

Landcare UpHunter

Winter 2020

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Urban possums - we're lucky to have them!

Shortly after the sun sets each evening, common brushtail possums come out from their den sites to start their "day". Although they're called common, these native possums (often just referred to as 'brushies') are not as common as they once were, except perhaps in our towns and cities where they seem to make themselves well and truly at home.

I've been studying brushtails for over 25 years now, so you can see I'm going to be biased when I say I think they are wonderful. Why is that? They are adaptable, quick learners, comfortable around us and have a jaunty walk *plus* they are very pretty with long ears, delicate pink pointy noses and great bushy tails. Like most marsupials, female possums first rear their baby (a joey) in their pouch and then, once it is larger, carry them around on their back. At birth, these young joeys are pink and hairless - so they are called 'pinkies'.

To communicate with each other possums have a wide vocal range, including screeching!

If you live in the country you're lucky to be near our native wildlife but because I live in the city, I'm lucky to see much wildlife – and that's why brushies make my day. What about ringtail possums, you say? Yes, they live in cities too and that always surprises me.

Ringtails are much shyer, their diet is more specialised (and their guts are specialised too, but that's another story) and they make their own dens out of leaves (dreys) in trees.

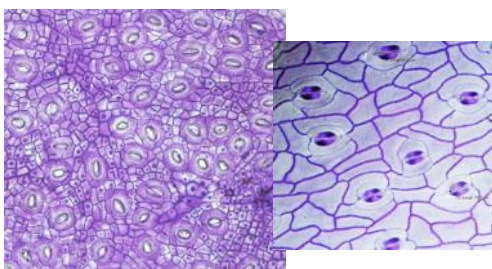
If we were to compare these two possum species with the native birds in our towns and cities, I'd say brushtails are rather like our cheeky in-your-face magpies while ringtails are more like the secretive currawong – in the background and just keeping their distance.

Back to brushies. What do they eat? Biologists call them generalist herbivores, which means they eat a huge range of plants; and because they are arboreal (live in trees) they eat leaves (and flowers and fruits) of trees and shrubs. These leaves naturally contain toxins but because possums have some capacity to digest and detoxify them, they can eat leaves that we never could. Urban possums and those living close to our homes in the country can access and eat more nutritious food than possums that are living in the bush.

If you have a veggie patch or you have a compost bin and it is unprotected, possums will make the most of lovely, tasty, sweet fruit and veggies. They love peach trees. They love apple, banana and peanut butter. They like orange, pear, strawberries and grapes and they'll eat a bit of carrot, corn, sweet potato, mandarins and kiwifruit. To my surprise they don't much go for lettuce, spinach, broccoli or bok choy - but on second thoughts, if you had a choice, would you? I have also heard of them eating an egg and even the odd sausage. Of course, just like us, if possums lived on just their favourite foods, they'd probably be nutritionally imbalanced.

We think of the species as a generalist herbivore, but do all brushies eat the same diet? Like us, the answer is no – even possums who all live in the same region. At the University of Sydney (School of Life and Environmental Sciences) we've been measuring the diet of individual possums in North Turramurra in Sydney—on the boundary between houses and Ku-ring-gai Chase National Park.

Plant cuticle is the outer protective layer of a leaf, which limits its water loss. Each plant species has a different pattern of cells seen clearly once you stain the cuticle. The images here show stained cuticle leaves of two native plant species, Fringed wattle (*Acacia fimbriata*) and Narrow-leaved ironbark (*Eucalyptus sparsifolia*), viewed under a microscope. We compare a reference set of these cuticle images to those we find in possum scats, to work out what plants possums eat. By carefully examining their scats, we've found some possums eat a very narrow range of foods – and these specialists eat the plants with naturally occurring toxins in them, so we like to think of them as the new koala! Other possums are generalists, eating a broad range of foods, mixing the nasty plants with lots of nutritious plants too and some of them switch between the two strategies. *cont'd. page 3*



Acacia fimbriata

Eucalyptus sparsifolia

Photos: Anushika Herath



Possum in tree

Photo: Katie Wat



A bold possum

A shy possum

Photos: Clare McArthur

5 Fun and Easy Gardening Activities for Kids

National Tree Day started in 1996 and since then communities around Australia have planted over 26 million trees. In the Hunter, people of all ages have been part of these activities e.g. schools, sporting clubs, families and business. Though normal National Tree day community planting events are now re-scheduled to 2021, there are many other activities you can do now. The Tree Day team has produced several research reports and here are some their key findings from *Needing Trees – The Nature of Happiness*:

Children who engage in just one third more outdoor activities than their peers grow up to be happier adults.

