

December 2018 Edition



*Left: Hansi Wegner at Balcombe Estuary using a small video camera on a telescopic pole he has developed for monitoring nest boxes.
Above: A photo by Matt Stahmer of cool temperate rainforest at Peninsula Gardens Bushland Reserve*

Greetings Landcare members & associates,

It is with much sadness that we note the passing of Matt Stahmer of the Natural Systems Team at the Mornington Peninsula Shire. He was a strong supporter of Landcare and Friends Groups and their endeavours. The photo above taken in Peninsula Gardens Reserve by Matt showcases one of his many skills (photography) and his love of the peninsula. I've been thinking a lot about the strength we all receive from nature. At this busy time of the year, I encourage you to take some time out for yourself to re-energise and reflect on the big picture – what a beautiful place we live in and how lucky we all are. A few weeks ago, I headed out to Balcombe Estuary to check out Hansi Wegner's great camera set up for nestbox monitoring which transmits live videos to a handheld screen. On behalf of the MPLN, I wish everyone a wonderful festive season and look forward to working with you to achieve your Landcare goals in 2019.

Warm Regards,

Jacqui Salter, Landcare Facilitator for MPLN Jacqueline.salter@mornpen.vic.gov.au
ph: 5950 1279 or 0408 213 079. Please note I work Mon-Wed 9am – 3pm.

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1. Opportunities & News

Update from J Salter, Landcare Facilitator

The ‘Roadside Weeds Subcommittee’ of the MPLN met recently and decided to summarise the state of our high priority roadsides to submit to the VicRoads ‘Roadside Environment Committee’. The roadsides I’ve been photographing and noting the major weeds on include Arthurs Seat Road, Mornington-Flinders Road (near Main Ridge Flora Reserve), northern end of Dunns Creek Rd, Balnarring Road (near reserves), White Hill Rd and Boneo Road.



The Norman Wettenhall Small Grants have just opened for applications and I’ll be working with Michele Sabto and Virginia Carter to submit an application for funding of LMPL next year. I’ve also been working with Matt Woods of Biomedica to edit our video for the ‘Getting the Dirt on your Soils’ project which we will release early next year. Over the quieter summer period, I’ll be working on updating our mapping of where Landcare groups are undertaking work.

Finally, last week I also attended the DELWP ‘Weeds at the Early Stages of Invasion (WESI)’ Weed workshop run by Kate Blood and Bianca Gold. The top weeds were:

1. Sicilian Sea Lavender
2. Berry-Flower heath
3. Chilean needle grass
4. Black Flag/Star fish iris
5. Bitou Bush
6. White flowering Brooms
7. African Daisy



Weed samples from WESI workshop.

Notes are available from me by request – just drop me an email:

Jacqueline.salter@mornpen.vic.gov.au

Greens Bush to Arthurs Seat Biolink – update from Chantal Kelly

Environmental weeds are a major threat to our natural environment. These weeds impact the environment by smothering indigenous vegetation, preventing the regeneration of indigenous plants, reducing habitat, displacing native fauna, and harbouring pest animals such as rabbits and foxes. In addition, environmental weeds can choke waterways, increase flooding and reduce water quality, increase fire risk and alter hydrological and nutrient cycles. Environmental and noxious weeds also impact agricultural production and can damage recreational, tourism and cultural values. During October and November, the Greens Bush to Arthurs Seat Biolink's bushland regenerators have been busy with woody weed control throughout the biolink, focussing on high threat and habitat changing environmental weeds such as Sweet Pittosporum, Blackberry and English Ivy (to name but a few). This important work will continue on into the new year.

In addition, a huge highlight this month has been the installation of ten nesting boxes to provide homes for local hollow dependent wildlife on participating GB2AS properties with an absence of hollow bearing trees. Boxes were installed in evergreen trees in suitable locations by a qualified arborist. The specially designed boxes made from environmentally friendly EcoPly will hopefully become home to a variety hollow dependant species, including Microbats, Pardalotes, Rosellas, Owls, Kookaburras and Possums. I have already received news only two weeks after installation that a Kookaburra has already taken up residence in one of the boxes. As we monitor, I will be sure to provide you all with updates. Wishing you all a wonderful Christmas and a restful and safe holiday season,

- *The 'Greens Bush to Arthurs Seat Biolink' is delivered by the Mornington Peninsula Landcare Network and the Port Phillip and Westernport Catchment Management Authority through funding provided by the state government's 'Our Catchments Our Communities' initiative.*

New National Landcare Program Smart Farms Small Grants - Closing 11 Jan

The program aims to protect, conserve and provide for the productive use of Australia's water, soil, plants and animals and the ecosystems in which they live and interact, in partnership with industry, communities and other governments. For further information and/or to apply for the current National Landcare Program Smart Farms Small Grants please go to the following link <https://www.communitygrants.gov.au/grants/national-landcare-program-smart-farms-small-grants-0>.

