

bushland news



Issue 113 **Autumn 2020** *Time of Bunuru and Djeran in the Noongar calendar.*

Celebrating 50 years of botanical discovery



Photo – Juliet Wege



Department of Biodiversity,
Conservation and Attractions



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

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Next issue

Winter Bushland News

Winter *Bushland News* contributions should be sent to [Urban Nature](#) by **10 June 2020**. *Bushland News* seeks original contributions. If your submission has been or may be published elsewhere please let us know. Compiled and edited by Julia Cullity.

Celebrating 50 years of botanical discovery

By Juliet Wege and Kelly Shepherd

In 1970, the Western Australian Herbarium launched its flagship taxonomic journal *Nuytsia* so that new information on the State's diverse and fascinating flora could be locally published. Named after the spectacular, giant mistletoe *Nuytsia floribunda* (Christmas tree or *kaanya* trees), the journal has played a central role in supporting five extraordinary decades of botanical discovery. Over this time, the number of native plant species formally recorded for the State has grown from 5,802 to 10,445, of which around one-fifth were scientifically named in *Nuytsia*.

This growth in botanical knowledge has been a collective effort – a vast array of scientists, curatorial staff, citizen scientists and volunteers have been involved in the discovery of new species, the collection, processing, databasing and curation of herbarium specimens, and the writing, reviewing and editing of taxonomic manuscripts. To celebrate these achievements and the 50th year of *Nuytsia*, 50 new species will be published in a [golden anniversary edition of the journal](#).

Cover photo: The dancing lechenaultia is a horticulturally significant discovery. This beautiful plant would fit right into many a native garden. Photo – Juliet Wege.

Recent discoveries and known unknowns

The 50 botanical novelties occur in a range of habitats across the State, from the Kimberley to the south coast and the deserts to the sea, including some botanically well-trodden (or snorkelled!) national parks. They will be published on separate days throughout 2020 via [FloraBase](#), with a story behind the science posted on the [Herbarium's Facebook page](#).

To achieve this world-first, Herbarium botanists coordinated a series of field expeditions to obtain high-quality herbarium collections and data for many species, among them the dancing lechenaultia (*Lechenaultia orchestris*), our cover photo. Discovered in southern Western Australia in 2012 by citizen scientist William Archer, this botanical showstopper has mauve blue flowers that are reminiscent of a flamenco dancer with arms upstretched, inspiring its scientific name (which means 'a dancer' in Greek). Species of *Lechenaultia* can be scarce in the wild but many are well known in cultivation and the horticultural potential of this new rarity is being explored by our colleagues at the Botanic Gardens and Parks Authority.



Above: Botanist Kelly Shepherd collects material of the dancing lechenaultia. Photo – Juliet Wege.

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Another recent find is the Mundatharrda calytrix (*Calytrix insperata*), which was discovered out of the blue by local botanists Steve Dillon and Adrienne Markey while they holidayed in the Kennedy Range National Park in the Gascoyne region. Its opportunistic detection, like that of the dancing lechenaultia, highlights the ongoing importance of botanical collecting and flora surveys in Western Australia, where new species continue to be discovered at a remarkable rate.

The *Nuytsia* anniversary edition also features species that were first collected more than 50 years ago but have remained undescribed (our 'known unknowns'). One example is the ornate babingtonia (*Babingtonia peteriana*), an unusual rarity from near Three Springs that was classified using DNA data and fresh field observations. This warty-stemmed species was named on Valentine's Day by Barbara Rye after her husband of nearly 45 years (how romantic!).

Taxonomy for conservation

Most of the species included in the *Nuytsia* anniversary edition are threatened, rare or poorly known, with several known only from a single collection or population, or fewer than 50 individuals. Naming these species and providing descriptions to aid their identification will hopefully lead to positive conservation outcomes such as the discovery of new populations. This is especially important in view of the escalating threats to our biodiversity in an era of rapid environmental change.

Despite 50 years of progress, Western Australia still has a large taxonomic backlog of more than 1,170 undescribed species (recognised on *FloraBase* under informal phrase names), many of which are poorly known. These species need classifying, naming and describing in publications such as *Nuytsia* so that this information can then be used to help conserve them for future generations.



Ornate babingtonia is an unusual rarity. It was first collected by former government botanist Charles Gardner in 1952 but its classification has been in doubt, until now. Photo – Robert Davis.



The opportunistically discovered *Mundatharrda calytrix*. We still have so much to learn about the biodiversity of our State. Species continue to be unearthed by botanists, even when they are on holiday. Photo – Kevin Thiele.

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Urban Nature update *by Julia Cullity*

Autumn sees us looking back and analysing the data we collected last spring and planning for the upcoming year. As for everybody, our planning is increasingly difficult with public health concerns, general uncertainty and an evolving situation in this COVID-19 pandemic. Because of this we have decided not to include a What's on calendar in this issue. We keep plugging away but are aware that anything we plan might be subject to change. On an individual basis, we ask that you take a considered and cautious approach to your own health and for those around you, and encourage you to consider the advice being provided at the time from health professionals and government health departments. However, I also note the opportunity that natural areas can provide for practicing "social distancing" and the recognised physical and mental health benefits of getting out in nature. Try to get outside and celebrate nature, even if it is just in your back yard. Consider joining a citizen science project remotely, like [Wild Pollinator Count](#), [Western Shield – Camera Watch](#) or [ClimateWatch](#).

The enormity of bushfires in eastern and South Australia may seem to downplay the fire season we have had here in the South West, but in this issue, we are featuring stories on two groups and their work to protect common and threatened wildlife following this summer's bushfires, the [Friends of the Western Ground Parrot](#) and the [Northern Valleys Wildlife Support](#). A little closer to home, some of the project sites that Urban Nature have been working on were also affected by bushfire. Parts of Lowlands Nature Reserve in Mardella was burnt in two separate bushfires this January. Last spring we mapped the distribution of serious environmental weeds at Hymus Swamp, the western block of Lowlands Nature Reserve. Whilst it's not what we anticipated, we've been able to incorporate this weed mapping data into the fire rehabilitation plan for Hymus Swamp and plan for targeted weed control of



Post-fire inspection at Hymus Swamp in Lowlands Nature Reserve to assess the immediate environmental damage resulting from the fire and to plan recovery actions such as rehabilitation of bushfire containment lines and repair of fences cut or damaged during the fire suppression. Photo – Julia Cullity.

those invasive weed species which rapidly invade after fire such as cape tulip, wavy gladiolus and perennial veld grass.

We had started planning for a number of events this year. Restoration work at Penguin Island will be delayed this year. Over summer/autumn we visited the island to undertake monitoring of the distribution of bridle tern nesting sites and rescored vegetation restoration trials that were established in 2015. It was good to see that the cover of native vegetation across all planted, brushed and direct seeded plots is still at 75–100% and the bridled terns continue to use the restored vegetation for nesting sites.

