

VICTORIAN

LANDCARE

Summer 2014/15 Issue 62

& CATCHMENT MANAGEMENT



TECHNOLOGY FEATURE

Wildlife caught on camera

Landcare monitoring by drone

Technology in the Mallee

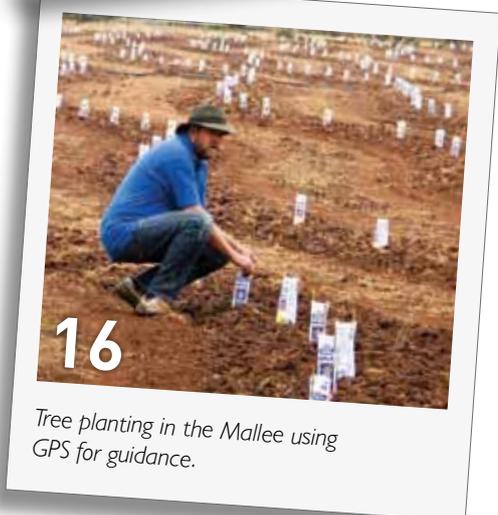


Landcare
Victoria



Victorian Landcare and Catchment Management

SUMMER 2014/15 ISSUE 62



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Cover photograph

Ian Vaskess (left) and Jasper Hails from Friends of Bunyip State Park checking a wildlife monitoring camera trap with Christine Connelly from the Victorian National Parks Association. Photograph by Tracey Koper.



From the Minister

Dear Landcarers

It is a great honour and privilege to serve the people of Victoria, particularly in the critically important environment, climate change and water portfolios. These areas face many challenges and the direction we all take together will shape the future health, liveability and prosperity of Victoria for generations to come.

The Victorian Government recognises that to meet these challenges we need new approaches to strengthen and support our network of dedicated local community groups across Victoria. We will work with the community to create a new vision for the management of our natural environment, on both public and private land. The commitment of local people looking after their local area is an inspiration to me, and together we can strengthen the care and protection we all give our environment.

We have a proud history of connection to Landcare and I am committed to supporting that even further. We will work hard to support Landcare groups and community conservation groups, maintain support for facilitators and

improve management arrangements for groups. We will also work closely with local councils and landowners to better manage weeds and pests on public and private land. We will do this by listening and delivering change by consensus.

It is rewarding to be able to contribute to this technology edition of the magazine. The progressive and innovative approach of Victorian Landcare groups and networks is inspiring. Your willingness to adopt and adapt technology is yielding some exciting environmental benefits. I also look forward to sharing more about the Government's support for Landcare in future editions.

I look forward to travelling across Victoria in my role as Minister to meet community Landcarers and see firsthand the wonderful and invaluable work getting done. I am humbled by the challenges ahead of me, but am confident that together we can once again make Victoria a leader and model for other states in tackling climate change and promoting innovative environmental conservation.

Hon. Lisa Neville MP
Minister for Environment,
Climate Change and Water



I look forward to travelling across Victoria in my role as Minister to meet community Landcarers and see firsthand the wonderful and invaluable work getting done.



New magazine index

The Victorian Landcare and Catchment Management magazine is now comprehensively indexed. All of the 62 issues of the magazine have been indexed and as each new issue is published the index will be updated

to include the content from that issue. Stories are listed by author and title and it is also possible to search by subject.

There are more than 5000 index entries hyperlinked to their specific articles.

The index will make stories from past magazines much easier to find. The index is on the Victorian Landcare Gateway. Visit www.landcarevic.net.au and search for the Victorian Landcare and Catchment Management magazine.



Twitter is a world of instant updates and latest news. It can be the go-to place to share exciting Landcare news and events.



Yonie Tiljak's Twitter account for the Heytesbury District Landcare Network attracted more than 1000 followers in seven months.

Using Twitter as a tool for Landcare

By Yonie Tiljak

I was a Twitter sceptic but after attending a social media training workshop earlier this year I started to see the benefits it could have for spreading the Landcare message.

I started a Twitter account (@hytsbrylandcare) and applied the tips I'd learnt in the training and from reading a free eBook about how to build a Twitter following.

Getting a following is critical. I followed anyone who was relevant and tweeted to them to make sure that they knew exactly who they were interacting with. I tweeted regularly about Landcare, rural life and the environment trying to keep it as interesting as possible and learning how to use hashtags (#tags). Our Twitter account went from zero followers in March 2014 to 1000 followers by September 2014.

Twitter is a great place to share the latest news about Landcare, spread the Landcare message and interact with other Landcarers. Quite a few locals use it and we've had people learn about our events on Twitter when they hadn't seen any other advertising. Our tweets have sparked conversations with local landholders about native species and alternative farming options.

Twitter is a quick, easy way to have an active online presence. I can spend between half

an hour and as much as three hours on Twitter. Mostly it is just on in the background in the same way as my mobile phone or email. I check it every now and then during the day and make sure I tweet or re-tweet.

Tips for new Twitter users

- Pick your username carefully. There is a character limit, so work out what is the priority. We chose to cut the vowels out of Heytesbury and keep Landcare whole so people could find us easily.
- Put some work into selecting your profile photograph, cover photograph, name and description. Use interesting photographs or logos and describe yourself in simple, direct language.
- #tag any term that can be #tagged. For example our description reads: #Landcare for everyone! Helping #farmers and the #community learn about and enhance our local #environment.
- Build up a following before you tweet. Use the search tool to find other people on Twitter similar to you. One of the first things I did was search Landcare and follow everyone who came up.
- Once you start tweeting use the @ symbol and #tags. @ allows you to tag a person in a tweet and ensures that

they see it and their followers can see it too. It also allows you to have public twitter conversations with people. # is tagging a word, subject or a specific #tag that has been created. People follow #tags so using them gets your tweets to a much wider audience if used correctly.

- Keep the momentum up and tweet about events as they happen. Check the trending list and if there is a relevant #tag then use it. If you are at an event and they have a #tag don't hesitate to use it.
- It's best to have one person tweeting so you don't mix styles and messages.
- Treat Twitter and Facebook differently. Due to the character limit Twitter users can sometimes type or use abbreviations and poor grammar in their messages. Facebook lets you go into more detail. Tweets can look lazy and out of place on Facebook.

Twitter is a world of instant updates and latest news. It can be the go-to place to share exciting Landcare news and events.

Yonie Tiljak is Community Co-ordinator with the Heytesbury District Landcare Network. For further information email Yonie at yonie@heytesburylandcare.org.au

Landcare's eye in the sky

By Belinda Pearce

Kiewa Catchment Landcare Groups are using a quadricopter drone for monitoring environmental projects and documenting changes over time. The drone can capture both still images and video footage. It can fly over hard-to-access areas like wetlands, recording weed infestations and the progress of revegetation works.