There is potential interest from Peninsula Landcare Groups in partnering with farmers thinking of putting in an application. Landcare can provide additional expert assistance and in-kind support in the form of volunteers. One area of priority is for enhanced vegetation and weed and feral animal removal along Splitter's Creek as a part of the Green's Bush to Arthur's Seat Biolink project.

If interested, please contact Greg Holland (greg@carranya.net).

Survey of Community Experiences from 'Our Peninsula 2021'

Our Peninsula 2021 was developed by the Mornington Shire Council in 2016-17 based on wide community consultation and feedback (see www.mornpen.vic.gov.au/files/assets/public/new...us/.../171306ca_att_33_1.pdf). Djarra Delaney, a student at the University of Melbourne currently undertaking research for a Master of Environment program focused on Climate Change adaptation, is looking for volunteers involved with the overall community interaction under what was then called Your Peninsula 2021 to be interviewed on their experiences and views.

Interviews will be approximately one hour long and will be scheduled around participant's time commitments. Data collected during the interviews will be anonymised and securely stored and participants will have the opportunity at any stage of the Further information: Djarra Delaney | 893679 | MC-ENV delaneyd@student.unimelb.edu.au | 0400418152

Gems from the Building and Maintaining a Vibrant Committee & Group Workshop

Last week, the MPLN hosted a 'Building and Maintaining a Vibrant Committee and Group' workshop. It was run by environmental community engagement specialist Kimberly Boswell, an inspiring woman who has worked in the industry for more than fifteen years. Some of the key learnings were:

- Know who you want to recruit and for what. Make the roles specific e.g., someone just to keep website up to date
- Make your contact individual – get names and contact details
- Make sure that when people arrive at an event (e.g., working bee), that they are given a role and made to feel valued and welcomed.
- Accept offers of help, even if they're not the way you've always done things
- People join groups because they want to belong, meet people, share and interest, build a resume, to get specific info (amongst other things).
- People leave groups because they don't feel welcomed, can't see results, negativity, not feeling appreciated.
- Communicate via a variety of methods
- Follow up after someone's first encounter with your group. Phone call – how did you find it?
- Tell your Landcare group's story, but don't make your group the hero. Open with your problem. Make the landholder the hero. Include a call to action.
- The secret to fabulous meetings: freedom & flexibility, social aspect, fun, good food, skilled facilitation at service of the group, establish group rules and stick to them.
- Celebrate your group's success!!!

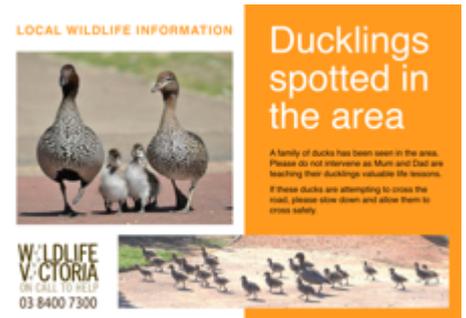


Participants in the 'Building and Sustaining a Vibrant Group' workshop with Kim Boswell (in green in the front).

- *Article by Jacqui Salter, image by Hannah Brown*

Wildlife Information

Wildlife Victoria (a not for profit native animal rescue service) has some good information on where current wildlife nesting and related activities are occurring. This includes wildlife information signs that can be printed off and displayed. <https://www.wildlifevictoria.org.au/wildlife-information/wildlife-fact-sheets>



In memory of Matt Stahmer



It is with much sadness that we received news that Matt Stahmer died of heart failure whilst surfing on 19th November. He was a gregarious and caring person who would go above and beyond to help others. He was also hilarious. I had the wonderful experience of working with Matt in the Natural Systems Team of the Mornington Peninsula Shire since I began in 2012. He was passionate about the local environment and his legacy lives on across the peninsula, including a significant patch of Calcareous Swale Grassland he helped to establish at St Andrews Beach Recreation Hall, his work to protect the Frankston Spider Orchid, the biolinks along Browns Road Rosebud and Meakins Rd Flinders and so much more. His hearty laughter and zest for life will be missed by all who knew him. Our thoughts are with his family and friends.