We have been continuing to work at a patch of banksia woodland at Farrington Road and

Allendale Entrance in North Lake. This is a newly purchased area in the Beeliar Regional Park where we began our bushland reconnaissance project. It's a small, five hectare site in mostly excellent condition with diverse flora and fauna values, and is an occurrence of the nationally listed Banksia Woodlands of the Swan Coastal Plain threatened ecological community. We returned in January to take some soil samples from two small areas of banksia deaths close to the edges of the reserve to test for *Phytophthora cinnamomi* dieback and were pleased to return a negative result. We have also mapped the distribution of environmental weeds which are currently very localised. We would love to [hear](#) from any community members who might be interested in adopting this small patch when group events can restart.

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The 2017 tuart threatened ecological community nomination field trip in the City of Bunbury's Maidens Reserve. Representatives from community, and local, state and federal government were present. People anticlockwise from checked shirt on right: Bernie Masters, Andrew Webb (addressing the group, DBCA), Katinka Ruthof, Trudy O'Connor (DEE), Judy Fischer, Kim Williams (DBCA), Sue Calab, Nikki Ward (DEE), Kim Wilson, Kingsley Dixon and Collin Spencer (CoB). Tuarts (Eucalyptus gomphocephala) are the largest local native tree on the Swan Coastal Plain and tuart communities are under serious threat, last year listed federally as a critically endangered threatened ecological community. The Perth Branch of the Wildflower Society of Western Australia, Urban Bushland Council and DBCA will be co-hosting Talking Tuarts, a symposium in two sessions, [email](#) to express your interest. Photo – Bronwen Keighery.



*Ezgi Perincek and Grazyna Paczkowska are taking a soil sample for *Phytophthora dieback* at Allendale Entrance in Beeliar Regional Park. We were relieved to get back negative results as this is one less threat to the banksia woodland at this small reserve. While in excellent condition, it does have limited weed invasion and we would love to [hear](#) from anyone interested in adopting this patch. Photo – Julia Cullity.*

I'm part of the planning committee for a conference on local citizen science and landcare: [Hands Healing the Land Boodja-Moort-Kaartdijin](#). This very keenly priced, one-day event will celebrate how community makes a difference in caring for our flora and fauna, learn from traditional owners and build community. Originally scheduled for May, it has been postponed to later in the year. We will let you know when a new date has been selected. The committee is interested in hearing from groups who'd like to share their stories, the [call for short presentations and posters](#) will be open until 29 May 2020.

Our largest event will be co-hosting Talking Tuarts with the Urban Bushland Council WA Inc. and the Perth Branch of the Wildflower Society of Western Australia. This symposium will be held in two parts and people will be able to register for one day or both.

We have provisional dates in June and July, but these are likely to change. The first session Talking Tuarts – Community, at Bold Park will share community stories about tuart including: tuart and tuart dominated plant communities; the role of the community in protecting tuart woodlands and forest; the federally listed threatened ecological community; and an introduction to, and walk in Bold Park's tuart woodlands. The second session Talking Tuarts – Community, Government and Managers, at DBCA Kensington addresses ecological values, legislation, threats, urban planning, restoration and management. It will be an opportunity to learn more about the values, threats and actions for the ecological communities of our iconic tree of the Swan Coastal Plain. More detail will come as we finalise the program, [contact us](#) to express your interest and we'll keep you informed. It may even be delivered as a webinar.

Iceplant *By Julia Cullity*

Iceplant (*Mesembryanthemum crystallinum*) is a low, spreading, succulent herb with wavy, fleshy leaves glistening with large bladder-like cells containing water. This distinctive, glistening appearance earned the species its common name. The annual or biennial herb can grow about 1m wide. The white flowers are a bundle of petal-like staminodes very similar to [pigface](#) (*Carpobrotus edulis*), a weed in the same family, and the flowers open during the day and close at night. Iceplant reproduces by seed.

Distribution

Like many environmental weeds of south-west Western Australia, iceplant was introduced as an ornamental plant from South Africa and the Mediterranean. It is found in a widespread area from Carnarvon across the Wheatbelt to the Great Australian Bight where it is a weed of saline farmland soils, granite rocks in arid areas, the edges of salt lakes and offshore islands. Iceplant currently has only localised distribution around the Perth area but it is abundant where it occurs, such as Carnac Island and further north in the Abrolhos. It hasn't yet met its [full potential to rapidly invade](#) extensive areas of WA, unlike south-eastern Australia where it has become a serious weed of pastures. There it is found on a range of soil types from sand to loam and clay soils. It can also tolerate low nutrient or saline soils.



Interesting biology

Iceplant has an interesting biology with several physiological adaptations which increase its ability to compete with native plants. The water cells on the leaf, stem and fruit surfaces reserve water to help it adapt to drought conditions. This ability to absorb and retain moisture from the soil means that iceplant can outcompete other plants for water. Whilst usually an annual that dies with the summer drought, some plants in moist habitats can grow on for another season. The water cells also tend to accumulate salt particularly at the end of the plant's lifecycle, with salinity levels [twice that of seawater](#), which enables the species to grow and establish in saline areas.

The germinating seedlings of iceplant below the shrivelled stems of the previous year's adult plant. Iceplant can produce around [15,000 seeds per plant](#), too many to hand weed when they germinate en masse. In this situation at Penguin Island, herbicide was used to control the seedlings. Photo – Kate Brown.



The sparkling, swollen water cells on the leaf surface give iceplant its name. The [suspected functions](#) of these cells include storage of water, accumulation of salts, protection from UV rays and a role in plant defense. They even occur on the fruit capsules and can provide enough water and nutrients for a stressed plant to reach seed-set and successfully reproduce. Photo – Rolf Lawrenz.

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Iceplant has a [distinct juvenile and adult lifecycle](#). Germinating plants have rapid growth until temperatures rise in spring and moisture levels drop. In the adult growth phase smaller leaves develop along the side shoots. It is capable of using two [photosynthetic pathways](#). In times of low environmental stress iceplant uses C3 photosynthesis. But in times of drought or in highly saline soils the plant can switch to the CAM photosynthetic pathway, a method that is shared by cacti and other succulents, where plants leave their stomata shut during the day to reduce evapotranspiration but open at night to collect carbon dioxide. This allows iceplant to accelerate its lifecycle to flower and then die from the roots up leaving only the seed capsules remaining viable. Once viable seed is set, the fruits are the last part of the plant to dry out.

The fruits have five parts to the capsule and open in a star shape to eject some of their seeds when moistened. The capsule then closes as it dries and can reopen and repeat the seed spread with the next rains.

