fistulosus occurs on a wide variety of soils from sand to clay, but favours light, disturbed, neutral to alkaline soils. It is primarily a weed of temperate and semi-arid regions, often found on sandy coastal or disturbed areas including open woodlands, shrublands, grasslands, pastures, rangelands, roadsides, railway lines, or waste areas.



Asphodelus fistulosus (left) and *Trachyandra divaricata* (right) are both tufted, semi-succulent herbs with similar white flowers and may be confused for one another, however you can tell the difference easily once you know what to look for. *A. fistulosus* has hollow, upright leaves and narrow, compact flowering stems, while *T. divaricata* has flat, strappy and sprawling leaves, and its flowering stems are more stout and widely branched. Both weeds are common on Western Australia's coastline and spread rapidly through abundant production of highly germinable seed, making them difficult to eradicate once established. Photos – © Morgan Lythe [CC-BY-NC 4.0](#) and Kate Brown.

It is a very widely naturalised species, and within Western Australia occurs from Karratha in the north to Eucla in the south.

Trachyandra divaricata occurs on white or grey sand and is most abundant on the sandy calcareous soils of coastal dune systems. Spreading rapidly along the coast of Western Australia, it is found from Geraldton to Albany along frontal to secondary coastal dunes and on limestone. It is also spreading inland on sites with sandy soils, along roadsides, or in degraded pastures where it is toxic to grazing livestock.

Ecological impact

[DBCAs weed prioritisation process](#) in the [Swan Region](#) rates *Asphodelus fistulosus* as being rapidly invasive, ecological impact unknown, and *Trachyandra divaricata* as being rapidly invasive with medium ecological impact. Both species impact coastal dune systems where dense infestations can form thick stands outcompeting and replacing native plants. *Trachyandra divaricata* may potentially form a monoculture.

Continued next page ...

Management

Asphodelus fistulosus can be effectively managed through manual removal, particularly for small infestations or isolated patches. Hand pulling should ideally take place prior to flowering, but if flowering, plants should be bagged and removed since large plants can continue to set seed after being removed from the soil. Note this species has been reported to cause dermatitis so be sure to wear appropriate protective gloves and clothing. For herbicide control, the [current recommendation](#) is to apply metsulfuron-methyl at 0.1g/10L + 100ml spray oil when flowering, with the optimal time for treatment being from July to October.

Trachyandra divaricata can also be managed through herbicide control or manual removal, although hand pulling can be difficult since the rhizomes may be buried in the sand at a depth of 15cm or more. As with *Asphodelus fistulosus*, hand removal of small or isolated patches before flowering is recommended. Ideally plants should be dug out before they have a chance to set seed, but if present seed heads should be bagged and removed so they do not blow around spreading seed. Additionally, plants left in contact with moist soil may take root again, so plants should either be pulled when the soil is dry, or bagged and removed from site.

The [current recommendation](#) for herbicide treatment is to wipe a 50% glyphosate solution directly onto plants before flowering. Dense infestations in degraded areas can be spot sprayed with 0.4g chlorosulfuron plus 25ml wetting agent in 10L of water when plants are actively growing. The optimum time for herbicide treatment is from June to August and occasionally September. Where appropriate, the native parasitic dodder [Cuscuta epithymum](#) may be planted to provide a useful biocontrol agent to help rehabilitate degraded sites.

For both species, follow-up inspection and repeat control is essential for seedlings that may emerge from the soil seed bank. Eradication is difficult and prevention of spread and control of new infestations is the best management approach for both *Asphodelus fistulosus* and *Trachyandra divaricata*.

CSIRO are currently investigating options to undertake research to provide more effective solutions for controlling *Asphodelus fistulosus* and *Trachyandra divaricata*. Interested groups should contact [Bruce Webber](#) for further details.

Contact

Anna Wisolith

Parks and Wildlife Service

email anna.wisolith@dbca.wa.gov.au

Dune onion weed management in practice

Friends of Paganoni Swamp

By Leonie Stubbs

Dune onion weed (*Trachyandra divaricata*) is one of the major weed species targeted by [Friends of Paganoni Swamp](#). It is a weed that appears to really enjoy current conditions – drying climate, warm temperatures and intermittent rainfall.

Following trials carried out by Urban Nature in 2012 which found that spraying was more effective than hand weeding, our main method of eradication is herbicide use followed by hand weeding and removal of seed heads later in the season. The group has trialled a significant

number of digging tools to ensure total extraction of the complete rhizome and is currently in the process of checking on the success (or otherwise) of a trenching shovel!

Weed mapping every five years means infested areas can be targeted in a timely manner to ensure that seed loads do not build up.

The southern boundary is the problem area for dune onion weed management within Paganoni Swamp bushland because the adjoining property is overrun with it and no weed management has ever occurred even when politely requested.



Trachyandra divaricata has a sprawling habit and its straplike leaves may grow to 1m long, meaning that older plants can cover a substantial area and large infestations like this one at Paganoni Swamp bushland can rapidly outcompete native plants. Photo – Leonie Stubbs.

Continued next page ...

Urban Nature suggested erecting a vegetation barrier between the boundary fence and the southern fire access track where it was wide enough. Prickly native species such as *Hakea prostrata* and *Acacia pulchella* were planted and it has been an amazing success in reducing the ability of dune onion weed seed heads to enter the bushland.

The Friends have found that new infestations can be eradicated. Even in some areas where no weed control occurred until the group became active, the weed's density is now less than 5%. The main challenges are areas where weeds are moving in from adjoining properties and current weather conditions. Dune onion weed appears to be germinating for an extended period especially after intermittent rains. It requires significant resources to continually return to sites to check for seedlings and remove seed heads. Our group therefore prioritises patches where eradication is possible and manages the other challenging sites to reduce densities.



The tumbleweeds of dried seed heads get trapped by the mesh fence (left), and along with the planting of prickly native shrubs as a barrier inside the fence (right), has helped slow the incursion of the wind-dispersed dune onion weed seed into Paganoni Swamp from the adjoining paddock. Photo – Kate Brown.

Stirling Natural Environment Coastcare

By Walter Kolb

[Stirling Natural Environment Coastcare](#) (SNEC) has weeded twice weekly over the last 16 years, predominantly in the 3.3km of Spearwood dunes over Tamala limestone from Trigg Island to Beach Road.

Dune onion weed was one of the weeds in abundance and has been largely hand weeded. It was prioritised as an early target due to the visual impact of dry wind-spread stalks and seed heads. Initially dried seed heads were collected from fence lines, then everywhere seen. Heads are bagged seed head first, then green stalks and heads broken off if there is no time to dig them out properly.

Now only a few dune onion weed plants remain in the dunes. If there was insufficient time during spring we removed seed heads and then went on to remove the remaining plants in the summertime due to the difficulty of weeding dune onion weed, especially in beach spinifex. On reflection, for ongoing management and given sufficient volunteers, removal of plants while small is both easier for totally removing all rhizomes and preventing the top up of seed banks.

Various specific tools have been used for intact removal of rhizomes when dune onion weed is amongst other native plants. From the beginning mattocks (with a defined pick one end) were used for loosening soil around the rhizomes and then Mike Norman ([Joondalup Community Coast Care Forum](#)) developed a special tool that is a half round galvanised pipe with a bar across the bottom to push it in by foot, with a short handle with a bar across the top to hold on to. We also use extra narrow spades to reduce off-target damage.



Trachyandra divaricata rhizomes may be buried at a depth of 15cm or more. It is important if removing plants by hand to ensure all rhizomes are dug out (hint – loosen soil first), since plants may regrow from rhizomes left behind. Photo – Rae Kolb.

In the 3.5km of Quindalup dunes from Trigg Island to Peasholm Street to the south, SNEC has worked in collaboration with City of Stirling and Perth NRM using Coastwest grant funding to hand weed using contractors, volunteers, corporate and school groups. This is followed up with chemical weed management, monitoring and further hand weeding. This is one weed that will need ongoing monitoring and maintenance to manage. Lesser dodder (*Cuscuta epithymum*) is providing a useful biocontrol in isolated areas.

Contact

Leonie Stubbs

Friends of Paganoni Swamp
email fop@westnet.com.au

Walter Kolb

Stirling Natural Environmental Coastcare
phone 0419 389 720

FrogID citizen science: making giant leaps in frog conservation

By Nadiah Roslan

Australia has [over 240 species of frogs](#), many of which are threatened. A challenge to frog conservation however is that large parts of Australia lack scientific records of frogs. In Western Australia many species of frog, such as the [crawling toadlet](#) (*Pseudophryne guentheri*) are poorly known. Others, such as the [orange-bellied frog](#) (*Geocrinia vitellina*) are threatened and of great conservation concern.



FrogID is helping to collect much needed data on frogs around Australia, like this Western Australian endemic, the moaning frog (*Heleioporus eyrei*). Listen out for its fantastic eerie [moaning call](#) in autumn and the beginning of winter around Perth and the south-west. Photo – Jodi Rowley.

