



Working Together

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Dung + Beetles in vineyard

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Dung beetles to drought-proof vineyards Boongarrrie trials, Eden Valley—Bernard Doube & Mark Dale

Concept: biological renovation of vineyard soils using dung beetles to bury waste dung from dairies, feedlots and stables

What was done: 2010–2014, the impact of dung burial on soil properties and on vine vigour, and grape production and quality was assessed

What happened: large amounts of dairy dung were buried under vines

What we found: dung burial extended the growing season for grapes in 2013 without compromising grape yield or quality

How this happened: dung burial improved soil fertility and especially water relations by generating numerous tunnels to 50 centimetres under vines and filling them with dung

Where to from here?

- Continue monitoring vine vigour and grape yield/quality
- Assess burial of gypsum in

dung to help resolve soil sodicity

- Establish a larger scale trial with fast-growing Shiraz grapes
- Extend the trial to cherry orchards



Mark Dale explaining the trial to a group of growers at Boongarrrie

We predict that vines treated with dung+beetles will be better able to handle the greater extremes of weather resulting from climate change.

Drip-irrigated vineyards have been shown to suffer from declining in soil structure over time. Dung beetles can reverse

the process, improving infiltration and adding carbon and nutrients to what is effectively a strip of rejuvenated soil that has been tilled without damaging the vine roots.

Bringing dung into vineyards

The easiest way to get dung into a vineyard is to run cattle there. However, a winter trial with cattle at Boongarrrie showed that they did not produce enough dung to allow measurable change to the soil in a reasonable time, even if all



Cattle in the vineyard

the dung were buried. Because
Continued on page 2

Peep Hill Hop bush searches a success by Kylie Moritz

As the name suggests the Peep Hill Hop bush (*Dodonaea subglandulifera*) has a strong hold around the Peep Hill area near Eudunda. But this nationally endangered shrub, which is only found in South Australia, also makes its home through the Western Murray Mallee. In the summer of 2013 surveys were carried out across the

Western Murray Mallee to look for new populations of the Peep Hill Hop bush. It was really exciting to find a large new population of the species in the Stonefield area.

The Peep Hill Hop bush was known to occur on at least one property in the Stonefield area but there was no information of how wide spread it was or

how many plants were present. This new information is very positive with over 3,500 plants located across several properties at Stonefield. It is highly likely that more sites with Peep Hill Hop bush could be located in the area. Sites with known Hop bush populations have been
Continued on page 3

Dung beetles to drought-proof vineyards Boongarrie trials, *continued*

‘Dung burial redistributed carbon, sulphur, nitrate, phosphate, ammonia and potassium from the surface dung to the base of the soil cores...’

of this, bulk dung was brought into the vineyard for the trial.

Soil core trials: soil quality and water relations

Soil fertility: Dung burial redistributed carbon, sulphur, nitrate, phosphate, ammonia and potassium from the surface dung to the base of the soil core, where it was most concentrated in the vicinity of the beetle tunnels and their contents.

Vine root growth: When the soil cores were extracted, those containing buried dung were festooned with vine roots and there was substantial root growth in the cores, especially in the base sections that contained most of the buried dung. The dung-only and control cores had no obvious root material on their outer surface or in the soil core.

Soil carbon content: Dung burial and increased vine root growth increased the soil carbon levels, especially at

depth in the soil.



Samples at 10-cm intervals down to 50 cm show that soil darkens as its organic content increases (left to right).



Wine quality under the microscope: there was no obvious difference between the wine made from grapes from the three treatments (dung+ beetles, dung-only, no dung and no beetles)

Bulk density: Dung beetle tunnels also reduced the bulk density (compaction) of the base section (25–50 centimetres) of the soil profile by about 20% (from about 1.28 grams per cubic centimetre).

Water relations: The soil cores were extracted in May 2012 following 57 millimetres of rain over the previous two months. The dung+beetles cores contained moisture equivalent to 57 millimetres, while the other cores were substantially drier. We infer that the dung+beetles treatment allowed much more

effective rain infiltration.