The weed alters soil chemistry to favour itself. As iceplant grows it concentrates salts from the soil profile into its leaves reducing soil salinity near its roots. When it dies the stored salt is released back into the soil. This increased salinity inhibits the growth of other less salt-tolerant native species whilst favouring germination of its own seed during autumn and winter, and the annual lifecycle continues.

Control

Flowering occurs with the onset of heat and moisture stress in spring and summer. [Weed management](#) with herbicide must occur prior to flowering, generally from June to September, whereas hand removal can take place until early summer if all fruiting material is removed. A herbicide spray of Logran® (triasulfuron) at 12.5g/100L plus the penetrant Pulse® is very effective with little off-target damage in coastal heath. Integrated pest management is the key as some South Australian biotypes have developed resistance to Group B herbicides, the mode of action that includes triasulfuron.

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Iceplant has a juvenile and adult growth form. Here it is transitioning and beginning to grow small adult leaves on side shoots growing out from the junction of the large, paired juvenile leaves. Photo – Geoffrey Cox.



Iceplant, in the foreground, invading the native plant community at Lancelin Island. Photo – Kate Brown.

Investigating red foxes in Kings Park and Bold Park By Julia Cullity

Urban reserves are important environmental and social assets, providing refuge to native fauna and connecting the public with nature. However, predation and competition by foxes (*Vulpes vulpes*) poses a significant threat to native biodiversity inhabiting these reserves, which are already impacted by fragmentation and habitat loss from surrounding land uses. Close proximity to people and domestic animals also increases the risk of foxes transmitting diseases, such as mange, to the populace.

Since 2017, members of the Botanic Gardens and Parks Authority (BGPA) and Edith Cowan University (ECU) have collaborated on a project investigating the distribution and ecology of foxes occurring within and around Perth's urban reserves. The goals of the project are to identify the home range and habitats used by foxes within Kings Park and Bold Park, as well as to determine fox occupancy probabilities within the reserves and their potential impacts to native biodiversity.

Four foxes were captured and fitted with GPS collars during December 2018. Collars were programmed to store location fixes every hour, as well as every 15 minutes between 5–7am and 5–7pm to assess crepuscular activity, for 90 days. From this, the daily movements and seasonal ranging behaviours for each fox could be analysed in detail. Fox scats were collected opportunistically in both reserves from November 2017 to July 2018. These samples were submitted to the laboratory at [Scatsabout](#) for a content analysis to determine what prey species and other foods occurred in the diet of foxes. Motion cameras were also deployed at both parks as part of a long-term survey of fauna species. Changes in fox occupancy and detectability rates in habitat types and over seasons was determined from this camera data.

Unfortunately, only a single collar was recovered from the field. However, telemetry data from this collar revealed that the fox maintained a home range covering just 30ha, which is consistent with home range sizes for foxes inhabiting urban centers within Australia and internationally. Fox home range size often decreases with increasing human disturbances to a landscape, particularly when human population densities are high.



Foxes are a significant threat to native biodiversity. In Kings Park and Bold Park they are mostly eating small and medium-sized mammals, quenda, possums and rats, and not relying on human-derived foods like rubbish, pet food or garden plants. Photo – BGPA.

This is believed to be the result of foxes inhabiting urban areas having greater food availability from human sources, including refuse and food scraps, pet foods left outside residences and deliberate feeding. However, the dietary analysis in this study revealed that human-derived foods were consumed infrequently by foxes. Instead, fox scats frequently contained the remains of small and medium sized mammals, particularly bandicoots (*Isodon obesulus*), brushtail possums (*Trichosaurus vulpecula*) and black rats (*Rattus rattus*). Local mammal populations may occur at relatively high densities within the reserves compared to surrounding land uses, providing foxes with a consistent food supply.

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Movements made by this radio-collared fox were short and mostly occurred during nocturnal hours (8pm–4am). Roads and walking tracks were important in facilitating the movement of the fox throughout its home range. The fox preferred habitats containing parrot bush (*Banksia sessilis*) and exotic weeds, while avoiding ornamental lawns and other open spaces. Both parrot bush and exotic habitats had higher densities of vegetation than other areas, indicating vegetation cover is a key driver of habitat selection in foxes. Areas of dense vegetation are ideal resting sites for foxes, providing shelter from people and other threats. Use of open spaces also increased at night, when foxes are most active and fewer people visit the reserves.



Image taken of a radio-collared fox in Kings Park. Unfortunately this is one of the foxes whose collar was not recovered, so its detailed movements remain a mystery. Photo – ECU.

Fox occupancy within Kings Park was found to be strongly influenced by seasonality, as the probability of detecting a fox was almost five times higher during summer when compared to the rest of the year. This spike in detection rates, which peak during February, coincides with the dispersal of juvenile foxes from their natal grounds. Detection rates decline rapidly following this event, suggesting that the presences of foxes within Kings Park returns to an equilibrium shortly after this peak. Considering that foxes are territorial, it is probable that foxes immigrating into the reserve are driven away by individuals or groups with established home ranges. This is an important factor to consider when implementing control programs, as the removal of any fox creates a vacant territory that can be claimed by another.

With the findings gained from this investigation, planners and wildlife managers will have a better understanding of the ecological and behavioural traits of foxes inhabiting urban areas and be better equipped to manage the impact of foxes through improved timing and coordination of control events and monitoring changes in local fox populations.

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Rankin Salinas at Kaarakin Black Cockatoo Conservation Centre to learn about the black cockatoos of WA. Photo – Margarete Sciesinski.

Cape to Cape Cocky Run

Ecologist and long-distance runner, Rankin Salinas, recently ran Margaret River's 124 km Cape to Cape Track in under 24 hours (19 hours and 52 minutes) this past weekend on 28th March to raise \$10,000 for [black cockatoo conservation](#).

The Cape to Cape Cocky Run encourages those capable to [donate to the fundraiser](#).

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Hands Healing the Land Boodja-Moort-Kaartdijin call for short presentations and posters

By Linda Metz



Do you have a story to tell? Share your group's passion by presenting at the [Hands Healing the Land conference](#) to be held later this year. The conference committee would like to hear from individuals or groups who have a story to share about how they are contributing to protecting our unique flora and fauna and building community through conservation and science. Brief 3–4 minute presentation slots are available plus stall space at the event. Submit your project title, brief description and contact details to the [conference organiser](#) by 29 May 2020.

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EPBC Act submissions extended

[The public comment period](#) on the decadal review of *Environment Protection and Biodiversity Conservation Act 1999* has been extended until 17 April 2020. This is due to the impact of bushfires on the Australian community, and the independent reviewer Professor Graeme Samuel stated "Acknowledging that the bushfires are the focus of many of the review's stakeholders, it is appropriate to extend the timeframe for providing submissions. I am keen for every interested stakeholder to have their say about the EPBC Act and how it operates."