The drone is operated using a smart phone. It has been a real winner at capturing the interest of our younger members, as part of the fun is learning how to master the controls. Our entry level model was purchased in 2012 for \$350 with an additional battery for \$50.

Our drone has several limitations. Due to its light weight it can't be flown on windy days, the wi-fi control range is restricted to 50 metres and the battery life is less than 10 minutes. On the positive side it has survived numerous crashes due to beginner operators.

More recent models have higher quality cameras and a built in GPS unit enabling users to program flights. Updated drones are continually being released, providing Landcare groups with an exciting new monitoring tool.

Online membership system

Kiewa Catchment Landcare Groups manages the membership of five subgroups. We were keen to devise an up-to-date membership system that was less time consuming for our membership secretary.

After investigating numerous options we decided to take our existing membership system online. The new online system has numerous time saving advantages, which include increased payment options (PayPal and credit card), automatic receipts and generation of renewal notices. Group secretaries always have access to current email lists and contact details, while equipment holders can check if people hiring Landcare equipment are current financial members. Members can easily renew their membership, make a donation and update their details.

The system still requires the manual entering of paper-based membership forms and payments made by cash, cheque or bank transfer. The site also requires some ongoing technical maintenance and executive members need to be trained in how to use the system.

We believe that this is the way of the future, and it is important that we provide new and existing members with a full range of joining and renewal options.

Belinda Pearce is the Local Landcare Facilitator with the Kiewa Catchment and Upper Ovens Valley Landcare Groups. For further information contact Belinda by email at belinda.pearce@landcarevic.net.au

The online membership system can be viewed at www.kiewacatchmentlandcare.org.au



Volunteers from Kiewa Catchment Landcare Groups fly the quadricopter drone.

Victoria's direct seeding story

By Jim Robinson

Direct seeding is a low-cost revegetation technique that establishes native trees, shrubs and understorey by sowing seed directly on to prepared sites. It is ideal for large-scale Landcare projects when compared with the planting of nursery-raised seedlings. The two techniques are often combined to maximise the species and structural diversity of sites.

Direct seeding isn't new. Natural regeneration by direct seeding has been taking place over the 400 million year history of the co-evolution of Australia's native plants and animals. The use of direct seeding as a technique by landholders in Victoria began in the 1870s when sugar gum belts were sown using mouldboard ploughs and seed spread by hand. Much of this direct seeding took place in the largely treeless volcanic plain grasslands in south west Victoria.

Mouldboard plough direct seeding is still undertaken by Landcarers today, generally in the higher rainfall parts of the state, in the Heytesbury-Otway districts and in south and west Gippsland.

The use of direct seeding dropped away from the early 1900s until the 1980s when there was a revival of interest. At this time a number of innovative landholders built prototype seeding machines and some farmers tested pasture drilling equipment and cropping air seeders.



Before and after: A 180 hectare direct seeding site in 2006, 2008 and 2010 at Giffard West between Yarram and Sale.

“

Direct seeding isn't new. Natural regeneration by direct seeding has been taking place over the 400 million year history of the co-evolution of Australia's native plants and animals.

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In the late 1980s Dr Rod Bird from the then Department of Agriculture undertook a direct seeding research project. The results of this work guided the adoption of direct seeding in south eastern Australia and the development of the specialised tree seeding machines that followed.

The research findings showed that:

- Thorough chemical weed control to harvest soil moisture was critical for direct seeding.
- Scalping a thin strip of top soil was a key treatment and late winter to early spring was the likely best time for sowing in mid-rainfall areas.

Grassy groundcover restoration

Dr Paul Gibson-Roy from Melbourne University and Greening Australia has developed a successful restoration technology for native grasslands using direct seeding of a diverse mix (50 to 80 species) of seed of native grasses and wildflowers.

Dr Gibson-Roy has been working on the project for the last ten years. His initial doctoral research established what was needed at a research scale. This work was then extended to 14 one-hectare sites in six CMA regions across Victoria. Since then the work has scaled up further to include a range of broad acre native grassland restoration sites.

Soil scalping has been central to the success of this technology. Scalping removes the bulk of the weed seedbank in the topsoil and at the same time removes much of the topsoil fertility, which is advantageous for low-fertility, tolerant native species. Road graders are often used to scalp sites prior to sowing.

For more information visit the Greening Australia website at www.greeningaustralia.org.au

Before (above right): direct seeding a diverse mix of native grass and grassland wildflowers on a 14 hectare site near Point Henry. Rod White from Greening Australia ensures seed flows smoothly through the seeder.

After (right): the site two years later.



- In low rainfall areas (400 millimetres and less) autumn sowing timed to align with rain is recommended.
- A seeding rate of about 250 to 300 grams per kilometre of mixed seed of local native species would generally achieve a reasonable result.

In the late 1990s the Greening Australia Florabank developed best practice guidelines, a model code of practice and a wide range of other seed knowledge that now underpins seed collection and supply for direct seeding across Australia. This knowledge includes the setting up of seed production areas to take the

pressure from often fragmented remnant vegetation populations.

Seed biology knowledge critical

A basic understanding of seed biology is necessary for successful direct seeding. For example hard coated seeds such as wattles and peas require scarification or the application of hot water as a pre-treatment.

Research into native seed biology in the last 30 years has yielded a great deal of knowledge. Recent genetic research into plant and seed DNA is challenging much of the accepted seed knowledge of the past.

The work with smoke chemicals, initially in South Africa and then at Kings Park and the Botanic Gardens in WA, has also been a major advance. There are approximately 4000 chemicals produced by burning plant material that include a single chemical, Butenolide, which initiates a germination response in many seeds.

As a result generic commercial smoked-water products are now available to Landcarers. The water products can be diluted and sprayed over seeds during direct seeding, or used as a pre-treatment seed soak before sowing with hard-coated species.

● Continued next page



Direct seeding in the late afternoon using a Burford seeder, just north of the Little Desert National Park for the shire-wide Project Hindmarsh.

Inoculant increases wattle vigour

Another significant development in direct seeding technology in the early 2000s was the development of a root-nodule bacteria inoculant that increases the germination, health and vigour of a range of wattle species.

In 1993 the Kondinin Group in WA published *Tree Tops, the Tree Planting*

Book for Farmers, which roadtested and compared 22 direct seeding machines. Many of these seeders are no longer manufactured. The machines currently available or used by contractors in regional Victoria are the Burford seeder, the Hamilton Tree seeder and tractor-mounted Rippa seeders.

Recent developments include a saltbush

mounding seeder for heavy soils in northern Victoria and a polymer seeder for use in low rainfall areas such as the Mallee.

Jim Robinson is a Project Officer with Greening Australia. For more information contact Jim on 0428 335 287.

More information on Flora Bank can be found at www.florabank.org.au



A basic understanding of seed biology is necessary for successful direct seeding. For example hard coated seeds such as wattles and peas require scarification or the application of hot water as a pre-treatment.



