

### “The Trouble with Sub” project

Pasture legumes, particularly sub clover, have very important roles to play through their ability to fix nitrogen, which benefits accompanying species in mixed pastures, and serves as a supply of soil nitrogen to subsequent crops.

To investigate anecdotal reports of growth and nodulation issues with pasture legumes in medium/high rainfall areas of the Riverina, local farmer and Landcare groups are undertaking a project to survey over 80 paddocks containing clover. The project is working closely with other relevant MLA/GRDC funded projects, and has been funded by the National Landcare Programme and Riverina LLS.

The preliminary results indicate that many of the paddocks surveyed (sown from the 1950's through to 2014) have very poor nodule formation on their roots systems. Other information that has been collected includes soil tests, pasture composition, nodule occupancy and nitrogen fixation of the clover from the sampled paddocks. Over the coming months, this data will be analysed and hopefully the puzzle of clover decline may be further understood.

For more information, please contact Janelle Jenkins (Riverina LLS Tumut): (02) 69 411 401, 0427 639 947 or [janelle.jenkins@lls.nsw.gov.au](mailto:janelle.jenkins@lls.nsw.gov.au).

### Silverleaf Nightshade (SLN) weed project

The SLN project, jointly run by Murrumbidgee Landcare and NSW DPI (funded by MLA and AWI) has been going for two years now with research, workshops and demonstration trials taking place in areas all around Australia where this weed is found.

The following points cover some key SLN weed control advice from participants in the project:

- Have a weed control plan that is flexible depending on the season. The development of the plant in spring will depend on the seasonal conditions (moisture and heat)
- Controls applied every year in summer and autumn need to be done consistently, over a number of years to bring the numbers down
- The likelihood of eradication is low, but plant densities can be reduced to levels that are not causing economic damage
- An indicator of success is when the large patches are reduced to scattered plants that can be spot sprayed
- Cooperating with neighbours to stop the spread of the weed in the district is critical.

Murrumbidgee Landcare agronomist Phil Bowden notes that this season has been very favourable for SLN, as the soil moisture levels and temperature have favoured early shoot emergence from the existing roots and also germination of seedlings in many paddocks. SLN shoots from the root are in

**Now is the time to take action, if there are newly emerged SLN seedlings in your paddock!**

flower a month earlier than usual in many cases, and berries will be produced in the next few weeks. Sprays should be aiming to prevent seed set at this time, and also to kill emerging seedlings, as this is when they are easiest to eradicate. If the new plant is allowed to develop an extensive root system, it becomes nearly impossible to kill.

Research has shown that a systematic “dual action” approach over the growing season, from spring to autumn, is needed: Prevent seed set with a late spring or summer spray, and then use a follow up control in autumn to pick up any surviving shoots and run the root reserves down. Residual herbicides may be required in conjunction with normal summer weed programs to give effective control. For long term control, a competitive pasture or crop rotation is needed to choke out the weed and reduce the moisture and nutrients that it can access.

For more info about SLN, including the best control options and latest research, talk to: Dr Hanwen Wu ([hanwen.wu@dpi.nsw.gov.au](mailto:hanwen.wu@dpi.nsw.gov.au), or 69 381 602), or Phil Bowden ([weeds@mli.org.au](mailto:weeds@mli.org.au), or 0427 201 946).



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JALN meeting dates are published in the monthly Murrumbidgee Landcare e-news

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# Junee Area Landcare

JALN Newsletter

Summer 2015

## Message from Skye Bellamy, Junee Area Landcare Network

Hello Landcarers!

Junee Landcare has nearly finished another action packed year. Our Landcare area has achieved pleasing results whilst participating in a wide variety of activities. We can all be proud of our continued dedication to managing our natural resources on farm and fostering the Landcare ethos.

In autumn, 25 land holders from the Junee, Illabo and Bethungra regions participated in a landscape-scale fox baiting program, receiving free or subsidised baits, through the Cross Property project (see page 3). We hope to be able to repeat this program in 2016. In winter, we held a Rodenator field day at John and Nicole Hopkins' property at Illabo (see page 3). A number of local properties were also involved in a project looking at the causes of declining or low nodulation in sub clover (see page 8). In spring, we held a series of “Women on Fire” workshops (see page 2). It was fantastic to see so many women keen to come along and share their experiences, and we hope that these women will now be better able to prepare their homes and families for potential bushfires in the coming season.

