

banksia

bulletin

spring 2021

**Potting indigenous
plants**

**Nature strip
makeover**

**Boosting
biodiversity**



Bayside
CITY COUNCIL

From the Mayor

Hello everyone, and welcome to the Spring 2021 edition of *Banksia Bulletin*.

I hope you are enjoying your daily exercise time by exploring new routes and discovering our local heathlands, reserves, parks and open spaces located close to home. I saw many people exercising in Cheltenham Park on Father's Day (Sunday 5 September) when I went for a walk – all social distancing appropriately.

Unfortunately, our annual Spring Open Days have been cancelled due to COVID-19 restrictions but that doesn't



Mayor Laurence Evans (left) with Dave Franklin (right) who designed and planted the nature strip at Bronte Court, Hampton where TV renovation show *The Block* is being filmed.

stop us from visiting these fantastic natural landscapes we are so lucky to experience close to where we live.

It is disappointing that the Bayside Community Nursery remains closed to the public for sales, but I would like to thank our volunteers who continue to maintain the plants we are growing at the nursery and propagating for future use.

Now that Spring is here, it is a perfect time to be out in the garden and there are some excellent articles in this edition of *Banksia Bulletin* about planting indigenous species in pots and in nature strips.

I recently 'opened' the nature strip at (TV renovation show) *The Block* site in Bronte Court, Hampton. Design and planting of this nature strip was proudly led by local Black Rock resident, Dave Franklin, using native grasses, many of which were purchased from the Bayside Community Nursery.

While you're outside, keep a look out for any Tawny Frogmouths that might be visiting. Sir David Attenborough's *Planet Earth III* is coming to Melbourne soon and the BBC is looking for Tawny Frogmouths in suburban backyards.

You can read more about this on page 15 where we have included a link to a recent interview from ABC *Breakfast* host Sammy J with BBC producer Fredi Devas talking about this exciting initiative for Melbourne bird lovers to get involved in.

While not specifically the owl species Sir David is looking for, I did hear a Boobook owl while playing golf earlier this year in Cheltenham. It was a wonderful sound.



On page 4, you will find the link to Council's Have Your Say page where we are asking for feedback on our draft Urban Forest Strategy, which is out for consultation until 23 September. This is a very significant strategy for Bayside and your input is valued.

Before I sign off, I would like to encourage all of you to submit articles to this magazine about our local flora and fauna, things you see in Bayside, or knowledge you would like to share.

It could be as simple as a photograph with a few words describing a plant, insect, bird or other wildlife you find in your own garden or while exploring locally. Imagine one of your findings appearing on the cover of this local magazine that is designed to promote and protect our natural environment. Articles and photos can be sent to banksia@bayside.vic.gov.au

Cr Laurence Evans OAM
Mayor



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VICTORIA
**NATURE
FESTIVAL**

The Victoria Nature Festival is on now until Sunday 26 September. Explore and learn about our state's rich natural environment and wildlife by joining virtual events and experiences designed to connect people of all ages, abilities and interests from home.

Find us on 



Drosera by Pauline Reynolds



Rounded Noon-flower (*Disphyma crassifolium*)



Plants of Bayside

Words and photo by Aaron Hurrell,
Citywide Bushland Crew

Rounded Noon-flower

The Rounded Noon-flower (*Disphyma crassifolium*) is a perennial spreading ground plant growing up to 1-2 m wide.

Its succulent leaves are paired, shiny and cylindrical, growing between 1-4cm long by 2-8 mm wide. Mostly green in colour, the leaves can have a beautiful yellow or red tinge to them.

The pretty flowers appear daisy-like and range in colour from pink to magenta with a white centre. They can grow up to 5cm wide.

Disphyma crassifolium seeds form in a pod with a membranous cover while the roots form at nodes along runners.

This plant can be propagated by cuttings or seeds, and will grow in most soils if it has some reliability in full sun. Being able to tolerate saline conditions makes *Disphyma crassifolium* very useful for erosion control on embankments.

Our First Nations people used to eat this plant raw.

Source: Bull, Marilyn (1991) *Flora of Melbourne: A guide to the indigenous plants of the greater Melbourne area* Carlton Vic: Hyland House Publishing



Policy protects wildlife

Barbed wire on properties located on Council owned or managed land will now have to abide by the Management of Barbed Wire Policy unanimously endorsed at the June 2021 Council Meeting.

Under the new policy, Council will not install any barbed wire in the future (except in rare and exceptional circumstances). Council's focus will be the removal of any barbed wire in heathland and bushland reserves and open spaces with a primary role of conservation.

This policy paves the way for better protection of wildlife in Bayside and Bayside Mayor, Cr Laurence Evans OAM will be leading advocacy with other Victorian municipalities, local schools and businesses to where possible remove barbed wire on their properties in Bayside.

Read more about the policy here



Vote now for Victoria's first fossil emblem

A five-million-year-old fossil found in Beaumaris, *Pelagornis*, has been nominated by Melbourne Museum to represent Victoria as its inaugural fossil emblem.

By (A/Professor) Dr Vicki Karalis AM, MBBS, FACNEM, FASLM
President, Sandringham Foreshore Association

Victoria is the last Australian state or territory to name a fossil emblem and a winning nomination for *Pelagornis* would put Bayside in the spotlight.

An ocean bird with a six-metre-wide wingspan, twice the size of a living albatross, roamed the world's skies from just after the extinction of the dinosaurs until about 2.5 million years ago.

It captured prey in a beak over 30cm long that was studded with spiky projections of bone that provided the same function as teeth.

Most *Pelagornis* fossils around the world have been found in rocks that once formed on the floor of shallow coastal seas. Along the southern coast of Victoria, including inside Port Phillip Bay, the oceans of the past 25 million years are preserved in rock layers. *Pelagornis* was discovered in Beaumaris more than 150 years after it was first named and proved this bird had a worldwide distribution.

Vote Pelagornis
for Victoria's fossil emblem

**CLICK
HERE!**

Pelagornis fossil facts

Scientific name	Pelagornis
How do you say its name?	Pell-uh-GORE-niss
How big?	Its wingspan in life was likely more than six metres — far wider than birds alive today.
When did it live?	The Victorian Pelagornis lived here 5 million years ago.
What did it eat?	Fish or squid
Significant Victorian location	Beaumaris, Port Phillip, Boonwurrung Country
Traditional Owners	Bunurong people
Who named it?	French palaeontologist Édouard Lartet (1801-1871)
Who found it?	Pelagornis fossils have been found at Beaumaris by keen-eyed members of the public.
What is special about it?	Bony projections formed 'teeth' along the beak of Pelagornis.
Significance of the fossil	Fossils from Beaumaris, Victoria are the only fossils of these birds in Australia and show that Pelagornis visited every continent on Earth.
Full name and meaning	Pelagornis simply means 'ocean-going bird'.

Did you know?