- Jacqui Salter, Landcare Facilitator

Reminder! Like @mplandcare Facebook page

Please 'Like' the Mornington Peninsula Landcare Network Facebook page (@mplandcare) and choose to receive notifications to keep up to date with Landcare-related news.

<https://www.facebook.com/Mornington-Peninsula-Landcare-Network-958968857459004/>

2. State of the Environment

Have Your Say: Draft Biodiversity Conservation Plan

The Mornington Peninsula is a unique place when it comes to biodiversity – it is home to an incredible range of plants and animals, including species and areas of regional, state, national and international significance.

The Shire has just released its draft Biodiversity Conservation Plan for public comment, and are inviting Landcare Groups to 'Have Your Say'.

Significant research and consultation has been undertaken to develop the draft Plan, which establishes strategies and actions to help us achieve best practice management for the protection and enhancement of biodiversity on the Mornington Peninsula. The draft Plan is largely informed by our State of Biodiversity Report which, for the first time, brings together information on the peninsula's biodiversity values – their extent, condition and threats. Drawing on data from scientific, government and community sources, this comprehensive report is essential reading for anyone interested in the peninsula's natural environment. You can read more about the State of Biodiversity report on our [Biodiversity page](#).

The draft Plan is on public exhibition until 20 February 2019 and you can download a copy at:

<https://www.mornpen.vic.gov.au/About-Us/Have-your-say/Have-Your-Say-Draft-Biodiversity-Conservation-Plan>.

The Natural Systems Team is also planning an information session on the draft Plan for our Friends and Landcare Groups in late January – so stay tuned, we'll let you know the details via email.

An Australia-wide Program to Monitor Changes to Threatened Species

Over the history of the earth there have been periods of expanding species richness and variety, interspersed with massive species extinctions. The rise and demise of the dinosaurs is one well-known example.

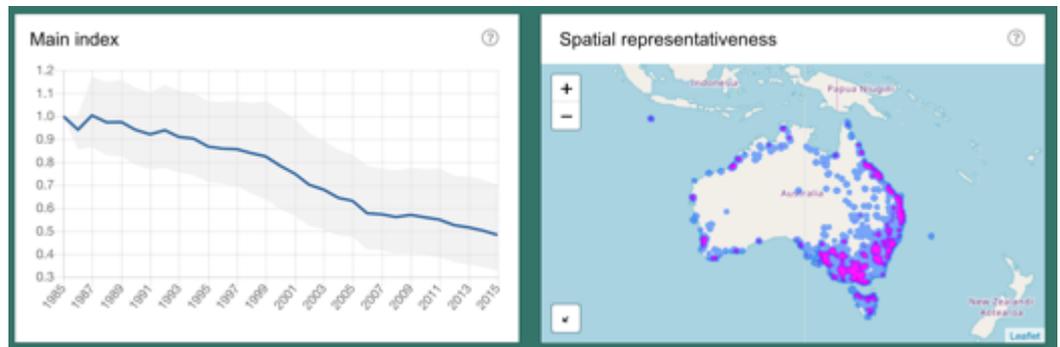
Fast forward to the present. Several hundred years ago, global species richness was at an all-time high. But as we have entered the Anthropocene (a period when human activity has become the dominant influence on the climate and environment), we have entered a sixth period of mass species extinction that is at levels never before seen and is occurring at time scales of decades rather than the thousands of years for past extinctions.

In addition to extinctions, there is a worrying trend in the number of collapses of entire populations (e.g. where a species approaches or becomes extinct in one region without disappearing globally). For example, “*Roughly a third (8,851/27,600) of all land vertebrate species examined are experiencing declines and local population losses of a considerable magnitude*” and “*as much as 50% of the number of animal individuals that once shared Earth with us are already gone, as are billions of populations*” (Ceballos et al 2017). This is of concern because such losses presage further extinctions that may be sneaking up without our full understanding.

Such assessments are somewhat uncertain because of the lack of concrete data extending over sufficient length of time to discern trends.

Enter the **Australian Threatened Species Hub** (TSH 2018a) and their initiative to gather objective, country-wide assessments of trends in species numbers, diversity and local population. The results are freely available using a web-based tool that enables one to look at a variety of species and regions (TSH 2018b), and sadly our record is not good. Shown below is the Australia-wide trend in all bird species that lie in the near-threatened to critically-endangered categories. In just thirty years, the numbers of these bird species has declined by around 50% on average, and there is no bird species in these categories that has not seen at least a 30% decline.