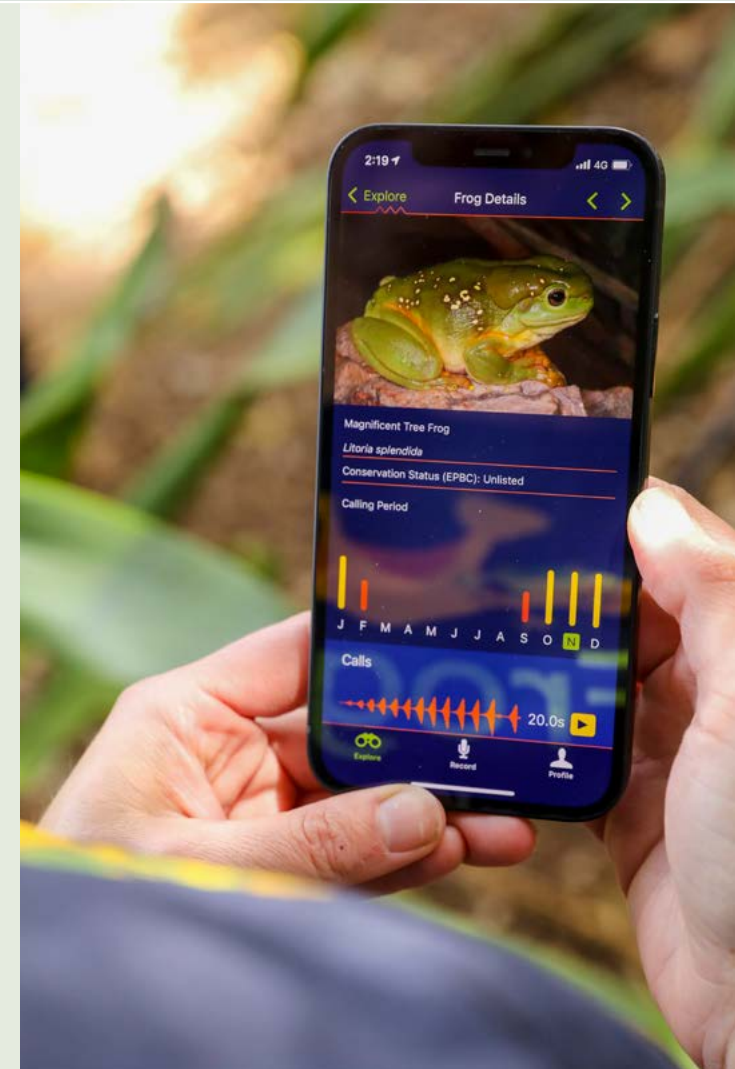
Frogs play a valuable role in [keeping our environment healthy](#). Unfortunately, frogs are in [a lot of trouble across the globe](#) and face a number of threats including introduced species, pollution, climate change, habitat loss and degradation, and disease. There's so much we don't know about our unique frogs, and we need these knowledge gaps filled if we are to better conserve them.

Fortunately, we can better understand frog distributions, breeding habitats and conservation needs through community participation in [FrogID](#) – a national citizen science initiative by the Australian Museum that records frog calls with the free [FrogID app](#).

What is FrogID

The [FrogID project](#) is all about frog calls. Male frogs call to attract female frogs, and this love song is unique to each frog species. Recording frog species from breeding habitat gives us an important idea of what our threatened frogs need, but we need people power to help record frog calls from more areas across Australia if we are to better understand and conserve frog species.

Launched in 2017, the [FrogID smartphone app](#) is a national citizen science tool that enables anyone with a smartphone to learn more about the frog species around them and actively take part in frog conservation. Frog calls are submitted by users through the app and then validated by frog call experts at the Australian Museum who assign a species, or multiple species, to the record.



The Australian Museum's FrogID project is a nationwide citizen science initiative to document the true species diversity, distribution and breeding habitats of Australian frogs. The mobile app enables anyone with a smartphone to record frog calls in their local area, facilitating the collection of valuable data from all corners of Australia through the people power of thousands of citizen scientists. Photo – © Salty Dingo 2021.

Continued next page ...

What FrogID has achieved

FrogID has been a game changer for frog conservation thanks to the efforts of thousands of participants recording frog calls from across Australia. The last 24 months has seen the project accelerate, building an unprecedented [database on frogs](#), which are one of the most data deficient, threatened groups of animals on the planet.

Since 2017, the project has received over 400,000 submissions (of which over 34,000 recordings have been received from Western Australia alone!) and gathered over 650,000 scientific records of frogs.

These records are critical to understanding impacts of events such as the Black Summer bushfires of 2019–20, where now more than 13,000 FrogID frog records have been received from areas burnt during the bushfires. Species detected include those listed federally as priority species which require urgent post-fire management intervention. FrogID data is helping drive post-fire conservation efforts and advise government conservation assessments.

FrogID is also helping us track the invasion of the [cane toad](#) (*Rhinella marina*), including in northern Western Australia. Importantly, these records are shared with government agencies across Australia helping manage the threat of the cane toad, as well as native species that have been accidentally transported outside their natural range and are establishing invasive populations.

FrogID is also helping discover new species, the most recent of these being the [screaming tree frog](#) (*Litoria quiritatus*) and the [slender bleating tree frog](#) (*Litoria balatus*) from the eastern coast of Australia, which were scientifically recognised thanks in part to

FrogID recordings helping discern subtle differences between their calls. In 2020, FrogID also helped reveal an endangered population of the [tusked frog](#) (*Adelotus brevis*) in New South Wales, in an area where this species had not been reported in over 40 years.

These discoveries highlight how valuable FrogID is for better understanding and conserving Australia's frog species. Through people power, FrogID is enhancing the information available for biodiversity conservation. Whether FrogID participants themselves are expert on frogs, or completely new to observing the natural world, every FrogID record adds value to our fight against biodiversity loss and extinction.

How to get involved

The threats facing our unique species can feel overwhelming, but FrogID is one small activity that can have a positive impact on biodiversity conservation. Around 86 frog species are known to occur in Western Australia and the cooler months are a great time for recording frogs like the [moaning frog](#) (*Heleioporus eyrei*) in south-west Western Australia.

To get involved, download the free [FrogID app](#) and record frog calls from your backyards, dams, and bushland, as often as you can.

Through FrogID we can all play a part in making sure our frog populations and our environment is kept healthy and safe, now and into the future.

We'd like to thank our partners and collaborators across Australia, and the many participants that record frog calls with FrogID that help make these achievements possible.



*In addition to collecting data on native frogs, FrogID can help track and manage the threat of invasive cane toads (*Rhinella marina*), as well as native species accidentally transported outside their natural range which may establish invasive populations. Photo – Jodi Rowley.*

Contact

Nadiah Roslan

Australian Museum

email calls@frogid.net.au

website www.frogid.net.au

Polyphagous shot-hole borer: a perfect invader

By Marcus Visic

An invasive exotic beetle, the [polyphagous shot-hole borer](#) (PSHB) was recently detected in the Perth metropolitan area. About the size of a sesame seed, PSHB (*Euwallacea fornicatus*) beetles excavate tunnels in trees where they cultivate fungus as a food source. This fungus spreads inside the tunnels, disrupting the flow of water and nutrients.

The establishment of this pest may have a significant impact on natural environments, horticulture and agriculture. As this is the first detection in Australia, the full impact of this pest will not be known for some time.



Residents who suspect they have borer damage to trees should make a report through the [MyPestGuide Reporter app](#) or by contacting DPIRD's [Pest and Disease Information Service](#). Photo – DPIRD.

The Department of Primary Industries and Regional Development (DPIRD) in Western Australia is working closely with the community, industry and stakeholders to control the spread of PSHB and protect urban trees, native trees and vital industries. A quarantine area is in place covering 21 local government areas where [restrictions apply](#) to the movement of wood and plant material.

DPIRD has been undertaking a comprehensive surveillance program, with the removal of trees now necessary as part of the current response, to keep beetle populations down while the next steps are being considered. Early detection and the prompt removal or pruning of infested trees is key to containing PSHB spread and minimising further impact on neighbouring trees.

Detection

PSHB was first reported in Western Australia on 6 August 2021 via DPIRD's [MyPestGuide® Reporter app](#). A member of the public reported symptoms on two 30-year-old box elder maple trees (*Acer negundo*) in East Fremantle.

Hosts

PSHB can severely damage host trees, with some species dying within two years of infestation. The box elder maple tree (*Acer negundo*) has been identified as the preferred host for the PSHB. PSHB has a [known host range](#) of more than 400 plant species.

Reproductive hosts are susceptible trees in which both the beetle and the fungus establish galleries and reproduce.



The polyphagous shot-hole borer is an exotic invasive beetle that was first detected in Western Australia in 2021. The beetle is very small – females are approximately 2mm in length and males 1.6mm, so detection is difficult and symptoms of the damage they cause to trees are usually noticed before the beetle. Photo – DPIRD.

Non-reproductive hosts are attacked by the beetle, but PSHB are not reported as able to establish galleries and complete their lifecycle on these species. While the fungus may be present in these hosts the disease does not establish and these hosts are not expected to die.

High priority hosts include:

- Maple (*Acer* spp.)
- Coral (*Erythrina* spp.)
- Robinia (*Robinia* spp.)
- Poinciana (*Delonix regia*)
- Avocado (*Persea americana*)
- Plane (*Platanus* spp.)
- Fig (*Ficus* spp.)
- Oak (*Quercus* spp.)
- Willow (*Salix* spp.)

Continued next page ...

PSHB has currently been detected in two species native to Western Australia. This includes [cookie's tongue](#) (*Templetonia retusa*) which appears to be a non-reproductive host from what has been observed so far. Of the large number of [red-flowering gum](#) (*Corymbia ficifolia*) trees inspected, PSHB has only been detected on two trees. They only appear to be infested under specific circumstances. Whilst confirmed as a reproductive host in California, red-flowering gums are unable to be confirmed as a reproductive host in Western Australia until further data is gathered.

DPIRD is currently determining the local reproductive host range as PSHB may behave differently in Western Australia.



The symptoms of a tree infested with polyphagous shot-hole borer are not always obvious. Be on the lookout for early signs of dieback and inspect closely for small bore holes 1mm in diameter, about the size of a ballpoint pen tip. Photo – DPIRD.

Contact

DPIRD Pest and Disease Information Service

email padis@dpird.wa.gov.au

phone 9368 3080

website agric.wa.gov.au/borer

What to look for

Because the beetle is so small, the symptoms of PSHB damage are usually noticed before the beetle.

Symptoms vary between host species but may include:

- **Beetle entry/exit holes** – approximately the size of a ballpoint pen tip.
- **Galleries** – when pruning branches or inspecting fallen branches, check for evidence of galleries caused by the tunnelling action of PSHB beetles.
- **Discoloration/staining** – this is caused by the *Fusarium* fungus.
- **Gumming** – thick resin or sap.
- **Frass** – produced by the beetles tunnelling, frass or 'noodles' may be seen on the tree exterior. This can indicate a high level of infestation.
- **Sugar volcanoes** – a common sign of infection on avocado trees, where crystalline foam is exuded from entry/exit holes.
- **Dieback and tree death** – the fungus disrupts the tree vascular symptom causing dieback and death.

Symptoms are not always obvious. Look for early signs of dieback and inspect trees closely for evidence of small bore holes – about the size of a ballpoint pen tip (1mm diameter). There are often large numbers of holes in a shotgun pattern. Susceptible trees and shrubs should be inspected and monitored for PSHB damage.

