

bushland news



Issue 115 **Spring** 2020 *Time of Djilba and Kambarang in the Noongar calendar.*

Celebrating 30 years of Ramsar wetlands in Perth-Peel

Photo – Bryony Fremlin.



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

Summer Bushland News

Summer *Bushland News* contributions should be sent to [Urban Nature](#) by **2 December 2020**. *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.

Celebrating 30 years of Ramsar wetlands in Perth-Peel

By Michael Coote

The State is celebrating 30 years since the first listing of nine iconic wetlands under the international convention on wetlands, the Ramsar Convention in June 1990. The [Forrestdale](#) and [Thomsons Lakes](#) and the [Peel-Yalgorup System](#) Ramsar sites were two of these that are within a short drive from Perth and loved by many local residents and bird lovers from Western Australia and further afield, not to mention the thousands of waterbirds that visit these wetlands from overseas and the ones that call it their home all year round.



A southwestern snake-necked turtle, one of the small residents of Lake McLarty in the Peel-Yalgorup Ramsar site. Photo – DBCA.

Forrestdale and Thomsons Lakes play an important role in maintaining wetland biodiversity as they are the best remaining examples of brackish, seasonal lakes with extensive fringing sedgeland that were once typical of wetlands on the Swan Coastal Plain. In particular, these lakes play an important role for providing a safe place for breeding of resident waterbirds such as black swans. Eighty-five species of waterbirds have been recorded at the two lakes and 27 of these have been recorded breeding.

The fringing vegetation around the lakes provide safe habitat for a large number of terrestrial birds and other vertebrate species including the uncommon skink, the Perth slider (*Lerista lineata*), six species of frogs, and the southwestern snake-necked turtle (*Chelodina colliei*). Both lakes contain rich and diverse communities of aquatic invertebrates, which are a main food source for the many faunal species, including the migratory waders.

Critical to the conservation of Forrestdale and Thomsons Lakes is the hard work and many hours of on-ground activity that staff from the Department of Biodiversity, Conservation and Attractions (DBCA) and the [Friends of Forrestdale](#) dedicate to managing the threats from weeds, feral animals and climate change. As a result of all this hard work, we have incredibly peaceful, yet active wetland systems that invite the visitor to explore along signposted walkways and paths.



Entrance walkway to Forrestdale Lake with some of the Friends group. Photo – DBCA.

The Peel-Yalgorup Ramsar site is located in and around the Peel and Harvey estuaries in Mandurah, just 80km south of Perth and include the lakes of Yalgorup National Park. The system is one of the most diverse wetland systems listed under the Ramsar Convention in Australia, containing estuaries, rivers, saline lakes and freshwater lakes and marshes.

The site is the most important area for waterbirds in south-western Australia. Large populations of waterbirds utilise the estuary and lakes and there is a diversity of fish, aquatic invertebrates and fringing salt marsh vegetation. In addition, the system contains rare microbial communities in the form of thrombolites. The thrombolites at Lake Clifton are considered to be 2,000 years old. They are one of only two examples of living thrombolites in Western Australia, and a handful in the world.

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The [Peel-Yalgorup Ramsar site](#) lies within Bindjareb country, a dialect group of the Noongar. It contains hundreds of sites of significance to the Indigenous community, including sites of artefact scatter, camp sites, ceremonial sites, fish traps, and skeletal remains.

The [Peel-Harvey Catchment Council](#) coordinate oversight of the system and have a tremendous track record for conserving the many natural values of the wetlands. The group partners with staff from DBCA and the Department of Water and Environmental Regulation, four local governments that surround the system, and community groups to conduct on-ground restoration and scientific investigations, working to ensure there is a balance between protecting natural habitats and allowing a great experience for the thousands of locals and visitors to the system.



A view across Thomsons Lake showing important habitat for resident waterbirds. Photo – Ezgi Perincek.



The Serpentine River joins the Peel Estuary in the Peel-Yalgorup Ramsar site. Photo – PHCC.

The Peel Inlet and Harvey Estuary system supports the largest commercial and recreational estuarine fishery in Western Australia. The estuarine fishery was [certified as sustainable](#) by the Marine Stewardship Council in 2016, a good indicator of the balance that has been achieved between ecological requirements and the pressures of recreational and commercial fishing and other activities that take place there.

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A note from the editor

By Anna Wisolith

With Julia Cullity having been seconded to a new role temporarily, I will be acting editor of Bushland News for the next few issues. Part of the Nature Conservation team, I have spent the better part of the last decade working on the Banksia Woodland Restoration project, helping to restore banksia woodland to previously weedy paddocks around Anketell Road and Forrestdale Lake.

In this issue of Bushland News, we put the spotlight on wetlands. Having spent my honours year at uni studying the western swamp tortoise, I spent many an hour radio-tracking tortoises, wading knee-deep or more in the water at Ellen Brook Nature Reserve. I would often take breaks to pause and admire the changing light throughout the day as it reflected on the pools of water and bounced off the hills in the distance, a reverie sometimes broken by the sudden *THWAP* of a dragonfly flying right into my face! Wetlands are special places to many of us, they can be beautiful, peaceful spots and also bustling with a diversity of life. Our cover story this issue takes a look at the internationally important wetlands that are right here on our doorstep, celebrating their ecological and cultural value. We also explore some of the threats our wetlands face with an increasingly dry climate meaning shorter inundation periods and encroaching weeds.

Our *What's on* section is back this issue, with life in Western Australia having returned to some level of normality in this COVID-19 era and we hope the situation remains well controlled. We have been lucky in WA, with most regional [travel restrictions](#) having been lifted in time for spring, so get out there, explore our wonderful State and enjoy wildflower season!

Urban Nature update *By Grazyna Paczkowska*

Restoration continues at Penguin Island

All volunteer activities involving habitat restoration projects on Penguin Island have been suspended until further notice due to COVID-19. Even when the restrictions were partly lifted, getting the volunteers to the island is proving to be a logistical nightmare – the only way to and from the island is on a small DBCA boat where it is impossible to enforce the two square metre distancing rule. However, do not despair, not all the previous work is lost. DBCA Penguin Island Experience and marine ranger staff stepped in and have been helping to carry the projects over until volunteers are allowed back to the island. With their help, more restoration cages were set up and weeded.

The staff also assisted with seed work at the DBCA Western Australian Seed Centre, Kensington. Seed of the Australian hollyhock (*Malva preissiana*) collected from Carnac and Shag Islands was cleaned, quantified and a subset prepared for long-term storage (at minus 20°C). This seed will be used to reintroduce the malva to Penguin Island. The team also had a go at setting up germination trials for [nitre bush](#) (*Nitraria billardierei*), a species that we have experienced difficulties in establishing in our restoration trials. This is an important native species on the island as it provides very important habitat for Penguin Island fauna.



*Penguin Island Experience staff Melanie Croft (front) and Theda Morrissey at the DBCA Western Australian Seed Centre, Kensington cleaning Australian hollyhock (*Malva preissiana*) seed collected from Carnac and Shag Islands, which will be used to reintroduce the plant to Penguin Island. Photo – Grazyna Paczkowska.*

Continued next page ...

Urban Nature update *By Grazyna Paczkowska*

Weed management begins at Hymus block

Hymus block (173ha) is the western portion of Lowlands Nature Reserve (1,312ha). The majority of the site, approximately 115ha, is a banksia woodland in good to excellent vegetation condition that provides habitat for the threatened glossy-leaved hammer orchid (*Drakaea elastica*), listed as critically endangered under the *Biodiversity Conservation Act 2016* and endangered under the *Environment Protection and Biodiversity Conservation Act 1999*.

Two large, hot summer fires have recently impacted on [Hymus block](#) with 97ha burnt in January 2016, and 120ha burnt in January 2020, resulting in the entire patch being burnt in the past four years. The disturbance associated with fire creates conditions for increased weed invasion due to fire releasing the dormancy of seed or corms, enhanced seed production and germination after fire, often with increased weed growth due to lack of competition from surrounding native vegetation and increased soil nutrient levels.

In spring 2019, Urban Nature mapped the distribution of the more serious weeds within the reserve. This information has become the basis for a successfully

funded DBCA fire rehabilitation plan that includes weed control for some 120ha of the latest fire affected area. However, no funding was available to tackle the weed management within the area affected by the 2016 fire that is predominantly occupied by regenerating banksia woodland. And this is where Peel-Harvey Catchment Council (PHCC) came to the rescue, providing additional funding for weed management in this area as part of their *A world for woodlands project*. This funding of \$8,000 will allow for control of weed species such as Cape tulip, wild gladioli and arum lilies that have a high ecological impact and rapid invasiveness.

Before starting any weed management and to make sure that the rare orchid is not impacted by any on-ground activities, DBCA staff with the help of the Mandurah Regional Herbarium Volunteers surveyed the area for the plants. It is hoped that initial post-fire weed management for this high-quality banksia woodland site will be extended for another two years courtesy of PHCC.



*The threatened glossy-leaved hammer orchid (*Drakaea elastica*) flowers in spring with a single, slender flowering stem up to 30cm tall. Photo – Andrew Crawford.*



*The leaves of *Drakaea elastica* are a characteristic glossy green, round to heart-shaped with a diameter of 1–3cm, and often seen in groups. Photo – Andrew Crawford.*



Surveying for the glossy-leaved hammer orchid is very tricky as the leaves are so small and difficult to spot on the ground, so the assistance from the Mandurah Regional Herbarium Volunteers was much appreciated by DBCA. Photo – Julia Cullity.

Hesperantha falcata

another invasive species from the iris family *By Grazyna Paczkowska*



Hesperantha falcata is a geophyte so it dies back in summer to its underground storage organ – the corm. Removing the outer corm allows us to check the stage of corm exhaustion. The shrivelled, slightly darkened and flatter-shaped parent corm sits below the fresher, paler, larger upturned teacup-shaped developing daughter corm. For weed control to be effective, herbicide application should be timed for when the parent corm is exhausted and the daughter corm is still developing. Photo – Grazyna Paczkowska.

FloraBase indicates that Western Australia has over 90 species in the Iridaceae family. These are commonly known as irises meaning 'rainbow' in reference to its many flower colours. And who doesn't love our native irises such as the purple flag (*Patersonia occidentalis*) or the morning iris (*Orthrosanthus laxus*). However, of the species recorded in Western Australia only 31 are native and the rest – a whopping two-thirds – are introduced, with many of them known to be serious environmental weeds of our bushlands and wetlands such as the dreaded watsonias, Cape tulips, sparaxis, gladioli, babianas and freesias.

Hesperantha falcata is another weedy iris that has naturalised in many parts of south-west WA.

Biology

Hesperantha falcata is native to the southern African winter-rainfall zone. It is a slender, small (10 to 45cm) perennial geophyte that is annually renewed from its underground storage organ, a corm. Its corms are characteristically shaped like an upturned teacup. *Hesperantha falcata* can be confused with freesia and sparaxis. To tell them apart, dig them up to test for the characteristic shaped corms versus round corms in the other species.

The genus name is derived from the Greek words hesperos, meaning evening, and anthos, meaning flower. True to its name, the white flowers of *Hesperantha falcata*, which are purplish-brown on the outside of the petals, open in the late afternoon to evening and close before sunrise. Only one or two flowers on the spike are open at any time. Three to five basal leaves are produced, with the species name *falcata* referring to its leaf shape, which is curved like a scythe or sickle.