Native bees are possibly more important than honeybees.

Australia has more than 1,500 species of native bees. Victoria is home to seven of the 10 major groups of native bees – Reed Bees, Blue-banded Bees, Teddy Bear Bees, Leafcutter Bees, Resin Bees, Masked Bees and Homalictus Bees – all of which are incredibly diverse.

Native bees are vitally important for pollinating native plants and wildflowers.

Experts are calling for native bees to be preserved while researchers are discovering unique benefits of native bees.

As our appreciation of native flora continues to grow, so too can our awareness and enthusiasm for native fauna.

Find out more ...



Read about the rare healthy sugar unique to native bees discovered by researchers at the University of Queensland by ABC journalists Anthea Moodie and Kallee Buchanan.



Watch Planet A's report on why we are saving the wrong bee including interviews with pollination experts.

Would you like to see more trees in Bayside?

have
your
say

Have your say on Council's plan to grow Bayside's tree canopy cover from 16% to 25% by 2030.

Our draft **Urban Forest Strategy** contains 42 actions to improve how we monitor, increase, diversify and maintain tree canopy cover, and support residents to plant and keep their trees. Under the strategy, we'll be planting more than 2,000 trees each year to promote ecosystem health and help to alleviate issues such as air pollution and the urban heat island effect.

Key actions to grow our urban forest include:

- A targeted, ambitious, and diverse public tree planting program
- Stronger protections for trees on private land
- Encourage new canopy tree planting on private land
- Active monitoring of the health and extent of our urban forest
- Education and support services for residents to maintain trees

There are a few ways to **provide your feedback** including: a survey and an interactive plant a tree map to show us where you'd like to see more greenery in Bayside.

The **draft Urban Forest Strategy** was developed using community focus group feedback and technical and expert advice, and is a key part of delivering urgent, meaningful action on climate change as set out in the **Climate Emergency Action Plan 2020-2025**.

Consultation on the draft Urban Forest Strategy closes on 26 September 2021.
visit: <https://yoursay.bayside.vic.gov.au/planting-protecting-trees>

Growing indigenous plants in pots

Story and photos by Pauline Reynolds

For something different in your garden, try growing native plants in pots.

In fact, our more temperamental indigenous plants sometimes do better in pots, which can be moved around your garden according to the season.

Winter flowerers brighten up the view from windows, making small shrubs, ground covers and wildflowers very rewarding.

When potting, always start with a container that's the right capacity for the plant's expected size.

Place a few bits of old broken terracotta under your pot to get it a centimeter or so off the ground especially if it's on hard paving. This will ensure it drains well.

Always use good quality native potting mix as ordinary potting mix may have the wrong nutrients for the plant such as too much phosphate, which can kill or stunt your plant.

Soak the plant in water then put it in the pot as if you were planting in the garden, leaving two or three centimetres at the top to hold the water.

It is a good idea to give a dilute solution of seaweed tonic to help reduce any shock to the roots but don't actually feed it until the plant has started to show signs of new growth. An occasional feed



with a dilute solution of liquid fertiliser two or three times a year is also helpful but avoid overfeeding.

Keep the watering up, especially in summer, making sure not to overwater. The soil should only feel moist to the touch. A good soaking three times a week, unless during a heatwave, is far preferable to a sprinkle every day. If the pot does dry out and become hydrophobic, try soaking it in a container of water until it stops bubbling or drip water for a time. This will saturate the mix again.

Remember, pruning is important too. Either tip prune regularly being sure to keep the flower buds or give the plant a good cut back and shaping after flowering then a light feed.

A selection of the prettiest wildflowers in the one pot, similar to the way exotics are sometimes arranged, is a nice option.

Experiment with plants and different pots like terracotta, rusted metal, old buckets and other interesting containers you may have around the home. Potting is fun, enjoyable and can add colour and interest to your garden.

Removing carp from local pond and lake

Council removed three large carp from Tulip Street Pond recently after it was drained along with Landcox Park Lake where around 30 large carp were removed. Carp is listed as a noxious aquatic species in Victoria under the *Fisheries Act 1995* due to its ability to play havoc with the ecosystem. Carp are known to have detrimental effects on native aquatic plants, animals and general water quality, largely because of their destructive feeding habits.



The native catfish and native freshwater turtle were released safely back into Landcox Park Lake.



This female carp was removed before her eggs were spawned.

Indigenous Bayside plants for nature strip colour

Story and photos by Sue Forster

Due to soil disturbance during kerb replacement work, my grass nature strip looked a mess for several years. In spring 2019, I decided to dig up it up, take out the grass and weeds, and replant with locally indigenous plants.

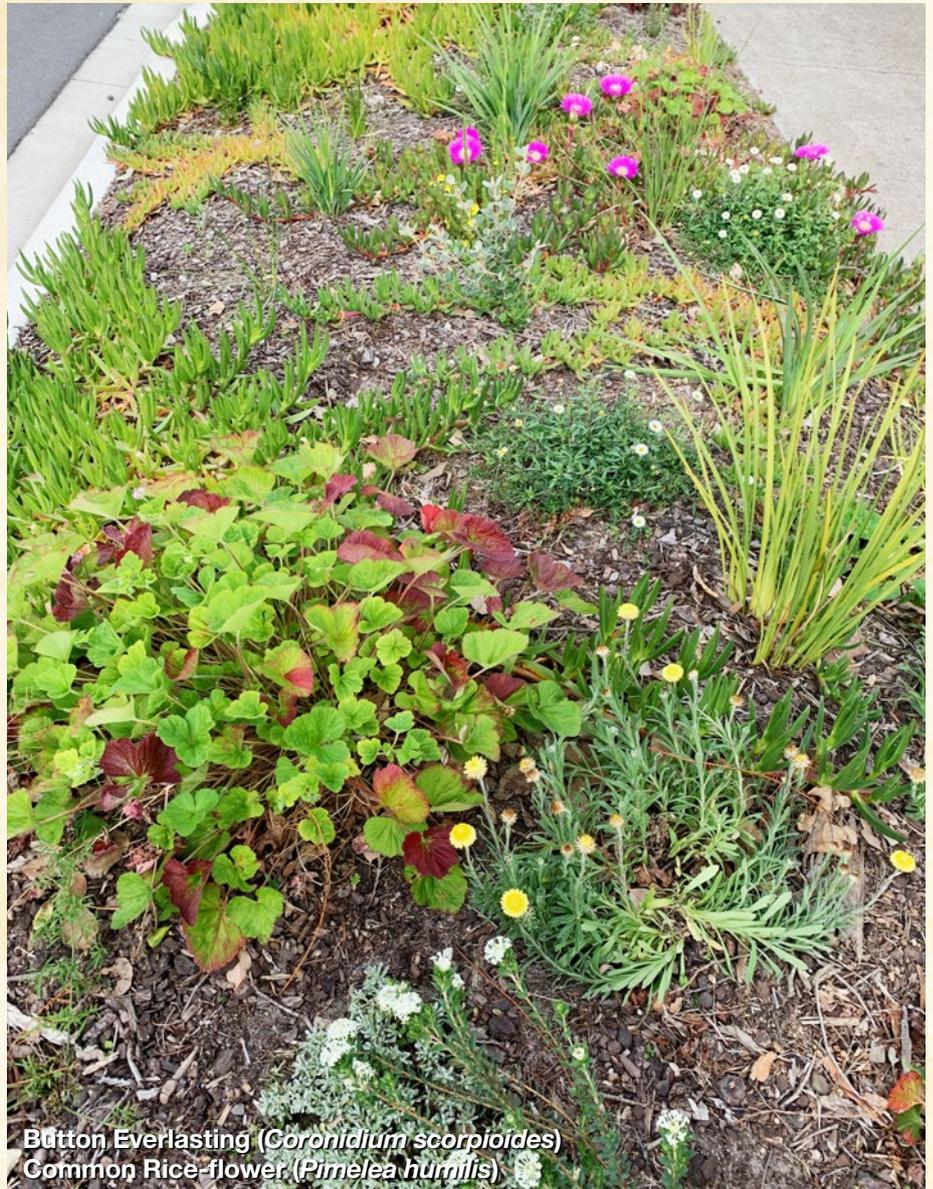
As a Bayside Community Nursery volunteer, I had a good idea which plants might be appropriate for the job, but I needed Council permission to carry out the work. This involved organising a Dial Before you Dig report to identify any underground services crossing the area and submitting a plan to Council with a plant list and a rough sketch of my planting scheme.