Megan Rowsell at the Greening Australia Seedbank at Portland. The establishment of regional seedbanks has been driven by the seed requirements of large biolink-type projects requiring significant amounts of seed.



Springhurst farmer Lindsay Humphry with a soil sample during filming of *A Lifetime of Healthy Farming*.

“

Landcare films can function as a virtual field day so people can keep up to date with projects and learn about new topics without having to travel.

”

Short films a hit for Landcare in the north east

By Kelly Behrens

A short film produced by North East Regional Landcare Facilitators about a local dung beetle project is gaining a huge following on YouTube.

Dung Beetles: Underground Army, enriching soils had 800 views from 74 countries including Poland, Mexico and Ireland in its first two weeks.

The film has now had more than 1130 views. The statistics also show that people are watching the film through to the end which is unusual considering the mass of content competing for attention online.

The film features local farmer and dung beetle expert Chips Boucher. Chips digs about in the dung to find beetles and his enthusiasm is infectious. According to the film one cow produces 18 kilograms of dung each day. With approximately four million cows in Victoria, that's an enormous quantity of an underused resource.

The idea to make a film came about due to concern that people involved in Landcare were often busy and unable to attend regular meetings. Landcare films can function as a virtual field day so people can keep up to date with projects and learn about new topics without having to travel. The films are also a good way for groups from other areas to share knowledge and find inspiration.

A film about Lindsay Humphry, an award-winning farmer from Springhurst, is also gaining strong interest online. *A Lifetime of Healthy Farming* focuses on Lindsay's experience of using natural inputs such as worm castings to fertilise paddocks and pasture cropping to ensure greater ground cover.

The films' conversational style could be the reason for their success. Farmers and researchers tell their stories with a real passion for what they are doing.

Both films have been shown at Landcare group meetings, especially over winter when outside activities are limited, and have been very well received. Fact sheets have also been developed to provide more information on the film topics and include links to websites with related content.

Visit www.northeast.landcarevic.net.au

Kelly Behrens is Regional Landcare Facilitator with the North East CMA. For further information email Kelly at kelly.behrens@landcarevic.net.au

Perennial Pasture Systems – research driven by farmers

By Rob Shea

The Perennial Pasture Systems (PPS) group was formed in 2007 after a workshop at Halls Gap. The workshop brought together graziers in the upper Wimmera catchment interested in progressing and integrating perennial pastures in their farming systems. Discussions were held about forming a grower group and the benefits that might come from that.

An executive committee was convened in 2008 and PPS got underway on three long-term paddock scale projects trialling new pasture varieties. The group's aim is to push the boundaries of perennial pasture research in the region and to provide information on productive pasture management to members.

Funding has been received from Meat and Livestock Australia (MLA), the AW Howard Trust, Caring for our Country, EverGraze, Woolworths Future Food Program and Landcare Australia as well as support from the Wimmera, Glenelg Hopkins and North Central CMAs, plus Project Platypus. This support has seen PPS grow into a strong and innovative grower group representing 108 farm businesses across central Victoria and the southern Wimmera.

As well as the long-term pasture variety trials, PPS has managed a host of other research projects. This includes an EverGraze phalaris and lucerne trial site at Mooneys Gap, a soil amelioration project, four replicated plant variety trials to test pasture species under the different soil and climatic conditions in the region, a variable

lime application trial and a cocksfoot cultivar comparison at Stawell.

All of the PPS research projects are focused on gaining knowledge about the productive and environmental benefits of perennial pastures. The results from the best practice phalaris demonstration project at Mooneys Gap are a good example. Compared with a control paddock, the best practice phalaris paddock saw a 150 per cent increase in production. The new pasture has also increased summer ground cover, improved water use efficiency and reduced nitrate leaching.

New projects underway in 2014 include a long term Caring for our Country funded pasture establishment analysis at Glenlofty, a pasture persistence project as part of MLA participatory research and a joint pasture variety trial established with the Paradise Soil Health Group at Tottington.

All PPS trial data and results are shared through the group's website. Results are further shared through a newsletter, field days, annual study tour and annual conference. PPS has also facilitated pasture and financial management courses for members.

PPS is committed to exploring the latest technology in grazing systems. At a Pasture Update event in Ararat this year PPS members heard from Zac Economou from the University of New England. Zac presented information from the University's 2800 hectare SMART farm. He took PPS members through remote pasture sensing and animal tracking projects as well as the use of drones for stock surveillance and farm observations and the latest developments in virtual fencing.

PPS works closely with many groups including government agencies, local government and the CMAs. The group has continued to grow. More than 100 people attended the sixth annual conference held in Ararat this year. PPS is a farmer-driven group fulfilling an important niche in the region, promoting productive and sustainable grazing systems to help our members into the future.

Rob Shea is the Project Manager at PPS. For further information contact Rob on 0438 521 357 or visit the PPS website at www.perennialpasturesystems.com.au



PPS members on the 2012 annual study tour held in South Australia.

Mt Worth online

By Rosemary Kennedy

The Mt Worth and District Landcare Group has embraced the use of the Victorian Landcare Gateway.

In 2013 I attended Victorian Landcare Gateway training and then introduced our members to the concept of going online. We now have a website that records group activities, provides information for new members and is an avenue for us to share areas of common interest.

The group consists of farmers and lifestyle property owners located on the steep slopes of the Western Strzelecki Ranges near Warragul and close to the Mt Worth State Park. The local area has remnant wet rainforest and farmlands that are home to a diverse array of flora and fauna. The Strzelecki gum, Strzelecki koala, burrowing Gippsland cray and the giant Gippsland earthworm are just some of our flora and fauna.

Members have contributed more than 40 photographs of different birds sighted in the area for posting on the new website. A local bird list from the 1960s recorded more than 90 different birds in the area.

Our challenge is to see how many birds can be photographed from this list and whether there are any additional birds that can be added.

The group's members are committed to sharing ideas and skills to improve local properties and Mt Worth State Park. The geography of the area provides particular challenges for members due to its steepness. Members have successfully sought funding for works including planting of steep gullies, repairs to landslides and the creation of wildlife corridors through linking remnant vegetation. Over time we have developed a number of mutually beneficial partnerships with the Baw Baw Shire, government agencies, Friends of Mt Worth, Seaview Mechanics Institute and Tetoora Road Community Centre.

Changes in bird species will be under discussion in early 2015 when a community workshop looking at the changes to the local landscape from

the group's activities will be held. The workshop will be an opportunity to look at changes to tree cover and at local birds as an indicator of change to the environment due to the group's revegetation and remnant protection works over a number of years. Cara Brammar will talk about work undertaken as part of her honours project on identifying birds in local revegetation areas.