Hesperantha falcata is a slender, small perennial geophyte up to 45cm with characteristically scythe-shaped leaves, and white flowers with maroon undersides and buds. Photo – Kate Brown.

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Dispersal

It is mainly spread by seed, and water flow seems to play an important role in the weed's dispersal.

Control

Hesperantha control is difficult due to the small size of the plants, with little surface area available for herbicide absorption and the wetland environments the plants tend to grow in and invade.

The current herbicide [control recommendations](#) are to spot spray metsulfuron methyl 0.2g/15L + Pulse® or 2.5–5g/ha + Pulse® just at corm exhaustion, usually in early spring. However, herbicide control might not be possible if the weed is growing in wetland soils that are still under water or wet.

Due to the slender size of the plants, hand weeding is not feasible for bigger infestations.

Impacts

Hesperantha is not a new arrival to WA. The first collection of this weed was made in 1896 by H.W. Alcock with the locality given as 'Swan District'. Considering how long it has been in the State, the weed is still mostly confined to poorly drained winter inundated soils of the wetlands and damp areas of the Swan Coastal Plain and in the Darling Ranges. *Hesperantha falcata* is on the DBCA Swan Region weed list as an environmental weed that has a high ecological impact and rapid invasiveness. The weed has the ability to invade undisturbed bushland and wetlands where it can form dense infestations that can compete and displace native geophytes. The critically endangered plant communities of the Clay Pans of the Swan Coastal Plain are susceptible to *Hesperantha* invasion and the weed has been recorded in these communities at the Greater Brixton Street Wetlands and Ellen Brook Nature Reserve.



Once established, *Hesperantha falcata* forms a dense monoculture displacing the native species in the winter-wet claypans and clay flats. The severity of infestation at Ellen Brook Nature Reserve can best be seen in the late afternoon when the flowers open. Photo – Kate Brown.

Take away message:

- Watch out for *Hesperantha falcata*, keep a record of any new infestations and lodge specimens with the [Western Australian Herbarium](#) – the current distribution seems to be under-reported.
- Herbicide control is effective but difficult in wetland environments.
- Follow-up control is recommended as there is high seedling recruitment through seed that can persist in the soil up to five years.
- Timing of herbicide control is very important, and needs to be done just at corm exhaustion (ranges from late July to August). This can be checked by digging them up and removing the outer corm covering. Compare healthy corms which are pearly white, firm and crisp in texture to exhausted corms which discolour to beige, soften and wrinkle.

More information

Goldblatt P (2003) A Synoptic Review of the African Genus *Hesperantha* (Iridaceae: Crocoideae) [Annals of the Missouri Botanical Garden](#) 90(3), 390-443.

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Waterbirds return to Lake McLarty

By Geoff Barrett and Heidi Bucktin

Lake McLarty is an internationally significant wetland located 30km south of Mandurah, that was under serious risk of ecological collapse. Part of the Peel-Yalgorup Ramsar site, it is one of the few fresh to brackish water wetlands available for migratory waders.

Freshwater wetlands are the most threatened habitat type globally. Lake McLarty is a shallow freshwater lake with a narrow fringe of riparian paperbarks (*Melaleuca* species) and flooded gums (*Eucalyptus rudis*). The lake qualifies as a wetland of international significance based on its large waterbird population, with over 20,000 waterbirds recorded on the reserve on 19 separate dates between 1996 and 2008. The lake also supports a number of

threatened, international migratory wader species, such as the curlew sandpiper (*Calidris ferruginea*), common greenshank (*Tringa nebularia*), red-necked stint (*Calidris ruficollis*) and sharp-tailed sandpiper (*Calidris acuminata*).

Monitoring by the Peel-Harvey Catchment Council (PHCC) and DBCA revealed how Lake McLarty has been drying out over time. Originally, the lake would dry out for between one to three months each year but since 2006, it has been dry for between four and seven months each year. This increased drying has led to deep cracks in the clay beds, exposing pyritic sediments and leading to acid sulphate soils.

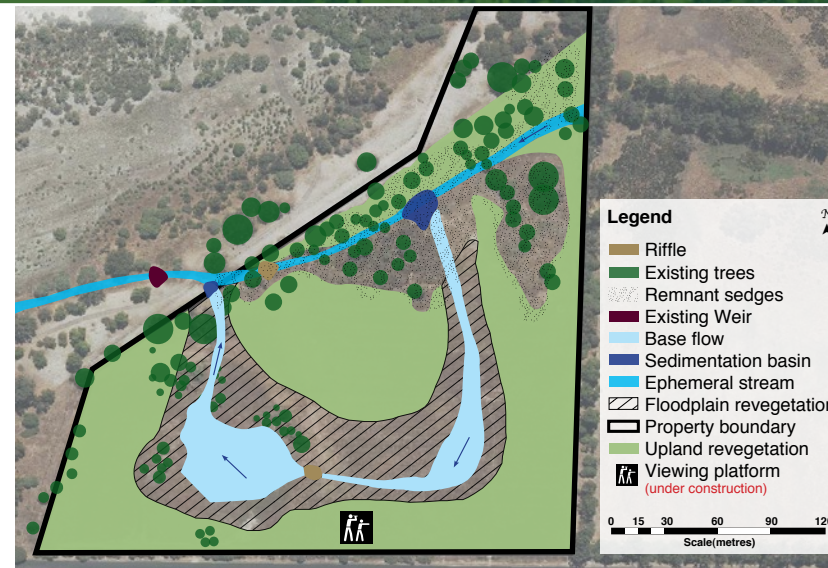
Lake McLarty qualifies as a wetland of international significance based on the large number of waterbirds that use it, with in excess of 20,000 waterbirds regularly recorded on the lake between 1996 and 2008. Photo – Bob Paterson.

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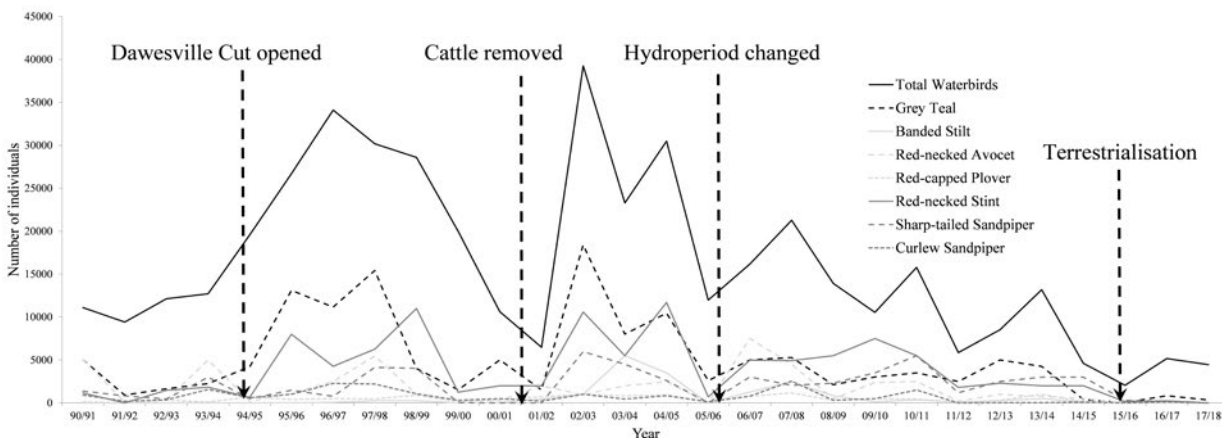
The lower winter water levels and extended dry periods have also allowed perennial vegetation to grow across the lakebed (terrestrialisation), resulting in the removal of the mudflats where the waders feed. Since 2006, waterbird numbers have significantly declined with increasing dry periods at Lake McLarty, and the resulting terrestrialisation in 2016 saw their numbers drop further.

Rehydration of the lake

In an effort to improve the surface water run-off into Lake McLarty, PHCC and DBCA Swan Coastal District developed The Living Stream Water Quality Improvement Project, which began by diverting water from an existing agricultural drain into the south-eastern corner of the lake. The Department subsequently purchased land on Mills Road directly upstream from the lake to pass water from this drain through a nutrient stripping basin, and completed earthworks to enhance the natural palusplain wetland in May 2020. Funding from the Commonwealth National Landcare Program II also enabled the weed control, preparation, fencing and revegetation of the 7.2ha nutrient stripping site with 23,000 wetland plants. In July 2020, water was diverted through this nutrient retention system with surface water being directed from the drain, through shallow riffles and a revegetated swale where nutrients are removed, before returning to the drain and into the lake.



The Living Stream Water Quality Improvement Project is a restoration project to control and filter drainage water through a stream nutrient filtration swale on Mills Road into Lake McLarty. Water is directed out of the drain and through a shallow, revegetated wetland area where nutrients are removed from the water, before entering the south-eastern corner of Lake McLarty. Funded by DBCA and Peel-Harvey Catchment Council National Landcare Program II. Image – DBCA.



The peak number of all waterbirds and the seven species for which Lake McLarty is internationally important are shown here within each 12-month period from May to April from 1990–91 to 2017–18. The dashed arrows show factors hypothesised to have influenced waterbird numbers: Dawesville Cut opened, cattle removed, changed hydroperiod (time the wetland is covered in water) and subsequent terrestrialisation. Graph adapted from Craig et al. (2018).



In February 2012 (left), Lake McLarty was comprised mostly of exposed silty mud providing excellent habitat for migratory and resident waders. In February 2018 (below), after several years of low winter water levels and extended dry summers, the lakebed had been colonised by grasses (Poaceae) and samphires (Chenopodiaceae), greatly reducing the area of exposed silty mud and quality of the habitat for waders. Photos – Geoff Barrett and Michael Craig.

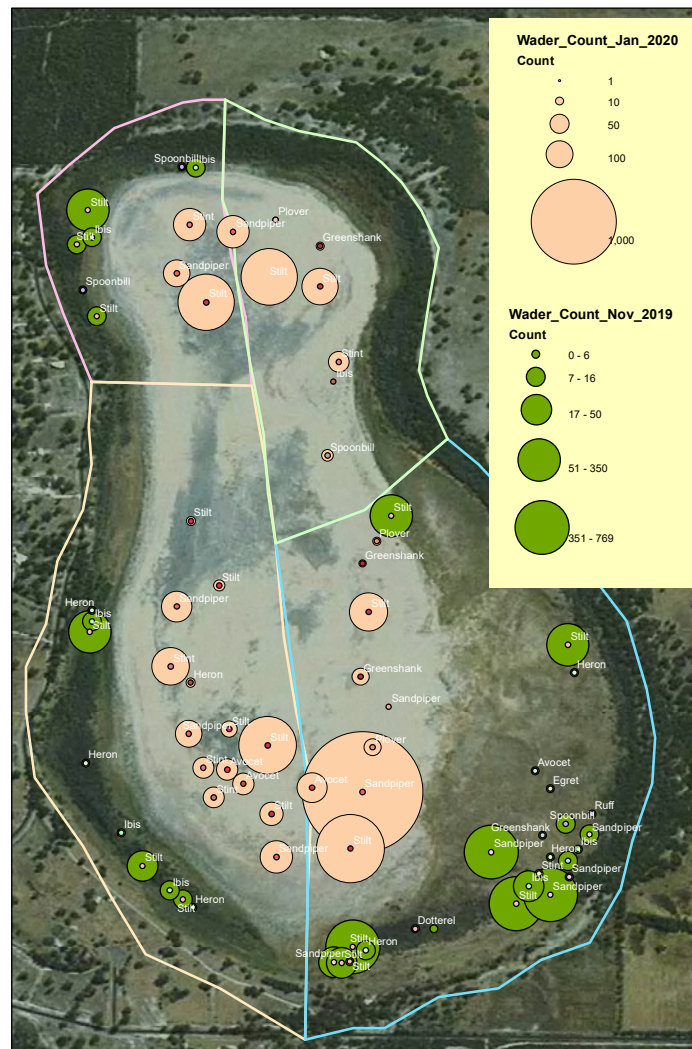
Recovery

The PHCC project Saving Lake McLarty was funded in 2018 under the Federal Community Stewardship Grants scheme, with the purpose of assessing the recent expansion of acid sulphate soils and addressing the underlying issue of reduced water supply to the lake. In collaboration with the Friends of Lake McLarty, BirdLife and DBCA, PHCC is monitoring the health of the lake through wader bird and aquatic invertebrate surveys, as well as water quality and vegetation measurements.