At first, my intentions were modest and largely aesthetic: I would do the work myself, as time permitted, aiming to create an interesting mix of colour, form and texture throughout the year. I needed hardy plants that were tolerant of poor sandy soil, some shade and low rainfall, and that would spread quickly to create groundcover.

The site has a couple of other problems. Firstly, a large eucalypt in my front garden overshadows the nature strip in the afternoon and sucks up a lot of moisture during summer. Secondly, the soil has been backfilled with stones in one patch and offers little substance for plant growth.

It took me three days to dig and rake out the grass roots, although I left about one-third under grass for our bins. Council regulations stipulate that plantings are to be kept pruned to a maximum height of 600mm and must be well clear (500mm) from the back of the kerb. My nature strip slopes down to the kerb, which makes planting difficult and getting out of a car on the passenger side even more difficult. I used the sand-dune succulent Karkalla (*Carpobrotus rossii*) to secure the slope, and I trim it back regularly away from the kerb.

On the flatter surface near the path I wanted a wildflower mix of colour, and a mix of spiky and soft leaf textures. Between the brilliant pink Karkalla



Button Everlasting (*Coronidium scorpioides*)
Common Rice-flower (*Pimelea humilis*)

flowers, Austral Stork's-bill (*Pelargonium australe*), Common Rice-flower (*Pimelea humilis*), Button Everlasting (*Coronidium scorpioides*) and Bundled Guinea-flower (*Hibbertia fasciculata* var. *prostrata*) have provided green and red leaf and pink, white and yellow flower colour over many months, with a brief purple splash from Long Purple-flag (*Patersonia occidentalis*) and Pale Flax-lily (*Dianella laevis* var. *laevis*) last summer.

My spiky Knobby Club-rush (*Ficinia nodosa*) and Multi-flowered Mat-rush (*Lomandra multiflora*) have flowered this August, along with silver-leafed

White Correa (*C. alba*) and green-leafed Common Correa (*C. reflexa*). Once the Correa becomes well established, I will have to keep it well pruned or pull it out.

Other plants still establishing in the mix include Austral Crane's-bill (*Geranium solanderi*), silver-leafed Common Everlasting (*Chrysocephalum apiculatum*), prolific yellow-flowering Hop Goodenia (*G. ovata*) and a small-leaf, pink flowering succulent, Rounded Noon-flower (*Disphyma crassifolium*).

My neighbours watched my labour with enthusiasm and Nicky, my next-door neighbour with a 'green thumb',



Long Purple-flag
(*Patersonia occidentalis*)



Austral Stork's-bill
(*Pelargonium australe*)



White Correa (*Correa alba*)



Karkalla (*Carpobrotus rossii*)

was inspired to plant her nature strip as well. Two species that have failed to flourish on my side, Running Postman (*Kennedia prostrata*) and Hop Goodenia, are looking great in a sunnier spot over her side, and her Grass Trigger-plant (*Stylidium graminifolium*) has just sprouted five new flower stems (still in bud). We have both mulched well with pine bark, and I continue to disperse any fallen leaves back onto my strip around the plants.

I have made one exotic concession with the inclusion of a few Seaside Daisies (*Erigeron karvinskianus*)

as I doubt my nature strip holds enough moisture for our local Coast Daisy (*Brachyscome parvula*). I still need to replace the worst patch of stony soil nearest my drive as nothing thrives there. However, experimenting with new plants from Bayside Community Nursery and watching the changes in my nature strip gives me great joy.

There have been other unforeseen social benefits from the planting. My neighbours love to stop and chat when they see me out weeding, planting or pruning the nature strip.

Most importantly, the broader ecological benefit of a mixed native planting is the re-establishment of 'habitat' for native fauna. Documenting the insects that have found my nature strip plants is an ongoing project, which I hope to be able to report on more fully in years to come.

For more information visit
Council's website.



Common Correa (*Correa reflexa*)



Bundled Guinea-flower (*Hibbertia fasciculata var. prostrata*)



Running Postman (*Kennedia prostrata*)



Multi-flowered Mat-rush (*Lomandra multiflora*)

When the playgrounds close

Words by Sue Forster

Photos by Kirsty Joosten

At the end of March 2020, a young neighbour, Iona, was going to miss out on her birthday celebrations due to our first COVID-19 lockdown.

Instead of sending a card, I decided to leave her a birthday message on a bare patch of my newly planted nature strip.

Iona's wonderfully creative response was delightful and so were the photographs supplied by her mother, Kirsty.

Between us, our seeds, pebbles, gum nuts, leaves, plaster bird, eggshell and feathers all proved marvellously malleable play materials.

The 'message' game continued over several days while Iona and Kirsty were out exercising, giving us some exciting surprises during an anxious period.





Boosting the resilience of our biodiversity

It is widely known that the original vegetation of Bayside is well adapted to fire. Our heathlands in particular need fire to maintain their biodiversity.

Story by Rob Saunders

Convenor, Friends of Long Hollow and Rare Plants Group

Photos by Pauline Reynolds

In the absence of fire, the number of different plant species present in an area decreases over time. One of nature's strategies to cope with climatic variability and irregular fires is to store seed in the soil, sometimes for decades. Seed can also be retained in capsules in the canopy, waiting for the right conditions to release them. However, if fire is too frequent or too infrequent, these natural seed banks can be depleted. It is a bit of a juggling act to manage fire so as to retain biodiversity, particularly in small urban bushland reserves.