Visit the [website](#) to stay up to date on the latest information and developments regarding PSHB.



Top: Not to scale! In reality the polyphagous shot-hole borer is only 2mm long. Here it sits on a small pile of frass which is produced by the beetle tunnelling through the wood of host trees. Above: The box elder maple tree (*Acer negundo*) has been identified as the main host for the shot-hole borer. In this photo you can spot symptoms of staining, foaming sugar volcanoes, and if you look closely, tiny bits of frass extruding from the 1mm bore holes. Dieback and gumming are other symptoms of an infestation to look out for on this priority host species. Photos – DPIRD.

NatureLinks: transitioning Perth to a nature-linked city

By Jane Chambers

Rapid urbanisation in the Perth and Peel regions of Western Australia is fragmenting the natural landscape causing significant habitat loss and endangering the area's unique biodiversity.

Urbanisation is increasingly reducing the size of remaining natural areas. The smaller the natural area, the less diversity it can support, especially in the long term. Isolated natural areas act like islands, each island is separate from each other and the biodiversity supported is only as much as the individual island can support.

Linking protected natural areas increases their sustainability

To sustain biodiversity, native wildlife need to be able to move between remaining sources of food and shelter in protected natural areas (conservation reserves) to maintain healthy populations.

Urban infrastructure can be hostile, exposing species to hazards such as dehydration, traffic and predation. However urban design can enhance support of biodiversity through urban greening and especially by creating linkages between habitats: NatureLinks.

Using GIS, NatureLink Perth has identified how connected protected natural areas are in the Greater Perth region and located the best pathways between them. These NatureLinks are nature-friendly pathways joining two or more protected natural

areas, that provide the least risk to species moving across the urban landscape.

You can access the locations of these NatureLinks in an [interactive GIS story map](#) available on the [NatureLink Perth Resources](#) page.

How can I use this NatureLink resource?

The suggested NatureLinks provide a scientific basis and focus for improving the biodiversity connectivity and greening in your area. Rather than starting out with a blank slate, you can view these NatureLinks, see what land uses – road verges, residential gardens, green spaces, public open spaces, drains – they intersect and consider how you might improve locations along these pathways to make them more friendly for biodiversity.

NatureLink Perth will be working to provide guidance and resources to help everyone achieve best practice in connectivity for different land uses intersecting or adjacent to NatureLinks. Everyone can be involved in improving NatureLinks from individuals to organisations.

Contact

Jane Chambers

Murdoch University

email naturelinkperth@murdoch.edu.au

New technology to target feral cats in the south-west forests

By Brian Chambers and Adrian Wayne

Across millions of hectares of Australia's forests and woodlands, areas that were once teeming with native fauna are now largely devoid of movement. The clearing of huge swathes of land for agriculture and the influence of introduced herbivores such as rabbits dramatically changed the landscape, making it less hospitable to the native species that called these areas home for millennia.

Following the introduction of rabbits came foxes and feral cats. These highly efficient predators drove many populations of native mammals that survived in the remaining uncleared areas of habitat to extinction. To this day, predation by feral cats and foxes remains one of the major threats to our native mammals.



A Felixer grooming trap. These traps are a new technology which use range-finding sensors to recognise cats and foxes, and spray only these target animals with a gel containing the 1080 toxin. Feral cats will groom themselves, licking the gel off their fur and consume a lethal dose of poison. Photo – DBCA.

The [Upper Warren region](#) of south-west Western Australia is an important refuge for native mammals. Ten particularly vulnerable species of native mammals including numbats, woylies and western ringtail possums have persisted in this area, aided by landscape scale fox control through the [Western Shield](#) program run by the Department of Biodiversity, Conservation and Attractions (DBCA). However, seven of these 10 species have suffered significant declines since the turn of the century with predation by feral cats implicated as a contributing factor. The [South West Catchments Council](#) is working with DBCA and the [Blackwood Basin Group](#) to test the ability of [Felixer™ grooming traps](#) to control feral cats across large areas of the forest to protect these vulnerable native species.

Felixer grooming traps use range-finding sensors to distinguish target cats and foxes from non-target wildlife and humans, and spray targets with a gel containing the 1080 toxin. Feral cats are fastidious groomers and will lick the gel off their fur, consuming a lethal dose of poison as they do. Felixer grooming traps have the potential to bolster feral cat control efforts that have previously relied on baiting, which is challenging and at times ineffective due to the preference of cats to take live prey.

Our first trial, which deployed eight Felixer traps over 14,000ha of forest for eight weeks, reduced feral cat activity by up to 24% when compared to a site without Felixer traps, which recorded an increase of 25% in feral cat activity over the same period.



Captured on camera: a feral cat with a woylie in its mouth. Predation by feral cats is a major threat to our native mammals and control has been challenging due to the preference of cats to take live prey over baits. Photo – South West Catchments Council.

This reduction in activity at sites where traps were deployed was maintained for five months after the traps were removed. Our project is continuing to improve the efficacy of the traps by targeting their deployment locations based on camera trapping data and moving the traps part way through deployment if required.

Felixer grooming traps have the potential to be a useful tool alongside other management techniques to help conserve our vulnerable native fauna. This research, funded through the Australian Government's [National Landcare Program](#), will help us learn how to use them most effectively so that we can help the recovery of our native species.

Contact

Brian Chambers

South West Catchments Council
email brian.chambers@swccnrm.org.au
phone 0436 488 033

An Australasian bittern amongst reeds preparing to produce its signature 'boom'. Photo – Helen Cunningham.



Many ears make light work!

The Australasian Bittern project is looking for volunteers to listen to one-minute wetland soundscape recordings from south-west WA to see what you can hear. You just need good ears, a computer and internet connection! Contact Bradley for training in how to use [Arbimon](#) to validate audio files.

Contact

Bradley Clarke-Wood

BirdLife Australia

email bradley.clarke-wood@birdlife.org.au

Graphic design for landcare *By Natasha Bowden*

The South East Regional Centre for Urban Landcare (SERCUL) is well known for supporting many of the community landcare groups in Perth with on-ground and administrative support, as well as working with business, government and universities on environmental projects. But did you know that we have an in-house graphic designer, Melinda Snowball, who can help your group, local government or business with your graphic design needs? Mel has been working at SERCUL for close to 15 years and was a landcare officer before undertaking training in graphic design, so she has extensive knowledge of environmental issues and how to present them from a design perspective. She is also a very talented artist and produces detailed plant and animal drawings. In addition to producing SERCUL's education and promotional materials, she has experience working with schools, Aboriginal and landcare groups and local government to bring their design ideas to life! Get in touch if you want to produce a brochure,



poster, newsletter, flyer, Facebook post, logo, sign, invite, website, report or anything else requiring a bit of design flair and environmental knowledge at a very reasonable rate for landcare groups.

Contact

SERCUL

Natasha Bowden

email natashabowden@sercul.org.au

Melinda Snowball

email melindasnowball@sercul.org.au

phone 9458 5664

Outdoor learning helps kids consciously connect By Ainslie de Vos and Fiona Cooper Smyth

"I've learned how to respect nature and how to treat it. We need it to live. We need trees and bees and birds. I feel like when I go out here now, it has advanced my knowledge and my experience in nature" – student reflection.

The [WA Parks Foundation's](#) theme this year is 'consciously connect', and the highly engaging [Nature Connection](#) school excursion series was a huge success with 100% of school leaders stating it had a positive impact on student learning and development.

The eight-week immersive program in outdoor learning environments supports teachers in techniques that inspire and enhance engagement with their students to foster a deep connection with nature. It is run by [Educated by Nature](#) in partnership with the WA Parks Foundation and has been made possible through



Kids are happy to be outdoors. Photo – Educated by Nature.

the generous funding support of the Australian Gas Infrastructure Group.

Programs have been completed at Glencoe and Ocean Road primary schools in the Mandurah region and Grovelands and Westfield Park primary schools in the Perth region.

Importantly, the program gave students, teachers and school communities who wouldn't normally access such programs an opportunity to learn about nature in their local bushland area. "The kids that don't necessarily see success in the classroom are coming out of their shells," observed a participating teacher.

Outdoor learning challenges teacher pedagogy and practice long after the students have left the outdoor space. Teaching in outdoor classrooms enhances learning whilst in the natural spaces, but beyond that the experience continues to influence learning back in the classroom. As the [Australian Curriculum](#) states, "Outdoor learning not only addresses content across several learning areas, it is uniquely placed to address general capabilities and cross-curriculum priorities of the Australian Curriculum."

[View](#) six short videos capturing the essence of The Nature Connection Series.

Contact

WA Parks Foundation

email info@ourwaparks.org.au



Outdoor landscaping, part of the Nature Connection excursion series. Photo – Educated by Nature.

Loss of graceful sun-moth in coastal reserve By Don Poynton

For more than a decade, the [Friends of North Ocean Reef-Iluka Foreshore](#) have been monitoring sites in the coastal reserve between Burns Beach and Ocean Reef (Bush Forever site 325) for the graceful sun-moth ([Synemon gratiosa](#)).

The graceful sun-moth is found only in south-west Western Australia, along a narrow strip of coastal habitat approximately 630km in length, from Kalbarri south to Binningup.

It is recommended that surveys be undertaken between mid-February and late March but only when the temperature exceeds 35°C and there is no or very light wind.

This year, despite ideal conditions, our surveys resulted in no sun-moths being recorded for the fourth year in a row. Other [known sites](#) to have lost their populations include Kings Park, Bold Park, Whiteman Park and Neerabup.



Typical *Lomandra maritima* vegetation at one of the Ocean Reef sites where graceful sun-moth surveys conducted by the Friends of North Ocean Reef-Iluka Foreshore have failed to record any sun-moths for the last four years. Photo – Don Poynton.

Between 2009 and 2012, extensive surveys by the then Department of Environment and Conservation found new subpopulations of graceful sun-moth located in coastal heathland associated with the mat rush [Lomandra maritima](#), a perennial grass-like herb. *L. maritima* is locally abundant in coastal vegetation between Binningup and Shark Bay, including the Friends group's sites. Previously the closely related species [Lomandra hermaphrodita](#) had been the only known host species, and the discovery of a new host plant led to additional habitat and subpopulations of the graceful sun-moth being recorded.