Land for Wildlife program goes digital *By Andrew Del Marco*

Many of you would be familiar with the Land for Wildlife (LfW) program, but most of you may not know that since 2016 the program has been delivered by a partnership of DBCA and WA's seven Natural Resource Management (NRM) regional groups. Under this partnership, a [new online LfW system](#) was launched in December last year to make it easier for landholders to join the program, and easier for DBCA and regional NRM groups to assess landholder applications. [Land for Wildlife](#) gives recognition and support to landholders and pastoral station leaseholders who want to conserve and restore natural wildlife habitats on their land. In WA there are 1,946 members in the program who manage over 1,062,000ha of WA's unique natural environment on their properties. Each of these members is provided with a site assessment report, free advice on land management options, and the characteristic blue diamond sign. The program is free, non-binding and has operated in WA since 1997.

Development of the new online system was supported by the State NRM Program as part of a collaborative project led by Peel-Harvey Catchment Council, one of WA's seven NRM regional groups, and DBCA. The system is based on the GRID platform developed by environmental technology consultants Gaia Resources.

Landholders wanting to join Land for Wildlife are encouraged to register their expression of interest via the [new system](#). It is hoped the new system will continue the reinvigoration of the program, with membership growing in WA at the rate of more than 50 landholders annually.

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The Land for Wildlife [online registration system](#) was launched in December 2019. Here Regional Development Minister Alannah MacTiernan is holding the characteristic blue diamond-shaped Land for Wildlife sign, along with representatives from DBCA, State NRM, WA's seven NRM regions and Gaia Resources. Photo – Sam Gibbs.



A juvenile snake-necked turtle (*Chelodina colliei*) smiles for the camera.
Photo – Anthony Santoro.

Turtle Trackers how did we go? By Anthony Santoro

Turtle Trackers: saving our snake-necked turtles is a citizen science project started last year that aimed to harness the power of the community to locate and monitor nesting females during the treacherous journey from wetland to nest, and protect located nests with small mesh cages to reduce nest predation. This project was necessary as unsustainable numbers of mature females were being killed during nesting movements, and nests were being destroyed by predators.

The project was promoted through social media, newspaper, radio, and a previous [Bushland News story](#) to spread the word and involve as many turtle trackers as possible. After a short information and training

session, approximately 30 turtle trackers were armed with the necessary knowledge and equipment to help save our snake-necked turtles!

Between those 30 turtle trackers, patrols were conducted on 44 different days during the peak nesting season (September through November). Nesting was observed on 12 of those 44 days, and a total of 25 nests were protected with individual nest cages, specially installed by trained members from Native ARC. There was an average of 10 eggs in each nest, a minimum of 7 and a maximum of 17! This means that if at least half of the eggs hatch, approximately 125 hatchlings have a chance to enter the population at Bibra Lake.

This was a very successful first year for the project and shows that community involvement could be a key part of saving species that may not be adapting to urban environments. We are now looking to expand the program and are hoping for additional collaborations and turtle trackers that will mean we can monitor additional wetlands and protect more nests!

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Please send us your regional report (200 words) and a photo by Wednesday 10 June 2020. Text may be edited in response to volume of submitted reports.

30 years of Volunteering with the Parks and Wildlife Service

By Lee Hollingsworth

A celebration of 30 years of the formal volunteer program for Parks and Wildlife Service and its predecessors was held in conjunction with the annual Volunteer of the Year Awards for 140 guests including volunteers, their families and staff at the Keiran McNamara Conservation Science Centre in December last year. The event opened with a Welcome to Country from Walter McGuire, traditional owner of Noongar boodjar, and was hosted by DBCA Director General Mark Webb and Environment Minister Stephen Dawson.

The event highlights the significant support volunteers give to the work of the Parks and Wildlife Service and recognises the outstanding contribution they make. Congratulations go to Mike Wood, the Volunteer of the Year, for his dedicated contribution to the Bibbulmun Track Foundation. Twenty-seven Outstanding Service awards and 35 Long Service awards were also granted, including 22 volunteers who have contributed more than 25 years!



The commitment our volunteers have is impressive and they provide valuable support to many areas of the department. Their contributions vary from fauna monitoring projects such as Western Shield, helping visitors at our national parks, rehabilitating wildlife and natural areas, through to essential data entry and administration. All are vital components of our large workload – we couldn't do what we do without them. Thank you to all volunteers for your passion for the environment, dedication and commitment.

Walter McGuire, a Noongar boodjar traditional owner, providing a Welcome to Country at the opening of the Parks and Wildlife Service Volunteer of the Year Awards and celebration of 30 years of the volunteer program. Photo – DBCA.

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Three Perth conservationists in 2020 Australia Day Honours *By Julia Cullity*

Our congratulations go out to Greg Keighery, Bronwen Keighery and Margaret Owen who were awarded The Medal of the Order of Australia for their service to conservation and the environment at the 2020 Australia Day Honours. Both Greg and Bronwen were recognised for their contributions to the Wildflower Society of Western Australia and other volunteer conservation organisations, their ecological and botanical work for the State Government and a wide body of publications on the flora of Western Australia. Margaret was recognised for her contribution to a number of community conservation groups including the Friends of Underwood Avenue Bushland, the Western Australia Insect Study Society, the Urban Bushland Council and Friends of Landsdale Reserve Group and for her publications on native birds.



Husband and wife team Greg and Bronwen Keighery are photographed on a lunch break during a plant survey on the Whicher Scarp for the Wildflower Society of Western Australia. Their contribution to conservation science spans from professional to volunteer. Photo – Vanda Longman.



Margaret Owen has taken on roles in advocacy, governance, on-ground management and biological surveys for a number of community conservation groups. Photo – Miles Tweedie.

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Hunt for the European wasp

By Hannah Kilian

The European wasp (*Vespula germanica*) is a [declared pest](#) in Western Australia. The species can pose a risk for humans, as they are highly aggressive with a painful sting, as well as causing damage to the horticultural and agricultural industries. European wasps also have an adverse effect on native biodiversity and ecosystem functioning through competition and predation of native invertebrate species. The European wasp is an exotic pest to Western Australia that is already well established in the eastern states of Australia. Each year fertilised wasp queens arrive in WA via freight and cargo from the eastern states. First detected in 1977, Western Australia remains the only place in the world to have kept these wasps from establishing over such a long period. While the [species looks very similar to the commonly observed yellow paper wasp](#), it is significantly different in behaviour. The European wasp feeds on meat, including fish, dead insects and pet foods. They also mostly build nests underground, which makes detection and destruction of nests a significant challenge.