The results indicate that following rehydration of the lake with water from the drain, the water quality is stable and fresh, and most encouragingly, remains alkaline while inundated. Not surprisingly, however, there are elevated nutrients and pH levels have dropped in recent years.



A common greenshank (*Tringa nebularia*), one of the international migratory waders returning to Lake McLarty. Photo – Claire Greenwell.



Recent wader counts were encouraging with more than 3,000 migratory waders, mostly sharp-tailed sandpipers, recorded in January 2020. These surveys also show how the birds forage towards the centre of the lake as it dries out. In January 2020, up to 1,000 waterbirds (mostly sharp-tailed sandpipers) were observed foraging towards the centre of Lake McLarty (large, pink circle), while in November 2019 they had been feeding in exposed mud flats around the south-eastern margin of the wetland (green circles). Photo – DBCA.

At least 116 aquatic invertebrate species were collected in October 2019, and it is estimated that about 141 species may have been present within the areas sampled. PHCC research has shown that this exceptionally diverse invertebrate community is related to the diverse sediment and geological foundation, which forms a variety of wetland habitats.

Where to from here?

Further hydrology investigations are being undertaken to improve our knowledge of the groundwater function and other options for increasing the winter water levels at Lake McLarty are being considered.

PHCC has funding for Lake McLarty until 2022 through the Commonwealth National Landcare Program II and State Natural Resource Management Program, and will continue to work with the Friends of Lake McLarty, BirdLife and DBCA to maintain the values of Lake McLarty and improve our understanding of the lake's hydrology.

More information

Craig MD, Moore GI, Kirkby T, Singor M, Russell B, Graff J (2018) Birds of Lake McLarty Nature Reserve, Western Australia: an internationally important wetland facing an uncertain future [Records of the Western Australian Museum](#) 33, 145-170.

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A challenging year for Mary Carroll Wetland

By Unice Robinson

A beautiful view of Mary Carroll Wetland, marred by the unusually shallow water and mounds of couch grass that allow predators to access all areas of the wetland and threaten the waterbirds nesting there. Photo – Unice Robinson.

It has been a very interesting and a challenging year to date – not only have virus lockdowns been affecting volunteers, meaning on-ground work slowed, but rain didn't arrive as expected. Mary Carroll Wetland is a seasonal basin which has some overflow drains leading into it, so it is totally dependent on rain.

At the end of May, our swans arrived to a couple of puddles and needed to walk from one puddle to another – a very unusual sight. The [Friends of Mary Carroll Wetland](#) started our bushland plantings as usual in June, into dry ground. Pied stilts were of course in abundance (usually leaving our wetland around September). In June we saw a little more water in the wetland but at times it dried up again. By July we saw a thin covering of water across about half of the wetland.

Two years ago, we lost our main group of Eurasian coots to [botulism](#). This year we saw arrival of more than 60 Eurasian coots, approximately 50 grey teal ducks and about the same of pacific black ducks, a high number compared to previous years. Where did they come from – a drier wetland or lost wetland? Having so many birds on the wetland with so little water was a concern due to a lack of food sources, an increase in nutrient levels and the threat of predatory animals. Foxes, dogs, cats, and humans can access all parts of our wetland due to the lack of water and presence of couch grass piles.

The Australian white ibis and pied cormorants started arriving to nest with little to no water under their nesting sites, again a first.

August saw a bit more rain, and water coverage across our wetland increased. Our pair of swans commenced building their nest only to have a large dog chase them. Thank you to the City of

Gosnells for their quick response with a letter drop, rangers notified and signage placed throughout the wetland reminding visitors to keep their dogs on leads. Our swans did not return to their half-finished nest but after trying again in another part of the wetland have had six healthy cygnets.

Wonderful Australian shelduck parents have lost all their young this year to date. Under the trees there is still little water so they are spending all their time in the open, with Australian ravens and birds of prey having a field day. Even when they pop underwater, they are still close to the surface where they can easily be dragged out of the water.

It was exciting to see six egrets arrive at the wetland and stand around. Again unusual, as they usually arrive in January to March as our water recedes. They stayed a week.

In September, water coverage was about two-thirds with 20 pied stilts, over 60 Eurasian coots, 20 grey teal ducks, and pacific black duck numbers back to normalish. Ibis chicks are arriving, with pink-eared ducks, shovelers, and pied cormorants all nesting. Moaning frog holes are at least a metre from water in most areas, and I have doubts about their tadpoles surviving this year. We created bird islands from dead acacia branches earlier in the year; these have become motorbike frog havens on the edge of the water where they would normally have been calling from under melaleucas.

From the walkway our wetland looks beautiful until you realise how shallow the water is. Rehabilitation around the wetland is going well, although we were once again planting into dry sand and planting sedges in mud. We are hoping for late heavy rains but then face the possibility of botulism.



Egrets typically arrive in January to March as the water recedes, but unusually this year landed at Mary Carroll Wetland in spring and hung around for a week in the shallow water. Photo – Unice Robinson.

The Friends of Mary Carroll Wetland are looking forward to 2021 but worry that this year for our wetland will become the norm. If it is to become the new normal, how do we protect our waterbirds?

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Fundraise with Containers for Change



A new Statewide container deposit scheme [Containers for Change](#) launched on 1 October 2020, enabling consumers to cash in eligible empty drink containers for 10 cents each. Run by not-for-profit company Western Australia Return Recycle Renew, the scheme aims to increase recycling, reduce litter and landfill, create jobs, and provide financial benefit to community groups through fundraising opportunities.

How it works

The easiest way to receive a refund is to [sign up](#) for a scheme ID, which will allow payment by direct deposit into your bank account. Alternatively, you can receive your refund in the form of cash or a voucher. Vouchers are offered as a refund method at some refund points and may be used at certain retail outlets such as local supermarkets.

Containers can also be donated by dropping them off at a donation location or donating refunds directly to a charity, community group or school. Friends groups, why not use the scheme to [fundraise](#)? Register with a scheme ID and encourage members of your community to donate containers or refunds to help care for their local bushland. Your group can become a physical or a virtual donation point. To be a physical donation point you will first need to set up a bin or cage where people can drop off eligible containers, and then arrange delivery of the containers to a refund point where they will be counted and the refund deposited to your nominated bank account. Or more simply, be a virtual donation point by getting supporters to donate their refunds using your group's scheme ID.

What containers are eligible?

The scheme targets those [drink containers](#) that are most often littered. Most 150ml to 3L drink containers made from aluminium, glass, plastic, steel and liquid paperboard are eligible. Examples include soft drink cans and bottles, bottled water, small flavoured milk drinks, beer and cider cans or bottles, sports drinks and spirit-based mixed drinks. Containers must be empty and have their lids removed (lids can be brought to the refund points for recycling too). Not eligible for refund are containers smaller than 150ml or larger than 3L, as well as plain milk containers, cordial containers and glass wine bottles.

✓ ELIGIBLE CONTAINERS



Most glass, plastic, aluminium, steel and paper-based cartons between 150mL and 3L.

✗ INELIGIBLE CONTAINERS



Containers not commonly found in litter, including all plain milk, flavoured milks 1L and above, pure juices drinks, wine and spirit bottles, cordials.



Containers for Change is a new Statewide container deposit scheme that allows consumers to cash in eligible drink containers for 10 cents each, in an aim to increase recycling and reduce litter and landfill. You can use the scheme to help raise funds for your community group. Photo – Containers for Change.

Where to return?

You can [search](#) for your nearest refund point by postcode or suburb. There are four types of refund points:

- Bag drop: you bag up, tag and drop off your containers, and once they have been processed you will receive a refund via electronic funds transfer (EFT) through your scheme ID.
- Depots: containers are counted by staff or machine and a refund is given via cash or EFT.
- Pop up: a scheduled service where operators meet consumers to process containers and provide refunds by cash, EFT or voucher.
- Reverse vending machines: these take uncrushed containers, counting and checking their eligibility via barcode reader, and provide refunds via EFT or voucher.

Across Western Australia there are currently 200 refund points including regional and remote locations.

Duckling care at Darling Range Wildlife Shelter *By Michelle Hazelwood*

[Darling Range Wildlife Shelter](#) (DRWS) is a volunteer and non-for-profit organisation whose purpose is to rehabilitate native wildlife and promote the value of biodiversity. Volunteers rescue, provide care and rehabilitate Australian native wildlife in immediate need including threatened, endangered and migratory species, aiming for release back into their natural environment. Wetlands are a vital part of our ecosystem and the species which depend on them have an enormous impact on the work undertaken by volunteer wildlife rehabilitators.

At DRWS, ducklings comprise over 20% of annual admissions. Caring for orphaned, newly hatched wild ducklings may seem simple in theory, however, is an

intensive and specialised process. Rehabilitators assess and provide care in consideration of duckling age, whether rescued individually or with siblings, injury, period of time under stress, exposure to cold or heat, and diet. Duckling rehabilitation starts from the point of admission. Due to the need for specialised protocols we have a dedicated 'Duckling House' and associated care manual.

Volunteers frequently admit orphaned ducklings and injured adults following attack, trauma or displacement. With ongoing loss of large trees, duck species who nest in hollows struggle to secure a good location. Ground nesters are challenged to find safe sites where sitting parents will not be taken by predators or disturbed by dogs and people.

Containing duck families and shielding them on journeys between hatching and habitat sites is not an unusual activity for volunteer rehabilitators. Adult ducks generally must walk their hatchlings to the nearest water body for survival. A sheltered nesting area in someone's pool yard can be up to 3km away from the nearest wetland. Safe passage is uncommon due to habitat loss and wetland fragmentation. Roads and predators are repeated hazards.

DRWS has a supportive relationship with the Armadale Gosnells Landcare Group. While wildlife admissions to the shelter help identify areas needing increased vegetation and habitat, the Landcare group are working hard to revegetate such sites. Both groups are focussed on mobilising the community to report wildlife in need and assist with planting native vegetation.