In welcome news for Landcare, the state government recently announced that they will be funding a network of Landcare Coordinators across the state. We are hopeful that we will have a Landcare Coordinator covering the Junee region, to help drive activities and projects in our region, and support our Landcare group in further progressing NRM in our local area.

We are looking forward to another productive year in 2016, and wish everyone a successful harvest and happy festive season.

## Understorey studies in revegetation sites: Call for EOI's

Peter Orchard is currently studying the understorey of revegetation sites. He aims to look at the impacts of site history, management, replanted species and densities on the understorey.

Peter plans to select a limited number of sites for experimental sowings of native understorey species. If you would be interested in offering a site on your property, please contact Peter at: [porchard@csu.edu.au](mailto:porchard@csu.edu.au). Please include a brief summary of the site, and any objectives you would like to focus on (eg aesthetic enhancement, weed control, production increases, improved shelterbelt efficiency or integrated pest management).

This newsletter has been produced by Murrumbidgee Landcare as part of its *Cross Property Planning to Balance Production and Biodiversity* projects, assisted with funding from the Australian Government and the NSW Government's Environmental Trust.



## “Women on Fire” workshops

In mid-September, a series of 7 “Women on Fire” workshops were held across the region, as part of Murrumbidgee Landcare’s Cross Property Planning project. The workshops were developed by Skye Bellamy and Maria Turner, of the Junee Area Landcare Network, and aimed to empower women to develop greater confidence and knowledge about how to protect their homes and families in the event of a bushfire.

The workshops were held at a variety of locations, including Old Junee, Illabo, Eurongilly, Downside and Junee Reefs. Well over 100 local women attended, many of whom had experience from several recent bushfires.

Skye and Maria led a discussion of experiences with bushfires, and shared many useful tips for protecting and defending your home. Skye also showed everyone her Bushfire Survival Kit, and went through her personal checklist of things to do when a bushfire is approaching. A sample checklist is available from Nicole at MLI (details below), and can easily be adapted to your personal situation by adding or deleting steps relevant to you.

We also got some helpful tips from James Smith of the NSW Rural Fire Service, who emphasised the need to prepare a plan and discuss it with your family. See the box at right for a link to the RFS Bushfire Survival Plan guide, to help you develop your own plan. The box also contains several other resources recommended by the RFS to assist you in your bushfire preparedness.

If you are interested in attending follow-up workshop in March 2016, or would like any further information from the workshop, please contact Nicole Maher at Murrumbidgee Landcare: [nmaher@mli.org.au](mailto:nmaher@mli.org.au), or 0438 452 814.



James Smith (in RFS uniform) takes women at the Eurongilly workshop on a walk around Patricia Herbert’s beautiful garden, identifying important things to keep in mind when preparing for the bushfire season



Skye Bellamy shows participants at the Junee Reefs workshop the contents of her Bushfire Survival Kit

### Useful resources

**Bush Fire Survival Plan** - takes you through the steps to develop a fire plan for your family and home. Available at: [rfs.nsw.gov.au/plan-and-prepare/bush-fire-survival-plan](http://rfs.nsw.gov.au/plan-and-prepare/bush-fire-survival-plan), or contact the Wagga RFS on (02) 69 714 500

**Farm Fire Wise Checklist and Action Plan** - takes you through a step-by-step process of developing a fire protection plan for your whole property. Available at: [rfs.nsw.gov.au/\\_data/assets/pdf\\_file/0019/9451/Guide-to-Farm-FireWise.pdf](http://rfs.nsw.gov.au/_data/assets/pdf_file/0019/9451/Guide-to-Farm-FireWise.pdf)

**“Emergency Plus” app** - developed by Australia’s emergency services, and uses your phone’s GPS so you can provide emergency services with your exact location. Download for free from the App store on your smart phone

**“Fires Near Me”** - provides a map and details of all bush and grass fires attended by fire services in NSW. You can click on any fire to see more information. Available at: [rfs.nsw.gov.au/fire-information/fires-near-me](http://rfs.nsw.gov.au/fire-information/fires-near-me), or download the app for free from the App store on your smart phone

**Catalyst video** - a special edition of the ABC program, where families were put in a staged bushfire scenario, to see how they would cope. Available with additional information at: [abc.net.au/catalyst/dontpanic.htm](http://abc.net.au/catalyst/dontpanic.htm)

However we do find more species of reptiles in tree plantings if other key habitats are available or included in the plantings, such as dead trees, fallen timber and native tussock grass.