The Department of Primary Industries and Regional Development (DPIRD) have a very effective [surveillance and eradication program](#) in place for the European wasp, which successfully engages a range of professional and community groups to take action against the establishment of the species. Parks and Wildlife Service Perth Hills District currently manage 30 European wasp traps in Greenmount National Park, checking the traps for wasps and replenishing the baits every three weeks. Wasp nests have previously been located in the Shire of Mundaring, including the Greenmount, Boya and Darlington areas. Parks and Wildlife Service began assisting DPIRD in the surveillance and eradication program in the summer of 2018. The 2019/2020 monitoring season has so far resulted in no detections of European wasp in John Forrest National Park or Greenmount National Park, but intensive surveillance and control efforts are being applied across a 9km stretch of bushland in the Darling Scarp from Lesmurdie to Martin – including Banyowla Regional Park, Ellis Brook Valley Reserve and Korung National Park. If you regularly hike in these areas, always [LOOK, REACT & REPORT](#). Parks and Wildlife Service are proud to be involved in such a valuable program working towards eradicating this invasive pest.



European wasps are [similar to several other insects](#). When in the bush it's their behaviour that gives them away, particularly scavenging on dead meat such as kangaroos, rats, rabbits or quenda. European wasps are drawn out of the bush and their underground nests using fish lures. This photo in the Banyowla Regional Park was taken less than 30 seconds after the one-inch cube of fish was put out (notice their black feelers). Wasps harvest the fish and fly back to their nests. Surveillance officers follow and the nest is destroyed by dusting with permethrin powder. Photo – Catherine Webb.

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Connecting through Country and culture – Noongar Six Season Walks *By Ingrid Sieler*

The Noongar Six Season Walk project combined culture and conservation, moving throughout the Perth landscape through the year and providing people an opportunity to connect with the land and learn about our local history and traditional culture from respected elders.

These events moved from the estuary in bunuru, the time of the hot easterly winds, upriver in the milder djeran and towards and up into the hills in the cold makuru and djilba, then back along the wetlands in kambarang to the coast in hot, dry birak.

Elders welcomed us to country and shared their knowledge of the creation of the ancient land, their totems and how rules help to maintain food supplies, and consequently biodiversity. In djeran, Elder Marie Taylor shared a blessing and our spirits, body and souls were cleansed by smoking ceremonies in makuru and djilba by Elders Noel Nannup and Neville Collard.

Caring for Country activities were conducted during each season. During bunuru, [Swan Estuary Reserves Action Group \(SERAG\)](#) and [Birdlife WA](#) taught participants how to monitor birds on the Swan Estuary. In djeran and makuru volunteers planted hundreds of seedlings at [Baigup Wetland](#) and [The Spectacles](#). During djilba the community installed jute rolls at Jorgensen Park to combat stream erosion. In kambarang we learned of the importance of wetland vegetation from Leonard Thorn and then re-potted wetland seedlings for rehabilitation of the wetlands at [The Wetlands Centre, Cockburn](#). As the sun beat down for hot birak, [Coastcare](#) leaders described how to conduct [marine debris surveys](#) and spoke of the impact that the community has in creating waste and in addressing it.

This program was supported by funding from the Western Australian Government's State NRM Program. Perth NRM gratefully acknowledges the involvement of SERAG, Baigup Wetland Interest Group, Friends of the Spectacles, The Wetlands Centre, Cockburn and Stirling Natural Environment Coastcare, and support of [Friends of Lake Gwelup](#), City of Kalamunda and DBCA.



Makuru Six Season Walk by Elder Noel Nannup at The Spectacles. Photo – Jeanmarie Collens.



Planting seedlings at Baigup Wetlands for djeran. Photo – Sharon Munro.

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Saving kyloring western ground parrot

ranked number one for
urgent post-fire action

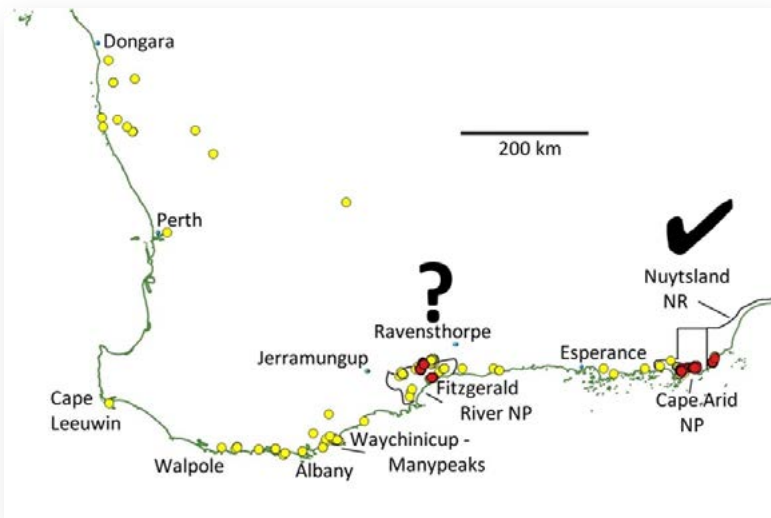
By Paul Wettin



*A captive western ground parrot at Perth Zoo.
Photo – Perth Zoo.*

Following the 2019–20 bushfires in southern and eastern Australia, the Federal Department of Agriculture, Water and the Environment recently released a [provisional list](#) of 113 animal species that have been identified by experts as the highest priorities for urgent management intervention. Kyloring, the western ground parrot (*Pezoporus wallicus flaviventris*), was the highest ranked bird species.

The western ground parrot is critically endangered because its population and distribution has declined precipitously in recent decades. The parrot's original distribution extended from near Dongara to east of Esperance but currently the only known wild population is confined to Cape Arid National Park and Nuytsland Nature Reserve.



Historically, western ground parrots were found along the coast of WA from Israelite Bay to Dongara (yellow symbols). They were last recorded in Waychinicup-Manypeaks in 2003 and by 2012 their distribution had contracted to Fitzgerald River National Park, Cape Arid National Park and Nuytsland Nature Reserve (red symbols). Further declines mean that there are only current confirmed records of western ground parrot at Cape Arid and Nuytsland, with the population estimate before the most recent bushfire as low as 150 birds in the wild.



Even prior to recent fires in this area, the parrot's population was estimated at less than 150, making it one of the world's rarest birds.

Since late 2015 several major wildfires have burnt large areas of Cape Arid/Nuytsland including "core" parrot habitat that is areas for feeding and roosting. The latest fire at Christmas 2019 was so severe that at one stage the fire crews had to abandon control efforts as conditions became too dangerous. Protecting the parrots and their habitat was the primary reason for this work, which also included Christmas and Boxing Days. Eventually the fire was brought under control due to the sterling work by the fire crews from DBCA and volunteer brigades. Despite this effort, the outcomes from the recent fires are:

- More than 50,000ha of Cape Arid and the Nuytsland Nature Reserve were burnt in the Christmas 2019 fire.
- This included an additional 12,000ha of core parrot habitat.
- The total reduction in core parrot habitat due to the major fires since 2015 is estimated to be around 80 percent.
- Less than 14,000ha of core habitat remains recently unburnt.