As a result, the sun-moth was [delisted](#) from the threatened category under the *Western Australian Wildlife Conservation Act 1950* on 6 November 2012. It is now included in a non-legislative category of priority 4 (near threatened) on the Western Australian [threatened and priority fauna list](#). In May 2013, it was deleted from the [list of threatened fauna](#) under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

When considering its decision, the Commonwealth's Threatened Species Scientific Committee stated the appropriate timeframe over which to examine population decline was 10 years. Given the data used was collected between 2009 and 2012, and the observed decline and possible local extinction in some areas since then, it is hoped the status of the graceful sun-moth will be reassessed in the near future.

Contact

Don Poynton

Friends of North Ocean Reef-Iluka Foreshore
email dpoynton@iinet.net.au



Graceful sun-moths are day flying moths that generally look and behave like butterflies. They are inconspicuous when settled with their wings fully closed but can be easily recognised when their orange hind wings are exposed. Photo – Graham Zemunik.

Friends of Warwick Bushland *By Michelle Wild and Karen Clarke*



The [Friends of Warwick Bushland's](#) Warwick Weeders recommenced activities in April with three successful Saturday sessions held on 9 April, 23 April and 7 May. Sessions are continuing fortnightly on Saturday mornings. Weeds targeted include the home garden escapees *Gazania linearis*, freesia and rose pelargonium, which can overtake large areas if not controlled. We also remove dune onion weed, cape tulip and soursob. Grass weeds targeted are perennial veldt grass and fountain grass – both species are invasive, competitive and major fuel load contributors. Grasses are very difficult to control as the many seeds disperse easily and can remain dormant in the soil for a number of years. Pink gladiolus (*Gladiolus caryophyllaceus*) will be removed when it is flowering in spring. All weeding by the Friends group is done by hand with specialised tools for deeper roots and bulbs.

This year the Warwick Weeders are focusing on the entrance points to the bushland and areas that were previously planted or will be planted with native species in the near future.

New volunteers are welcome to join, and we would greatly appreciate any extra helping hands.

Clean Up Australia Day was a wonderful event where the Warwick Scouts, their leaders and parents joined the [Friends of Warwick Bushland](#) for a big clean-up. Held on Sunday 13 March, 23 large bags of litter and rubbish were removed. The scouts and other volunteers learnt about some of the ways to care for the bushland including removing weeds, a crucial part of keeping the bushland healthy. The scouts removed an impressive amount of Geraldton wax (*Chamaelucium uncinatum*) plants, which are not native to our area.

On Sunday 3 April, Belinda McCawley from [Mindful in Nature](#) kindly ran a mindfulness and nature journaling workshop for the Friends of Warwick Bushland. Belinda visited Warwick Bushland after the large summer bushfire that destroyed one quarter of our site and felt moved to offer the workshop to focus on recovery and hope. A small group of members enjoyed the guided journaling activities that gave us time to rest, focus and observe our bushland and appreciate the physical and mental health benefits of being in nature.

Left: The Warwick Scouts, their leaders and parents joined the Friends of Warwick Bushland for Clean Up Australia Day at Warwick Bushland on Sunday 13 March. Photo – Mark Brundrett.

Right: The Friends of Warwick Bushland enjoyed morning tea together following a mindfulness and nature journaling workshop run by Belinda McCawley from Mindful in Nature. Photo – Raquel Aranda.

One of the activities was writing a poem, here is an example:

*Strong canopy rises
Embracing my fragile form
Holding potential life.*

– Karen Clarke

We greatly appreciated Belinda's workshop and would highly recommend it to others. The Friends are hoping to work with Belinda again in the future to further explore nature journaling as a mindfulness practice.

Contact

Stephanie Murphy

Friends of Warwick Bushland

email friendsofwarwick@gmail.com

Wildlife community comes together to help quenda with debilitating skin disease



A healthy quenda with skin and coat in good condition, with no signs of hair loss or skin thickening that may indicate an animal is infected with sarcoptic mange. Photo – Mark Brundrett.

Edited reprint with thanks to Murdoch University's [Harry Butler Institute](#)

Researchers from Murdoch University's Harry Butler Institute will conduct a study in winter of 2022 to understand how the disease sarcoptic mange is manifesting in quenda in Roleystone urban and bushland sites.

Over the last three years the Roleystone community and wildlife rehabilitation centres have become concerned over increasing numbers of the small marsupial, also known as the southwestern brown bandicoot, seen with severe skin disease in local reserves and backyards. A cluster of cases detected in the Jandakot area recently suggest the disease may be establishing in new areas.

Sarcoptic mange is caused by a skin mite *Sarcoptes scabiei*. It is a significant and debilitating disease threat to several Australian mammal species, including wombats and koalas. The parasite was likely introduced to Australia at the time of European settlement, carried by settlers and their domestic animals.

Once infected, quenda develop crusting of the skin, intense itchiness, and secondary complications that may lead to death. Murdoch University Lecturer in Wildlife Health and Epidemiology, Bethany Jackson said it was a matter of considerable concern to members of the Roleystone and wildlife health community.

"We are working closely with the wildlife care facilities and local council to understand why this disease is being seen more commonly in quenda, and what the impact is on their populations," Dr Jackson said. "We suspect as sarcoptic mange has only been seen occasionally in this species prior to the last five years, it could be coming from another reservoir animal, potentially European foxes. This sort of event shows the critical role played by the public, local government and wildlife care facilities in disease surveillance for our native species."

Continued next page ...



Quendas infected with sarcoptic mange. Signs to look for include intense scratching, hair loss, skin reddening and thickening (as seen on the ear and hindquarters of the quenda to the left). Photos – Darling Range Wildlife Shelter and WA Wildlife.

Even with treatment, Darling Range Wildlife Shelter reports 40% of quenda will still require euthanasia due to the severity of the skin changes and complications. Early intervention for infected quenda is vital to the success of treatment programs, and successful release.

Sarcoptic mange occurs when mites bury into and feed on the skin of a mammal. Although it is not common for the mite to be transmitted to people from wildlife, it can cause disease in pets and people. Further research is needed to understand how quenda become infected and what risk this poses to other species and to humans.

The researchers aim to capture quenda in urban and bush areas of Roleystone, collect samples, and determine how the mite impacts the skin and host, the best method for detecting the mite in this species, and how the mite found on quenda is related to other sarcoptid mites collected from hosts such as local foxes, and species in the east of Australia.

Based on the findings of this pilot study, the group of stakeholders hope to establish guidance on best management practices for individual quenda, as well as expanding surveillance through local councils and citizen-science programs. Overall, the study will aim to improve on-ground decision-making for wildlife departments and care facilities when working with affected quenda.

If you see any affected species contact your local wildlife care centre such as the [Darling Range Wildlife Shelter](#), [WA Wildlife](#), [Kanyana Wildlife Rehabilitation Centre](#), or [Native Animal Rescue](#) for care and treatment. Alternatively, contact the [Wildcare Helpline](#) on 9474 9055 to be directed to your nearest wildlife care service. Do not attempt to handle sick or injured wildlife yourself. Wild animals can carry viruses and other diseases which may be transmitted to humans and should only be handled by trained and licenced personnel.

Information on mange in native Australian species can be found on the [Wildlife Health Australia website](#).



Dreams can fly *By Cathy Levett, Danielle Crichton and Simon Cherriman*

Destined for development in 1996, an old fruit orchard adjoining remnant bushland in Glen Forrest has recently been confirmed as a breeding site for an endangered species. But it has only happened with a long-term vision and ongoing custodianship to see this vision realised.

Residents of Glen Forrest became aware that the land, originally managed by the Department of Land Administration (DOLA), was to be auctioned for development. This led to extensive meetings between the Shire of Mundaring Council, DOLA and other State Government representatives and the local community, culminating in a large parcel of land named 'the Superblock' being identified as a core reserve precinct and recommended for inclusion in the Darling Range Regional Park.

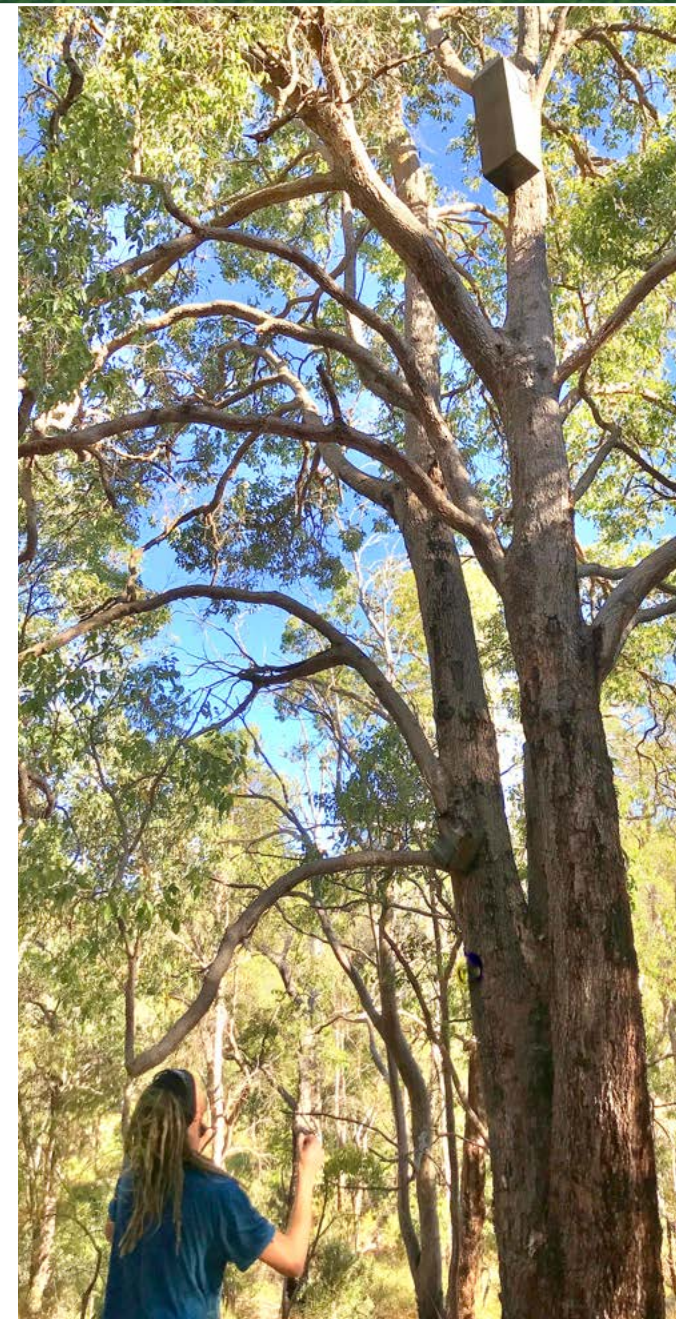


Dreams can fly: in Glen Forrest, an old fruit orchard destined for development in 1996 and since revegetated with native plants was recently confirmed as a breeding site for Carnaby's cockatoos – all thanks to the vision, action, and ongoing custodianship of the Friends of Nyaania Creek and the Hills Millennium Kids Environment Group. Photo – Simon Cherriman.