### The value of granite outcrops

Recognising that rocky areas provide important reptile habitat on farms led us to explore in more detail the ecological values of granite outcrops. In many agricultural areas, these islands of rock are completely surrounded by grazing and cropping land. Our surveys identified that granite outcrops, or inselbergs as they are often called (which means island mountain), support more reptile species than similar-sized patches of remnant vegetation.

Many of the species that live on granite outcrops live entirely on rocks, including several species of gecko and the tree crevice skink. Other species such as the iconic inland carpet python, rely entirely on rocky outcrops for winter hibernation and as a source of rabbits (one of their primary food items in the absence of medium-sized native mammals which once roamed the landscape). Rocky outcrops also provide important ecological services which have production benefits, including contributing minerals to the soil, providing ephemeral springs and cycling nutrients and providing shelter for stock.

However, outcrop vegetation is often degraded by over-grazing and competition by invasive weeds. Fencing out livestock is one way to help improve outcrop vegetation and reptile habitat. Unfortunately, fencing is expensive and the small size of many outcrops means that they are not suitable for inclusion in land covenants or native vegetation management incentive programs - the focus of our recent long-term monitoring programs.

### Ongoing research to help conserve reptiles

Across the BGGW, we are comparing reptile numbers in areas that are excluded from livestock grazing, or receive only winter grazing to reduce annual grass biomass, with areas that are set stocked throughout the year. Although results are preliminary, we found that some species such as small nocturnal snakes increased as a result of changes in grazing pressure (probably due to reduced trampling and vibrations), and some species such as Boulenger’s skink and the ragged snake-eyed skink increased as a result of fallen timber retention.

However, for the majority of reptile species in the BGGW we are yet to see any significant changes. We believe this is partially due to the very specific habitat requirements of many species and gaps in the understanding of how to improve critical habitat for this diverse group. For example, some species are associated with shallowly-embedded surface rocks (eg the threatened pink-tailed legless lizard), or flaking bark of large eucalypt trees (eg arboreal geckos), or flaking rock in contact with bedrock (eg rock-dwelling geckos and snakes). Indeed, bush rock collection and the loss of large paddocks trees continues to have a major effect on reptile populations in the BGGW.

We hope that our research will in the future be useful for developing financial incentive schemes that target critical resources used by reptiles before any of these species are added to the threatened species list.



Olive legless lizard (*Delma inornata*)



Dwyer’s snake, a small nocturnal snake



Boulenger’s skink (*Morethia boulangeri*)

## Conserving reptiles in agricultural landscapes: Are we making a difference? Dr Damian Michael, Fenner School of Environment and Society, ANU

### Reptiles in Box Gum Grassy Woodlands

The Box Gum Grassy Woodland (BGGW) in south-eastern Australia is a nationally important agricultural region, but it is also a highly threatened ecological vegetation community. This type of woodland community grows on the deep fertile soils along the inland slopes of the Great Dividing Range, and is home to various iconic woodland animals, many of which are threatened with extinction due to habitat loss.

With over 80 species, snakes and lizards are a major group of animals that occur in the BGGW. Several species are well known, such as the bearded dragon, goanna and brown snake, but the vast majority are secretive, only come out at night or spend the majority of time sheltering beneath logs, rocks or in loose soil. Over the past two decades, our group has been conducting research on snakes and lizards in farming landscapes to better understand their distribution, habitat use and response to habitat restoration and native vegetation management.

### Finding reptiles in agricultural landscapes

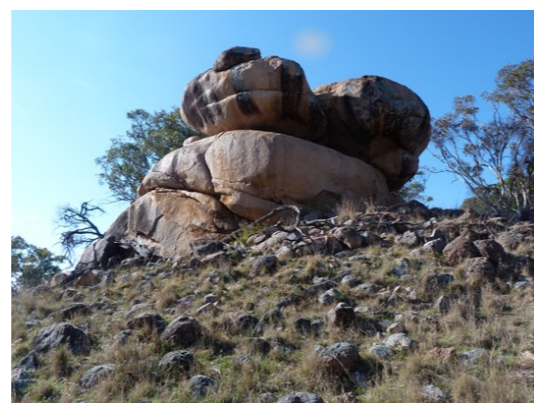
How exactly do you study animals that are notoriously hard to find? One method we use is to place artificial refuges, such as sheets of tin, railway sleepers and roofing tiles in woodland remnants to attract different species. As most farmers would know, snakes will readily use scrap iron, but seldom seen species such as the curl snake and tunnel-dwelling lizards such as the tessellated gecko will shelter beneath railway sleepers, and the olive legless lizard and hooded scaly-foot are easily detected using roof tiles. We periodically inspect the refuges and record information on species presence and surrounding habitat features.