Trends in Australian bird species listed as near-threatened to critically endangered (left panel) and sites where the supporting observations have been taken (right panel). An index of 1.0 on the left scale indicates the species status in 1985.



The grey area in the left panel indicates the trends in individual species. Taken from TSH 2018b.

These data underline our comparative record globally, where we have the fourth-highest rate of species extinction. They also emphasise the importance of our MPLN efforts to establish major biolinks between existing residual patches of native ecosystems.

Have you been collecting data on one or more local species, or would you like to collect such data? The good news is that you can contribute to the survey through an interactive page accessible from their main website.

References:

Ceballos et al 2017: Biological annihilation via the ongoing sixth mass extinction signaled by vertebrate population losses and declines. *PNAS July 25, 2017 114 (30) E6089-E6096*. <https://doi.org/10.1073/pnas.1704949114>

TSH 2018a: <https://tsx.org.au/about/>

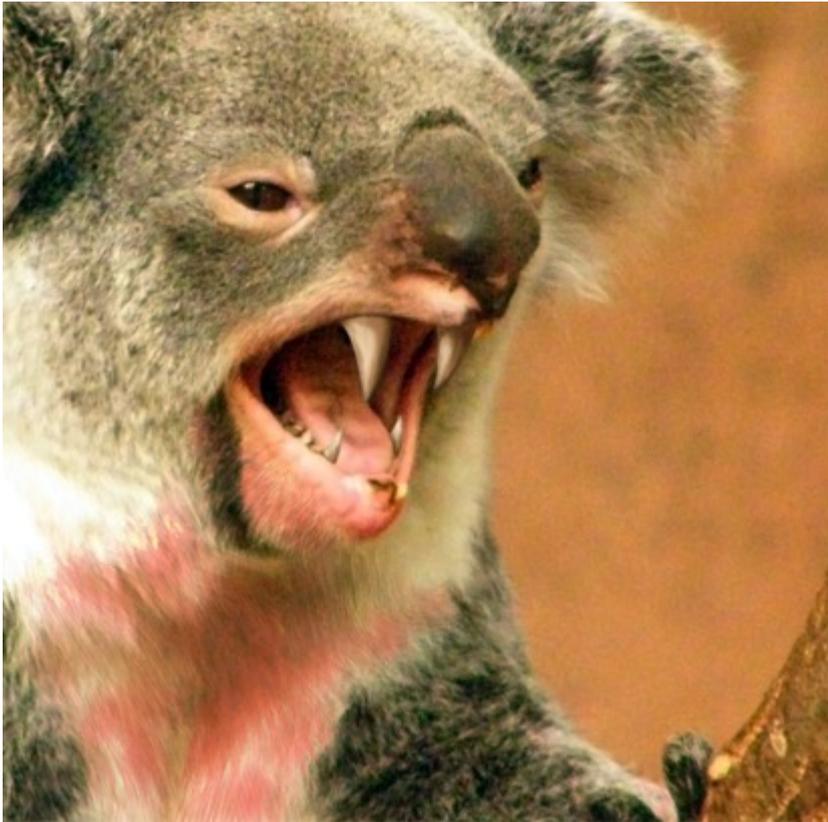
TSH 2018b: http://www.nespthreatenedspecies.edu.au/SfSS%208_WHOLE_V8.pdf

- Article by Greg Holland

Out of Hibernation and Hungry

A lonely pair of shoes found beside the trail as I recently wandered through the bush provides a stark reminder of the danger that lurks in our lovely eucalypts.

Drop Bears (*Thylarctos plummetus*) sit patiently in the treetops - waiting, waiting. Along you come without a care in the world. Down one plummets to snatch you back into the tree. A quick bite to the neck and the feasting begins. It happens with such force that one or two shoes sometimes are left behind, a useful diagnostic for determining if there are drop bears around.



Since no other remains are ever found, the number of victims is probably underestimated. There are even those that claim drop bears are fictitious - an outlandish creation to scare children, city slickers, and those chappies from England.

Do not believe it!

They are real and dangerous, a killer species bred by koalas as punishment for loss of habitat and all those hugs they have to put up with. Dropbears are even recognised by the Australian Museum as distinct a species in the *Thylarctos* (koala) genus – though for some strange reason the museum seems to think they only appear on April 1st?