What is perhaps less well known is that it is not just fire that needs to be managed to protect what remains of our original biodiversity. Certain indigenous species also need extended wet periods in order to survive. This is not surprising given the prevalence of wetlands in parts of Bayside prior to settlement. Draining and filling in swamps has been the single



most important reason we have lost more than half our original flora. Many of our moisture-loving species have become locally extinct.

Like much of Victoria, Bayside experienced a 'millennium drought' between 1996 and 2010. Over that period many local species struggled to survive and several disappeared from our bushland reserves. We can track the previous occurrence and extent of these species using authoritative and comprehensive records such as the

List of Local Native Plants by Dr Jim Willis (1989) and *Flora of Melbourne* by Marilyn Bull (4th Edn. 2014). Some older but less complete records are also quoted by Daintry Fletcher in *The Bushlands of Sandringham* (1988).

Luckily a wetter cycle has returned, at least for now. In two of the last three years, Long Hollow Heathland Reserve has seen surface water around its boardwalk for several weeks at a time. Interestingly, one of the species we thought had disappeared is now growing again in a damp area. It is a matting groundcover with the humble name of Creeping Raspwort (*Gonocarpus micranthus*). CityWide crew leader Will McGowan spotted it while weeding recently.

There are several records of Creeping Raspwort from Long Hollow, but it hadn't been seen for more than 20 years. It is now being propagated at Bayside Community Nursery, which is a vital asset in the conservation of our indigenous biodiversity. It will be a great addition to damp areas on golf courses and wetlands within the municipality and also to gardens around ponds.

George Street post ecological burn

It's almost five months since the ecologically controlled burn at George Street Reserve was carefully managed. Let's look at how it was done and how it has been revived.

How the ecological burn was managed

Story and photos by Cameron Arden
Citywide Bushland Crew Member

Ecological burns require a tailored management strategy to suit individual site needs. From fire application to vegetation regeneration, the 2021 burn at George Street Reserve has evolved and adapted in an ongoing manner.

With many thousands of *Ehrharta erecta* and herbaceous weed seedlings taking advantage of the abundant winter rains after the burn, it was clear that we would be quickly overwhelmed by hand-weeding.

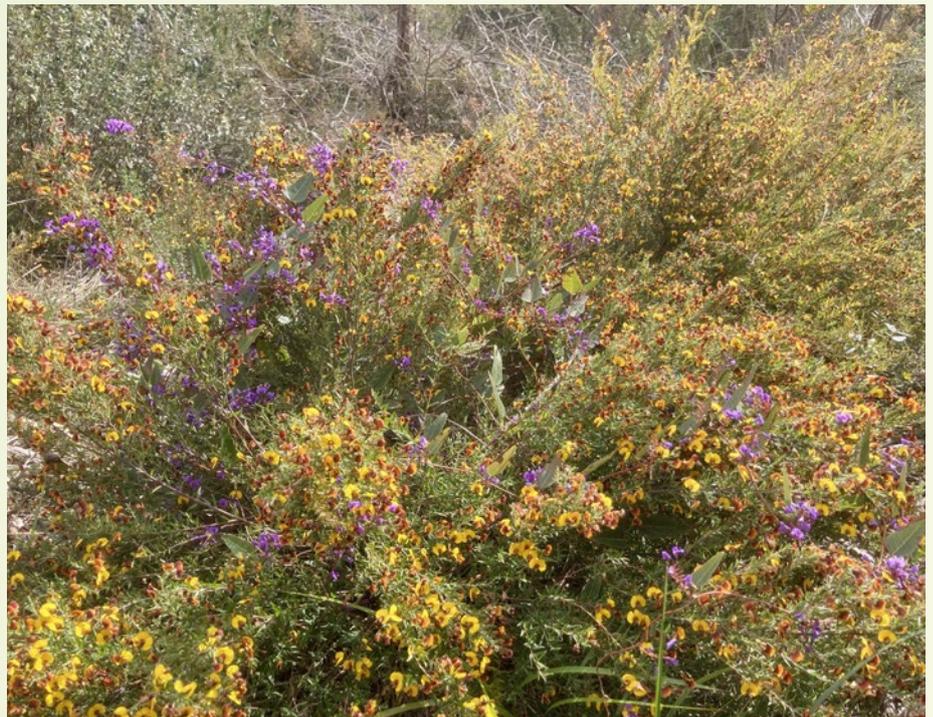
To have any chance of tackling this ever-greener problem we needed to pursue a method of management that was more time-efficient and cost-effective while remaining low-disturbance.

Drawing from much expert advice we decided to use minimal herbicide methodically on every new *Ehrharta erecta* seedling.

We diverged from traditional methods of application and opted for fine-tipped paint brushes. Using the paintbrushes delicately we were able to easily avoid non-target native species.

Trying not to miss any seedlings and prevent backtracking, we set up a grid system over the site. Two string lines were run the entire length of the burn roughly an arm span apart then two of us, starting from opposite ends, worked our way inwards between the strings. Adjusting the string lines we moved across the burn site, selectively painting the weeds.

This method has seen a very high level of success in weed suppression and has acted to support native seedling regeneration. Weed management exists in an ever-evolving state and we expect with the changing of seasons this technique can be repeated to tackle new emerging weed species.





Students from St John's Kindergarten regularly visit George Street Reserve and draw pictures about their observations.

Regeneration begins

Story and photos by Pauline Reynolds

Co-convenor, Friends of George Street Reserve

George Street Reserve is regenerating wonderfully well.

There is healthy growth from root stock but heathland species are also germinating from seeds including our very rare Sticky Longheads (*Podotroche angustifolia*).

It's also reassuring to see the Purple Coral Pea (*Hardenbergia violacea*) doing well in the Reserve also.

When the weeds grew in such abundance, there was a time when we felt despondent.

The Reserve had sat ready to be burnt for the whole of last year having been prepared, then put on hold by COVID-19 restrictions, so every weed took advantage of the space and light and the good rains.

Citywide has worked tirelessly to tackle the problem using methods – as described by Cameron – we haven't tried on previous burn sites, not forgetting that this burn was the first 4000 square metre ecological fire Council has undertaken, so a huge job.

Unfortunately, our volunteers were unable to participate in planting the final 200 plants this season because of COVID-19 restrictions but thankfully the Citywide crew got them all in.

Many people are walking along the paths at George Street, and it has been heartening to see so much positive interest in all the activity. I think there is now a much clearer understanding about what we are doing at George Street Reserve.

St John's Kindergarten have been regular visitors and the students have drawn pictures about their springtime observations. Such a lovely impromptu exhibition.

We look forward to seeing George Street Reserve bloom next spring!