- Nature has the ability to influence happiness as it has direct and positive effects on the brain and the body's response to stress.
- Exposing children to environments reduce stress and increase wellbeing has long-term effects on the structure of the brain and happiness later in life (research has shown that nature provides us with a wide range of benefits for our health and well-being).
- 3 out of 4 adults played outdoors more often than indoors when they were young, compare that to only 1 in 10 children of today.

We always need nature but maybe now more than ever we need some extra healing from the natural world—that is all around us.

Here are some of our top activities for kids from the Tree Day team:

Build an Enviro Diorama

A diorama is a mini-world or scene in a box! A fun way to highlight your local environment or an environmental issue you are passionate about.



Make a Mini-Herb Garden

All you need is potting mix, a recycled container, trays, spray bottles for watering your seeds, some strong sticky tape, fertiliser and your seeds.

Go on an Environmental Treasure Hunt

Explore your local environment and find what's listed on the *Treasure Hunt Activity Sheet*. You could even photograph or sketch your find in an explorers log book! If you do this in a team, maybe talk about the favourite thing you found and why. Take care not to hurt any plants or any animals.



Become a Nature Explorer

Get creative with our nature explorer's logbook, use crayons, paints, pens and pencils. Take your Mum. Dad, friend or wizard. Find some earthworm friends and describe the trees and other living creatures that you found.

Be a Leaf Detective

Did you know that a single leaf can say a lot about a tree? There are many different leaf shapes and sizes, all come with different edges – toothed, undulated, lobed and much more. They come in different colours too. All you will need for this activity is a pencil, selection of leaves and the activity sheet from the Tree Day site – become a certified leaf detective and tell all your friends about it!

There are lots of fun ways you can celebrate the importance of National Tree Day. Maybe even plant a tree in your own backyard. Head to treeday.planetark.org to find out more or to link to activity sheets directly go to treeday.planetark.org/toolkit—have fun!

Jennifer McMillan



Sydney Science Trail—Online

National Science Week will be held from the 15th to 23rd of August. If you haven't heard of this annual event before, it celebrates the achievements and significance of applied science, technology, engineering and math (STEAM) within Australian communities. How is your school planning to participate in National Science Week? If you don't know, maybe ask your teacher what is planned.

A great way to be part of this online event is to link into the Sydney Science Trail, normally held in Sydney during National Science Week. Lucky for us, this year it will all be held online and will run for a whole month, from the 15th of August to 15th of September.

The Australian Museum and the Royal Botanic Garden will jointly present the Sydney Science Trail to celebrate Australian science through a wide range of activities, talks, panel conversations, exhibitions and workshops, all presented in digital format. You can live stream panels with experts; access live science shows, get at-home science activities and specific citizen science activities.

The theme for this 2020 month-long event is 'Adaptation'. Access is via the NSW Department of Education online platform, DART. You don't have to be a student, teacher or parent of a current student to link into this great, educational website. Just go to DART via <https://dartconnections.org.au/> and look at the events, activities and information there—or maybe sign up for the newsletter.

Ruth Hardy

Urban possums - we're lucky to have them! (cont.)

So not all brushies are generalists. Having specialist and generalist possums living in the same area probably means they compete less for food. What's the consequence? They can pack themselves in, living at higher densities, than if they all ate the same thing.

Our research includes measuring the personality of individual brushtail possums. You may wonder how we do that, given we can't hand them questionnaires. Instead, we trap them at night, a couple of times each, and film them in a little arena for some 5 minutes before then letting them go again. We measure how they behaved across tests and, using some statistics, rank individuals in terms of their personality traits (characteristics) defined by how bold, exploratory and active each possum is.