Christmas 2019 fire in Cape Arid. Photo – DBCA.

Continued next page ...

Post-fire planning by DBCA staff for the protection of the parrots and management of feral cats has been swift, with aerial [Eradicat® baiting](#) completed in January 2020. Ground baiting was completed in February accompanied by ongoing trapping of feral cats in remaining unburnt habitat.

Acoustic recording units (ARUs) are digital recorders which record the calls of the parrots as they fly from their roosting habitat to feeding areas just before sunrise and their return to roost just after sunset. Solar powered units are placed in the field and can be left for months. Periodically the data cards in the ARUs are collected, often using a helicopter due to the remote locations. This method of monitoring the parrots is the most effective as they are extremely rare and very cryptic in their preferred coastal heathland habitat. Very few people have seen a parrot in the wild!

Thirty ARUs are deployed by DBCA across all potential and occupied ground parrot habitat in Cape Arid and Nuytsland to hopefully record parrot calls and during the Christmas fire several of the acoustic recording units (ARUs) were collected and removed, but two were burnt. The redeployment of ARUs was completed in February. Camera-traps were deployed with the ARUs to monitor introduced predator activity.

The [Friends of the Western Ground Parrot](#) have a history since 2003 for supporting work by DBCA. An urgent [fund-raising campaign](#) commenced in January, and closed March 31. To date, over \$30,000 has been raised from private donors, some substantial. A US \$10,000 grant was achieved from the US-based [SPCA International](#). With these funds, the Friends are supporting the critical monitoring work in Cape Arid with the purchase of an additional 28 ARUs which will be used in upcoming surveys as well as the hire of helicopters to deploy them.



Melted, fire-damaged acoustic recording unit and solar panel after the Christmas 2019 fire. Suitable habitat for the western ground parrot at Cape Arid and Nuytsland Nature Reserve has been reduced by about 80 percent in the past five years as a result of bushfires. Photo – DBCA.

Also six additional solar powered ARUs were purchased for a Fitzgerald River National Park remote area survey where parrots may still reside. The Friends previously made a \$20,000 donation for the Fitzgerald River project in September 2019. We welcome additional [donations](#).

On 26 February the Federal Environment Minister Sussan Ley identified \$1 million in initial financial support in WA for priority wildlife and habitat recovery projects including “on-ground surveys and rapid assessment of threatened species; additional acoustic recording units and intensive



DBCA officer Abby Thomas reinstalling an ARU and solar panel in Cape Arid National Park. Photo – Jeff Pinder.

monitoring of western ground parrot.”

The results from all this work at Cape Arid and Fitzgerald River will be critical for DBCA determining the approximate numbers in the surviving population and locations of these critically endangered birds. This is critical information for planning recovery actions for this population and for a possible translocation strategy to establish a second wild population.

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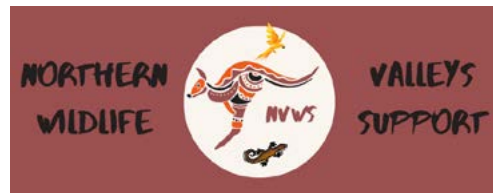
Rescuing, caring for and rehabilitating wildlife

By Northern Valleys Wildlife Support

Northern Valleys Wildlife Support was formed in 2014 and believe that the world's wildlife needs help and support more than ever before. The pressures wrought upon our wildlife have reached a crisis point and wildlife rehabilitation is an essential service. We have to make a difference! The message is clear, with global warming and the catastrophic fire events Australia has recently experienced, now is the time to keep wildlife at the forefront of people thoughts.

Northern Valleys Wildlife Support is a [volunteer wildlife rescue and rehabilitation network](#) of wildlife carers working with the public and government agencies. Our team rehabilitate most wildlife but specialise in macropods and marsupials. Our primary purpose is to rescue injured, displaced or orphaned wildlife, rehabilitate them and ultimately release them back into the wild. Our guiding mission is to do what is in the best interest of the wild animal to give them the best chance of future survival. We endeavour to keep our intake at a manageable level, by networking with other specialist rehabilitators ensuring all animals in our care get one-on-one attention from their primary carer.

We promote and support species recovery programs. We volunteer for habitat enhancement projects, clean up campaigns with [Tangaroa Blue](#), advise and liaise with local governments, businesses and other organisations and supply them with educational material and wildlife rescue kits. We have the



confidence and experience to undertake coordinated wildlife rescue after disasters.

Since the 12,000 ha Yanchep/Wilbinga fire this summer, feed and water stations have been strategically placed for the remaining wildlife, predominantly kangaroos and emus, although some quenda tracks have also been documented. These stations are not placed in the black zone but on the outskirts to encourage the wildlife to stay out of the burnt areas so it has time to rejuvenate. These stations are replenished three times a week. We find it is also important to have the same volunteers attend them as the wildlife becomes recognisable and records are made on progress of individual animals that have been deemed at risk and also of new animals who visit the stations. We find a drone is useful to search for injured wildlife after a fire, it also allows us to see where the unburnt areas are which, more often than not, harbour displaced wildlife taking refuge. An excellent way to monitor our stations is by the use of wildlife cameras. They enable us to view what wildlife are frequenting the area as well as any predators that prey on the wildlife. We currently have 15 joeys in care directly from the Yanchep fire and are phasing the feeding stations out slowly now as native grasses and herbs are beginning to grow which we have noticed the kangaroos are eating. The recent rains have made a big difference already.



Karri, a 350g western brush wallaby, in care and doing well. She was rescued from her deceased mum's pouch on Julimar Road, a notorious road for wildlife and vehicle collisions. If all goes well, she will be released back into the wild at a safe, soft release site on a private 1,000 acre property in south-west WA. Photo – Sonia Cooke.

Continued next page ...

Wildlife rehabilitation has advanced dramatically over the past 15 years. The need for wildlife rehabilitators to adapt and have regular training in new advancements is important. New methods come through both in medical care and husbandry. Our own record keeping and experience is paramount in supplying new carers with the knowledge they need. We are now able to successfully raise to release young that would historically have been euthanised due to their age or sickness.

We approached the City of Wanneroo and urged them to engage with DBCA to develop a whole of City strategy and fauna management policy after our involvement in the management of displaced kangaroos as a result of urban development. We strongly encourage rate payers to constantly put pressure on their local government to protect biodiversity by including nature reserves/wildlife pockets and corridors for all wildlife in future planning.

Protection of wildlife and WA's biodiversity is everyone's responsibility.

Contact

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We installed food and water stations from Yanchep through Two Rocks to Wilbinga and Caraban to assist wildlife recovery after the 12,000ha Yanchep/Wilbinga summer bushfire. Pictured is a station at Wilbinga on the western edge of the fire zone which has proven to be one of the most used. Food and water stations are slowly being phased out as the bushland regenerates. Photo – Mahala Panegyres.