This saw the birth of the Friends of Nyaania Creek, a small group of passionate landcarers dedicated to restoring degraded sites and protecting and enhancing areas of existing native vegetation. Thanks to local teacher Cathy Levett, Glen Forrest Primary School children from Years 4 to 7 were given the opportunity to record how they valued the area, becoming involved in outdoor science, environment and conservation activities and nature walks with the Friends group. When the time came for DOLA to remove orchard trees, students then played a vital role in annual planting days, which saw restoration works continue for the next two decades.

In 2015, Glen Forrest Primary School Year 6 children, encouraged by their teacher, joined a [Millennium Kids](#) Youth Environment Conference to find out more about sustainability and conservation. They were encouraged to identify a local area and focus on working towards solving an environmental issue, so re-established a connection with the Superblock. The students decided they wanted to further improve the habitat for native animals in the area along Nyaania Creek. In collaboration with Kathy Wood and other Friends group members, Cathy Levett helped in 2016 to form the Hills [Millennium Kids](#) Environment Group, which allowed students to work on their project outside of school hours. About 12 young people met regularly to plan and undertake activities including the planting of habitat shrubs for quenda refuge and food trees for native birds, especially threatened black cockatoos.

Continued next page...



Simon Cherriman below the large nest box used successfully by Carnaby's cockatoos in the Glen Forrest Superblock. Photo – Danielle Crichton.

As a key part of the project, the Hills Millennium Kids group came up with the idea of installing nest boxes at the site. They planned, promoted and delivered a school holiday workshop to make the nest boxes with local environmental scientist Simon Cherriman of [The Re-Cyc-Ology Project](#). The Friends of Nyaania Creek, with support from Shire of Mundaring staff Jaya Vaughan, Brad Thompson, Briony Moran and David O'Brien, were successful in obtaining a grant to fund the workshop and other parts of the project, which included numerous Glen Forrest Primary School classes walking from their school to observe the installation of the nest boxes in the Superblock.

Working amongst a thriving 'new forest' of native trees and shrubs, the Hills Millennium Kids group continued to monitor the nest boxes installed in and near the old orchard, carefully recording their findings on a monitoring sheet they themselves developed. After five years the boxes had been used by a variety of wildlife including ducks, possums, parrots, an assortment of insects and spiders, [mardos](#) (a species of antechinus) and even conservation dependent species, the [south-western brush-tailed phascogale](#) (or wambenger). The presence of such animals highlighted the role the site was now playing as an important wildlife corridor. But one of their most exciting discoveries was yet to come.

In late 2021, two students who were original group members of the nest box workshop, Alexander Hurlbatt and Rory Bundock, now in Year 12, accompanied Simon and Friends of Nyaania Creek members to inspect one of the large, top entry nest boxes situated in a young marri tree. As the extendable monitoring camera was positioned above the box, the group was thrilled to identify a healthy Carnaby's cockatoo nestling peering up and swaying its head gently! Later observations of the chick's parents

revealed they were feeding on some of the fruits of local labour: the seeds of *Hakea* shrubs planted by landcarers young and old during the previous 20 years.

The success of this project lies in the tenacity of all involved, from the initial community group that led the charge against development, to the children who envisioned a range of native animals colonising the area again. The fledging of a brand new Carnaby's cockatoo – an endangered species that continues to disappear from much of its pre-European range – marks an incredibly important point in the Superblock's story. It is living proof that when children have dreams, they absolutely can, and do, fly.

*In late 2021, Simon Cherriman, Friends of Nyaania Creek members, and Year 12 students Alexander Hurlbatt and Rory Bundock who had been involved in planning and building the nest boxes installed at the Glen Forrest Superblock in 2015, were thrilled to find a healthy Carnaby's cockatoo nestling in one of the nest boxes.
Photo – Simon Cherriman.*



Contact

Danielle Crichton and Simon Cherriman

The Re-Cyc-Ology Project
email re-cyc-ology@inet.net.au

Cathy Levett

























Millennium Kids
email cathy@millenniumkids.com.au



Members of the Hills Millennium Kids Environment Group monitoring nest boxes at the Glen Forrest Superblock. Photo – Cathy Levett.

Recurrent activities

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

-  **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 Ave and Burbridge Ave, Koondoola. 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 8:30am–10:30am**
Bushcare activities with Swan Estuary Reserves Action Group at **Pelican Point**, Crawley. First Saturday of each month. Contact: Margaret 9330 1791 admin@swanestuaryreserves.org
-  **Saturdays 8:30am–10:30am**
Bushcare activities with Swan Estuary Reserves Action Group at **Alfred Cove** Nature Reserve. Fourth Saturday of each month. Contact: Margaret 9330 1791 or admin@swanestuaryreserves.org
-  **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 9am–10:30am**
Fortnightly weeding with Friends of **Warwick** Bushland. Meet Lloyd Drive, Warwick outside the Warwick Bowling Club. Contact: Stephanie Murphy friendsofwarwick@gmail.com
-  **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 each Saturday and Tuesday morning, regular workdays on the middle and last Saturday of each month from April to November. Contact: friendsofyellagonga@bigpond.com
-  **Saturdays, Sundays 9am–12 noon**
Koala maintenance at **Yanchep** National Park. Contact: Ciara 9303 7771
-  **Sundays 7am (summer) or 8am (winter)**
Bushcare most Sundays with Friends of **Point Peron**. Look for the signs Point Peron Rd or Safety Bay Rd **Rockingham**. Bring your own gloves, water and dress for the bush. Contact: James 0427 229 166 jgmumme@live.com.au
-  **Sundays 7am–9am (summer) or 8am–10am (winter)**
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.wilsonwetland.com)
-  **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**
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 **Samphire Cove** Nature Reserve, Halls Head. Last Sunday of each month. Contact: Barry bjsdoongin@gmail.com [Facebook](https://www.facebook.com/bjsdoongin)
-  **Sundays 9:45am–12 noon**
Bushcare activities with the Friends of **Piesse Brook**. Third Sunday of each month. Contact: Ken 9293 3159 or 0402 243 351 bibbulman@hotmail.com
-  **Sundays 10am–10:30m**
Sunday animal encounters at WA Museum Boola Bardip. \$10 standard –\$8 junior. [Bookings](http://www.wa.gov.au)
-  **Sundays**
Wilson Wetlands Action Group undertakes regular **work mornings** throughout the year on Sunday mornings. Contact: 0407 135 412 wilsonwetland@gmail.com
-  **Sundays 2pm & 3pm**
Aboriginal Cultural Experience at Wangi Mia Meeting Place at **Yanchep** National Park. Adults \$16, children \$8. [Bookings](http://www.wa.gov.au)

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







- 
Mondays 7am–8:30am (summer), 8am–9:30am (winter)
 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: Margaret 9330 1791 or admin@swanestuaryreserves.org
- 
Mondays
Plant learners' group with **Eastern Hills Wildflower Society** meets twice a month in a self-learning environment to identify plants and expand knowledge. Contact: Pam eastern.hills.branch@wildflowersocietywa.org.au
- 
Mondays
Propagation group with **Eastern Hills Wildflower Society** meets twice a month to share knowledge about propagating native plants. Contact: Sandy eastern.hills.branch@wildflowersocietywa.org.au
- 
Mondays, Wednesdays, Fridays 9am–12 noon
Bushcare activities and wetlands walk trail maintenance with **Yanchep** National Park Volunteers. Contact: Ciara 9303 7771
- 
Tuesdays 9:30am
 Free nature play at **Piney Lakes** Environmental Education Centre. Alternate Tuesdays **Tales and Trails Storytime** for toddlers and the intergenerational **Buds n Blooms**.
- 
Tuesdays 7am–9am
Tremendous Tuesdays bushcare activities with Swan Estuary Reserves Action Group at **Alfred Cove** Nature Reserve each Tuesday. Contact: Margaret 9330 1791 or admin@swanestuaryreserves.org
- 
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](#)
- 
Tuesdays or Thursdays, 9:30am–11am
 WA Gould League's **Herdsmen Lake** Discovery Centre holds a weekly **nature playgroup** for children 2–5 years. Sessions include storytelling, a guided nature walk, art activities and open-ended indoor play. [Tickets](#) \$20 per session or \$150 for a term pass.
- 
Wednesdays
Seed cleaning group with **Eastern Hills Wildflower Society** meets fortnightly to prepare seeds for propagation. Contact: June eastern.hills.branch@wildflowersocietywa.org.au
- 
Wednesdays 3:30pm–5pm
Wildlife Wednesdays is a weekly after-school nature club for children 5–14 years offering hands-on nature experiences and activities that vary each week. WA Gould League's **Herdsmen Lake** Discovery Centre. [Tickets](#) \$15 per child per session, parents/carers free.
- 
Thursdays 7:30am–9am
Bushcare activities with **Bicton** Environmental Action Group. Planting, weeding and foreshore clean-up. Various dates. Contact: Peter 0439 467 855 pneesham1@hotmail.com [website](#)
- 
Thursdays 7:30am–9:30am, 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, Saturdays and Sundays 9am
Morning walks with Friends of **Bold Park** Bushland Volunteer Guides. Various dates. Contact: 9480 3996 friendsbp@bqpa.wa.gov.au [website](#)
- 
Thursdays (Term 2 & 3) 10am–11am
Kaya Koolangka! Hello children! program for children ages 2–5 to learn the Nyoongar names of native animals and our environment through stories, movement, and nature-based activities, with a different theme each week. [Tickets](#) \$15 per child (single session), adults free with an enrolled participant. WA Museum Boola Bardip.
- 
Thursdays and Sundays 10am–12 noon
Kanyana Wildlife Centre, Discovery Centre **Tours**. Close encounters with native animals and interactive Discovery Centre. \$15 or less. Bookings essential. Contact: 9291 3900 education@kanyanawildlife.org.au [website](#)
- 
Thursdays and Fridays 9am–4pm
Wetland, bushcare and **nursery** activities with The Wetlands Centre, **Cockburn**. Contact: Danielle 9417 8460 community@thewetlandscentre.org.au
- 
Thursdays 3pm
Bushcare most Thursdays with **Friends of Point Peron**. Look for the signs Point Peron Rd or Safety Bay Rd **Rockingham**. Bring your own gloves, water and dress for the bush. Contact: James 0427 229 166 jgmumme@live.com.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: 0419 928 618 murdoch.secretary@wildflowersocietywa.org.au [Facebook](#)
- 
Fridays 8am–9am
Bushcare activities every Friday with **Byford** Enviro-Link. Contact: Colleen 9525 1146
- 
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. Contact: mail@mosmanparkbushland.org
- 
Fridays 7pm
Talks with **Eastern Hills** Branch of the **Wildflower Society**. Fourth Friday each month, Octagonal Hall, 52 McGlewe Rd, Glen Forrest. \$2 entry, visitors welcome. [Facebook](#), [website](#)
 Contact: eastern.hills.branch@wildflowersocietywa.org.au
- 
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 education@kanyanawildlife.org.au
- 
Check calendar
BirdLife holds 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.