Rosemary Kennedy is joint secretary of the Mt Worth and District Landcare Group. For further information contact Rosemary by email at mtworthandistrictlandcare@gmail.com



Mt Worth and District Landcare Group members Rosemary Kennedy and Margaret McDonald look at bird photographs on the group's new website.



Mt Worth and District Landcare Group members at an open farm day inspecting the steep country of the Strzelecki Ranges.



A family of eastern grey kangaroos are photographed at a bait station in the Wombat State Forest.

Caught on camera – using motion-sensing

The Victorian National Parks Association's NatureWatch citizen science project is training volunteers in the use of motion-sensing cameras to monitor wildlife for research purposes.



Motion-sensing cameras can gather data on some groups of fauna (small mammals) with much less labour than survey methods such as live trapping.



Monitoring wildlife can be labour intensive. Motion-sensing cameras can gather data on some groups of fauna (small mammals) with much less labour than survey methods such as live trapping.

Each camera trap has a motion-sensing camera and a bait station with oats, golden syrup and peanut butter. Camera traps can be set up at multiple monitoring locations and rotated over regular time periods to maximise the data collected. The method is much less stressful for wildlife than catching and handling, and can record species that are unlikely to be caught in traditional traps.

Camera monitoring also provides fascinating images of animals behaving in ways that we might otherwise have difficulty observing. This forms a great community education resource with images of the different species caught on camera in the local area regularly presented back to the community, much to their delight.

In 2009 NatureWatch volunteers assisted researchers from Deakin University to set up camera traps in the Grampians National Park to explore the long-term response of small mammals to fire.

The activity was so popular the NatureWatch team met with land managers, scientists and community groups to identify where knowledge gaps existed and where motion-sensing camera monitoring might be useful, and the Caught on Camera program was underway.

Collaborative research

The Caught on Camera program began in 2012 in Wombat State Forest near Daylesford and Bunyip State Park near Gembrook. After a successful first year the NatureWatch team added a new project location in the Wimmera.

The projects are collaborative, with involvement from local community groups and land managers. Volunteers are trained in the project methods at the start of the



NatureWatch volunteers complete training in the use of motion-sensing cameras in the Wombat State Forest.



Our volunteers are trained in the project methods at the start of the monitoring season and then do most of the legwork, setting up the cameras at the monitoring sites.



cameras for wildlife monitoring

monitoring season and then do most of the legwork, such as setting up cameras at the monitoring sites.

There is also a lot of behind-the-scenes work processing the images and managing the data. The project's consultant scientists, who include Richard Loyn and Peter Menkhorst, ensure a sound scientific methodology and assist with species identification, data analysis and preparing project reports.

Each project location has different research aims. In partnership with Wombat Forestcare, the Wombat State Forest project is addressing the effects of fire on small mammals. Images are collected at recently burnt, intermittently burnt and long unburnt sites within two different types of forest.

In Bunyip State Park the NatureWatch volunteers are working in partnership with the friends group and with support from Parks Victoria to monitor how small mammals are recovering from the 2009 bushfires.

Threatened and endangered species recorded

It is too early to draw conclusions from these projects, but there have already

been some rewarding outcomes.

The threatened Brush-tailed Phascogale was recorded in Wombat State Forest and the endangered Southern Brown Bandicoot in Bunyip State Park. Before the Caught on Camera program there were no recent records of these animals in these areas. The new images have assisted Parks Victoria with their important protection works.

Assessing wildlife in Wimmera revegetation areas

The Wimmera project is run in partnership with the Hindmarsh Landcare Network to monitor how wildlife are utilising the revegetation link on private land between the Little and Big Deserts.

This year the NatureWatch team also ran a successful trial at one of bankmecu's Conservation Landbank properties at Minimay near Edenhope.

All of the Caught on Camera program projects have been established with the aim of running them over the long term – for at least 10 years. That's a big commitment from our volunteers, but we have no doubt the NatureWatch team is up to the challenge.

By Christine Connelly



A short-beaked echidna is caught on camera in the Bunyip State Forest.

Christine Connelly is the NatureWatch and Community Projects Coordinator with the Victorian National Parks Association. Detailed reports for Caught on Camera at each location are available online at vnpa.org.au. For further information or to volunteer email Christine at christinec@vnpa.org.au

Upper Mount Emu Creek – tweeting for Landcare

By Emma Bennett

The Upper Mount Emu Creek Landcare Network is exploring how technology can support the work of its volunteers.

After completing a social media training course provided for Victorian Landcare facilitators I jumped in and started using a program called Mail Chimp to organise and streamline information delivery.

This has tidied up our electronic mailing lists and provides an easy way to disseminate information to most members.

The next challenge was to provide a website to host past issues of the network's newsletter and to provide an up-to-date calendar of events. A good website can be costly and time consuming to update. A suggestion from the social media trainer about embedding Twitter on the front page sent me off on another crash course on the use of social media technology. Fortunately a local web design

business came on board as a partner and has provided invaluable support.

The web designer built an outstanding website for the network with lots of social media enhancements. The Twitter feed is on the home page which means the website is updated in real time. Volunteers are able to check the website for up-to-date information via the Twitter feed which can be updated from a mobile phone. It also allows for photos taken in the field to be posted on the website instantly.

The website design team has also trained me in how to update the calendar of events and news feeds so the website will stay relevant and useful. Not all members of Landcare groups have email, or want electronic communication – around 40 percent of members still request a hard copy of our quarterly newsletter posted to their house.

Many of our older farmers still prefer standard mail communication but they are also starting to use the website. The website will also help the network promote its activities to sponsors and the broader community and to engage with the younger generation of Landcarers.

We expect our technology uptake will be given a further boost through our partnerships with junior Landcare and local schools. The network is also embarking on the task of filming short video clips showcasing the enthusiasm and achievements of our volunteers that can be added to the website. Visit our website at www.umec.org.au to keep up with the new developments.

Emma Bennett is the Upper Mount Emu Creek Landcare Facilitator. For further information email Emma at Landcare.emma@gmail.com



According to Emma Bennett uploading to a website is as easy as taking a photograph and tweeting.

“

We expect our technology uptake will be given a further boost through our partnerships with junior Landcare and local schools.

”



Bob and Anne Davie with their son Richard Davie in front of a shelter belt.

“

The farm now stores a greater tonnage of carbon than is required for certification.

”

Phillip Island cattle stud declared carbon neutral

By Kellie Nichols

The Davie family run Bimbadeen, a 200-hectare brangus and angus cattle stud at Phillip Island. Bob and Anne have planted more than 35,000 trees on the property and have been heavily involved in Landcare and a host of other projects aimed at best practice farming and environmental sustainability.

The Bimbadeen herd is certified as free range and is raised without any growth hormones or antibiotics. DNA testing and genetic selection are used to ensure high growth rates and enhanced yields for all stock.