We discovered highly exploratory possums eat a much broader diet than do less exploratory ones and they are more likely to solve a puzzle we give them (opening a door-flap from a box) and for those living on the edge and for possums living on our urban-natural bush boundary. Highly exploratory possums extend their home range further into the urban side than do less exploratory ones. Bold possums are much more likely to come to the ground to eat than shy ones are which makes sense but they forage less efficiently at risky feeders. Is this because bold possums are braver or simply don't recognise the risk? At this stage we don't know.

So when next you see a possum, ask yourself: is this one shy or bold? Is it exploratory? The answer to these questions will tell you something about how it copes with the world around it; whether it's a fussy feeder or not and whether it is likely to get out of tight places by using its head to solve a problem. Not all possums are the same.

We may often only value things once they become rare. I like to value possums even though, in some places, they are common.

Acknowledgments: thanks to my PhD and Honours students, past and present, who have worked tirelessly at night gathering all our possum data; particularly Anushika Herath, Katie Wat, Valentina Mella, Anahi Castillo Angon and Natasha Wiggins.

For more details about some of this work and for the relevant articles you can email me direct at clare.mcarthur@sydney.edu.au.

Clare McArthur



Possum in arena

Photo: Anahi Castillo Angon



Radio Tracking

Photo: Katie Wat



Possum with peanut butter sandwich

Photos: Anahi Castillo Angon



Resources & Funding

Big Shifts for Small Farms podcast—Grow Love Project 10-part series to assist small scale farmers. Covers a wide range of topics from soil health to mental health, with farmers and industry experts looking at real-life stories and support information. To view any or all of the series link in through your usual provider to Big Shifts for Small Farms or via the [Greater Sydney LLS website](https://www.growloveproject.com.au/).

Community-based battery storage—ANU Battery Storage & Grid Integration Program webinar that looks at modelling projects and some pilot projects in community battery storage in Australia. View webinar <https://www.youtube.com/watch?v=LQHNBVV-Qjl>

PestSmart: new wild dog management videos—National Wild Dog Action Plan podcast with a two part series focussing on management strategies used at grazing properties in the Paroo region. Landholders share their experiences—part 1 establishing a coordinated wild dog control program; part 2 new tools for ongoing wild dog control at <https://pestsmart.org.au/education-videos/>

Feral/wild deer aggregator—Centre for Invasive Species Solutions project looking at a feed structure that essentially aggregates deer through its functionality and prevents non-target native animals from feeding. To access go to <https://invasives.com.au/>

Threatened Species Index—Threatened Species Recovery Hub newly released research on 57 threatened and near-threatened Australian mammal species, covering 1995-2016 data across 1,186 different locations nationwide. Just go to <https://tsx.org.au/>

Using flies to help track calicivirus in feral rabbits—ABC article looking at ways flies assist in detecting RHDV strains in pest rabbits. Dr Robyn Hall (CSIRO Rabbit Biocontrol team) www.abc.net.au/news/2020-05-05/blowflies-help-manage-pest-rabbits/12213136

Funding

Rural & Regional Enterprise Scholarships Program—QTAC organised scholarships of up to \$18,000 (depending on the length of your course), to study from Certificate to PHD level, for students from regional and remote areas of Australia. A course must last for a minimum of 6 months. For information Tel: 1800 290 970 or view via the website at <https://www.qtac.edu.au/rres-program>

Australia Post Community Grants Programme—Funding up to \$10,000 for local organisations aiming to connect individuals in communities, to enhance mental wellbeing project activities. Applications close 17th of July.

Access details on auspost.com.au/about-us/corporate-responsibility/our-community/local-support/community-grants-program.

Events for your Diary

Landcare UpHunter stall—farming, environment, Landcare, education resources, plants/herbs. Visit us at: Events on hold until further notice.

Birds in Backyards: Winter Survey - in July. List the bird species seen in your garden, upload your findings at www.birdsinbackyards.net

Hunter Livestock Forum—online. To book: <https://hunterlls.wufoo.com/forms/2020-hunter-livestock-forum/>

The Botanic Gardens Biosecurity Network—webinars held fortnightly on a Wednesday 2.00 to 2.30pm.