Immediately after the ecological burn



Regeneration has begun

Go native this spring

By Pauline Reynolds

Spring has sprung and a Bayside gem is bursting with wildflowers and native plants.

Bayside Community Nursery Rob Saunders said, “Daylight hours are lengthening and the soil is nicely moist. Both the soil and the air are gently warming too – just what new plants love.”

Indigenous plants can help turn your garden into a climate-tolerant and wildlife-friendly space.

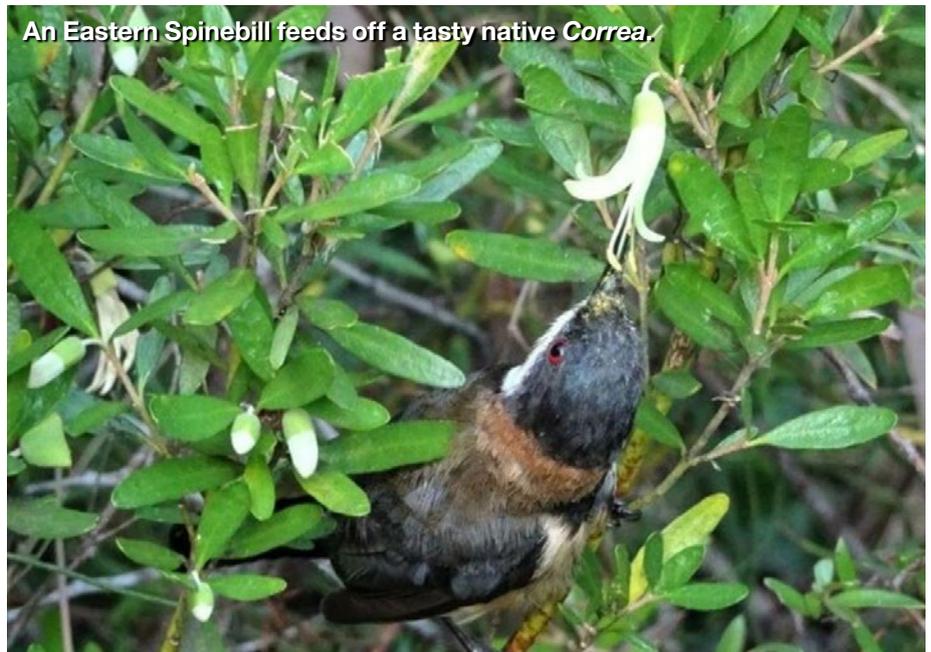
For example, by planting *Correas* you could attract the elegant, melodic Eastern Spinebill.

Rob suggests giving smaller birds shelter from more aggressive larger ones by planting a prickly *Acacia* such as Spike Wattle.

“Profuse wildflowers, already visible in the nursery and its display gardens, include Native Violet and the bright red Running Postman,” he said.

Nursery volunteers have continued to propagate plants even during COVID-19 lockdowns. These are used by Council in community spaces, which is part of Bayside’s *Urban Forest Strategy*, *Climate Emergency Action Plan* and *Biodiversity Action Plan*. Plants are also sold to local businesses, organisations

An Eastern Spinebill feeds off a tasty native *Correa*.



such as golf clubs to create habitat for wildlife.

I would love everyone to give indigenous plants a try; you will get a wonderful surprise.

A Gala Day at the Nursery is currently planned for Saturday 2 October but may not proceed due to lockdown. Our Gala Days are traditionally a great community event where visitors to the nursery can buy stock, enjoy a sausage sizzle and

build their knowledge about native plants.

Keep an eye on **Council’s website** to find out if the Bayside Community Nursery will open to the public for sales this season.

Bayside Community Nursery is located at 317-319 Reserve Road, Cheltenham.

On the tail of the eel – creatures of mystery

Learn about the cultural and ecological importance of eels from Gunditjmara traditional owner Uncle Denis Rose and Senior Scientist in the Applied Aquatic Ecology team at the Arthur Rylah Institute for Environmental Research Dr Wayne Koster who work in partnership to research eel migration.

The Department of Environment, Land, Water & Planning Victoria hosted this joint presentation from Denis and Wayne during NAIDOC Week. Enjoy a rare chance to dive into the mysterious world of eels.



[Click here to view the video](#)



Report helium balloon releases



The EPA is cracking down on helium balloons being released into the air and damaging the environment. Releasing helium balloons is considered littering and is illegal in Victoria.

Information provided by EPA

Wildlife can be seriously harmed or killed by balloons and their attachments. They can become entangled or ingest balloon litter.

Balloons floating in the water can look like squid or jellyfish. Marine mammals, sea birds and turtles often mistake them for food. In Victoria, seals and other animals have been known to become entangled in balloon ribbons which can cause lasting damage.

Zoos Victoria's campaign, **when balloons fly, seabirds die**, has more information about how you can take action.

Sustainability Victoria has more information about **preventing pollution from balloons**.

The EPA is now enforcing helium balloon releases and imposing hefty fines of up to \$991 for an individual and \$4,956 for a company.

If taken to court, the fine could be up to \$16,522 for a person and \$82,610 for a company.

Visit EPA website for more.

If you want to use helium balloons, EPA recommends keeping them indoors and making sure they are strongly secured. However, there are some great alternatives to balloons including:



blowing bubbles



reusable or recyclable bunting



floating flowers



paper decorations



planting a tree

Read more about alternatives to helium balloons and register your balloon-free event at zoo.org.au/balloons

Sir David Attenborough wants to film Tawny Frogmouths in your backyard

Source: ABC Radio Melbourne

Sir David Attenborough's *Planet Earth III* is coming to Melbourne and the BBC is looking for Tawny Frogmouths in suburban backyards.

Listen to ABC Radio host Sammy J's interview with BBC producer Fredi Devas on Melbourne's *Breakfast* show about why the world is "fascinated with our favourite nightjars."



Click here to listen





A peregrine falcon flying over Leipzig, Germany. Peregrines survive and reproduce more easily in cities than in rural areas. Sebastian Willnow / Picture Alliance via Getty Images

Urban refuge:

How cities can help solve the biodiversity crisis

Cities have long been considered species deserts, devoid of wildlife beyond pigeons and squirrels. But with animals such as snowy owls, otters and bobcats now appearing in urban areas, scientists are recognising that cities can play a significant role in fostering biodiversity.

By Janet Marinelli
Writing for *Yale Environment 360*

Last year, as billions of people around the globe were in coronavirus lockdown, students of Queens College ecologist Bobby Habig discovered a bobcat roaming around the Bronx River in New York City, better known for its recent past as an open sewer and repository for automobile tires and rusted chassis than as a habitat for elusive wildcats. In January, a snowy owl, native to Canada's Arctic tundra, touched down in Central Park for the first time in 130 years and spent more than a month supplementing its usual diet of boreal lemmings with choice urban fare such as mice and rats. For weeks

a coyote was spotted in the Ramble, a 37-acre "wilderness" of rocky crags and hilly forest in the heart of Central Park.