Bob and Anne's son, Richard, now manages the cattle business but instead of retiring Bob has developed a new passion – making the farm carbon neutral. Through a combination of growing legumes, deep-rooted crops and other practices Bob has been able to increase the total carbon sequestered in the soil in a trial paddock from 129 tonnes to 228 tonnes per hectare.

The farm now stores a greater tonnage of carbon than is required for certification. It is hoped that the process can be aided by the use of class A irrigation water from Western Port Water. Bob explained that

sowing a crop on a dryland farm puts seven tonnes of dry matter back into the soil, but on an irrigated pasture this increases to 16 tonnes or more.

Bob works on a program using minimal tillage and deep-rooted crops. Approximately 40 per cent of dry matter in the crop goes back into the soil as carbon. Under ideal conditions this will be converted to carbon in 16 to 18 weeks. The process reduces the farm's reliance on fertilisers by converting carbon dioxide drawn from the atmosphere by legumes to start the program.

The sustainability of the cattle business is augmented by use of solar and wind power around the farm and in the home. A windmill and a solar bore pump circulates water to overhead tanks, from where it is reticulated to water troughs across the property.

“Bimbadeen has 90 paddocks and the management of water means we can constantly rotate stock to changes in the pasture, ensuring high cattle growth rates,” Bob said.

Bob and Anne celebrated their carbon journey in July this year, announcing the

property was carbon neutral at a function in Melbourne to showcase Gippsland's natural meat products. At that time Bimbadeen had 200 tonnes per hectare of total carbon sequestered under a plan submitted to the Australian Government Carbon Futures Initiative, a voluntary carbon offset scheme. Since then Bob has further improved on the figures.

“We know it is the right thing for the environment to do what we're doing. We want Bimbadeen to be an environmentally sustainable property, carbon neutral and grazing beef cattle efficiently,” Bob said.

According to Anne, the improvements to the farm wouldn't have happened without Landcare.

“We've been involved with Landcare since 1988. More recently the Bass Coast Landcare Network has been a great source of inspiration – they are great friends and supporters – more like an extended family,” Anne said.

Kellie Nichols is the executive officer of the Bass Coast Landcare Network. For further information visit the Davie's website at www.bimbadeenbrangus.com.au or email Kellie at k.nichols@basscoast.vic.gov.au



Tree planting in the Mallee using GPS for guidance.

Technology in the Mallee

By Kevin Chaplin

Many Landcare group members in the Mallee are dryland farmers. These farmers are actively interested in new technology and their capacity and interest has flowed through to Landcare with groups keen to engage with technology for community capacity building and the management of projects.

The use of Geographical Information Systems (GIS) and Geographical Positioning Systems (GPS) with farm machinery is common in the Mallee. This cutting edge technology allows farmers to sow grain crops at a precise depth (plus 5 millimetre accuracy) and row width (plus 2 centimetre accuracy), along with variable rate application of seed and fertiliser volumes managed by on-board computers containing GIS maps of soil type and fertility levels.

Tractor operators no longer even need to steer their machines. Real time GPS technology electronically guides and drives the tractor in a perfectly straight line. The operator has to remember to manually override the guidance system and turn the tractor around once the end of a run is reached. Not surprisingly a few fences have taken a beating over the years when operators have been distracted or nodded off.

Rabbit project planned and recorded using GIS

With the latest GIS and GPS technology becoming more common and affordable, Landcare groups are capitalising on these tools by using them to plan, implement and report on their projects and activities. This helps the group to tell their story and demonstrate their achievements to a greater audience.

When a Landcare group documents its activities using tools such as Google Earth or Quantum GIS in conjunction with hand held GPS units they are able to demonstrate the breadth of their works in a dramatic and immediately understood format.

Map 1 demonstrates the results from six Landcare groups working together on roadside rabbit infestations in native vegetation in the central Mallee. While all groups had applied for project funding independently, they then conducted their works co-operatively to further enhance each group's effectiveness and the overall impact on rabbit populations around the eastern edge of Lake Tyrrell.

By using GIS mapping the groups were able to identify the targets and the borders

of each area of work. By using the borders to plan the new projects they added value to each other's work and achieved a landscape-scale effect. The total treated area, outlined in green, is more than 301,200 hectares.

Recording warrens by hand-held GPS

The groups recorded every treated rabbit warren using a hand-held GPS unit. These records show up as dots on the GIS map overlay. This sort of recording and monitoring allows the groups to provide solid evidence that the works have been conducted and highlight areas of concern and high infestation for groups to keep a close eye on. The background imagery in this case is aerial mapping from 2009 using a prohibitively expensive program.

In the last six months the Mallee CMA has been working closely with Landcare groups to help them access free software and imagery that works just as well as costly mapping programs. By having the software and the training to use it, groups are now in the position of being able to provide comprehensive reports back to their communities. This helps them to promote their projects and encourages the active engagement of members.



Mallee Landcare group members plan their projects using aerial maps.

“
 By using GIS mapping the groups were able to identify the targets and the borders of each area of work. By using the borders to plan the new projects they added value to each other’s work and achieved a landscape-scale effect.
 ”



Map 1

Communications technology has also started to take off. Groups no longer rely on a notice in the local milkbar, public notice board or newspaper to advertise meetings and events. Text messages to mobile phones have a better response and participation rate with members and non-members. After the initial announcement, follow-up reminders are sent shortly before the event to help jog the memory and encourage people to attend.

Social media uptake slower due to older demographic

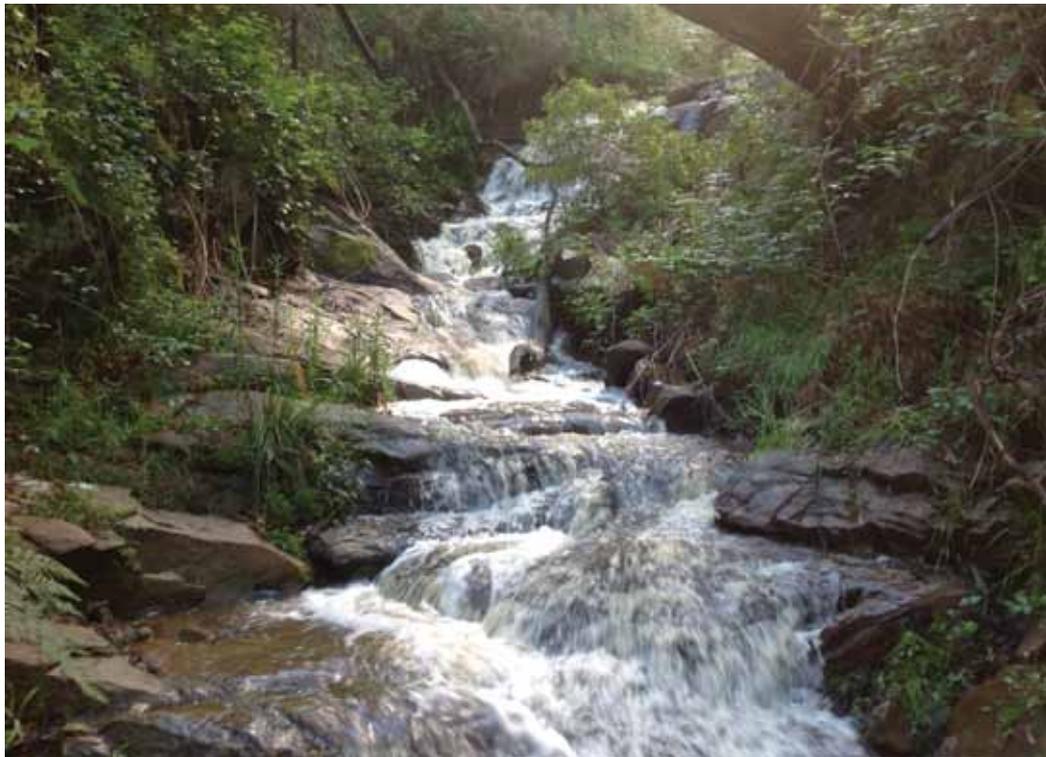
Online tools such as Facebook, Twitter and YouTube are also being used, but as the population base of the Mallee tends to be older these methods are not as popular as they are in other areas of the state. The Mallee Regional Landcare Network Facebook page is active and receives interest locally and from people all around the country.