<https://australianmuseum.net.au/drop-bear>

I have noticed a distinct increase in shoes along bush tracks in recent years, and even in the burbs - all lonely and forlorn, the only memorial to their careless,

unbelieving owners.

But there is hope - speaking Strine loudly or rubbing vegemite behind the ears and under the armpits is an effective and time proven deterrent!

- Article by Greg Holland, drop-bear image from wiki media commons (<https://commons.wikimedia.org/wiki/File:Dropbear.jpg>)

Now that is a Compost Heap

Sitting here, thinking of my compost heap, I am all forlorn and sad – and just a little bit jealous. Around a cubic metre of organic refuse carefully collected and turned sits quietly decaying down to lovely soil for the gardens. But, I visited Garry Crittenden (of Crittenden Wines) recently and his compost heap is bigger than mine – much bigger.

Garry has been pursuing organic principles in the vineyard for quite some time and is a source of considerable experience and expertise on the benefits of recycling and reducing the use of chemicals to a minimum. All the detritus from the winemaking process is used to make up a long row of compost, currently adding up to 500 cubic meters!



Let's have Garry explain the process in his own words: *“we collect the grape residue along with the grape stalks and transport this to a specially set aside and prepared corner of our vineyard. We then shred dozens of large round hay bales the like of which are commonly seen in paddocks everywhere and mix this all together with tonnes of stable manure from a nearby horse stud. This is then formed into one long windrow, which over the next 12 months is turned and reformed monthly while the aerobic bacterial ferment takes place. This results in the growth in the compost of countless billions of beneficial bacteria.”*

“After 12 months the compost is loaded into a specially designed spreader and broadcast over the entire vineyard at the rate of 12 tonnes per hectare.”

“In April we lightly cultivate and harrow the vine-rows in readiness for the sowing of a green manure crop as an additional source of biomass. The crops vary from year to year but always have two species including one that produces nitrogen.”

“Typically the crops could be oats for bulk and dwarf broad beans for nitrogen. [oh, and the occasional feed for our family and friends.]”

“Rather than mowing or ploughing the crop into the soil in the spring we roll it down flat to form a dense mat that slowly decomposes into the soil and additionally provides valuable mulch for moisture retention over the summer months.”

Landcare is arranging a group visit to the winery early in the new year so all can find out for themselves. Watch for the notice in February. In the meantime, more information is at <https://vimeo.com/277598439>.

I suppose I had better go back and tell my little cubic metre that I still love it, sigh.

- Article by Greg Holland, image from Garry's video at <https://vimeo.com/277598439>.

3. Monthly Features

Plant of the Month: Ruddy Ground Fern

If you notice some strange ‘bracken’ (*Pteridium esculentum*) scrambling up and over an old tree stump or mound, look more carefully – it may be another ground-fern species from the same family. It may even be an uncommon or rare one from the *Hypolepis* genus. Here we provide an example of the ruddy ground-fern.

Species name: *Hypolepis rugulosa*; **Family:** Dennstaedtiaceae.

Origin: Australian native, found throughout SE Australia and in the far SW and also through SE Asia.

Status: Uncommon on the Peninsula.

Growth Habit: Typically found in moist-wet areas along creeks and near standing

water, shady or sunny. Individual fronds 1-1.5 m but it may scramble up and over local obstructions and may form dense thickets that are higher.

Reproduction and Dispersal:

Reproduction is by spores that develop underneath and near the lobes of the pinnae (leaves). Dispersal is by water and perhaps on bird feathers or animal fur.

Toxicity: Nil

Similar Native Plants: Other members of the *Hypolepis* genus, from which it is easily distinguished by the deep red stems near the base and the soft, drooping young fronds.



Further reading: <https://vicflora.rbg.vic.gov.au/flora/taxon/5f30640a-3b29-4572-a97b-05f9b68d9622>

- Article and images by Greg Holland; the distribution is from Atlas of Living Australia.

4. Upcoming Events

Description	Time & Date	Location	RSVP date	Contact
Natural Systems Team Biodiversity walk and talk	Sat 15 Dec 9 – 11am (30min chat then walk with staff)	Merricks Red Hill Trail, Red Hill End, Red Hill Station Picnic Shelter, next to carpark off Point Leo Road.	<i>No specific date, but RSVP to the contact address</i>	biodiversitywalkmerrickstrail.eventbrite.com

Biodiversity walk and talk

Come and learn about our local bushland reserves



Merricks-Red Hill Trail

Saturday 15 December, 9 – 11am (30min chat then walk with staff)

Meet

At Red Hill End, Red Hill Station Picnic Shelter, next to carpark off Point Leo Road.