June

-  **2 Thursday 7:30pm–9:30pm**
Insects and Fungi – Be surprised! [talk](#) by Daniel Heald
Murdoch Branch Wildflower Society of WA, Cockburn Wetlands
Education Centre. Entry \$3.
-  **4 Saturday 1pm–3pm**
Introduction to botanical drawing with artist Una Bell. Una
will guide you through the illustration of plant species with
accurate form, colour and details, experimenting with a range
of mediums, paper and scales. Suitable for 15+ years.
Mundaring Arts Centre. [Tickets](#) \$45, materials included.
-  **5 Sunday 9am–12 noon**
Planting Astley Street River Park with [Armadale Gosnells
Landcare Group](#).
-  **5 Sunday 9am–1pm**
Planting Bibra Lake Reserve with the City of Cockburn.
[Register](#).
-  **7 Tuesday 10am–11am (AWST)**
Webinar: Fifty years measuring climate change with
atmospheric scientist and science educator, Dr Dave Lowe.
Environment Institute of Australia and New Zealand. [Tickets](#) \$20.
-  **7 Tuesday 8pm–9:30pm**
**Threatened species, threatening processes, and
conserving plant diversity in south west Western Australia**
talk by David Coates, [Perth Branch Wildflower Society of WA](#),
Subiaco Community Centre. Entry \$3.
-  **9 Thursday 7:30pm–9:30pm**
Waterbirds – how they use fringing vegetation [talk](#) with
Unice Robinson, Armadale Branch Wildflower Society of WA,
Armadale Environmental Centre.
-  **9, 16, 23 & 30 Thursdays 1pm–2pm**
Nyoongar language course Learn basic Nyoongar on this
four-week course with Sharon Gregory at the Walyalup
Aboriginal Cultural Centre, Fremantle. [Tickets](#) \$60.
-  **10 Friday 7pm–9:30pm**
Bandicoot Sleuthing [talk](#) with Dr Kenny Travouillon, Darling
Range Branch WA Naturalists' Club, Kalamunda Community
Centre. Entry with cash donation of \$5 adults, \$1 children.









*Learn botanical
drawing with artist
and environmental
enthusiast Una Bell.
Photo – Rebecca Mansell.*

-  **11 Saturday 9am–1pm**
Planting Matilda Birkett Reserve, Coolbellup as part of Rehabilitating
Roe 8. Meet NW corner of Coolbellup Ave and Forrest Rd. [Register](#).
-  **11 Saturday 10am–11am**
Noongar culture and language workshop with local Noongar
language teacher Carol Foley, who will be discussing the Noongar
season of Makuru. Maylands Public Library. [Free event](#).
-  **11 Saturday 10am–11:30am**
Frog Friendly Gardens workshop Learn how to encourage and
support frogs in your garden. Bunbury Public Library. Light
refreshments and materials provided. [Tickets](#) \$10.
-  **12 Sunday 8:45am–11:30am**
Lake Clifton Seedling Giveaway A morning of knowledge sharing and
native seedling giveaway for residents of Lake Clifton and Herron.
[Register](#) by 9 June to secure your seedlings.
-  **12 Sunday 10am–12 noon**
Planting day Boat Ramp Access, Broadwater, Busselton.
Refreshments provided. [Register](#).
-  **12 Sunday 9am–12 noon**
Give our Bushland a Boost planting Edencourt Reserve with City of
Gosnells and [Armadale Gosnells Landcare Group](#).

-  **12 Sunday 9:30am–12 noon**
Top tips for early birders an introductory workshop to bird
watching and bird listening with the team from BirdLife WA. Blue
Gum Community Centre, Brentwood. [Tickets](#) \$25.
-  **12 Sunday 1pm–3pm**
Big Planting Day Warwick Bushland with the [Friends of Warwick
Bushland](#) and City of Joondalup.
-  **13 Monday 8:25am–1pm**
Quarterly monitoring marine debris survey at Gilbert Fraser
Reserve and Sandtracks Beach, North Fremantle. Bookings
essentials, navigate to [#SeatoSource – Western Australia](#).
-  **14 Tuesday 10:15am–11:15am**
Kanyana Wildlife [talk](#) at Lesmurdie Library. Learn what makes our
wildlife special, why we need to conserve our wildlife, and what to
do if you find injured wildlife. Free event, [bookings essential](#).
-  **15 Wednesday 8:25am–1:30pm**
Bibra Lake Community Wetland Rehabilitation with
Conservation Volunteers Australia. Hand weeding around native
seedlings to give them the highest chance of success. Bookings
essential, navigate to [Revive our Wetlands – Western Australia](#).
-  **15 Wednesday 9:30am–12:30pm**
See me, see you – multicultural responsiveness training free
online opportunity with Volunteering WA to check your intercultural
readiness. [Register](#).
-  **18 Saturday 9am–12 noon**
Planting Wright Brook Kelmscott with Friends of Banyowla
Regional Park – Clifton Hills and [Armadale Gosnells Landcare Group](#).
-  **23 Thursday 3pm–4pm**
Kanyana Wildlife [talk](#) at Lesmurdie Library. Learn what makes our
wildlife special, why we need to conserve our wildlife, and what to
do if you find injured wildlife. Free event, [bookings essential](#).
-  **25 Saturday 9am–1pm**
Planting Roe 8 corridor, Coolbellup as part of Rehabilitating
Roe 8. Meet bus stop on south side of Forrest Rd (follow path from
Forillion Ave). [Register](#).
-  **25 Saturday 11am–12:30pm**
Planting Warwick Bushland to revegetate the scar from January's
bushfire with the [Friends of Warwick Bushland](#). BYO garden trowel
or spade, gloves, drinking water and wet-weather gear. Meet Lloyd
Drive in the car park outside Warwick Bowling Club.





-  **26 Sunday 9am–12 noon**
Planting Homestead Park Thornlie with [Armadale Gosnells Landcare Group](#).
-  **28 Tuesday 7:30pm–9:30pm**
Is hotter than hot possible? National biodiversity hotspots in WA talk by Greg Keighery, Northern Suburbs Branch Wildflower Society of WA, Henderson Centre, Groat St, North Beach. Entry \$3.
- 29 Wednesday 1pm–3pm**
Fungi and fire recovery walk and talk through the Banksia Trail at **Warwick** Bushland with the [Friends of Warwick Bushland](#). Meet Lloyd Drive in the car park outside Warwick Bowling Club.





July

-  **2 Saturday 9am–1pm**
Planting CY O'Connor Beach – Rollinson Road with the City of Cockburn. [Register](#).
- 2 Saturday 9am–1pm**
Community open day to celebrate the rehabilitation efforts within the Roe 8 corridor. Interactive stalls, free activities, and free barista coffee for the first 100 guests. Meet the Rehabilitating Roe 8 team, ask questions, share ideas and have your say about what matters to you in the corridor. Len Packham Clubrooms, Coolbellup. [Register](#).
-  **7 Thursday 8pm–9:30pm**
Myxomycetes in Western Australia talk by Karina Knight, [Perth Branch Wildflower Society of WA](#), Subiaco Community Centre. Entry \$3.
-  **7 Thursday 9am**
Planting Jandakot Regional Park with the Friends of Jandakot Regional Park, SERCUL and DBCA. Meet [Clifton Rd Canning Vale](#). RSVP essential to melindasnowball@sercul.org.au
-  **8 Friday 7pm–9:30pm**
Magpie research project talk with Mandy Ridley, Darling Range Branch WA Naturalists' Club, Kalamunda Community Centre. Entry with cash donation of \$5 adults, \$1 children.
-  **9 Saturday 9am–12 noon**
Planting Goolamrup Reserve Kelmscott with Friends of Goolamrup Reserve and [Armadale Gosnells Landcare Group](#).
-  **9 Saturday 9am–1pm**
Planting CY O'Connor Beach – Rollinson Road with the City of Cockburn. [Register](#).

-  **16 Saturday 9am–1pm**
Planting CY O'Connor Beach – Rollinson Road with the City of Cockburn. [Register](#).
-  **17 Sunday 9am–12 noon**
Planting Mary Carroll Wetland Gosnells with Friends of Mary Carroll Wetland and [Armadale Gosnells Landcare Group](#).
-  **20 Wednesday 7:30pm**
Bats talk with Nic Dunlop introducing bats and then discussing the results of the Star Swamp survey. Northern Suburbs Naturalists, Henderson Centre, Groat St, North Beach.
-  **23 Saturday 9am–12 noon**
Planting Wright Brook Kelmscott with Friends of Banyowla Regional Park – Clifton Hills and [Armadale Gosnells Landcare Group](#).
-  **24 Sunday 9am–12 noon**
Planting Homestead Park Thornlie with City of Gosnells and [Armadale Gosnells Landcare Group](#).
-  **27 Wednesday 8am–10am**
Coolbinia Bushland Golly Walk with Northern Suburbs Naturalists.
-  **31 Sunday 9am–12 noon**
Planting Saddlers Retreat, Canning River Kelmscott with City of Armadale and [Armadale Gosnells Landcare Group](#).