Groups are constantly on the lookout for new tools and techniques that will help them better engage their greater communities and make life easier. Teleconferencing and video conferencing via home computers both offer very viable solutions to the problem of holding meetings for small groups of people spread over a vast area, as is the case in the Mallee.

Kevin Chaplin is the Regional Landcare Co-ordinator based at the Mallee CMA. For further information contact Kevin on 5051 4344.



The Creek link volunteers hope that hundreds of groups will use the maps to create a visual record of the many thousands of projects that Landcare has completed over the years.



A new online mapping tool allows Landcarers to record their waterway revegetation projects.

Creek link – recording revegetation projects online

By James Maund

There are good reasons why Landcare groups should be creating a permanent record of the location of their completed revegetation projects. Mapping past projects provides a valuable visual record of environmental improvement and change and is a way of acknowledging and celebrating the achievements of Landcare groups.

Creek link maps allow Landcare groups to accurately map the location of their past waterway projects in a way that is simple and fun. The Creek link mapping tool was created by Landcarers specifically for use by other Landcare groups anywhere in Australia.

Landcare groups are provided with a free online map of their local area, with the group boundary shown in orange. A line of connected squares runs along each of the major waterways on the map. The map looks something like a large board game.

Group members then get together around a kitchen table and use a laptop to colour in the different squares on their map. Each of the four colours available correspond to a different level of waterway condition.

When the group has added information about their past projects to the map they will have completed a first draft of their own waterway condition map. The colourful online maps can help groups to make more strategic decisions about how to link and extend previous projects, write compelling funding applications, and engage more fully with the broader community.

Creek link is currently being used by 12 Landcare groups with this number scheduled to increase to 20 by the end of 2014. Creek link Inc. is a not-for-profit organisation run by volunteers and the maps are free to groups. The Creek link volunteers hope that hundreds of groups will use the maps to create a visual record of the many thousands of projects that Landcare has completed over the years.

To receive a Creek link map for your group go to creeklink.org.au and fill in your group's contact details. For further information contact James Maund by email at james@frogwood.com.au

Virtual fencing

CSIRO scientists are using satellite technology to develop an animal-friendly virtual fencing system to confine cattle without using fixed fences.

Building and maintaining fences is a major cost for cattle producers. A virtual fence requires no physical posts and wire, which reduces labour and costs, allows better use of pasture resources, helps protect environmentally sensitive areas and improves situations where a fence may be difficult to install or subject to flood damage.

The cattle are confined with boundaries drawn entirely by Global Positioning System (GPS). The fence exists as a fence line only on a computer, without wires or fixed transmitters.

The system builds on the basic principle of an electric fence, except there is no fence. Instead it includes a wireless sensor network containing microcomputers, radios and sensors, some of which are fitted into cattle neck-collars and emit a sound when the animals approach the virtual boundary.

If an animal crosses the boundary it will receive a small electric shock – around one fifth of the voltage used in a conventional electric fence – and will learn to avoid the boundary. Once the boundary is set the system is fully automated and self-sufficient. Producers can set a new fence line from the farm office at any time, as well as

continuously monitor where their cattle are located.

The research team has developed a prototype virtual fencing system and successfully demonstrated its use on a herd of cattle. Within one hour the cattle learn to associate the sound signal from their collars with the virtual boundary and stay within it. An independent animal welfare expert has shown that animals are not unduly stressed by the virtual fence.

Before the prototype system can become a commercial reality the technological challenge of power consumption must be resolved. The scientists are also working to improve durability and robustness of the cattle neck-collars.

So far the work has focused on excluding animals from riparian areas, although the virtual fencing system has a number of other potential applications such as matching pasture supply more closely with animal grazing, moving or mustering animals, and collecting information about the production, health and welfare of livestock and their grazing environment.

For more information go to www.csiro.au and search for virtual fencing.



Virtual fences require no posts or wire – a major cost saving and a huge change to the look of the landscape.

What's Pozible?

By Horrie Poussard

Crowd funding – a new way to attract public support for projects – is now being used to fund Landcare and environment projects across the world. Landcare NSW joined forces with the National Landcare Network and Australian Landcare International to put together the initial collection of projects on the Pozible website.

In June 2014 Pozible launched a new environment category on their website. Donors from around the world can support the projects they like with small or large donations. A donation target is set and if not reached, donors get their money back.

There were 15 Australian and nine international projects listed in the new environment category. The international projects are from New Zealand, Asia, Africa and North and South America. There was a wide variety of projects from farming support to caring for biodiversity through to improving habitat. The importance of volunteer action is a driving force for all of the projects.

Australian projects included Junior Landcare, revegetation, pest control and native wildlife protection.

The international projects included habitat protection for monkeys in Nigeria and lemurs in Madagascar along with biogas production in Indonesia and a bee awareness project in the US.

Rob Youl, president of Australian Landcare International, said the team from Pozible (a Melbourne-based company), had been very supportive of the new category and had been particularly helpful for the international projects, some of which are based in remote areas with limited access to digital technology.

The outcome from the first nine international projects was a little disappointing – three projects fully funded and most others raised at least half their target amount. But we learnt a lot in the process. It brought home the importance of publicity and social media to acquaint people with the projects, get them to go to the website and urge them to donate. In many developing countries where Landcare is just getting a foothold, social media is not as strong as here. Also we found that available financial systems in many of these countries made it difficult to send donation funds via the internet to projects.