Swan Alcoa Landcare Program provides funding for Perth revegetation and rehabilitation activities in 2020. [Applications](#) close 15 May.

Coastwest 2020/21 provides grants of \$5,000–\$50,000 to support coastal land managers and community organisations to rehabilitate, restore and enhance the Western Australian coast. [Applications](#) close 20 April.

Coastal Management Plan Assistance Program 2020/21 provides grants of up to \$125,000 to support coastal land managers to develop strategies and management plans for coastal areas that are, or are predicted to become, under pressure from a range of challenges. [Applications](#) close 20 April 2020.

Lake Clifton Stewardship Grants Program for Lake Clifton landholders [registered with Land for Wildlife](#). Small grants \$250–\$1,000 for managing and enhancing bushland on your property. Contact Jordon 6369 8800 or [email](#).

Alcoa Waroona Sustainability Fund 2020 for community development projects that make a positive contribution to the economic, social, recreational or environmental sustainability of communities within Waroona Shire. Grants \$10,000–\$50,000. [Applications](#) close 10 April.

NACC Biodiversity Community Grants up to \$5,000 for community groups working to improve the management and protection of threatened malleefowl and black-flanked rock wallaby in the Northern Agricultural Region. [Applications](#) assessed on a first in, first served basis.

Dreams for a Better World Community Grants up to \$50,000. Round 1: Better Living [applications](#) close 26 June.

Australian Bird Environment Foundation grants up to \$5,000 for on-ground conservation activities for Australian birds. [Applications](#) close 31 May.

Wettenhall Environment Trust small environmental grant scheme funds research and education projects on flora and fauna conservation. [Applications](#) open 1 April.

Australian Geographic Society sponsors Australian adventurers, scientific and environmental research and community projects up to \$10,000. [Applications](#) close 30 April.

Impact100 WA provides large \$100,000 grants for projects to be carried out in WA. [Applications](#) close 15 May.

AMP Tomorrow Fund seeking amazing Australians doing great things to share in \$1 million in grants. [Applications](#) opened March 2020.

Coca-Cola Foundation gives back one percent of its operating income to enhance the sustainability of local communities worldwide. Empowering women, protecting the environment and enhancing communities are priority areas. [Grants](#) awarded 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](#) open April.

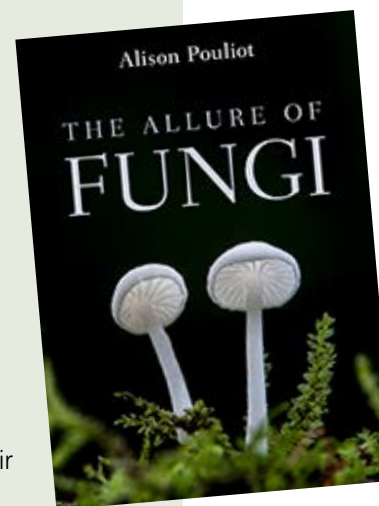
Local government community grants
These local governments provide small grants to their communities which can fund environmental groups' management and restoration projects. Eligibility varies. [Albany](#) closes 30 April, [Busselton](#) closes 30 April, [Cottesloe](#) closes 30 April, [Gosnells](#) closes 15 April, [Melville](#) open year round [Rockingham](#) closes 8 May, [Subiaco](#) closes 7 July.

New publications

Eucalypts of Western Australia – The South-West Coast and Ranges French, Malcolm and Dean Nicolle. *Scott Print*, 2019. \$49. This book describes in detail all 147 species and subspecies of naturally occurring eucalypts in the coastal and sub-coastal regions from south of Dongara to east of Ravensthorpe. Designed and written for those with no botanical training, but also catering for the professional, this book will be for those interested in appreciating, identifying and growing the unique eucalypts of Western Australia's south-west coast and ranges.



The Allure of Fungi Pouliot, Alison. *CSIRO Publishing* 2018. \$50. Fungi is presented through multiple perspectives – those of mycologists and ecologists, foragers and forayers, naturalists and farmers, aesthetes and artists, philosophers and traditional owners. It explores how a history of entrenched fears and misconceptions about fungi has led to their near absence in Australian ecological consciousness and biodiversity conservation.



Wildflowers and Wetland Plants of the Margaret River and its Hinterland Scott, Jane. *Cape to*

Cape Publishing, 2019. \$24.95. This guide to the flora of the Margaret River and its surrounds features photographs and descriptions of 290 plant species encountered on the river's journey from its source to the sea. It also describes characteristics of plant groups and discusses the river's environment and importance.

Website watch

Euclid makes identifying eucalypts easy by providing a free [interactive online key](#) to all 934 species, subspecies and varieties of *Angophora*, *Corymbia* and *Eucalyptus* in Australia. It covers morphology, geographic and ecological information as well as illustrations of features that are difficult to describe, such as leaf vein arrangement, with more than 12,000 images included. The revised fourth edition of Euclid was launched on 23 March 2020 (National Eucalypt Day) and is complemented by \$19.95 [Android and Apple app versions](#). The apps can operate without an internet connection, giving users interactive ID capabilities in the field from their mobile device.



iNaturalist helps you to [identify plants and animals](#). Record and share your observations and connect with a community of over 750,000 who can help you learn more about nature. The Australian Bowerbird app is closing down but its citizen science community will continue to thrive on a [BowerBird project within iNaturalist](#).

Environmental Recovery Project is a [citizen science initiative](#) that will use people's photos of bushfire affected areas to track the recovery of flora and fauna after fire. Citizen scientists use a project platform on [iNaturalist](#) to upload their photos and scientists from University of New South Wales will use these to understand how some areas recover better than others and calculate when and how animals return to burnt areas. There are no records for WA yet.

KeyBase an assortment of [interactive keys for native plant identification](#). These have often been digitised from printed floras from around Australia. Some can be very technical, but this is a great place to go if you have a tricky species that you have little information for or that has undergone taxonomic review.

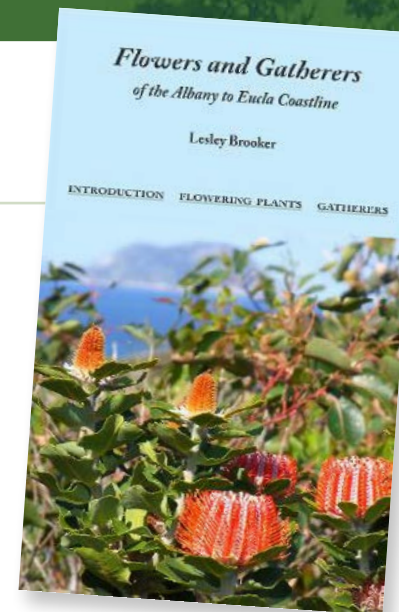
Meet the Ferals by the ABC Landline program has an episode for seven different feral animals and is available to watch on [iView](#).