August

-  **6 Saturday 9am–12 noon**
Planting Martin St Reserve Kelmscott with [Armadale Gosnells Landcare Group](#).
-  **11 Thursday 9am–4:30pm**
Subtleties of the City: Djilba – A Journey on Whadjuk Boodja Bus tour between the City of Perth and Fremantle, visiting various local sites and learning about the culture and country of the Whadjuk people. Morning tea and lunch provided. [Tickets](#) \$209.79 or \$188.69 concession.
-  **11 Thursday 6:30pm–7:30pm**
Restoring kelp forests, a talk by Georgina Wood. Find out how scientists are restoring this crucial habitat and give them the best chance of surviving in a changing ocean. City of Perth Library. Free event, [registrations](#) essential.
-  **14 Sunday 9am–12 noon**
Planting Araluen Walktrail Roleystone with Roleybushcare and [Armadale Gosnells Landcare Group](#).

-  **17 Wednesday 7.30pm**
Orchids talk with Mark Brundrett on the latest orchid research. Northern Suburbs Naturalists, Henderson Centre, Groat St, North Beach.
-  **20 Saturday 9am–12 noon**
Planting Jacqueline Drive Thornlie with Friends of Jacqueline Drive and [Armadale Gosnells Landcare Group](#).
-  **24 Wednesday 8am–10am**
Tranquil Park, Carramar annual orchid [Golly Walk](#) with Mark Brundrett, Tim Hodgkins and Northern Suburbs Naturalists.
-  **27 Saturday 9am–12 noon**
Planting Champion Lakes with [Armadale Gosnells Landcare Group](#).

WA Coastal Awards for Excellence

Nominate someone you know doing great things in coastcare for the [2022 Western Australian Coastal Awards for Excellence](#).

Award categories are coastal champion, coastal planning, coastal management and adaption, education and engagement, coast design, and science and research. Winners will be announced at the [2022 WA State NRM and Coastal Conference](#). Help recognise and celebrate the success and achievements of those working to enhance, rehabilitate and adapt to the threats and pressures on our coastline. [Nominations](#) close 6 July 2022.



Highlights

On now – 21 August

Thalassa: Pertaining to the Sea is a [free exhibition](#) on at the WA Museum Boola Bardip. Displaying spectacular still and moving imagery from our State's underwater seascapes, this exhibit documents marine animal biodiversity and reveals fresh insight into intricate details of anatomy, associations, ecology and behaviour.

June – July

Be a part of the **Birds in Backyards** [winter survey](#) by spending 20 minutes counting the birds in your backyard, local park or school and [submit your survey data](#) to BirdLife Australia. Register to join BirdLife's [free webinar](#) on Wednesday 15 June 5pm–6:30pm AWST to learn all about how to do a Birds in Backyards survey – and why your garden matters.

3 June, 13 August, 17 September

Koolbardi wer Wardong is a musical production which tells a creation narrative of two vain, jealous brothers, Koolbardi the magpie and Wardong the crow. Sung in Noongar with English surtitles. On at the Albany Entertainment Centre (Friday 3 June), Goldfields Art Centre (Saturday 13 August), and Esperance Civic Centre (Saturday 17 September). [Book or register](#) for ticket announcements.

5 June 3pm – 6 June 1am (AWST)

World Environment Day Symposium *Only One Earth* will be held virtually. A diverse group of experts will share insights on ways to promote sustainable use of the earth's scarce resources. Participants from around the world are invited to write and present articles on the sub-themes (education, energy, environment and sustainability, and economics) alongside keynote speakers.

24 June 9am–5pm

Communicate to Inspire 2022 Australian Science Communicators conference. Focusing on practical skills-based workshops and the latest research with the theme Creating Connections. [Tickets](#) \$45–80.



**GET UP!
STAND UP!
SHOW UP!**
3-10 JULY 2022

3–10 July

National NAIDOC Week is held across Australia each July to celebrate the history, culture and achievements of Aboriginal and Torres Strait Islander peoples. The 2022 theme is [Get up! Stand up! Show up!](#) Find a [community event](#) taking place near you and share in the celebrations.

11–14 July

Australian Society of Herpetologists 2022 Conference will be held at Mylor Adventure Camp, SA. Visit the [website](#) for more details. Tickets \$372–\$465 (3 days) or \$150 (1 day). [Registration](#) closes Friday 10 June.

28 July – 2 August

International Society for Behavioural Ecology Congress Stockholm, Sweden or online. Visit [website](#) for details, pricing and to [register](#).

31 July

National Tree Day is celebrated on [31 July](#) but events are encouraged at any time of year. Register a site and [host your own event](#), or get involved by volunteering at a [site near you](#).



23–25 August

2022 National Landcare Conference International Convention Centre, Darling Harbour, Sydney NSW and online. Early bird tickets will go on sale in June. Registrations to be a virtual conference delegate are free. Visit the [website](#) for more details.

27–28 August, 24–25 September, 22–23 October

Red Card for foxes cats and rabbits [community based feral animal management](#) that achieves greater impact through coordinating teams to conduct baiting and shooting activities at the same time across the agricultural regions of WA.

31 August – 1 September

Dieback Information Group Conference 2022 [save the date](#).

5–9 September

The Island Arks Symposium *Partnering for Land, Sea and Coast* Phillip Island, VIC. Registrations \$110 per [day session](#) or \$350 for the [full symposium](#).

10–16 September

Australian Native Plants Society Biennial Conference *Australian Flora – Past Present Future* Kiama NSW. [Registrations](#) \$140 per day session or \$600 for the [full conference package](#).

20–22 September

WA State NRM & Coastal Conference *Building Resilience Through Innovation* Mandurah, WA. [Registrations](#) \$165–\$825, with early bird pricing available until 20 June.

24–26 September

Flora and fauna monitoring at Yunderup field station with the WA Naturalists open to members and visitors. [RSVP](#) various prices.

25–29 September

Australasian Weeds Conference *A weed odyssey: innovation for the future* Adelaide Oval, SA. [Registrations](#) \$550–\$1,150, with early bird pricing available until 4 August.

3–5 October

Albany Wetland Summit Collaborate, connect, learn, and find solutions to the many threats facing a unique landscape spanning the Albany Sandplains and North Stirlings Basin. Albany Entertainment Centre, with a half-day field trip on 3 October to Ballogup (Lake Pleasant View) and Ten Mile Swamp. Visit the [website](#) for more details or to book [tickets](#) (\$160 whole event pass, \$75 single day, or \$25 field trip only).

29–30 October

The Australasian Shorebird Virtual Conference Save the date and [stay tuned](#) for more information.

31 October – 4 November

National NRM Knowledge Conference Margaret River, WA. Includes field trips, two-day conference and National Chairs Forum. [Save the date](#).

27–30 November

International River Symposium *Journey to Resilience: Communities, Climate & Biodiversity* Vienna, Austria and online. [Registrations](#) €70–€500 with super early bird discounts until 10 June and early bird discounts until 31 July.

28 November – 2 December

Conference of the Ecological Society of Australia will be an in-person conference with a limited number of online options offered. Wollongong, NSW. Visit the [website](#) for more details as they are released.

30 November – 1 December

Hydrology & Water Resources Symposium 2022 *The Past. The Present. The Future*. Brisbane, QLD and online. Visit the [website](#) for further details as they are released. Early bird registrations open 23 June.

Year round

Parks and Wildlife Service's Know Your Patch, *Nearer to Nature* and *River Guardians* have come together to provide an engaging, hands-on nature-based school holiday program for kids and families. With locations across the Perth metro area and a variety of different themes, there is something for everyone to enjoy. Head to the [website](#) for more information or to book.

Various dates

Zippy's Kings Park Adventurers connects pre-school nature lovers to structured activities in bushland at Rio Tinto Naturescape Kings Park. Enjoy an [eight-week program](#) of 45-minute sessions each term as early learners explore nature and gain a deeper understanding of the world around them. \$96 per term.

Community Rivercare Grants to improve the health and habitat of the Swan and Canning rivers. [Applications open 1 June](#).

Wheatbelt NRM's **Where the Wild Things Are** grants provide funding of up to \$15,000 to support protection of the eucalypt woodlands of the Western Australian Wheatbelt. [Applications open now and close 31 December](#).

2022 Healthy Bushland Support loan of cage traps or funding to assist with baiting to control cats, foxes and rabbits in the Avon River Basin. [Applications open now and close 31 December](#).

NACC Biodiversity Community Grants up to \$5,000 for projects that conserve malleefowl and black-flanked rock-wallaby in the Northern Agricultural Region. [Applications](#) are assessed in a **first in first served basis**. Contact Jarna Kendle on 0477 177 164 or [email](#) to discuss eligibility.



Rivercare – Friends of Bennett Brook. Photo – DBCA.

Growing Great Ground incentives of up to \$1,000/ha for biodiverse native vegetation projects, \$400/ha saltbush plantings for wind erosion and \$200/ha for ground cover establishment in the Northern Agricultural Region. Applications are assessed on a **first in first served basis** for eligible sites. Contact [Anna Cornell](#) on 0447 298 063 to discuss eligibility.

Peel Harvey Catchment Council Fencing and Revegetation of Foreshore Areas [funds](#) landholders in the [Healthy Estuaries WA footprint](#) to fence streamlines on their properties to exclude stock with revegetation. **Open grant round**.

Gallagher Landcare Electric Fencing Grants provide funding using Gallagher products for fencing projects with tangible environmental or sustainable agriculture outcomes and that provide knowledge-sharing opportunities through field days, site visits or demonstrations. [Applications close 4 July](#).

The Indigenous Land and Sea Corporation's Our Country Our Future program funds land acquisition or management projects that deliver benefits to Indigenous Australians. This includes on-ground activities to maintain or improve the condition of Country (land, water, biodiversity, and cultural heritage). **Open on an ongoing basis**.