Although we are not singularly focussed on managing wetland species, DRWS has dedicated waterbird facilities, with currently more than 100 wetland dependent animals in care for rehabilitation including over 90 ducklings, swans, and turtles.



An Australian wood duck (Chenonetta jubata) duckling, one of the many very cute charges under the care of the Darling Range Wildlife Shelter. Photo – Michelle Hazelwood.

In 2020, we recorded an increase in wildlife admissions of over 50%. Aged from 14 to 85, our volunteer workforce provides nearly 40,000 hours of service yearly and we rely heavily on this support to keep things running. If you are interested in making a commitment to volunteer with DRWS, please contact us for more information on how you can get involved.

Contact

Darling Range Wildlife Centre
email info@darlingrangewildlife.com.au
phone 9394 0885



A juvenile pied cormorant (Phalacrocorax varius) being prepared for release in one of the waterbird enclosures at Darling Range Wildlife Shelter. Photo – Kelly Pilgrim-Byrne.

Pest warning for spring travel bugs *By Jodie Gysen*

Travellers heading out into Western Australia's wild blue yonder this spring are being asked to join biosecurity efforts by keeping an eye out for unwanted plant and animal pests, and to take precautions to prevent the spread of pests, weeds and disease throughout the State.

The Department of Primary Industries and Regional Development (DPIRD) is warning travellers that weed seeds, disease spores and pests are expert hitchhikers, unknowingly hiding in or on clothes, camping gear and cars.

Despite border closures preventing travellers from other states, there is still the potential to spread pests that are already present in Western Australia. These pests have the potential to significantly impact our agriculture industries, environment and lifestyles.

Everyone would know about having to surrender their fresh fruit and vegetables at the State border. But you might not know that fruit and vegetables cannot be taken into the Ord River Irrigation Area near Kununurra to prevent the introduction of Mediterranean fruit fly to the area.

Continued next page ...



Spring is a great time to get out and enjoy the spectacular wildflowers, and there are some simple actions you can take while travelling to ensure you don't contribute to the spread of pests, weeds and disease throughout our State. Photo – Mark Brundrett.

Tips for travellers:

- Fresh fruit and vegetables can harbour pests such as Mediterranean fruit fly and Queensland fruit fly. Play it safe by buying as you go, or dispose of produce in amnesty bins that are available throughout the State.
- Brush down luggage, contents, shoes, clothing, tents, sleeping bags and other items before moving onto the next location.
- Check your socks, shoes and clothing for burrs and seeds.
- Clean and dry all boating and fishing gear before fishing another waterway.
- Shake out car mats before moving on.
- Regularly remove bugs in car grills and check for seeds trapped in the tire grooves.
- Dispose of food waste in black plastic bags before placing in rubbish bins. This will prevent spread of pests if food is infested.
- Do not dispose of food waste in waterways – particularly crustacean heads and shells.
- Place dry food in airtight containers (including cereal, and packaged grains, beans, lentils and seeds).
- Always check your pet's fur and paws for bugs, seeds and burrs before entering your vehicle.
- Keep your dogs on a leash at all times as poison 1080 baits are used throughout the State for the control of feral pests such as foxes, pigs and wild dogs.
- Respect farm biosecurity. Call owners before entering a property.

Or that honey and bee products cannot be taken out of the Kimberley region to prevent the spread of small hive beetle to the rest of the State.

Western Australia has traditionally had a unique status of being relatively free from serious pests, but unfortunately travel has increased the risk of pest incursions.

Expert hitchhikers of high biosecurity concern to DPIRD in 2020 include Russian wheat aphid, European wasps, cane toads, any weeds with burrs, and fall armyworm.

There are also pests not established in Western Australia that could just as easily be spread by travellers if they were to arrive, which makes biosecurity awareness and practices even more important. Examples include red imported fire ant, Queensland fruit fly, plant diseases such as [myrtle rust](#), [red witchweed](#) and marine threats such as white spot syndrome in prawns.

DPIRD has suggested simple actions that travellers can take to keep the State safe from these biosecurity threats. These guidelines are not stringent and can easily become part of your normal travelling practices.

Keep an eye out and report any pests, weeds and plant damage that are unusual or suspicious. Also watch for birds such as starlings and sparrows, which are declared agricultural and environmental pests not established in Western Australia.

You can make reports and send photos of any suspect pests, weeds, birds or plant damage via [email](#), [website](#) or the [MyPestGuide Reporter app](#).

Contact

DPIRD Pest and Disease Information Service

email padis@dpird.wa.gov.au

phone 9368 3080



Keep your dogs on leashes at all times when out travelling to protect them from poison 1080 baits that are used throughout the State for the control of feral pests such as foxes, pigs and wild dogs. Photo – DPIRD.



While travelling, ensure you brush down your luggage, shoes, clothing and other items before moving on to the next location to avoid spreading unwanted weed seeds, spores and pests. Photo – DPIRD.

A boost for Western Australia's at-risk estuaries

[Healthy Estuaries WA](#) is a four-year \$25 million State Government project focused on improving the health of estuaries in the Peel, South West and Great Southern regions. Launched in June 2020, the initiative is a continuation of work undertaken for the [Regional Estuaries Initiative](#), implementing measures to improve water quality and restore environmental balance. Key actions of the [Revitalising Geographie Waterways](#) program will also be delivered under Healthy Estuaries WA.

The project is managed by the [Department of Water and Environmental Regulation](#), in partnership with more than 10 organisations across Western Australia. The project supports collaboration between community, scientists, government and industry to share resources and knowledge, in order to deliver outcomes and support regional economic growth.

Estuaries to be funded under the program are the Peel-Harvey Estuary, Leschenault Estuary, Vasse-Geographie waterways, Hardy Inlet, Wilson Inlet, Torbay Inlet and Oyster Harbour. These south-west estuaries are among the most at-risk in the state, being severely impacted by housing, agriculture, industry and recreation.

Healthy Estuaries WA will use the latest science to monitor and manage waterways, to reduce nutrient inputs from priority catchments and mitigate the effects of climate change on our waterways.

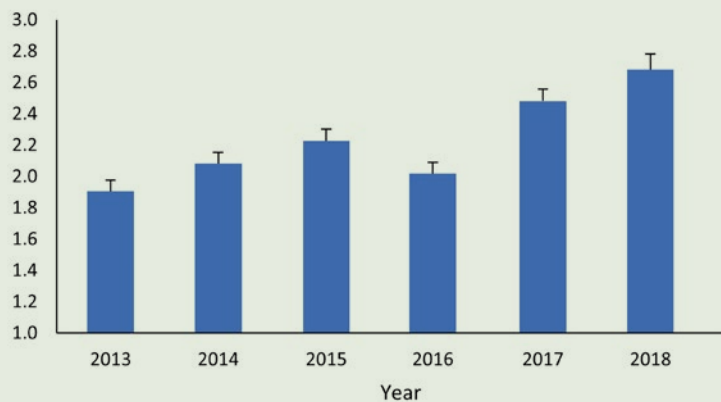
Counting bandicoots – Spring Quenda Count 2020 By Dr Rochelle Steven

The 2020 Spring Quenda Count is now underway across the south-west, this being the seventh count run by [WWF-Australia](#) and DBCA since the citizen science survey began in 2013.

Unfortunately, we were unable to conduct the count in 2019 but I am pleased to say, we have had a good response from our counters for the 2020 count. Across the six counts to date, a total of 349 observers have taken part in at least one count, covering a total of 369 sites. In 2018, we received 619 counts from across 114 sites.

Overall, quenda showed evidence of breeding at 49 sites (13% of 349 sites) and the proportion of sites with quenda present has remained pretty constant (87%).

Average number of quenda per hour during daily surveys (\pm SE)



Although fewer sites were sampled, encouragingly the number of quenda counted per hour was greater in 2018 than in any previous years of the count, with an average of 2.7 quenda sightings per hour.

Encouragingly, the number of quenda counted per hour of survey appears to be gradually increasing over the years.

Quenda deaths resulting from car strike were recorded at half the sites (182 sites), with deaths due to cats occurring at 27 sites (7%) and dogs at 11 sites (3%). It is concerning to learn of quenda drownings in swimming pools at 20 sites (5%), so please consider providing a safe water source where quenda can drink and either cover your pool, or provide a way for them to get out should they find themselves in your pool.

If you would like to take part in the remainder of the 2020 Spring Quenda Count, all you need to do is count the quenda in your suburban garden, local park or bushland for two or more days within one week, and record how many minutes you spend looking out for them (most counts are for 20 to 30 minutes). Also, look out for their tell-tale [conical shaped diggings](#).

If you would like to get involved, please [email us](#) to receive instructions and a copy of the data sheet.

Contact

Rochelle Steven WWF-Australia
email RSteven@wwf.org.au

Geoff Barrett Parks and Wildlife Service
email geoff.barrett@dbca.wa.gov.au

ALERT! – Please [let us know](#) if any quenda you see are in poor condition, showing signs of hair loss and skin irritation. As with all wild mammals, quenda can suffer from mange during times of stress, and we like to keep an eye on how extensive the problem is. The best way to provide this information is through the Quenda Count reporting because then we can get a better idea of the proportion of animals affected. If you can include a photo, that will also help.



This charming quenda was spotted in Kingsley, Perth. Join in the 2020 Spring Quenda Count and let us know how many quenda you see hanging out in your garden, local park or bushland. Photo – Harry Albert.

Friends of the Western Swamp Tortoise planting at Ellen Brook Nature Reserve

By Jan Bant

[Friends of the Western Swamp Tortoise](#) with the able assistance of Track Care WA members revegetated an extension to the existing Ellen Brook Nature Reserve on Saturday 27 June. Fifty adults and 15 children planted over 4,500 of the 5,000 plants from Chittering Landcare, ranging from prickly Moses (*Acacia pulchella*) and various melaleuca species to the very tall swish bush (*Viminaria juncea*). The remainder had to go into muddy water on the edges of the swamps and staff from DBCA planted them the following week. An extremely heavy shower of rain just after 1pm settled the plants into their new home. Revegetation of habitat with low spreading shrubs ensures a safe haven for the critically endangered tortoise and is an important aspect of our work.

Just a few years ago the revegetated area was part of a horse stud, and the purchase of this land adjoining Ellen Brook Nature Reserve was arranged by dedicated Western Swamp Tortoise Recovery Team members. Planting the bare paddocks and realigning the feral proof fence have been a priority for the Friends group, Chittering Landcare and DBCA. Ellen Brook Nature Reserve is the only self-sustaining population of the iconic short-necked western swamp tortoise, which was believed extinct for over 100 years. Since its rediscovery in 1953, the population has fluctuated markedly due to habitat destruction, feral predation, declining rainfall and slow breeding rates. Although none of the cryptic reptiles were spotted on the planting day, they would have been swimming in the newly filled swampy areas and hiding amongst the plants.

Track Care WA and the Friends of the Western Swamp Tortoise have another collaborative project planned near the Moore River National Park to enhance suitable habitat for releasing captive bred hatchlings from the very successful Perth Zoo program.



Although no western swamp tortoises were spotted on the planting day, they would have been swimming in the newly filled swampy areas and hiding amongst the plants. Photo – Anna Wisolith.