Merricks Trail

There are many wonderful and unique places on the Mornington Peninsula. We have 63 different types of vegetation communities and the Shire looks after more than 250 bushland reserves. The trail has some great remnant patches of vegetation including Herb Rich Foothill

Forest and Damp Forest. It is a great refuge for many bird species so come along and see what we can find. We will walk to Tonkins Road if time allows.

Shire staff will be there to chat with you about:

- What we do in bushland reserves
- What the Landcare groups do
- Flora and fauna
- Fire management
- Our goals for this reserve
- Any other questions you may have



RSVP

If you are coming, please let us know your attendance via Eventbrite:

biodiversitywalkmerrickstrail.eventbrite.com



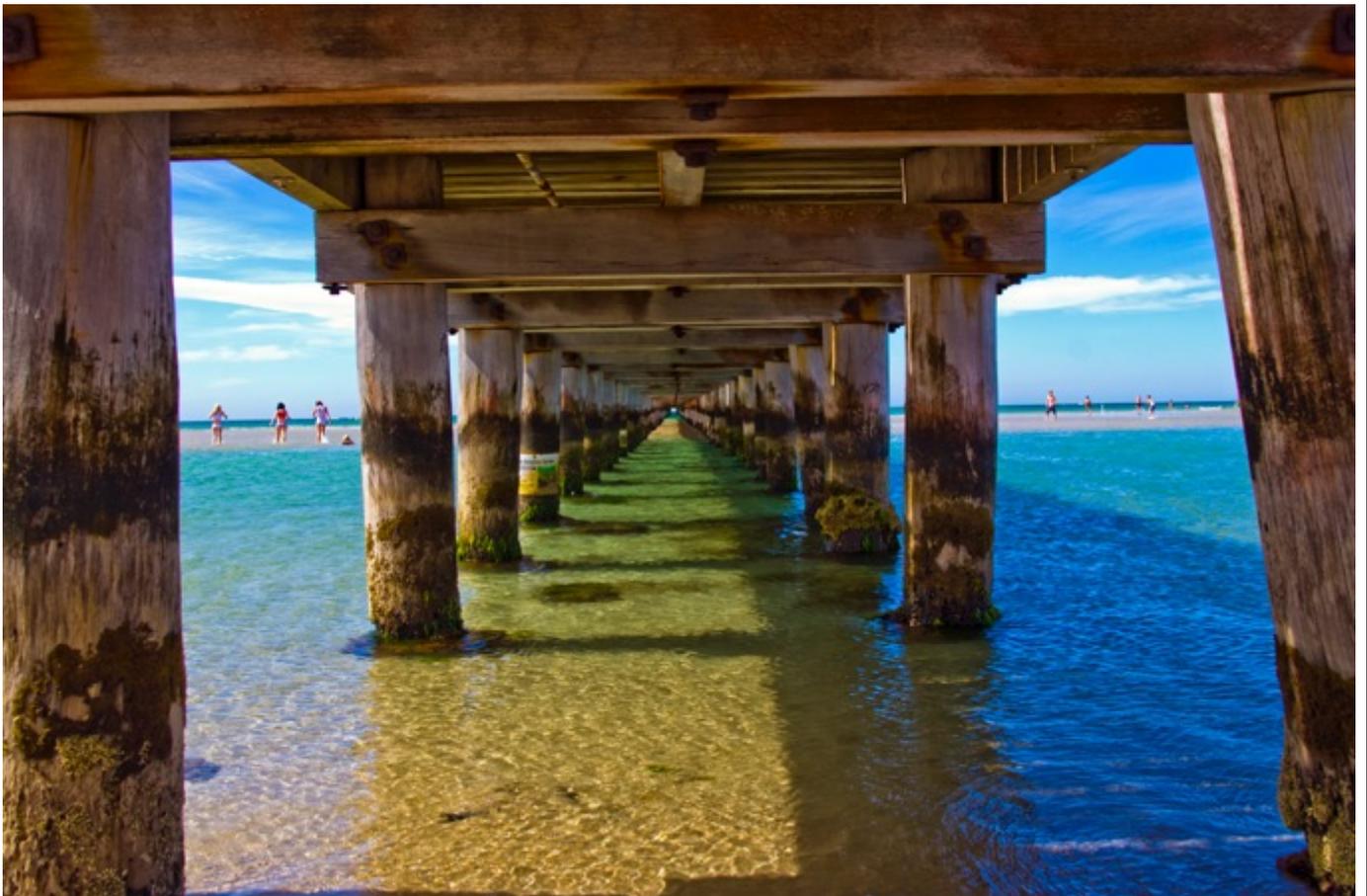
SAVE THE DATE

NEXT LANDCARE VICTORIA INC BIENNIAL FORUM
29 – 31 MARCH 2019

LANDCAREVIC.ORG.AU

Landcare Victoria Inc. Biennial Forum - 29-31 March 2019

Further details coming soon!



Water Cricket at Rye Pier January 2009

5. Mornington Peninsula Landcare Network Grants Guide Dec 2018

Name of Grant	Date due	Amount	Details
Norman Wettenhall Foundation	Open: 3 Dec	\$5,000 or \$5,000-\$25,000.	https://wettenhall.org.au/grants/small-environmental-grants/
National Landcare Program Smart Farms Small Grants	Fri 11 Dec	\$5000 - \$200,000	https://www.communitygrants.gov.au/grants/national-landcare-program-smart-farms-small-grants-0
Australian ethical community grants	TBA upon registration	TBA upon registration	https://www.australianethical.com.au/community-grants/
MP Shire Flexigrant	All year	Up to \$1000	http://www.mornpen.vic.gov.au/our_shire/community_grants
FNCV Environment Fund	TBA upon registration	Up to \$1000	http://www.fncv.org.au/environment-fund/
RACV	All year	Up to \$2000	https://www.racv.com.au/about-racv/our-business/community-involvement/community-support.html
Ross Trust	All year	Up to \$20,000	http://www.rosstrust.org.au/grants/apply-for-a-grant/
EPA Inspiring Environmental Solutions community funding program	All year	Around \$25,000 to \$100,000.	http://www.epa.vic.gov.au/our-work/programs/inspiring-environmental-solutions