Treasurers have a chance to win one of four \$5,000 donations for your not-for-profit group with the **2022 Commonwealth Bank Not-for-Profit Treasurers' Awards**. [Nominations close 8 July](#).

Lotterywest Grassroots Community-Led Grants are available for proposals big or small that work towards sustainable ecosystems including restoration, care for natural heritage, protection of endangered species, and reduction of the community's impact on the environment. [Applications open year round](#).

Keep Australia Beautiful **Community Litter Grants** up to \$5,000 for local area projects and up to \$10,000 for major initiatives that seek to change littering behaviour and work towards a litter-free WA. [Applications close 21 June](#).

Purves Environmental Fund up to \$50,000 for projects addressing the focus areas of habitat destruction, capacity building of key NGOs and climate change adaptation. [Applications open year round](#).

Wettenhall Environmental Trust small environmental grants scheme funds research and education projects on flora and fauna conservation. [Applications open 1 July](#).

Dahl Fellowships of up to \$25,000 are awarded to individuals for projects that contribute to eucalypt conservation, appreciation, research, or education. [Applications open 20 June and close 14 August](#).

Mary Bremner Bequest Strategic Grants Program of the Wildflower Society of WA for projects focused on WA flora. [Applications open year round](#).

Belmont Forum's Giving Back Program [offers small grants](#) of \$500 to local not-for-profit organisations. Grant winners are selected at the end of each quarter – **June, September, December and March**.

EMRC Community Grants up to \$3,000 for sustainability, social, cultural and recreational needs of members of the Gidgegannup, Hovea, Parkerville and Stoneville communities. [Applications open July](#).

Local government community grants These local governments provide small grants to their communities which fund environmental groups' management and restoration projects. Eligibility varies. [Armadale opens August](#), [Armadale Habitat Links open year round](#) for rural residents, [Broome open year round](#), [Fremantle opens 1 September](#), [Gosnells open year round](#), [Melville open year round except June](#), [Rockingham closes 5 August](#), [South Perth open year round](#), [Subiaco closes 7 July](#), [Wanneroo open year round](#), [Waroona closes 15 August](#).



City of Armadale's [Habitat Links program](#) offers rural residents free native seedlings, support and technical advice. Photo – City of Armadale.

New publications



Frog ID Report 2017–21

highlights achievements from the first three and a half years of Australian Museum's citizen science project: FrogID. An ongoing national frog census, FrogID enables people all around Australia to record frog calls using their smartphones and helps scientists to better understand and conserve Australia's unique frog species. Frog call recordings tell us about the environmental health of a precise location, at an exact time and date. The [FrogID report](#) tells stories of both the loss and resilience of Australia's frogs from around the country.

The Lives of Fungi: A Natural History of Our Planet's Decomposers

Bunyard, Britt. *Princeton University Press*, 2022. \$50. Fungi are important for us as well as for the environment. The *Lives of Fungi* presents an inside look into the hidden and extraordinary world of fungi – how they live and what they do, laying out essential facts for the mycologically curious.



Recent Research

Botten L, Ash A, Jackson B (2022) Characterising a sarcoptic mange epizootic in quenda (*Isoodon fusciventer*) [International Journal for Parasitology: Parasites and Wildlife](#) online early.

Brundrett MC (2021) One biodiversity hotspot to rule them all: southwestern Australia – an extraordinary evolutionary centre for plant functional and taxonomic diversity [Journal of the Royal Society of Western Australia](#) 104, 91–122.

Callaghan CT, Liu G, Mitchell BA, Poore AGB, Rowley JLL (2021) Urbanization negatively impacts frog diversity at continental, regional, and local scales [Basic and Applied Ecology](#) 54, 64–74.

Davies L, Kemp A, O'Loughlin C, Korczynskij D (2022) Is conscientious beachcombing the key to 'unlock' marine plastic pollution trends through citizen science? A case study from Cockburn Sound, Western Australia [Marine Pollution Bulletin](#) 177, 113519.

Davis RA, Valentine LE, Craig MD (2022) Do bird communities differ with post-fire age in *Banksia* woodlands of south-western Australia? [International Journal of Wildland Fire](#)

Hunt S, Maher J, Swapan MSH, Zaman A (2022) Street Verge in Transition: A Study of Community Drivers and Local Policy Setting for Urban Greening in Perth, Western Australia [Urban Science](#) 6(1), 15.

Moseby KE, McGregor H, Read JL (2020) Effectiveness of the Felixer grooming trap for the control of feral cats: a field trial in arid South Australia [Wildlife Research](#) 47, 599–609.

Saunders DA, Dawson R, Mawson PR (2022) Artificial nesting hollows for the conservation of Carnaby's cockatoo *Calyptorhynchus latirostris*: definitely not a case of erect and forget [Pacific Conservation Biology](#).

Apps



NatureMapr app is a regionally focused [citizen science platform](#) for reporting sightings and audio clips of fauna anywhere in Australia. It partners government, research and environmental organisations with the community to achieve real, on-ground outcomes for the environment. Available free from the [App Store](#) or [Google Play](#).

A new [augmented reality experience](#) has been launched at Kings Park. Using the **Markr app** available on the [App Store](#) or [Google Play](#), visitors can now access augmented reality images that have been installed in the Conservation Garden. These stories and images help educate visitors on conservation and ecosystem restoration, and the app offers an in-built translation service.

For loan

Wildlife cameras are [available for loan](#) from the City of Melville Libraries. Find out what native species you share your garden with – the cameras are free to borrow for up to three weeks with your library membership. Call your [City of Melville library](#) to find out more or [reserve a wildlife camera online](#). Not sure what animal you have recorded? Send the footage to [Piney Lakes Environmental Education Centre](#) for help with identification and tips on making your garden more wildlife friendly.

Website watch

Trails WA has launched a [new website](#) offering maps and information for more than 800 of the State's trails. The website features downloadable maps that can be accessed offline, as well as information on bushwalking, mountain biking, trail running or water trails, including wheelchair accessible and dog-friendly trails. New features include trail running and food and wine maps, elevation maps, and an online community feature where you can earn badges, share reviews and see your trail achievements. The new platform is more useable, more searchable and there is no need for the app – the website works across all mobile devices, iOS and Android.

Life on the Brink [podcast](#): join conservation scientists Gabe and Alex as they chat to people who have dedicated their lives to threatened species protection and ask them the big questions: Why does this species matter? What has been their best and worst day? And what about these creatures makes deadly risk, soggy clothes, and awkward bathroom situations worth it? Listen to the latest episode with [Dr Emily Roycroft](#) on discovering through DNA that the Australian native Gould's mouse, thought to be extinct, was not actually extinct after all!

BirdLife Western Australia has several updated **bird guides** available on their [website](#) for Exmouth-Cape Range, Cockburn, Narrogin, Kununurra-Wyndham and Esperance.



Australian Story: Into the Wild is a documentary episode on ecologists Dr Rebecca West and her husband Dr Reece Pedler who run the [Wild Deserts](#) project in Sturt National Park in New South Wales – an ambitious 10-year collaboration to reintroduce seven locally extinct animals and restore desert ecosystems. Embarking on the project, they faced years of crippling drought which meant conditions weren't right to bring in native animals. In 2020 the rains finally came and the [first 10 bilbies reintroduced](#) back to the area are now thriving in their new home. Stream the episode on [ABC iview](#) or [YouTube](#).

AUSMAP is a collaborative [citizen science project](#) documenting and analysing microplastic pollution in Australia's aquatic environments. Creating maps of plastic pollution hotspots all over Australia, the project aims to take a crisis that is invisible to the human eye and make it easy for everyone to see the scale and nature of this growing problem, so we can figure out how to stop any more plastic disintegrating into our waterways.

Every Kid in a Park is a [project](#) to support families with children of all abilities to access and enjoy the outdoors. In partnership with DBCA and delivered by Nature Play WA, this project will showcase a new park each month for the next three years. The first three parks are [Canning River Regional Park](#), [Woodman Point Regional Park](#), and

[Yanchep National Park](#). The project provides resources to assist families in planning their park visit including information on accessibility, points of interest, trails, cultural and biodiversity information, and activity sheets for kids. Canning River Regional Park has a [Social Story](#) for Kent Street Weir to prepare children and adults with autism spectrum disorder, intellectual disability, developmental delays and learning challenges by explaining what they can expect on the day of their visit. Available as a free [web app](#) or smartphone app from the [App Store](#) or [Google Play](#).

Breathing Life into Boodja is a [documentary](#) which tells the story of [Gondwana Link](#), covering the work of community groups, Aboriginal communities and rangers, conservation landholders, farmers and scientists in restoring over 1,000km of former farming land around the Porongurup and Stirling ranges in south-western Australia. The film is [now available](#) to purchase on DVD or rent to stream online. For use by educational institutions or for public screenings (commercial or non-commercial) please contact [Ronin films](#) or visit the [website](#).

Rabbit-Free Australia, [website](#) of the publicly subscribed fund to support research, raise awareness and encourage on-ground action to eradicate feral rabbits from Australia. Watch [videos](#) from a recent webinar on the environmental and economic impact of rabbits, and the latest research on how rabbit haemorrhagic disease virus (RHDV) is working.



orange fans

By Sapphire McMullan-Fisher



Anthracophyllum archeri, also known as the orange fan, is a brightly coloured fan-shaped 'mushroom' often seen in clusters on twigs. This important decomposer helps recycle nutrients in our bushland. Recycler fungi like this are habitat and food for local invertebrates which in turn are food for insectivorous birds.

Masses of these pale orange to vibrant red fans may totally cover the twigs on which they grow. They are attached laterally to the substrate with or without a very short stem. The texture is smooth and leathery. Shown here are the striking underside gills which are a similar colour to [the cap](#). Orange fans can be distinguished

by their intense colour and widely-spaced gills. There are other orange fans but not with this combination of characteristics.

Orange fans are common and can be found growing on dead wood mainly in moist native forests, but also in drier woodlands and forests. Within Western Australia it is distributed throughout the south-west from Perth to Cape Le Grand but especially in the higher rainfall karri forests of the south coast. They can fruit at any time of year, but you will have most luck spotting this spectacular looking fungus during the wet autumn and winter months from April to August.

Photo – Mark Brundrett.