A large part of our work includes raising awareness with presentations at schools or other groups and attending fetes, fairs and public events to spread our message. To this end we have recently commissioned a sculpture in the West Swan Road grounds of our sponsor, the Margaret River Chocolate Company, which has delighted many visitors.

Contact us if you would like to join [Friends of the Western Swamp Tortoise](#). Membership of the group is FREE.

Please send us your regional report (200 words) and a photo by Wednesday 2 December 2020. Text may be edited in response to volume of submitted reports.



Track Care WA and Friends of the Western Swamp Tortoise came together to revegetate an extension to Ellen Brook Nature Reserve, an area that was previously part of a horse stud. Photo – Jessica Shaw.

Contact

Jan Bant

Friends of the Western Swamp Tortoise
email westernswamptortoise@yahoo.com.au

Friends of Booragoon and Blue Gum Lakes

By Kate Goodman

The [Friends of Booragoon and Blue Gum Lakes](#) is a community group with over 50 members living and working in the City of Melville. The Friends group was formed to conserve and enhance Booragoon Lake and Blue Gum Lake with the community and to conserve biological diversity generally.

Throughout the year we organise weeding and planting sessions at the lakes in partnership with City of Melville, Wirambi Landcare and other community organisations including Blue Gum Tennis Club and Brentwood Village Town Team. We are working to expand our community links and have reached out to Brentwood Primary School, Winthrop/Bateman Scout Group and Aquinas College so that we can have a greater impact on our precious lakes.

Over the winter months we hosted four planting days in partnership with the City of Melville, Wirambi Landcare and SERCUL, planting over 4,000 native tubestock in the reserves around Booragoon Lake and Blue Gum Lake.

Now that spring is here, we are planning a night walk at Booragoon Lake with Joe Tonga from Natsync Environmental. Highly skilled in bush craft, Joe will be assisting us look for scorpions, detect bats, attract



Aquinas College students lend a hand on a planting day with the Friends of Booragoon and Blue Gum Lakes. Photo – Paul Rich.

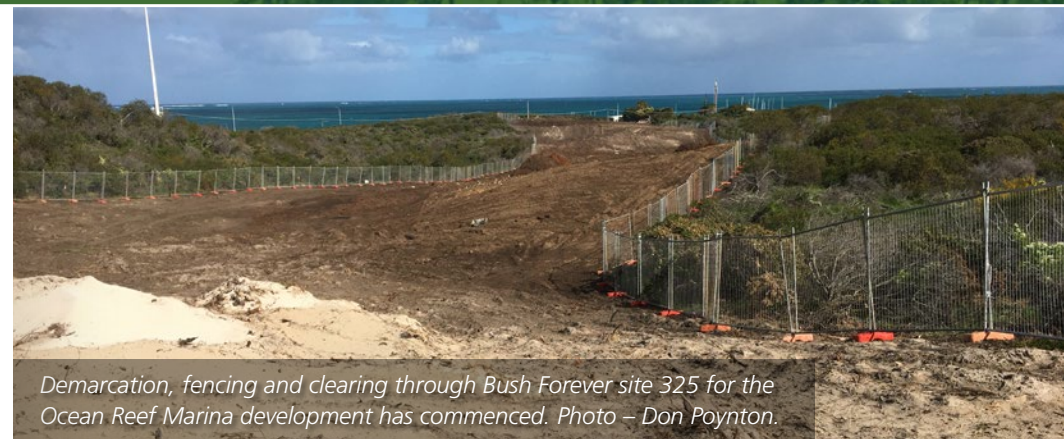
tawny frogmouths and owls, and find where the possums are hiding.

Each year, our membership fluctuates and we keep working forward, recognising that we have a diverse membership and we encourage each member to be a custodian of Booragoon and Blue Gum Lakes and to give whatever time, interest and sharing they can.

Contact

Kate Goodman

Friends of Booragoon and Blue Gum Lakes
email kategoodm@gmail.com



Demarcation, fencing and clearing through Bush Forever site 325 for the Ocean Reef Marina development has commenced. Photo – Don Poynton.

Portion of Bush Forever excised for Ocean Reef Marina development

By Don Poynton

Clearing of the 26ha of bush excised from Bush Forever site 325 (Burns Beach to Hillarys coastal strip) for the Ocean Reef Marina development commenced at the end of July. A number of locally rare plants as well as part of a Carnaby's cockatoo feeding ground will be lost by the time clearing has been completed to accommodate the marina, recreational facilities and a residential precinct.

Due to their concern about the loss of bushland and the impact of the development on the remaining Bush Forever area, members of the [Joondalup Community Coast Care Forum](#) produced a map of the locally rare and conservation significant species which the City of Joondalup's Natural Areas Team will use for the collecting of seed and cuttings. The map will also be used by the project proponent, DevelopmentWA (previously Landcorp), as it is required to rehabilitate five hectares of the adjacent Bush Forever with local provenance material.

A fauna trapping programme was conducted prior to the clearing after lobbying by concerned members of the community and this resulted in nine quenda and several reptiles being saved and relocated.

Contact

Don Poynton

Joondalup Community Coast Care Forum
email contact@jcccf.org.au

Record year for the Herdsman Bird Banding Project

By Euro Gerbaz and Bill Rutherford

Edited extract from the Herdsman Lake Bird Banding Project 2020 Annual Report

June 30, 2020 marked the completion of 19 years of the [Herdsman Bird Banding Project](#). A community study at Herdsman Lake, this project provides data to the Australian Bird and Bat Banding Survey, furthering knowledge of ornithology, conservation of species and habitat. The focus of the project is small to medium passerines as well as medium-sized birds from other orders (cuckoos and bee-eaters) with over 90% of encounters coming from these groups. This year, 18 volunteers put in nearly 1,400 hours over 48 banding sessions.

After a good start in July 2019, monthly bird numbers plummeted with just over 300 birds processed by the end of the calendar year. Hopes were high when monthly targets were exceeded in January and February, only to be dashed when the coronavirus pandemic forced us to shut down our activities in March and April. With many industries affected, our volunteers had more time on their hands, and with improved conditions during autumn and early winter, weekday sessions were organised to take advantage of an irruption of mainly small passerines, but also species rarely seen at Herdsman Lake. In May and June the group recorded its best two months ever, resulting in a record year for the project with 2,118 new birds banded and 342 re-traps.

Silvereyes were not surprisingly the dominant species, but this year made up 74% of all encounters, far exceeding the average over the term of the project. Near record numbers were seen in several other species and four new species were added to the project:

red-kneed dotterell, white-fronted chat, Gilbert's honeyeater and tawny frogmouth. The variegated fairy-wren in Western Australia was separated from the eastern species to gain new status as the purple-backed fairywren.

Of the 2,460 birds processed, nearly 1,700 were encountered in the last three months, a big finish to an unusual year interrupted by a pandemic. A regular contingent of volunteers allowed us to conduct nearly a session a week at five different banding sites. So, a very successful year in which a milestone of over 25,000 encounters (nearly 20,000 bandings) over the life of the project was reached. The diverse list of 94 species from 15 orders including passerines, waterfowl, shorebirds, large waders, parrots and lorikeets as well as raptors provides a good basis for our study which we hope will be of interest and value to ornithologists and conservationists in Australia and internationally.

Contact

Euro Gerbaz

Herdsman Lake Bird Banding Group
email podiceps@iinet.net.au

Bill Rutherford

Herdsman Lake Bird Banding Group
email o.t.s@iinet.net.au



There had been no reported sightings of the Gilbert's honeyeater (recently separated from the white-naped honeyeater, a species in its own right) for at least two decades and this may well have been the first observation at Herdsman this century. A second individual was banded by the group a few days later and there have been other sightings since then; possibly of our two banded birds. Photo – Herdsman Lake Bird Banding Group.

York River Conservation Society

By John Crook

Like all organisations, the [York River Conservation Society](#) (RCS) has been affected by COVID-19; we have cancelled fundraising events, meetings and busy bees and had to rethink the way we conduct our planting and weeding programs, but in the scheme of things this is a small price to pay compared to those who have been infected or lost their jobs.

Audrey Sole, our events coordinator and regional herbarium manager, was awarded a certificate of achievement in the York Citizen of the Year Awards for her passion towards the environment and her hard work over many years to protect and restore the flora and fauna of the York district. Well done Audrey!

With help from the York community we conducted a successful river clean-up day, members have continued to collect and collate data for the flora project and explore opportunities for establishing a local flora website. Wildlife cameras on Avon River Pools have produced some exciting results, with several rakali, a brushtail possum and many water birds, including a nankeen night heron with breeding plumage, being photographed. Underwater cameras at Gwambygine Pool revealed southwestern snake-necked turtles, shrimp, and several species of fish.

We continue to monitor and spray African boxthorn and other weeds in the Avon riparian zone. Successful community planting days along the river and in Avon Park and restoration work on signage along the Avon Walk Trail have been completed.

The RCS is continuing to collaborate with the Shire of York and other interested groups to establish an Environmental Discovery Centre in York.

Contact

John Crook

York River Conservation Society

email chairriverconservationyork@gmail.com



York River Conservation Society members and volunteers from the local community got together for a successful river clean-up day. Photo – York River Conservation Society.



This nankeen night heron with prominent nuptial plumage was captured on camera at Gwambygine Pool on the Avon River. Photo – John Crook.

Lake Clifton-Herron Landcare Group *By Jenny Rose*

Since its inception in 2001, Lake Clifton-Herron Landcare Group (LCHLG), formerly Lake Clifton Landcare Group (LCLG) has been tireless in raising local awareness with property owners in the environmentally sensitive coastal strip between the Peel-Harvey Estuary and Lake Clifton. With the support of Waroona Landcare Centre, the group organised [Heavenly Hectares](#) property planning workshops, wildflower walks, wildlife night stalks and sustainability excursions. Local planting projects were organised with the help of school groups and volunteers. Flora surveys were conducted in several areas and also in the bushland area to be consumed by the proposed Forrest Highway.