New York wasn't the only city where wildlife wandered freely. Sea lions galumphed up to shuttered storefronts in the Argentinian port of Mar del Plata. Mountain goats, which normally live on the rocky Great Orme in Wales, munched on hedges and grazed flower boxes in the nearby seaside town of Llandudno. A puma was seen in the deserted streets of Santiago, Chile's capital city.

Urban areas such as these have long been deemed to be devoid of biodiversity, especially by Americans, who glorify wilderness and believe that nature can flourish only where

cities do not exist. "It's been easy for people to think that cities, they're just these moonscapes, completely sterile environments with just humans and maybe trees or grass," said Seth Magle, director of the Urban Wildlife Institute at the Lincoln Park Zoo in Chicago. Even scientists bought into the narrative and believed "we have no business spending any time or energy in cities," he said.

As Eric W. Sanderson, senior conservation scientist for the Wildlife Conservation Society said, "I can't tell you the number of conservation analyses in which places like cities with high human influence were just blocked out because they have zero biodiversity value — they're wasted. There's nothing there."



Mountain goats roam the streets of Llandudno, Wales on March 31, 2020 while quarantine measures are in effect. Christopher Furlong / Getty Images

Wildlife is increasingly occupying novel niches such as green roofs, constructed wetlands and vacant lots.

This is called “the biological deserts fallacy” by the authors of a new paper in *BioScience*, who make the case that cities contribute more than we think to regional biodiversity. In fact, a raft of recent studies has found that long before the pandemic, the planet’s cities were important refuges for an array of plants and animals, in some cases even threatened and endangered species.

While the value of urban areas to wildlife conservation remains contentious, there is a growing recognition that cities are key to the future of conservation as the human footprint expands relentlessly around the globe. In fact, researchers are increasingly working with city planners, landscape architects and urban wildlife managers to make cities part of the solution to the global biodiversity crisis.

Recent studies have found that animals from fishers to coyotes are appearing in force in urban areas. Magle points to the expansion of coyote populations in the United States as an urban success story. “Ninety-nine percent are good at avoiding us and eating squirrels and rats,” he said. “In just the past couple of years, we’re suddenly seeing a ton of flying squirrels in Chicago,” Magle said.

“We never thought of them as an urban species, and now we’re seeing them all over the place.” Another surprise, he said, is the return of otters to the Windy City. “Who ever thought, given the quality of the water, that we’d ever see otters in the city again, but now they’re here.”

Some species, such as peregrine falcons, have higher survival rates or greater reproductive success in cities than in rural areas. Some even prefer urban landscapes. A 2017 analysis of 529 bird species globally found that 66 were found only in urban areas, including not only classic urban birds like feral pigeons, but also a variety of species native to their regions, like burrowing owls and black-and-rufous warbling finches. According to another review, diverse communities of native bee species persist in cities around the world, and in several cases, more diverse and abundant populations of native bees live in cities than in nearby rural landscapes. In Australia, researchers recently identified 39 imperiled “last chance” species that endure only in small patches of urban habitat, including trees, shrubs, a tortoise, a snail and even orchids.

For centuries, urbanization has resulted in the wholesale removal and fragmentation of natural vegetation. After the initial onslaught, a complex mosaic of novel habitats consisting of native, non-native, and invasive plants

emerged, dominated by buildings, roads and other impervious surfaces and contaminated with pollution.

Urban ecologists view these as a series of “filters” that make it difficult for many species to persist in cities, especially those with specific habitat requirements. Myla Aronson, an urban ecologist at Rutgers University, pointed out, for example, that so-called ericaceous plants such as blueberries and rhododendrons, which require acidic soils, have been disappearing from cities. One likely cause, she said, is that concrete has increased the alkalinity of urban environments.

While urbanization continues to pose a substantial threat to species and ecosystems, cities abound with a “wonderfully diverse” array of unconventional habitats “that can provide important habitat or resources for native biodiversity,” wrote University of Melbourne scientists in a 2018 paper in *Conservation Biology*. These range from remnants of native ecosystems such as forests, wetlands and grasslands, to traditional urban green spaces like parks, backyards and cemeteries, as well as golf courses, urban farms and community gardens. In addition, as cities invest in green infrastructure to ameliorate environmental harm, wildlife is increasingly occupying novel niches including green roofs and constructed wetlands and colonizing former brownfields and vacant lots. And the positive roles cities play in fostering biodiversity “can be bolstered through intentional design,” write the authors of the *BioScience* article on the “biological deserts fallacy.”

In recent years, urban ecologists have carved out a new niche in the field of conservation biology. One seminal paper, published in 2014, analyzed 110 cities across a range of biogeographic regions with comprehensive inventories of the resident plant life and 54 with complete bird lists. According to the study, the cities retained most of their native biodiversity. Aronson, the lead author of the paper, and her colleagues also found, however, that the plants and birds in the cities they studied had become much less abundant, losing 75 percent and 92 percent of their pre-urban density, respectively.

Some species have become more tolerant of the higher temperatures in cities.

Another founding paper of urban conservation biology, published two years later, was written by Australian scientists who found that cities harbor 30 percent of the country's imperiled plants and animals, including Carnaby's black-cockatoo, a large, gregarious cockatoo that lives only in southwest Australia, where large-scale farming has fragmented much of its habitat. In fact, they found that cities contained substantially more threatened species per square kilometer than non-urban areas. "Australian cities are important for the conservation of threatened species," they wrote.

Scientists have described several ways in which urban areas can benefit regional biodiversity. For example, cities can provide a refuge from pressures such as competition or predation that native species face in the surrounding landscape. A greater density of prey in cities has been linked to the success of several urban raptors, including Cooper's hawks, peregrine falcons, crested goshawks and Mississippi kites. Cities also serve as stopover sites where migrating birds can rest and refuel. Large city parks, such as Highbanks Park in Columbus, Ohio, provide critical stopover habitat for thrushes, warblers and other migratory songbirds.

Researchers have also documented adaptations that have made some species, such as acorn ants and water fleas, more tolerant of the higher temperatures in cities than in surrounding areas. These adaptations, they say, could create populations that may be better able to tolerate climate change and in the future could colonize and help fortify rural populations.

But urban conservation biology is still in its infancy, and much remains to be learned. "Because we have no idea, we start off with the assumption that wildlife will behave the same in urban habitats" as it does in rural ones, Magle said. But that prediction is almost invariably wrong. "You have to throw out the entire playbook," he said. "Sometimes I joke that I feel like I'm doing research on an alien planet."