We also actively search for reptiles by scanning logs and tree trunks for basking animals, and carefully lift rocks in search of sheltering species. Even though we have over 10,000 sleepers, tiles and tin sheets spread across our studies, reptile detections are often low and it can take decades to build up a picture of what is going on.

### Do tree plantings help reptiles?

One of our key findings is that reptiles use habitats in very different ways than birds or possums, and strategies to improve biodiversity do not necessarily benefit all reptiles. For example, over the past 20 years a huge amount of restoration work in the form of tree plantings has created key habitat for threatened woodland birds - and population numbers of many bird species have steadily grown. However, we found that only a small handful of reptiles use tree plantings, and of those that do, most are habitat generalists capable of moving through cleared pasture, or species that were present onsite before restoration works commenced.

We find that dense tree plantings on rocky hill tops can reduce lizard populations because of the increased shade levels caused by canopy cover, which potentially changes the thermal environment and reduces basking areas. Based on this, we recommend that plantings are widely spaced in rocky areas and incorporate more low growing shrubs instead of all eucalypts.



Top: Artificial refuges of sheets of tin, sleepers and tiles are placed in remnants to attract different reptile species

Bottom: Granite outcrops support more reptile species than similar sized areas of remnant vegetation

## Managing foxes and rabbits across the landscape Jacinta Christie, Murrumbidgee Landcare Inc

In March, the CPP project, in conjunction with Tarcutta Valley Landcare and Riverina Local Land Services (LLS), held a free 1080/Pindone Chemical Accreditation training course, followed by a workshop on Managing Rabbits and Foxes. Presenters were Dr Tarnya Cox from the Invasive Animals CRC and Michael Leane, Biosecurity Officer with the Riverina LLS.

A major recent development in the bio-control of rabbits is the selection of a new, naturally occurring variation of rabbit haemorrhagic disease virus, known as RHDV-K5. This virus is currently being assessed through a national project known as "RHD Boost". This project is currently seeking release sites for RHDV-K5, so interested land holders are encouraged to express your interest via the PestSmart website: [www.pestsmart.org.au/boosting-rabbit-biocontrol-rhdv-k5-national-release](http://www.pestsmart.org.au/boosting-rabbit-biocontrol-rhdv-k5-national-release), or contact Tarnya Cox: (02) 63 913 952, or [tarnya.cox@dpi.nsw.gov.au](mailto:tarnya.cox@dpi.nsw.gov.au).

Whole-of-landscape fox baiting ensures maximum impact on fox populations, and reduces the chance of re-invasion or immigration from other areas. To encourage local land holders to take this coordinated approach, the CPP project and June Area Landcare Network offered free Fox-off© baits to all members. Neighbouring land holders were also offered baits at a 50% discount. Across the area almost 3,000 baits were provided to land holders, with reports of between 60-100% of baits being taken by foxes.

Best practice fox control recommends baiting be conducted in both autumn and spring, so we encourage everyone to try and implement further control measures this spring.

### "Rodenator" field days

Nicole Maher, Murrumbidgee Landcare Inc

In late July, Phil Sansom of Jansen Farm Services in Ballarat came our way to demonstrate the Rodenator. In conjunction with the Cross Property Planning project, Phil demonstrated the technology at two field days, held at Illabo and Book Book.

The Rodenator R3 unit is designed to humanely control rabbits, and collapse the warren structure. Phil's technique is to first use a smoker unit (made from a modified leaf blower) to blow baby oil smoke throughout the warren. This allows you to identify all warren openings, which can then be closed in with soil. The portable Rodenator R3 unit is then used to deliver a concussive force throughout the warren, through the detonation of oxygen and LPG.

The concussive force is sufficient to humanely control rabbits and collapse the warren structure (depending on soil type and warren depth). For larger warrens, the Rodenator is most effective if used in conjunction with a baiting program or other control measures.

Phil discussed the importance of destroying warrens, rather than relying solely on baiting or other methods which just control the rabbits. If the rabbit population is controlled but the warrens remain, the population has been shown to be able to quickly rebuild. However if their homes are destroyed, this rapid reestablishment is not possible, giving land holders an opportunity to continue to control the population and prevent it from returning to plague levels, which is a simple and quick solution for the frustrating and costly problem of controlling rabbits.