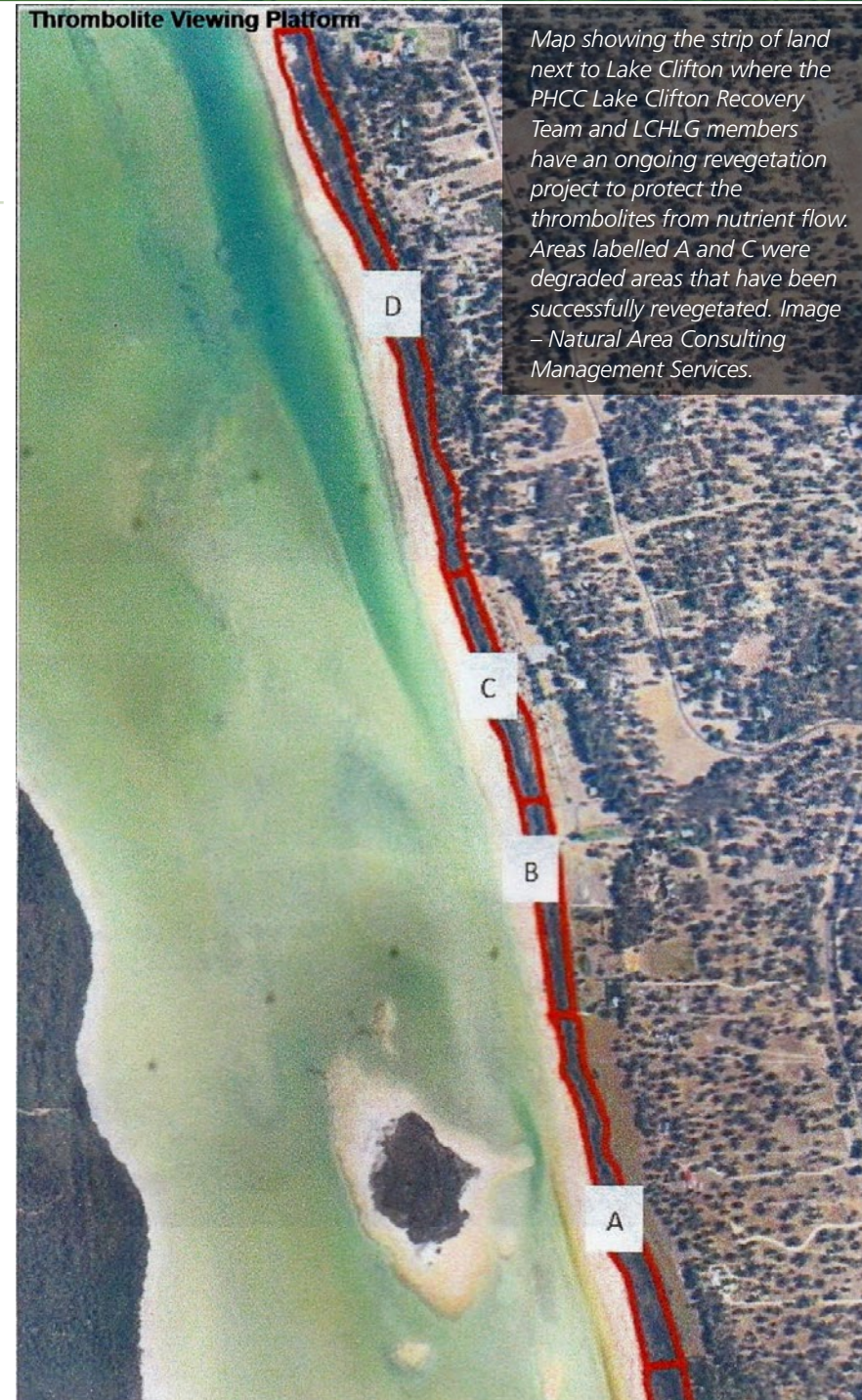
The group was involved in 2005-2007 with bringing the tuart decline to the notice of politicians and the local communities in which this was happening. Grants enabled the group to organise more projects for local landholders, including reforestation of Crown land, weed control and management courses, regular speakers on tuart tree decline and the critically endangered Lake Clifton [thrombolites](#).

Prior to 2010, the Peel-Harvey Catchment Council's (PHCC) Lake Clifton Recovery Team, which included LCLG members, decided to revegetate a 3km strip of degraded land between the thrombolite viewing platform and the end of Capel Way in Herron. This project was to protect the thrombolites in Lake Clifton from

nutrients which could flow from livestock and horticultural activities on adjacent properties. Before the revegetation project could commence, a comprehensive rabbit control program was needed, with a successful control program started in 2010 covering the area from Southern Estuary Road in Bouvard to the southern end of Lake Preston.

The revegetation project began in 2012. This ongoing project has been maintained by the LCHLG obtaining funding grants of over \$140,000 from South West Catchment Council, PHCC, and the State Natural Resource Management Office. We have received significant in-kind support from DBCA and volunteers who have come from Landcare group members, the local community, the City of Mandurah, PHCC, Peel Preservation Group and Men of the Trees. We are very grateful for all this assistance. For many years, the LCHLG relied heavily on the Green Army for planting and maintenance of the revegetated areas but since this Federal program was stopped have had to use contractors. This means we can only plant a reduced number of seedlings, as the cost of planting a seedling is more than the cost of the plant. Most Landcare groups are no doubt in the same situation.

Continued next page ...



Map showing the strip of land next to Lake Clifton where the PHCC Lake Clifton Recovery Team and LCHLG members have an ongoing revegetation project to protect the thrombolites from nutrient flow. Areas labelled A and C were degraded areas that have been successfully revegetated. Image – Natural Area Consulting Management Services.

Unfortunately the effects of the original rabbit control program have worn off, with increased rabbit numbers adversely affecting planting efforts. Despite two local releases of calicivirus by the LCHLG combining with the Peel-Harvey Biosecurity Group, it is obvious that a further broad scale program with nearly 100% landholder involvement will be necessary to combat this rabbit invasion. But we soldier on as most Landcare groups do.

Two great successes have been areas called A and C south of the thrombolite viewing platform. Area A, which was previously dominated by *Paspalum* grass has now been fully revegetated, and planting in Area C has seen it converted from grass and weeds into trees and bushes.

Over the years we have had more successes than failures, and have learnt many lessons on how to achieve successful revegetation:

- The conditions are too dry for the use 64 cell tray plants, with 100mm sized tubestock or similar giving a better chance of survival.
- Broadscale weed control before planting is really important.
- Breaking the surface/sub-surface soil either by rotary hoeing or ripping is really important in our local soils for a successful planting.
- In many areas use of an auger to deep plant is much better than using Pottiputkis.
- At least five years of weed control following planting is vital for revegetation success.
- In our area, plant guards need to be in place for at least two years so the plants can be strong/tall enough to survive predation from kangaroos and rabbits.

At the moment we have only two permanent members, with an on-call group of about eight others. Our sponsor for grants is Lake Clifton-Herron Residents Association and we have meetings every two months at our sponsor group's community meetings. The LCHLG welcomes all interested people to join our group and assist with projects and bring new ideas for ways we can invest in our environment.

Contact

Jenny Rose

Lake Clifton-Herron Landcare Group
email jennyatherron@westnet.com.au



Volunteers, Lake Clifton-Herron Landcare Group members and Peel-Harvey Catchment Council staff helped plant a strip of degraded land adjacent to Lake Clifton in winter 2020. Photo – PHCC.




Area A in 2009 was dominated by *Paspalum* grass (above) and in 2020 has been much improved following successful revegetation (right).
Photos – Jenny Rose.




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

Recurrent activities

Saturdays 15 minutes before sunrise

 **Research into bird** populations with the **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 8am–10am

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


Saturdays 8.30am–10.30am

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


Saturdays 9am–11am

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


Saturdays 9am

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


Saturdays

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


Saturdays and Tuesdays 9am–12 noon

 **Bushcare activities** with Friends of **Yellagonga** Regional Park. Nursery and project work each Saturday and Tuesday morning, regular workdays on the last Saturday of each month. Contact: friendsofyellagonga@bigpond.com

Saturdays, Sundays 9am–12 noon

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


Sundays 7am

 **Bushcare** every Sunday with **Friends of Point Peron**. Look for the signs Safety Bay Rd or Memorial Dr Rockingham. Bring your own gloves, water and dress for the bush. Contact: James 0455 157 547 jgumme@live.com.au


Sundays 8am–10am

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

Sundays 8.30am

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


Sundays 9am–11am

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


Sundays 9am–11am

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

Registration/contact details

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

AGLG Armadale Gosnells Landcare Group. Look for the AGLG sign at the meeting point, BYO gloves and dress for the weather. Morning tea provided. Call 0413 883 565 or check [Facebook](https://www.facebook.com/aglg).

Activities Key



Hands on – bushland and wetland management activities.



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




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




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

Recurrent activities ... *continued*


Sundays 9.45am–12 noon

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

Sundays 1pm–4pm

 WA Gould League's **Herdsman Lake Wildlife Centre** holds **family nature days**. First Sunday of each month. \$5/\$20 family. Corner Selby St and Flynn St Wembley. Contact: 9387 6079 or register

Sundays

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

Mondays 7am–8am

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

Mondays 8am–10am

 **Litter collection** with Swan Estuary Reserves Action Group at **Milyu** Nature Reserve, South Perth. Second Monday of each month. Contact: Cathie 9339 2439 oneillc@westnet.com.au

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 7am–9am

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


Tuesdays 9am–11am and Saturday

 **Bushcare** with Friends of **Allen Park** every Tuesday and first Saturday of the month. Contact: Lesley 9384 7983 Judy 9383 1501, foapbg@gmail.com or [Facebook](https://www.facebook.com/foapbg)


Tuesdays and Thursdays, 8am–10am

 **Coastcare activities** with **Stirling** Natural Environment CoastCare (SNEC) resume 28 January 2020. Contact: Sheldon 0488 190 651 Rae 0419 191 710 website


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 and Saturdays 7.30am–9.30am

 **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 and some Saturdays 8.30am–12 noon

 **Coastcare activities** with Friends of **Sorrento Beach** and **Marmion Foreshore** followed by morning tea. Contact: Mike 0438 710 527


Thursdays 8am–9am

 **Bushcare activities** every Thursday with **Byford** Enviro-Link. Contact: Kristy 9526 0199


Thursdays, Saturdays and Sundays 9am

 **Morning walks** with Friends of **Bold Park** Bushland Volunteer Guides. Various dates. Contact: 9480 3996 friendsbp@bgpa.wa.gov.au website


Thursdays and Sundays 10am–12 noon

 **Kanyana Wildlife** Centre, Discovery Centre **Tours**. Close encounters with native animals and interactive Discovery Centre. \$20 or less. Bookings essential. Contact: 9291 3900 info@kanyanawildlife.org.au website

Thursdays and Fridays 9am–4pm

 **Wetland, Bushcare** and **nursery** activities with The **Wetlands** Centre, **Cockburn**. Contact: Denise 0412 081 540 community@thewetlandscentre.org.au

Thursdays 7.30pm

 **Talks** with **Murdoch** Branch of the **Wildflower Society** to share passion and knowledge of nature. First Thursday each month. Cockburn Wetlands Education Centre. Contact: Christine 0468 676 933 murdoch.branch@wildflowersociety.org.au [Facebook](https://www.facebook.com/murdoch.branch@wildflowersociety.org.au)

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 7.30pm

 **Talks** with **Eastern Hills** Branch of the **Wildflower Society**. Fourth Friday each month, Octagonal Hall, 52 McGlew Rd, Glen Forrest. \$2 entry, visitors welcome. Contact: eastern.hills.branch@wildflowersocietywa.org.au [Facebook](https://www.facebook.com/eastern.hills.branch@wildflowersocietywa.org.au) website


Fridays and Saturdays 7pm–9pm

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

Check calendar

 **BirdLife** 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.

Activities Key



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Please send us your January, February, March events by
Wednesday 2 December 2020.

October


3 Saturday 9am

 **Community Landcare Event planting at Thornlie Riverpark.** Meet at the corner of Jacqueline Drive and Ravenhill Road. [Details](#).


8 Thursday 11am–1pm

 **Hooded Plover Monitoring. Online workshop** on how to safely monitor hooded plovers during their breeding season. Free to [register](#).


9 Friday 7.15pm–9.30pm

 **Spiders and other creepy-crawlies of the Perth Hills, a talk** with Dr Mark Harvey at Woodlupine Community Centre Hall, Forrestfield. Entry with cash donations of \$5 for adults and \$1 for children (discounts available for WA Naturalists' Club members). [RSVP](#).