Flowers and Gatherers of the Albany to Eucla Coastline is an interactive reference to more than 880 species of [flora of the south coast of Western Australia](#) between Albany and Eucla maintained by Lesley Brooker. It also includes a section on the botanists who collected and named the species, the gatherers. An ongoing project, begun in 2015, it is added to regularly as new data come to hand. Download the pdf file and explore.

Noongar Language and Culture, free [6-week online course](#) from Curtin University, CurtinX. 23 March – 4 May will take students 2–3 hours per week.



Wild Pollinator Count invites you to [count wild pollinators](#) in your local environment this autumn and help build a database on wild pollinator activity. The count week is 11–19 April and you can do it in your backyard.



Timing is everything, ClimateWatch is based on phenology, the study of periodic plant and animal life cycle events and how these are influenced by seasonal and interannual variations in climate. Simply start recording your [observations of indicator species](#) on the app or via the web page.

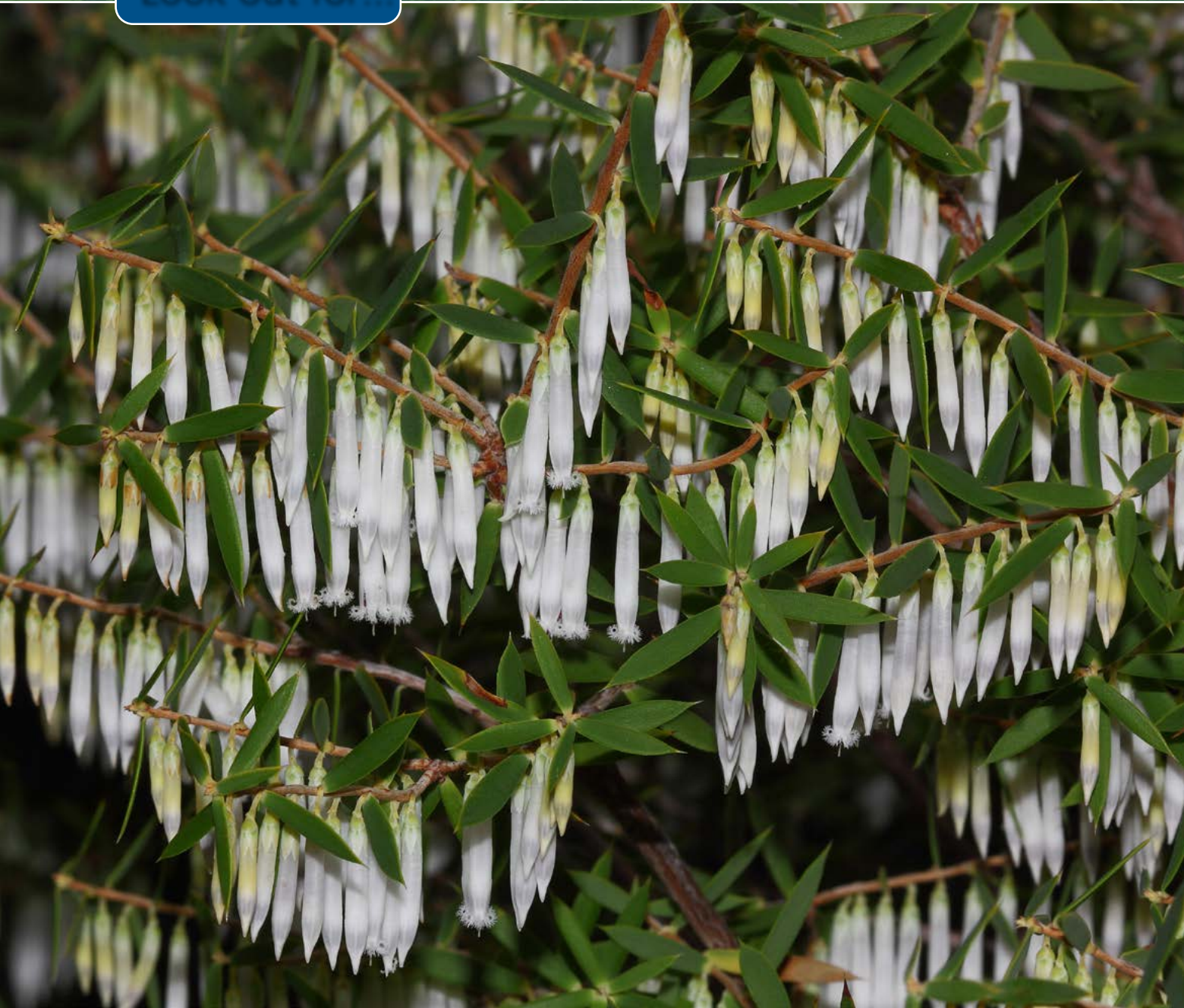
Western Shield – Camera Watch join this citizen science project and [identify native and feral animals from camera trap images](#). Discover the nightlife of the jarrah forest from your lounge room and assist in monitoring the effectiveness of feral animal management for native fauna recovery.

Recent Research

Animals (2020). Special Issue “The Application of Camera Trap Technology in Field Research”.

Meek PD, Ballard GA, Sparkes J, Robinson M, Nesbitt B, Fleming PJS (2019). Camera trap theft and vandalism: occurrence, cost, prevention and implications for wildlife research and management [Remote Sensing in Ecology and Conservation](#) 5(2), 160–168

Dundas SJ, Ruthrof KX, Hardy GES, and Fleming PA (2019). Pits or pictures: a comparative study of camera traps and pitfall trapping to survey small mammals and reptiles [Wildlife Research](#) 46, 104–113.



Look out for drooping leucopogon *by Julia Cullity*

Each autumn many heath plants (Ericaceae) start to bloom with their long tubular flowers, including the drooping leucopogon. The name for the genus *Leucopogon* is derived from the ancient Greek word for white beard and refers to the spreading white hairs on the corolla lobes. A recent increase in knowledge of our flora has led to [changes to taxonomy](#) and many species of *Leucopogon* (those with flowers in the leaf axils only) and all species of *Astroloma*, *Coleanthera* and *Croninia* have now been reclassified to the genus *Styphelia*. Work is underway to make those changes in the Western Australian Herbarium's collections and Florabase.

The flowers of many species of *Styphelia* mature into a sweet, succulent fruit. These are used as a snack by Aboriginal people and are much enjoyed by animals, particularly birds which help to spread the seed.

The drooping leucopogon, having large white flowers drooping from the leaf axils, is now included in the *Styphelia* genus (*Styphelia nitens* was [Leucopogon nutans](#)). You can find the showy, drooping leucopogon in the jarrah forest north and south of Perth. It flowers between April and June with the onset of flowering depending on moisture levels – they might be slow out of the blocks this year!

Photo – Rob Davis.