Horrie Poussard is Secretary of Australian Landcare International. For further information go to www.pozible.com



Biogas digesters provide many benefits. They save fossil fuels, save time collecting firewood, protect forests, save money, reduce cooking time for women, produce high-quality fertiliser from the waste, reduce air and water pollution and improve rural standards of living.



Volunteers from Merapi Landcare construct a biogas digester.

Biogas – a Landcare solution

Imagine walking high up into the mountains for eight hours to chop wood and then carrying 40–60 kilograms of it home on your back just to do the cooking. This was a daily chore for villagers in Selo in Central Java before the Merapi Landcare biogas project got underway.



Women carry firewood to use as fuel for daily cooking.

The farming land between the Mount Merapi and Mount Merbabu National Parks represents one of the most severe forms of land degradation on Java Island. The area has lost more than 90 percent of its primary vegetation cover since the 1980s due to clearing land for agriculture and firewood harvesting, which supplies more than 80 per cent of the energy needs of the local people.

The two national parks serve vital watershed functions in Central Java. They are the source of many rivers that provide water for irrigation, industry and domestic use to millions of people across the region. Lack of vegetation cover on steep slopes has accelerated erosion and increased the incidence of landslides in the uplands. This also contributes to seasonal flooding downstream.

Water quality and quantity has been affected. The local water reservoir is depleted, there are several dry springs and women queue for long hours at water collection points.

Merapi Landcare got underway in 2009 after a visit from Australian Landcarers from the Secretariat for International Landcare. After much consultation and testing the group decided that a major Landcare project would be the production of biogas from cow manure for cooking. The biogas would replace the use of firewood, which in turn would reduce encroachment on the local forest reserve and nearby national parks.

The biogas solution

Most people who live in the Merapi Landcare area are intensive farmers who house their cattle in barns, providing a ready supply



The steep slopes of the Merapi farming region in Central Java.

for Indonesia

By Victoria Mack and Sue Marriott

of manure. Biogas systems use a large tank, or digester, filled with cattle manure. Inside this tank, the bacteria from the waste (cattle manure) convert the manure into methane gas through the process of anaerobic digestion. Methane from one and half cows is enough to produce gas for cooking on one or two burners each day.

Biogas digesters provide many benefits. They save fossil fuels, save time collecting firewood, protect forests, save money, reduce cooking time for women, produce high-quality fertiliser from the waste, reduce air and water pollution and improve rural standards of living.

Merapi Landcare has now built more than 30 domestic biogas digesters since the project started in 2011. Each biogas unit costs approximately \$300. Early trials show that it takes 15 to 17 months to repay the cost of the unit. A revolving credit fund has been established by the community to enable each household to build a biogas digester and repay its loan through the savings made in energy costs.

The Merapi communities have strong social networks and a history of voluntary participation. The digesters are constructed by a group of volunteers on a roster basis. Community interest is growing due to the low cost, the simplicity of the digesters and

the reduction in energy costs. More than 130 new digesters are planned in the next year.

Huge reductions in firewood consumption

Without a digester each household uses approximately six bundles of firewood per month, equal to one medium-sized tree. This means each household needs the equivalent of twelve trees to fulfil its domestic energy demands each year. In the two sub villages where the biogas project has been running there are more than 1500 households. These households would need more than 6000 trees per year and there are more than 50 villages in the surrounding area with similar firewood demands.

Merapi Landcare group members are also actively involved in propagating and replanting trees and understorey to restore the ecological integrity of the forest reserve.

The biogas project is generating interest from people in surrounding villages. Merapi Landcare facilitators have been asked to provide training to other villages in the region on how to develop a biogas program.

The Merapi Landcare Biogas Project is a great example of how Landcare can reach out to people around the world and adapt ideas and practices from many sources.

Victoria Mack and Sue Marriott are Directors of the Secretariat for International Landcare. For further information email Victoria at vmack@silc.com.au



The Merapi Landcare Biogas Project is a great example of how Landcare can reach out to people around the world and adapt ideas and practices from many sources.



Around the State – News from the

Mallee

The Mallee's first Indigenous Landcare group, based in Robinvale, has run its first event. Local Landcare facilitators and community members attended the half-day cultural heritage workshop. Participants learnt how to make boomerangs, feather flowers and stone tools. It was a fascinating day and a great way to launch a new group.

Sunraysia school children learnt about Landcare and the environment at a National Water Week event held at the Mildura Show in October. The Mallee Regional Landcare Co-ordinator, in conjunction with a local reptile handler, provided an interactive experience that gave the students the opportunity to see and touch reptiles. The students also learnt how they could look after the local environment and help to protect wildlife habitat.

For further information contact Kevin Chaplin on 5051 4344.

West Gippsland

Landcare groups in the region will be busy over the planting season as a wide range of projects received grants from the Victorian Government. The successful projects range from restoring the riparian habitat of Merriman Creek to improving habitat and the recruitment of *Eucalyptus Strzelecki* in the Tarwin Valley.

Local Landcare networks hosted a variety of field days during spring. Successful events included a grazing management event with Dick Richardson for the Maffra and District Landcare Network and a

birdwatcher's breakfast with the Latrobe Catchment Landcare Network.

The region welcomed Kathleen Bartlett to the role of Regional Landcare Program Officer. Kathleen has returned to the region after 18 months working in East Timor and the United Kingdom.

For further information contact Kathleen Bartlett on 1300 094 262.

Wimmera

Dry conditions have impacted on crops and increased pressure on waterways in the Wimmera. Many groups have been busy watering trees after the winter community planting calendar.

A tour of key project sites associated with the Project Platypus AGM in October provided an opportunity to showcase the achievements of the past 20 years and plan with enthusiasm for what lies ahead. A regular Wimmera Partnerships Forum established with representatives from government agencies, the CMA, Landcare and industry group facilitators continues to strengthen collaboration and understanding between regional partners.

The three part-time Wimmera Regional Landcare Facilitators are putting together a program of landholder workshops to be held in early 2015 focusing on herbicide resistant weeds.

For further information contact Joel Boyd on 5382 1544.

Port Phillip and Westernport

Three Catchment Action Round Tables (CARTs) were held recently. CARTs are designed to build personal connections, share information on planned projects and facilitate collaboration and co-ordination across Landcare groups and natural resource management agencies.

The recent CARTs involved 68 representatives from Landcare groups and networks, friends groups, Indigenous organisations, local government, Parks Victoria, Melbourne Water, Western Water, DEPI and Conservation Volunteers Australia. Two more CARTs are planned for early 2015.

The 2012–13 Regional Landcare Report Card has been published. Data for the 2013–14 Regional Report Card has been collected using Landcare group and network surveys.

The rollout of the Open Standards for the Practice of Conservation has started with a series of facilitated Conservation Action Planning workshops delivered in partnership with Trust for Nature.

For further information contact Doug Evans on 8781 7920.