11 Sunday 9am–11am

 **Family Beach Biodiversity Morning. Rosslare Park, Mindarie.** Discover the biodiversity of Rock Pool Beach and look at local marine specimens under magnification with the Quinns Rocks Environmental Group. Free to [register](#).

11 Sunday 9.30am

 **Birdwalk Kaarakin Black Cockatoo Conservation Centre, Martin.** Meet at the centre car park at 322 Mills Road East. \$15 per person. Book at the BirdLife WA office before the day. [BirdLife](#)


11 Sunday 8.30am–10.30am

 **Harrisdale Swamp wildflower walk.** Meet at Carey Baptist College car park in Harrisdale. [Details](#).


17 Saturday 8.30am

 **Birdwalk Forrestdale Lake, Forrestdale.** Meet at Moore Street car park. [BirdLife](#)

18 Sunday 7.30am–12pm

 **Shoalwater Bay Rockingham walk.** Meet at the northern end of Mersey Point car park near the corner of Arcadia Drive and Penguin Road Shoalwater. [Details](#).

24 Saturday 8am


 **Birdwalk Len Howard Conservation Park, Mandurah.** Meet at the car park at the end of Marina Quay Drive. [BirdLife](#)

28 Wednesday 10am


 Discover the native flora and orchids with the WA Naturalists' Club in a **walk** through **Warwick Bushland, Warwick.** Contact: Don Poyton 0419 460 301.

November

1 Sunday 8am

 **Birdwalk Ashfield Flats, Bassendean.** Meet at the car park at the southern end of West Road, Bassendean. [BirdLife](#)

7 Saturday 7.30am

 **Birdwalk Whiteman Park, Swan.** Meet at the end of Car Park 23 near the Dog Park. [BirdLife](#)


14 Saturday 8am

 **Birdwalk Collins Road, Flint.** Meet on Collins Road. [BirdLife](#)


19 Thursday 7.30am

 **Birdwalk Ascot Waters, Ascot.** Meet in the car park at the end of Tidewater Way. [BirdLife](#)


22 Sunday 8.30am

 **Birdwalk Ellis Brook, Gosnells.** Meet at the corner of Gosnells Road and Bygum Lane, Martin. [BirdLife](#)

25 Wednesday 10am

 **Continuing our Coast Walk (Trigg Island - Brighton Beach).** See coastal, shore and sea birds on a 2.5km walk with the WA Naturalists' Club. Contact: Don Poynton 0419 460 301.

28 Saturday 8am

 **Birdwalk Walyunga National Park, Swan.** Meet in the car park at the end of Walyunga Road (off Great Northern Highway, Upper Swan, near Bungara Pool). If you have a National Parks pass bring it with you, otherwise entry is \$13 per vehicle or \$7 per vehicle concession. [BirdLife](#)




This scented sun orchid (Thelymitra macrophylla) is just one of the many beautiful flora species you might spy on a guided walk through Warwick Bushland this October. Photo – Mark Brundrett.

December

5 Saturday 7.30am

 **Birdwalk Thomsons Lake, Cockburn.** Meet in the car park on Russell Road. [BirdLife](#)

10 Thursday 8am

 **Birdwalk Penguin Island, Rockingham.** Meet at Mersey Point Jetty off Arcadia Drive, Shoalwater. Ferry tickets \$18 (concession \$16). [BirdLife](#)

13 Sunday 7.30am

 **Birdwalk Alfred Cove, Melville.** Meet in the car park in Troy Park next to the Oval, off Burke Drive, Attadale. [BirdLife](#)

19 Saturday 7.30am

 **Birdwalk Carine Open Space, Carine.** Meet in the car park off Beach Road, Carine. [BirdLife](#)

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Highlights

Weekdays and Saturdays, 10am–4pm until early 2021

Museum of Perth, **Gnarla Boodja Mili Mili exhibition** (Our Country on Paper) based on a [digital map](#) launched by the Aboriginal History WA unit within the Department of Local Government, Sport and Cultural Industries. The exhibit acknowledges Noongar place names of the Perth CBD and surrounds, and identifies culturally significant sites such as camping and hunting grounds, natural landmarks and sacred places that were traditionally known to Noongar people as they moved around the land following the six seasons.

October

CitSciOnLine2020 Australian Citizen Science Conference [Inspire, Impact, Influence](#). Log on to the comprehensive, multi-themed event.

October–1 November 9am–5pm

May Gibbs – Gumnut Babies is a free [exhibition](#) showing at the Ground Floor Gallery of the State Library of Western Australia. It features a selection of May Gibbs' beloved artwork, which was largely inspired by the native flora of Western Australia where she spent much of her childhood.

October–November

Check the WA Parks Foundation **Spring into Parks** [calendar](#) to discover a range of unique events and activities happening in parks all around the State. Experience stargazing in dryandra woodland, yoga and mindfulness at Cabaret Cave, learn about local bush tucker, hut building and flag making in Yancheop or experience the Kalbarri Skywalk.



October–March 2021

City of Cockburn **Turtle Trackers** [citizen science program](#) is seeking information about southwestern snake-necked turtles (*Chelodina colliei*), encouraging community members to report turtle sightings in support of scientific research. Volunteers are also needed to help protect turtles, nests and eggs during nesting season. Contact the City's Environmental Education Officer by phone (9411 3444) or [email](#).

1–9 October

Monkey Mia Dolphin Experience School Holiday Opportunities. Volunteer in assisting staff with the wildlife interaction and enhance the stay of visitors by providing information about the dolphins, Monkey Mia Reserve and surrounding Shark Bay World Heritage Area. Entry to Monkey Mia will be free while volunteering, with accommodation at volunteer's own costs. To book [email](#) or call the Volunteer Coordinator on 9948 1366.

1–10 October

Nearer to Nature [Sunlit Spring](#) fun nature-based activities for the school holidays.

10–25 October

[Nyisztor Studio](#), Palmyra, **The Overwintering Project: Summer on the Swan.** A collaborative [art exhibition](#) opening on World Migratory Bird Day, showcasing prints featuring migratory shorebirds and the unique nature of their resting and foraging sites of the Swan Estuary Marine Park and other important local sites such as Thomsons and Forrestdale Lakes.

11–19 October

Great Western Woodlands spring [bird survey](#) at Frank Hann National Park/Peak Charles National Park, followed by Dundas Rocks. [Contact](#) Lorraine or Libby at BirdLife.

16 October or 6 November 8.30am–4pm

Aquatic Weed Management training at the Canning River Eco Education Centre, Wilson. Bookings \$110. Contact Amy Krupa 9458 5664 or [email](#) to register.

The WA Parks Foundation are encouraging you to Spring into Parks with a range of unique events and activities. Visit our State's wonderful attractions such as Walpole's Valley of the Giants Tree Top Walk and share your experiences with [#springintoparks](#). Photo – Holii Carmody.



The spectacular new Western Australian Museum Boola Bardip will be open to the general public from Monday 30 November, with free entry for the first 18 months. Photo – WA Museum.

16–19 October

Be trained in monitoring methods by Malleefowl experts and put your new skills into action at the **2020 WA Malleefowl Muster.** Yongergnow Australian Malleefowl Centre, Ongerup. Free to [register](#).

19–25 October

Be a part of BirdLife Australia's **Aussie Backyard Bird Count.** [Register](#) as a counter for 2020.

8–15 November

Wild Pollinator Count invites you to [count wild pollinators](#) in your local environment this spring and help build a database on wild pollinator activity.

20 November

Fox management workshop for local and State governments and key stakeholders hosted by the South West Group. Register expressions of interest with Peter Nash: nrm@southwestgroup.com.au

29 November–4 December

2020 Conference of the Ecological Society of Australia will be a [virtual conference](#) this year with all program events held online. All content will be available for the full week so you can view sessions when it suits you.

30 November onwards

The new **Western Australian Museum Boola Bardip** [opens with free general entry](#), as often as you like for the first 18 months. Three times the size of the previous museum and with eight new permanent [galleries](#), see your favourite exhibits such as the bison, ancient meteorites and iconic blue whale return in spectacular new displays.

8–10 December

Australian Wildlife Management Society Annual Conference 2020 is virtual and free to [register](#).

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.

The Perth NRM **Direct Community Action Grants – Small Open Stream** provides [grants](#) of up to \$5,000 for community groups to use for small one-off project tasks or quickly address environmental concerns as they arise. Groups operating within the Middle Canning Estuary or its immediate tributaries can apply. [Applications](#) can be made **at any time** while funds are still available.

Wettenhall Environmental Trust small environmental grants scheme funding research and educational projects on flora and fauna conservation. [Applications](#) **open 1 October**.

Treasurers have a chance to win one of four \$5,000 donations for your not-for-profit group with the **2020 Not-for-Profit Treasurers' Awards**. [Applications](#) **close 6 October 2020**.

The **Bob Hawke Landcare Award** recognises individuals championing Landcare, with the recipient awarded a prize package to the value of \$50,000 for further development of their knowledge and skills in sustainable land management. [Nominations](#) **close 12 October**.

Community Rivercare Program aims to conserve the natural, cultural and social values of the rivers, tributaries and urban drains within the Swan Canning Catchment. [Applications](#) **close 12 October**.

Australian Citizen Science Association **Seed Grants 2020** are calling for new applicants for \$1,000 grants to boost citizen science projects or fund open access publication of citizen science papers. [Applications](#) **close 16 October 2020**.

Strengthening Rural Communities funding to support broad community needs in rural Australia, including

environmental sustainability. Two funding streams for small and vital grants or bushfire recovery are available. [Applications](#) are accepted year round with the current round **closing 24 November**.

Local government community grants

These local governments provide small grants to their communities which can fund environmental groups' management and restoration projects. Eligibility varies. [Augusta-Margaret River](#) **closes 9 October**, [Canning](#) **closes 28 May 2021**, [Cockburn](#) **closes 31 October**, [Cottesloe](#) **closes 30 April 2020**, [Gosnells](#) **open year round**, [Rockingham](#) **closes 20 November**, [Vincent](#) **closes 9 October**, [Wanneroo](#) **opens October 2020**.

Green Jobs Plan

Developed to protect the environment, create jobs and assist Western Australia's economic recovery from COVID-19, the State Government [Green Jobs Plan](#) will see \$60.3 million invested in environmental projects over the next three years.

Under the plan, the Department of Water and Environmental Regulation (DWER) will administer \$8 million in funds from the Native Vegetation Offsets Fund along with \$15 million in new funds to establish a Native Vegetation Rehabilitation Scheme. Part of the State's requirement for delivering environmental offsets, this scheme will provide employment opportunities, target restoration of biodiversity values impacted by past clearing and help improve habitat for Western Australia's unique flora and fauna through restoration, rehabilitation and protection of existing vegetation. On-ground works funded under the program will include fencing, seeding, planting, management of threats and improvement of native vegetation for fauna such as the Carnaby's cockatoo.

Set to create more than 1,000 conservation jobs in WA, the support of green jobs aids environmental protection in addition to creating a more sustainable economic recovery.



Photo – Bryony Fremlin.