Register for upcoming webinars or to access recordings of past ones—just link in to extensionaus.com.au

Subjects covered include 'Keeping the Garden Green; Watch out for environmental pests: Myrtle rust'.

Plastic Free July—1st to 31st July. For ideas, online event information etc. just go to plasticfreejuly.org/

National Science Week 15th to 23rd August. Information on this event can be found at scienceweek.net.au

Sydney Science Trail (online) from 15th August to 15th September. For information see bottom of page 2.

Merriwa Landcare Group. Contact Jenny Lee on 0429 337 557

Murrurundi Landcare Group. Please Email Sandy@boydscreek.com.au

Pages River Warriors Working Bee Email Sandy@boydscreek.com.au Postponed until further notice.

Scone Landcare Inc. Contact Ruth Email: sconelandcare@gmail.com or Tel: 0407 232 539

Landcare UpHunter—details below



Landcare UpHunter

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Opinions & views expressed in this newsletter are not necessarily those of Landcare UpHunter. We reserve the right to edit article contributions.

Landcare UpHunter is hosted by Scone Landcare Inc.

Online Exploration

Following on from the last edition of Landcare UpHunter, here are some more website links and apps for individual citizen science exploration and community organisation use.

Urban Wildlife app

Part of The Clean Air and Urban Landscapes Hub (CAUL Hub) activities, this app was developed to assist with citizen science monitoring of native wildlife and is focussed on urban areas. View their records so far or the map with recorded sightings and other data.

What behaviours have you observed of urban wildlife in your area? How can we support native wildlife and their habitats so that these populations are conserved or enhanced?

Look at the Bell frogs, Flying foxes, Beneficial insects citizen science projects and other publications, platforms and tools provided for your use. The 'Research' area has sections on air quality, urban greening, shared study sites and urban habitats and urban systems. Go to The Clean Air and Urban Landscapes Hub at www.nesurban.edu.au to connect.

NatureMapr

A cloud software platform for community organisations, government, individuals working in the environment sector, to collect, manage and analyse their data on the natural world. Plants, mosses, birds, mammals, reptiles, insects, fish, invertebrates—all are covered.

View 'Atlas of Life in the Coastal Wilderness' or 'Southern Highlands Nature Map', the list of flora and fauna species sighted (incl. feral pests). App, website www.naturemapr.org



iNaturalist

A joint initiative of the California Academy of Sciences and National Geographic Society, this website gives opportunity to learn more about the plants and animals worldwide. To date, it has nearly 40 million recorded observations and includes over 278,000 species!

Whether you find a rare insect, bird or plant in your local area, in public space or on your travels, or have a common weed or other plant species in your garden, your findings can contribute to scientific information that other citizen scientists and researchers access.

Where and when do organisms occur, connect with experts who can assist in identifying organisms you see, find a project of interest, or do you have one you want to initiate?

Start an observation journal to record your sightings, then register them on the iNaturalist website and join in the online discussion across the world. You can access their app from Google play or the App Store. Log in and view at www.inaturalist.org/ for more details.

Bush Blitz

As the largest nature discovery project in Australia, the Bush Blitz website allows citizen scientists and taxonomists document and upload details of our native plants and animals.

It is estimated there are over 650,000 native species in Australia with only 25% identified and scientifically described to date. People just like us participate in Bush Blitz and have helped to discover and identify 1,700 new species, with thousands more records added.

You can go on a virtual expedition via the website and discover more about the amazing plants and animals living in your own backyard, local area, wider region and in Australia.

Explore your own environment and record your finds. Work by yourself, with your family, at school or elsewhere, then upload the information you have gathered onto the website.

As you discover, over time, the wide variety of animal, bird, insect, invertebrate, reptile, tree and other native plants etc. living in your own environment, keep your records in the one book or place and see how diverse the natural world around you is—then share it!

Go to BushBlitz.org.au for information on participating in this national project and to look at the data etc. You can also check out the video on Youtube (or access this via google).

Ruth Hardy

Visit us at www.landcare.nsw.gov.au/groups/scone-landcare-group