Corangamite

Corangamite groups and networks have been busy implementing projects and writing applications for future activities. The 2014 Corangamite Landcare Grants will support 11 landscape-scale projects focusing on weed management and restoration works.

A small group of community leaders met recently to discuss forming a Rural Women's Network in the region. A program of local events and learning opportunities for women will begin in early 2015.

Landcarers have taken some informative study tours recently and returned home with knowledge and new ideas from Kangaroo Island, rural South Australia and New South Wales.

Local soil action planning is underway across the region. A series of workshops will be held in early 2015. A local film crew has also been travelling around the region and producing footage for a Landcare series that was launched on YouTube in December.

For further information contact Tracey McRae on 5232 9100.



The Latrobe Catchment Landcare Network hosted a recent birdwatcher's breakfast at Traralgon.

Regional Landcare Co-ordinators

East Gippsland

Local Victorian Landcare Grant projects got off to a good start during spring. The projects include restoration of Mitchell River rainforest by Nagle College Eco-Warriors, post-bushfire rainforest recovery in the Errinundra National Park, protecting and recreating habitat for endangered flora and fauna along the East Gippsland Rail Trail and Raymond Island, and supporting landholders across the region to improve grazing practices and biodiversity.

The East Gippsland Landcare Support Strategy is in development. Thanks are due to the Snowy River Interstate Landcare Committee, Far East Victoria Landcare and East Gippsland Landcare Networks for reviewing the existing Regional Landcare Support Action Plan and assisting in the development of the new strategy.

Nominations for the East Gippsland Regional Landcare Awards will open in March 2015.

**For further information contact
Amanda Bartkowski on 5150 3581.**

North East

Landcare, community groups and schools in the region are now working on a wide range of projects funded through Victorian Government Grants. Groups have also been successful in obtaining funding from a range of funding sources including the Victorian Recreational Fishing Grants and Victorian Landcare Grants.

The CMA congratulates all of the groups and organisations that were successful at securing funding for their environmental and community activities.

Costa Georgiadis of *Gardening Australia* launched the *North East Local Produce Guide* in October. The guide lists 100 north east farm produce suppliers and products. For more information go to www.nelocalproduce.com.au

The CMA has moved offices. See www.necma.vic.gov.au for our new location.

**For further information contact
Tom Croft on 02 6043 7648.**

Goulburn Broken

Congratulations to the community groups who were successful in obtaining funding from the Victorian Government.



Women working in agriculture and the environment got together at Boort recently to celebrate their achievements.

Data collection for the region's 2013–2014 Community NRM Report Card has been undertaken. The results show that local groups and networks are strong and working hard to achieve local action. Efforts in marketing and recruitment have brought results with nine percent of members listing as new members.

Several networks have been getting together to discuss and plan for the future. Recruitment, succession, facilitation and funding have been hot topics.

**For further information contact
Tony Kubiel on 5761 1619.**

Glenelg Hopkins

Congratulations to the 18 groups that were successful in gaining funds from the Victorian Landcare Grants for a range of projects and capacity building activities in the region.

The CMA also congratulates Leila Huebner and the Nelson Coastcare Group on winning the Community Action and Partnerships Award at the 2014 Victorian Coastal Awards for Excellence.

The Upper Mt Emu Creek Landcare Network held National Tree Day events at eight schools in the region, planting 5000 trees. The Network's Facilitator, Emma Bennett, worked tirelessly on this project.

Dunkeld Pastoral Company recently received funding from the Southern Grampians Shire Council Sustainability Program to produce and install nesting boxes for sugar gliders, feathertail gliders and pygmy possums.

Students from Dunkeld Consolidated School have now built 80 nest boxes to be installed in trees around Mount Sturgeon, along Salt Creek and in the Dunkeld Arboretum. The school has a partnership with the Panyabyr Landcare Group.

**For further information contact
Tony Lithgow on 5571 2526.**

North Central

The CMA sponsored several local Landcare representatives to attend the recent National Landcare Conference in Melbourne. The conference has given our team many new ideas to implement over the coming months.

The CMA has also been busy finalising the Victorian Landcare Grants and associated Group Health surveys that allows for a better understanding of group health and highlights areas for training and development within the region.

Regional Landcare Facilitator Ashley Rogers coordinated a successful Chicks in the Sticks event held at Boort recently. The event celebrated women working in the environment and agriculture.

Landcare groups continue to engage community members and deliver projects across the region. Recent activities include workshops, Catch A Carp events, restoration and revegetation works and nest-box construction.

**For further information contact
Amelia Morris on 5440 1864.**

In brief

Community Landcare leadership

A new Community Landcare Leadership Program has provided leadership skills to build the capacity and decision making of 19 participants from the Landcare, agribusiness and natural resource management sectors across the north east.

The Alpine Valleys Community Leadership Program delivered the seven-session leadership program with funding from the Australian Government Community Landcare Grants program.

The program participants included Landcare facilitators and committee members, PhD students, DEPI staff and North East CMA representatives.

Program sessions included leadership theory, personal leadership skills, leading change, decision making, resilience, community capacity building, communication, networking, risk management and trends, opportunities and challenges in Landcare and the natural resource management sectors.

The Holbrook Landcare Network was used as a case study throughout the program and a highlight was a two day field trip to the Holbrook region. The field trip sessions, focusing on innovation and entrepreneurship, provided participants with the opportunity to see and hear first-hand the work of the Holbrook Landcare Network, and also included visits to several project sites in the Holbrook district.



Community Landcare Leadership Program participants checking for dung beetles during a field trip to Holbrook.

Plans are now underway to deliver a second Community Landcare Leadership Program.

For further information and to express interest in the program contact Anne Shaw by email at leaders@avclp.org.au

Next issue – Aboriginal Landcare and the arts

From the next issue we will be transitioning into an electronic version of the magazine, in order to support more accessible digital formats and to ultimately reduce the hardcopy production requirements.

The next issue of the magazine will feature stories about Aboriginal Landcare

and the arts. We are interested in stories about Aboriginal Landcare projects as well as the many ways Landcare can be involved in the arts.

Contributions to the next issue should be sent to the editor by Friday 6 February 2015.

Carrie Tiffany, editor
Victorian Landcare and Catchment Management Magazine

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The Victorian Landcare & Catchment Management magazine is published by the Victorian Government Department of Environment, Land, Water and Planning and distributed in partnership with the Farm Tree & Landcare Association and the Victorian Catchment Management Council. The magazine aims to raise awareness of Landcare and natural resource management among Victorian farmers, landholders, the Victorian Landcare community and the wider community.



Mailing list enquiries and to receive your copy via email alert

Contact Farm Tree & Landcare Association
Phone: 9207 5527 Fax: 9207 5500 Email: ftla@landcarevic.net.au

Read the magazine online

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The print size of the magazine can be enlarged online for easier reading.



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