New publications

A Hollow is a Home Mitchell, Abbie, Astred Hicks. *CSIRO Publishing*, 2019. \$29.99. Aimed at upper primary school aged children, this Australian book is themed around the importance of tree hollows and aims to inspire the next generation to tackle the challenge of biodiversity loss. Discover



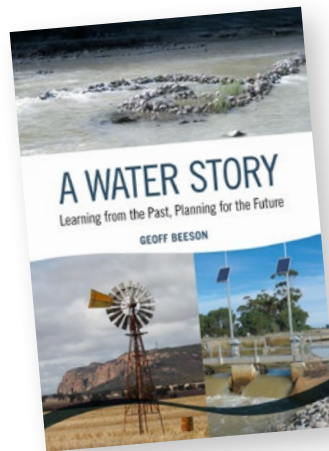
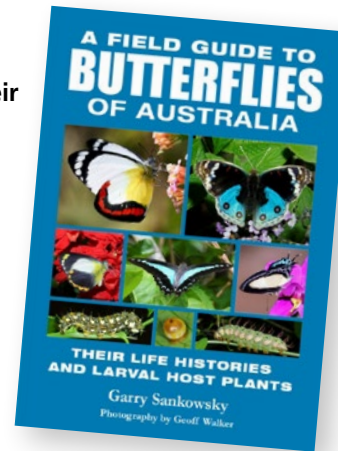
how hollows are created and why they are threatened, and get tips on how to spot hollows, protect the environment and encourage habitat for animals that are dependent on hollows. Free teacher resources to accompany this book are also

available on the CSIRO website.

Australian Wetland Cultures: Swamps and the Environmental Crisis Ryan, John Charles, Li Chen (Editors) *Lexington Books*, 2019. \$175. Wetlands are among the most productive ecosystems on earth and some of the most vulnerable. This book explores the cultural value of wetlands with a focus on swamps and their conservation, making a unique contribution to the interdisciplinary field of environmental humanities. The authors investigate the role of swamps in Australian society, spanning pre-settlement Indigenous Australian cultures, nineteenth-century European colonisation and contemporary Australia. Practical examples of wetland conservation are given with case studies from Perth illustrating the link between natural and cultural heritage.

A Field Guide to the Butterflies of Australia: Their Life Histories and Larval Host Plants

Sankowsky, Garry, Geoff Walker. *New Holland Publishers*, 2020. \$45. This comprehensive guide to Australian butterflies covers everything from the common to the more cryptic species. All images feature live butterflies (as opposed to specimens) with a large number of images documenting the different life stages from egg to caterpillar to chrysalis, and images of male and female butterflies where their appearance differs significantly. This guidebook, with a sturdy plastic cover and compact layout, also pictures host plants that are often important to help locate butterflies in the field.



A Water Story: Learning from the Past, Planning for the Future

Beeson, Geoff. *CSIRO Publishing*, 2020. \$69.99. An account of Australia's water management practices, describing the nature and distribution of our natural water resources, and how these resources have been used over time by Indigenous Australians, with the development of urban water supply and support

for pastoral activities and agricultural irrigation. This book also discusses the environmental consequences and current challenges faced in water management including food supply, energy and climate change, along with options for ensuring sustainable water supplies for a growing population.

Recent Research

Barratt P, Clarke A (2019) Unseasonally dry wetlands a challenge for the WA Bittern Project [Western Australian Bird Notes](#) 172, 20–21.

Booth TH, Muir PR (2020) Climate change impacts on Australia's eucalypt and coral species: Comparing and sharing knowledge across disciplines [WIREs Climate Change](#) 11:e657.

Hoffmann AA, Rymer PD, Byrne M, Ruthrof KX, Whinam J, McGeoch M, Bergstrom DM, Guerin GR, Sparrow B, Joseph L, Hill SJ, Andrew NR, Camac J, Bell N, Riegler M, Gardner JL, Williams SE (2019) Impacts of recent climate change on terrestrial flora and fauna: Some emerging Australian examples [Austral Ecology](#) 44, 3–27.

Mata L, Ramalho CE, Kennedy J, et al. (2020) Bringing nature back into cities [People and Nature](#) 2: 350–368.

Nanda A, Beesley L, Locatelli L, Gersonius B, Hipsey MR, Ghadouani A (2018) Adaptation Tipping Points of a Wetland under a Drying Climate [Water](#) 10, 234.

Santoro A, Chambers JM, Robson BJ, Beatty SJ (2020) Land use surrounding wetlands influences urban populations of a freshwater turtle [Aquatic Conservation: Marine Freshwater Ecosystems](#) 30: 1050–1060.

Saunders DA, Dawson R, Mawson P, Cunningham RB (2020) Artificial hollows provide an effective short-term solution to the loss of natural nesting hollows for Carnaby's Cockatoo *Calyptorhynchus latirostris* [Biological Conservation](#) 245, 1–11.

Schubert J (2020) Seven new species of Australian peacock spiders (Araneae: Salticidae: Euophryini: *Maratus* Karsch, 1878) [Zootaxa](#) 4758 (1), 1–44.

Semeniuk CA, Semeniuk V (2019) Geoheritage values of consanguineous wetland suites on the Swan Coastal Plain, Western Australia [Australian Journal of Earth Sciences](#) 66:6, 837–853.

Van Helden BE, Close PG, Steven R (2020) Mammal conservation in a changing world: can urban gardens play a role? [Urban Ecosystems](#) 23, 555–567.

Warden JG, Coshell L, Rosen MR, Breecker DO, Ruthrof KX, Omelon CR (2019) The importance of groundwater flow to the formation of modern thrombolitic microbialites [Geobiology](#) 17: 536–550.

Website watch

The **Baseline Report Card for Ramsar Site 482** informs the community and stakeholders of the [current condition](#) of the Peel-Yalgorup Ramsar Site and catchment. Using a traffic light system, it compares information collected from monitoring programs with 'Limits of Acceptable Change' that have been set for Ramsar Site 482, which incorporates the Peel-Harvey Estuary, Yalgorup Subsystem, Meelup, McLarty, Goegrup and Black Lakes. The report card will be updated each year.

Noongar Six Seasons Stories are recounted by Elders Neville Collard, Vivienne and Morton Hansen through audio and video [recordings](#), as they share traditional ecological knowledge of how the Noongar diet would change across the six seasons.

Friends of Warwick Bushland have a [new website](#) full of spectacular photos and information about the Warwick Conservation Reserve and Warwick Senior High School Bushland. Explore the biodiversity pages to learn about the web of life, local trees, wildflowers, orchids, fungi, birds, minibeasts and other animals. Download the walk trails map and go for a relaxing walk on one of the three nature trails. Under education learn how to build lizard lounges and bee hotels to support biodiversity in your backyard. Find out about all the work behind the scenes to manage the bushland and keep it in good condition. Check out upcoming events and learn how to value, respect, protect and promote this special place.



Kiss the Ground is a [documentary](#) that aims to educate and awaken people to the possibilities of regenerative agriculture as an alternative approach to farming, and how creating healthy soils could help us address the world's climate crisis.

BirdLife's **Bird Guide brochures** describe places to go birding and area checklists for many country shires and Perth councils. A new guide has been produced for east metro waterbirds.

Noisy By Nature is a [podcast](#) for young kids to tune into the surprising and sometimes silly noises of Australian nature, and learn some fun facts along the way. Hear sounds from a swamp in south-west WA: tooting coots, splashing wood ducks, quacking frogs and squelchy mud in the episode [Quacking Frogs](#).

Fantastic Fungi, a [documentary](#) that takes you on an immersive journey through the magical world of the fungi kingdom. With world-renowned scientists and mycologists, this movie celebrates the beauty of fungi and explores the solutions it can provide to medical, therapeutic and environmental challenges. Available to rent or buy through various platforms [online](#).

With **Wildlife Spotter**, citizen scientists can assist researchers by looking for animals in wilderness photos taken by automated cameras around Australia. You can identify and tag animals in the photos and contribute to research that will help save Australia's wildlife. It's all done [online](#) and anyone can join.

Crime Pays But Botany Doesn't is a [YouTube channel](#) run by an amateur botanist and Chicago native, offering a comedic education on plant ecology and evolution designed to inspire curiosity. Watch his enthusiastic, irreverent (and warning: profanity-laden) musings on nature around the US, Mexico, Chile and New Caledonia or see his outsider's perspective on our local flora, fauna and thrombolites in his Western Australia [playlist](#).

Apps

Nature Passport is an [app](#) to get kids and families playing, exploring and learning outdoors, with more than 100 activities designed by experts in outdoor play and experiential education.

One Small Step app aims to make it easier for people to successfully adopt greener habits. The world's issues with climate change and environmental sustainability are so big it often seems that our small, everyday actions won't make a difference. But individual actions compounded over time can make a huge difference. One Small Step's goal is to help people to reduce their per person carbon footprint to two tonnes of CO₂ or less per year, in line with the UN's 2050 target.

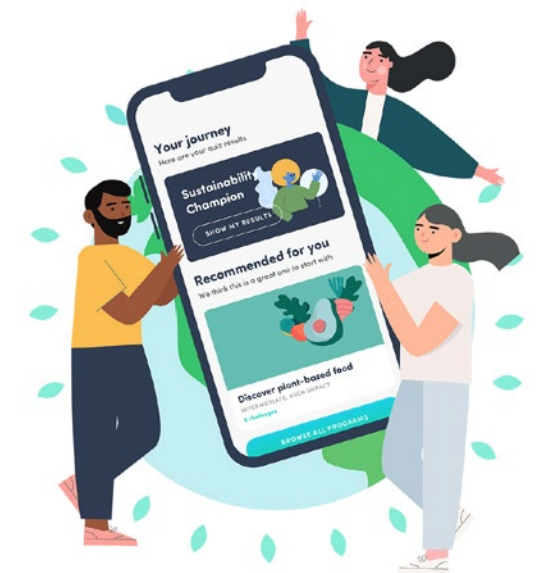




Photo – Michael Doe.

peacock spiders

By Michael Duncan

Peacock spiders are a jumping spider genus unique to Australia. They inhabit the undergrowth of native woodlands and heath. Ranging from 2–7mm in size, peacock spiders are characterised by a pair of elongated third legs and a flashy coloured abdomen, often with flaps that are unravelled during the male's courtship display. The different species use these traits in intricate dances that entice the female to mate. The striking specimen pictured here showing off his display is a *Maratus madelineae* from Meelup.

In recent years peacock spiders have become a worldwide sensation. It's not uncommon seeing video footage of these amazing spiders dancing to music.

In 2011 there were only seven described species of peacock spider. Since their profiling on social media, amateur photographers and naturalists from all over Australia have been on the hunt for new species. Thanks to the efforts of many of these citizen scientists there are now over 90 species described. In 2015 we started the citizen science group Project Maratus which involves liaising with museums and researchers in the mapping, behaviour and description of new species. In 2018 on a trip to southern Western Australia we discovered three new species within the space of two days. These were described by taxonomist Joseph Schubert and are now known as *Maratus felinus*, *M. combustus* and *M. aquilus*.

Tips on finding these stunning spiders are given in Mathew Hourston's Look Closer video series. Spring is the best time to spot peacock spiders in colour, so have a go at searching and maybe you could play a part in discovering the next new species!