A sea lion on a sidewalk in Mar del Plata, Argentina during a coronavirus lockdown, April 16, 2020. Mara Sosti / AFP via Getty Images

Magle, who got his start as an urban wildlife biologist by studying black-tailed prairie dogs living in sidewalk median strips near his home in Boulder, Colorado, founded the Urban Wildlife Institute (UWIN) to address one of the primary research gaps in urban conservation biology: the lack of multicity data. "Somebody would write a paper about how Toledo coyotes are super active at night. Then someone who studied coyotes in Dallas would come along and say, 'Well, I didn't find what you found so you're wrong.' And it drove me nuts," he said. UWIN has developed wildlife-monitoring protocols that employ tools like motion-triggered cameras to better understand the ecology and behavior of urban species, find differences across regions, and find patterns that remain consistent around the globe. These protocols are currently employed by research partners throughout the U.S. and in Canada.

To date, almost all urban wildlife studies have been done in North America, Europe and Australia. UWIN is trying to find partners in Asia and Africa, where most urban areas projected to become megacities in the next decade are located. In addition, just a few charismatic groups such as large mammals, pollinators and songbirds have received most of the research interest. Little is known about other groups, such as mice, voles, shrews and other small mammals, insects like flies and moths, reptiles and amphibians.

What's more, "It's worth remembering that some species are a problem" in urban areas, Magle said. "Some are a nuisance or carry disease." He said that greening cities needs to be better informed by wildlife science "so we can be sure to attract the species that we want."

"I think one of the biggest research gaps is how do we balance the different needs of multiple species with limited space," said Aronson, who has co-authored several papers on research needs in urban conservation biology. In addition, she pointed out, scientists still don't really know how much biodiversity different types of green spaces can support, although her research has shown that size is by far the most important factor in predicting their conservation value. "Larger spaces conserve the most species," she said. Another unknown, according to Aronson, is whether green spaces work together to provide habitat connectivity through a city, and if so, how, and at what scale. "Those are the big questions," she said. "There are many more."

Conservation "is not just about biodiversity but about the human relationship with that biodiversity."

Meanwhile, more than half of the world's human population lives in urban areas, and this is expected to rise to 70 percent by 2050. A striking 60 percent of the



A snowy owl in Central Park, New York on January 27, 2021. Cover images via AP Images

additional land projected to become urban in the next decade is yet to be built on. And some of the most rapidly expanding urban areas are in mega-diverse moist tropical forests along the Brazilian coast and in West Africa and southeast Asia.

More than a decade ago, Sanderson of the Wildlife Conservation Society, was pondering the future of conservation while standing under the Cross-Bronx Expressway, one of the busiest freeways in the U.S., beside the river that gave the highway its name. Just three blocks upriver, at the Bronx Zoo, is the headquarters of his employer, one of the oldest and most prestigious conservation organizations in the country, which is dedicated to conserving nature in the planet's most remote and sparsely populated places. "In contrast," he said, "before me was the antithesis of a wild place: an ecosystem that, in the popular vernacular of conservation, had been 'hammered,' which was literally surrounded by people."

However, years of community effort to pull up invasive plants, remove garbage and haul away abandoned cars from the Bronx River paid off, and even before the bobcat made its debut late last year, a beaver reappeared in 2007 after an absence of 200 years. The area is the last place most conservation groups would consider a priority, Sanderson and co-author

Amanda Huron wrote in "Conservation in the City," a 2011 editorial in *Conservation Biology*, yet people had cheerfully committed themselves to cleaning up the river, "because they live there."

Conservation, Sanderson said in a recent interview, "is not just about biodiversity but about the human relationship with that biodiversity." The healthier nature is in cities, where people live, the better that relationship will be, and the more people will care about preserving biodiversity everywhere, he said.

In fact, Sanderson believes that cities are "the way that conservation will ultimately succeed." In a paper analyzing demographic and economic trends, he and two WCS colleagues found, in a 2018 study, that as people have migrated from the countryside to towns and cities, poverty has diminished and fertility levels have dropped. And contrary to conventional thinking, per capita consumption also decreases in densely populated areas. "The conservationist's paradox," they wrote, "is that the same forces that are destroying nature now are also creating the circumstances for long-term success."

Drawing inferences from current patterns, Sanderson and his co-authors predict a severe bottleneck during the next 30 to 50 years, with heightened pressure on living systems, when more biodiversity losses can be expected.

"However, if we can sustain enough nature through the bottleneck," they write, the pressures will lessen, and a hundred years from now, with the vast majority of people living in cities, very few of them in extreme poverty, the human population could stabilize and even decrease. The only sensible path for reaching a world with 6 billion people and vast natural expanses, they conclude, is for conservationists to continue efforts to protect biodiversity, including in cities, "to build the foundations for a lasting recovery of nature."

Janet Marinelli is an award-winning independent journalist who was director of scientific and popular publications at Brooklyn Botanic Garden for 16 years. She has written and edited several books on imperiled species and the efforts to save them. She also covers ecological approaches to creating resilient landscapes and communities. Her articles have appeared in a variety of publications, from *The New York Times* and *Audubon* to *Landscape Architecture* and *Kew* magazine.

The more things change, the more they stay the same

Cycles of change are normal in nature. Like a slow motion kaleidoscope, a dynamic landscape has new kinds of environments that constantly emerge as others recede.

By Gio Fitzpatrick

For every successive set of conditions that come to the fore, there is a suite of specialised organisms waiting to flourish in a pulse of new life.

It could be the seed of a sun-loving plant waiting for a fire to clear away the dense undergrowth and trigger germination or it could be an Australian Spotted Crake waiting for a lake to evaporate and expose the bare muddy bed.

If, for example, the lake remained full all of the time, plants would grow densely to the water's edge and the crake would have no mud in which to find food.

If the lake remained low all of the time, the same thing would happen. It is the cyclical change between one state and another that unlocks the niches in between.

Many of these cycles of change are driven by two opposing factors:

1. The **succession** of plants, leading over time, from fast pioneer species through various intermediate stages and finally, to the strongest competitors that come to dominate and preclude others from growing or reproducing; and
2. **Disturbance**, which can reset the process of succession.

Large herbivores, like wombats weighing as much as three Angus bulls, once would have helped to keep vegetation open and diverse. But they gave way to humans, who skillfully burnt the land to achieve a similar effect. In so doing, humans have become an integral part of the very ecosystem that today we are trying to save.

High productivity grassland dominated by Kangaroo Grass has been well studied. It shows that in the absence of fire, it will quickly 'choke' with excess biomass and begin to lose its wildflowers and much of its animal diversity. After 7-11 years, even the Kangaroo Grass itself can die from the build-up of its own dead matter and the whole grassland can collapse permanently into one dominated by Spear-grasses or, more commonly, introduced weeds.

Aside from humans there are several other mammals in our region with an ability to change vegetation including:

- **Eastern Grey Kangaroos** – mowers that reduce the biomass of grasses, allowing other plants to survive in sunlit gaps.
- **Swamp Wallabies** – pruners that restrict the recruitment of woody plants and increase the density and flowering of those that do recruit.
- **Bandicoots** – ploughers that mix leaf-litter into the soil, spread fungal spores and create pits of bare, friable soil in which various seeds are able to germinate.