Right: The Rodenator in action at John and Nicole Hopkins' Illabo property, "Allawah"



## Restoring a farm dam at “Nunlong”, Bethungra

By Alison Elvin, *Natural Capital*

In summer 2014, I visited Bill and Maria Muller’s property, “Nunlong”, at Bethungra to provide some advice on transforming one of their existing dams into a healthy, biodiverse ecosystem, while also supplying improved water quality for stock.

At the time of my visit, the dam still contained some water but was sufficiently low to be dredged and re-shaped prior to autumn and winter rains. With this in mind, we came up with a plan for the dam shape, and the plant species most suitable for re-planting in both the riparian and catchment areas of the dam and its’ surrounds.

### Surrounding vegetation remnants

A small distance upstream of the dam, east of the inflow, is a clump of mature Grey Box trees (*Eucalyptus microcarpa*), indicative of a previous Grey Box Grassy Woodland vegetation community in this area. This is further evidenced by the presence nearby of larger grey box remnants along Nunlong Road, Allawah Road and the Hopkins’ neighbouring farm “Allawah”.

This dam restoration project therefore offered a unique opportunity to re-connect the remnants of grey box woodland between “Nunlong” and “Allawah”, together with the understory species that once flourished in this woodland, while also restoring the dam to a vibrant wetland with the ability to slow and filter water flows. The re-design also provided a small paddock which would be available for crash grazing when appropriate. Other benefits include providing higher quality stock water both within the dam itself and in overflows, and increasing the local riparian and terrestrial biodiversity.



### Design of the farm dam

The overall design of the dam has a well-vegetated inflow area, including a form of silt trap prior to the water entering the dam. The outflow is also cleverly designed to meander the excess water downstream in as slow and steady a manner as possible, allowing the water to soak into the soil as it moves along.



Top right: Looking southwest from the dam to scattered grey box remnants

Right: The dam in summer 2014, prior to any work being done

Far right: Bill Muller beside the dam now - note the island in the centre, uneven edges, and vegetation surrounding the dam

A substantial area of the paddock has been fenced out from stock access, creating the potential for a wetland to establish in and around the dam. Along the northern / north-western boundary of the paddock, the soil has been ripped in preparation for tree plantings that will continue across the paddock to Nunlong Rd, and finish a small distance from the adjacent grey box woodland remnant.

### Creation of habitat

For fauna habitat, scattered fallen logs were included around the edge of the dam, and in the dam itself. Occasional piles of rocks at the edge are also excellent habitat. Shelves were created on the steeper dam walls, using logs and similar items laid along the contour. Initially these are being held in place with small pegs, but over time the shelves will collect sediment, which will allow plants to grow there. This will protect the sides of the dam from erosion, and creating additional micro habitats.

### Planting guide

Planting in clumps provides a more natural look overall, especially as there was a large and irregular-shaped area to revegetate. However this makes ripping and spraying prior to planting more difficult. So along paddock boundaries plant was done in straight lines. In all cases, a key point with planning revegetation is to make sure you’ll have easy access throughout the site for the machinery you will use for slashing and weed spraying.

As a rule of thumb, taller, long-lived plants such as Eucalypts should only comprise about a quarter of all plants, as would occur in a native woodland and riparian zone such as this. For Bill and Maria’s dam site (an area of around 5 ha), around 80 large trees were planted in the paddock surrounding the dam. Species planted were a mix of 15-20 each of grey box, yellow box, white box, bull oak (*Allocasuarina*) and kurrajongs. River red gums were not planted, as there are large stands of them along the creeks elsewhere on the farm, and their seed could eventually spread to this area anyway. Trees were planted in clumps of 3 to 5 individuals (with each clump containing plants of just one species).

Around 170 smaller trees and shrubs were planted. These comprised a mix of around 15-20 each of several wattles (including golden, silver and hickory wattle), *Grevillea floribunda* and hop bush (*Dodonea viscosa*). Around 80 forbs were also planted, including 10-15 each of species such as *Lomandra*, flax lily (*Dianella revoluta*), sida and eastern cotton bush (*Marieana microphylla*).

Native grasses and actual water planted were not planted, as they tend to appear naturally over time anyway, mainly often from bird droppings.



Some of the native grasses which would be suitable for the site include kangaroo grass (*Themeda australis*), red grass (*Bothriochloa macra*), wallaby grass (*Austrodanthonia* spp), weeping grass (*Microleana stipoides*) and wheat grass (*Elymus scaber*).

### Further information

For further information on how to create a healthy farm dam, contact Nicole Maher at Murrumbidgee Landcare: [nmaher@mli.org.au](mailto:nmaher@mli.org.au), or 0438 452 814.