John T Reid Charitable Trust	All year	Not specified	http://www.johntreidtrusts.com.au/whatwefund
Melbourne Water Stream Frontage Grant	All year	Variable	https://www.melbournewater.com.au/
Canon Oceana Environmental Grants	Ongoing	\$11,000	https://www.canon.com.au/about-canon/community/environmental-grants
Sidney Myer Foundation	Ongoing	Not specified	http://myerfoundation.org.au/grants/sustainability-environment/
Colonial Foundation	Ongoing	Not specified	http://www.colonialfoundation.org.au/4330926/colonial-foundation-trust-grant-program.htm
Greenfleet	Ongoing	Can be substantial	https://www.greenfleet.com.au/

6. Local Information

Home Harvest exchange: Too many lemons and not enough parsley? Why not take part in a Home Harvest Exchange? This community initiative allows people to bring their own excess produce and go home with someone else's for free! Bring home grown edibles, eggs, preserved produce, honey, seeds and seedlings. No minimum amount and no money changes hands.

Mornington 3 rd Sat of the month; 2pm - 3pm Dig It, Mornington Community Garden, Mitchell St, Mornington. (Melways Reference: 145 D3)	Rosebud Last Saturday of the month; 2-3pm Rosebud Community Garden, Lawson Park, Leon Av, Rosebud. (Melways Reference: 170 F2)	Mount Martha First Saturday each month 3-4pm The Briars, 450 Nepean Hwy, Mt Martha.
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Eco Living Display Centre: Open: Fridays 1-4pm & first Saturday each month 9.00am-1.00pm. For activities and workshops - visit www.mornpen.vic.gov.au or contact the Renewable Resources department on 5950-1259.

Help and Advice for Native Fauna and Flora

Wildlife Contact Information about wildlife rehabilitators, rescue organisations and veterinarians in your local area who can care for the type of animal in need of help, such as a kangaroo or koala. It is smartphone compatible and includes advice for first responders according to the type of wildlife and the injury it appears to have sustained. (<https://www.wildlife.vic.gov.au/injured-native-wildlife/help-for-injured-wildlife>).

Snake Catcher: <https://www.mornpen.vic.gov.au/Your-Property/Animals-Pets/Pest-Nuisance-Animals/Snakes>.

Wildlife Help on the Mornington Peninsula (WHOMP): All hours 0417 380 687 or 0417 395 883.