In the UK, land managers with an area about 35 times the size of Elsternwick Park Nature Reserve have introduced large herbivores and digging animals to naturally manage the vegetation succession.

The dynamic environment that ensued abounds with ecological surprises. Among them is a section of former farmland that has provided a new baseline for how many birds can be squeezed into a UK landscape.

Local ornithologist Tony Davis banded more Eurasian Blackcaps and Lesser

Whitethroats in two weeks on this property than in the rest of his 35-year career. The abundance of life in this kind of dynamic landscape is beyond anything we've come to accept as normal.

Most of the key drivers of vegetation disturbance are missing from the Elsternwick Park Nature Reserve, although I suspect that our Purple Swampheens are important in counteracting the march of rhizomatous sedges across the wetland. Even the seed bank of indigenous plants is currently lacking and will take time to redevelop.

Our challenge at Elsternwick Park is to generate cycles of disturbance and succession on various spatial scales that support high biodiversity and productivity. This will rely on community engagement and adaptive management.

I propose the following methods:

- **Bandicoot working bees** – groups digging scattered, shallow pits and scrapes, especially targeting relative monocultures. Kids with bikes and shovels have already begun diversifying Kikuyu monocultures.
- **Wallaby working bees** – groups selectively thinning the emerging woody vegetation and tip-pruning shrubs and herbs to increase density, flower-production and longevity.
- **Mowing/slashing** – creating strips and patchworks to reduce grass biomass and maintain floral-diversity and foraging habitat for wildlife including Eastern Rosellas and Superb Fairywrens. Care must be taken not to create too many broad, mown swathes with overhanging trees (Noisy Miner habitat).



- **Periodic drying of wetlands** – allow significant but gradual fluctuation in water levels of as many water bodies as possible. In the creek itself, this can be achieved by directing most of the flow to one of the major north or south wetlands while the other gradually recedes over months and vice versa.
- **'Micro-burns'** – burning and dowsing of very small areas (ie a few square metres of ground at a time). Burning can have a similar influence to mowing/slashing but with added benefits related to seed germination and other factors. As well as direct dowsing of burnt patches, planned burning could also be completed immediately before the commencement of sprinkler irrigation.
- **Murnong harvesting** – ideally under the guidance of traditional owners, the digging and replanting of Murnong has a similar ecological influence to bandicoot diggings but with added cultural benefits for the community.
- **Coppicing of certain trees** – by targeting Eucalypts but also some Acacias, flushes of young growth may be produced, which is ideal for many native moth caterpillars and for changing the vegetation structure to counteract the dominance of Noisy Miners.

The Gardener's Guide to the Birds of South East Melbourne

By Gio Fitzpatrick

If the joy of gardening, at its core, is about being a curator of life, growth and beauty, then why stop just at plants? Why not create an ecosystem and join your garden to the whole of the natural world?

Gardens can contribute enormously to nature restoration but little has yet been done to harness their potential (more for a lack of information than interest). *The Gardener's Guide to the Birds of South East Melbourne* is a synthesis of local knowledge, which will hopefully inspire and empower people to do just that.

The book covers all bird species known to regularly use local gardens and for each one, practically lays out the specific habitat features that either help or hinder it. This includes information on vegetation structure, plant species, novel ecological challenges and more. Further than just fighting the decline of birds in our area, the guide also introduces the possibility of actually turning the ship around and setting the stage for recovery.

To order a copy of Gio Fitzpatrick's new book, *The Gardener's Guide to the Birds of South East Melbourne*, please email gardenersguidetobirds@gmail.com

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Volunteers needed

Friends of Bayside Roads is looking for roadside litter patrol volunteers to cover a number of hot spot areas including Nepean Highway, Hampton Bowling Club, Brighton Golf Course, Hurlingham and Elsternwick parks as well as other routes in Gardenvale, Sandringham, Brighton, Highett and Hampton.

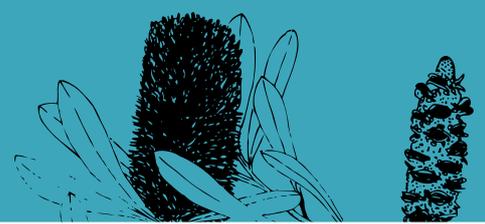
Most hot spot streets are patrolled weekly and these can be done on a day and time that suits you.

For more information please email Convenor, Derek Jones via derekhjones36@gmail.com or call **0417 360 747**.

Do you want to know more about Bayside and the Banksia Bulletin?

Please refer to our website

www.bayside.vic.gov.au



banksia bulletin

Editorial Policy

The purpose of publishing the Banksia Bulletin is to circulate information, report on events, and to profile relevant environmental issues important to our community. The Bulletin is also published to support the network of people involved in enjoying and protecting our local environment.

Bayside City Council encourages people from our local community groups to submit articles of interest, share experiences and news about any upcoming events. All articles are reviewed prior to publication and Council reserves the right to omit or edit submissions.

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Disclaimer

The views expressed in the Banksia Bulletin are not necessarily those of Bayside City Council nor its representatives.

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If you would like to be added to the Banksia Bulletin mailing list, please contact Bayside City Council on 9599 4444 or email: banksia@bayside.vic.gov.au Please indicate whether you would prefer to receive your Banksia Bulletin by email or via post.

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NATURE SCAVENGER HUNT

	A curved leaf	<input type="checkbox"/>		A spider web	<input type="checkbox"/>
	A spotted rock	<input type="checkbox"/>		Something yellow	<input type="checkbox"/>
	A track or footprint	<input type="checkbox"/>		A flying insect	<input type="checkbox"/>
	A seed or seed pod	<input type="checkbox"/>		A hole	<input type="checkbox"/>
	A bug or insect	<input type="checkbox"/>		A funny shaped cloud	<input type="checkbox"/>
	Something beautiful	<input type="checkbox"/>		An evergreen tree	<input type="checkbox"/>
	A feather	<input type="checkbox"/>		Three types of birds	<input type="checkbox"/>
	Some water	<input type="checkbox"/>		A stick shaped like a letter of the alphabet	<input type="checkbox"/>
	Tree sap	<input type="checkbox"/>		Something smooth	<input type="checkbox"/>

ECO EXPLORERS AUSTRALIA - www.ecoexplorers.com.au

by Kate Rijs

Australian Scavenger Hunt

Spring is here and what better time to start exploring nature again in your backyard and around Bayside.

This fantastic Australian Scavenger Hunt, hand illustrated and painted by artist and Eco Explorers bush playgroup facilitator Kate Rijs, will help you keep track of the wonderful bugs and creatures, plants and animals you discover.

Source: Eco Explorers