Animalia Shelter: 0435 822 699 All hours www.animaliawildlife.org.au

Crystal Ocean Wildlife Shelter (Rye): crystal_ocean2003@yahoo.com.au 0407 787 770

Advice on Removing Native Vegetation: For assistance and advice in relation to the removal of native vegetation, please contact nativevegetation.support@delwp.vic.gov.au

Shire Nursery at Briars: Open Wed/Thurs/Fri 9.00am – 3.00pm and first Saturday each month 9.00am-1.00pm. The Shire Nursery specialises in indigenous and native plants. Ph: 5974-8417, email nursery@mornpen.vic.gov.au

Land for Wildlife: If you wish to create or protect wildlife habitats on your property, then the Land for Wildlife scheme can offer advice and assistance. Participation is free and membership doesn't alter the legal status of your



property in any way. A Land for Wildlife sign is provided free of charge to acknowledge the efforts being made for wildlife conservation. Contact Peter Johnson Statewide Coordinator and Newsletter Editor Department of Environment, Land, Water and Planning (DELWP) Box 3100, Bendigo Delivery Centre Bendigo, 3554 Victoria, Australia Tel: (03)

5430 4358 Fax: (03) 5448 4982 peter.johnson@delwp.vic.gov.au <https://www.wildlife.vic.gov.au/protecting-wildlife/land-for-wildlife>

Landcare and Related Contacts

- **Jacqui Salter**, Landcare Facilitator, MPLN Jacqueline.salter@mornpen.vic.gov.au ph: 0408 213 079
- **Greg Holland:** Newsletter Editor greg@carranya.net
- **David Maddocks**, President of MPLN david.maddocks@bigpond.com ph: 0429 990 518
- **Michele Sabto**, Project Coordinator for 'Linking the Mornington Peninsula Landscape' project linkingmlandscape@yahoo.com.au
- **Chantal Kelly**, Project Coordinator for 'Greens Bush to Arthurs Seat Biolink' project: chantalkelly77@gmail.com
- **Sarah Saxton**, MP Shire Agribusiness & Food Industry Officer, sarah.saxton@mornpen.vic.gov.au
- **Lizzie Younger**, Melbourne Water River Health Officer, lizzie.younger@melbournewater.com.au

Newsletter Feedback

Do you have a story to tell? Is there a weed, plant, fungus, slime mould, or animal that you want to know about? Have you identified a new, rare, or interesting species? Or a good book? Please contact greg@carranya.net for it to be featured in the newsletter.

7. Image at the end: Southern Old Lady Moth

With summer now officially here, the butterflies and moths are starting to appear. Although the regular southerly outbreaks and cold rain has kept numbers down compared to other years, we shall soon see clouds of browns, blacks, whites, and multi-coloureds rising up before us as we wander. Then, in the evening the lights will be surrounded by moths, their navigation systems confused by the strange light source.

One of my favourites is the Southern Old Lady Moth (*Dasypodia selanophora*). Endemic to, and reasonably common in southern Australia, southern old ladies extend over to Norfolk Island, NZ and even down to Macquarie Island. They are nocturnal and dine off the local acacias.



Despite their nocturnal nature they are commonly seen because of their habit of sitting motionless all day, even in the open, and their large size (up to 90 mm wing span).

Butterflies and moths (Lepidoptera) are remarkably successful, having occupied virtually every habitat, from water to land, low to high, and even inside or in close relationship with other species. There are ~175,000 species around the globe and >14,000 in Australia, of which the moths make up about 90%.

Notice the shimmering look in the above image. All Lepidoptera are covered in scales developed to provide camouflage, to confuse predators, to mimic poisonous insects, and even to help with insulation and gliding. The scales are actually minute platelets that provide colour (including iridescence) through pigments, photonic crystals and diffraction gratings. Photonic crystals are arrays of nanometre-sized holes that let some wavelengths through and reflect others – thus providing an intricate array of colours. Diffraction gratings have the same effect and are responsible for the rainbow effects often seen on CDs. The patterns that arise from both crystals and gratings may change when viewed from different angles, this creating an impression of movement.



For example, the large ‘eyes’ on the old lady’s wings arise from it using some quite sophisticated rearrangement of light through diffraction gratings to confuse predators into approaching from what appears to be the ‘back’, but is actually the front. By doing this, the moth can see the threat coming in time to take evasive action.

- Article and images by Greg Holland.