These studies have shown:

Growing season: dung burial extended the growing season for grape vines

Water relations: dung burial increase the permeability of soil to water

Soil harness: dung burial softened soils

Vine vigour: in year one, there was no effect on vine vigour, grape yield or quality

Wine quality: assessed by amateurs, was not affected by vine treatment.

These studies have been extended to cherry orchards

The project is being undertaken in association with Phil & Sarah Lehmann and the Barossa Grape and Wine Association. For further details contact Bernard@dungbeetlesolutions.com.au.

Dung down under: dung beetles for Australia—The first farmer friendly publication about dung beetles. Available now! Price \$33 plus P&H. Go to www.dungbeetlesolutions.com.au or contact loene@dungbeetlesolutions.com.au or 08 8339 4158

A carbon budget: organic carbon content (g) in soil core components from the core experiment

Component	Dung+beetles	Dung only	Controls
Surface material	44	51	3
Upper section	111	92	76
Base section	78	58	74
Tunnels + contents	38		
Total per core	271	201	153



Peep Hill Hop bush searches a success *continued*

investigated more thoroughly to work out more precisely the size of populations, how the species is performing in the region and whether population regeneration evident, and also to get a better idea of the threats this species is facing.



Where in the Western Murray Mallee does this species occur?

The southern most location of the Peep Hill Hop bush is a small population of only two plants on a roadside at Fray-

ville. A large population occurs at Black and White Hill (near Sedan) where plants are found along roadsides, the River Murray pipeline and on private property. A small number of plants are also found along the cliff tops from Walkers Flat to Nildottie,

near Swan Reach, and a small population occurs east of the River Murray at Notts Well. The largest and most wide spread populations are found further north in the area around Eudunda and Robertstown, where an estimated 25,000 plants occur mostly on private property, but also in roadside vegetation. Peep Hill Hop-bush is an erect, perennial shrub up to 2m high which grows on low hills and plains on loamy soils with rocky (limestone, slate, shale) outcrops and flowers

'... an estimated 25,000 plants occur mostly on private property but also in roadside vegetation.'

Peep Hill *continued*

February through to August. The biggest threat to the Peep Hill Hop bush is grazing from stock and rabbits, but there was good evidence seen during the surveys that plants regenerate readily if grazing pressure is removed. If landholders suspect they have the Peep Hill Hop bush on their property and would like some advice or assistance with managing for its protection, please contact Natural Resources SAMDB or Mid Murray LAP.

SA Country Arts Grant

Last year the LAP was successful with a grant "Engaging the Community in Cultural Arts at Meldanda". With an aim to work with the Aboriginal Community to create stories that will be incorporated onto a copper Coolamon, made by artist Ali Devitt-Lansom. Once completed the Coolamon will be installed on a stone plinth made by Chris O'Keefe, in Meldanda's Bush-tucker/use garden. A Coolamon is a vessel that Aboriginal people, mainly women, use to

carry water, food and even their babies in. A Coolamon is often made from a trip of bark from a tree. The art work will incorporate the making of bush foods that will be fixed inside the Coolamon. There will also be a smaller Coolamon made to be installed at the Visitors Park in Cambrai to draw attention to the project and Meldanda. We are planning on an opening ceremony for the Coolamon in late May at Meldanda.

'...with the Aboriginal Community to create stories that will be incorporated onto a copper Coolamon...'

Landholder Survey around SRCP

The Mid Murray LAP has been undertaking a landholder survey of approximately 150 landholders surrounding a 5Km radius of Swan Reach Conservation Park. The LAP mailed out letters to landholders in early March with information about Malleefowl and their presence in the region and the purpose for the survey. The survey includes information about remnant Mallee on their properties, stock access, feral cats, foxes, goats and wombats,

quite a few with some being reported as unwell. The response has been amazing with great interest and support from the landholders. It isn't surprising that cats and foxes are seen in this area, but what is impressive is that the majority of landholders are implementing control of these ferals. The diversity through this region is quite incredible and I feel often goes unnoticed. It appears at this stage there may be one or two breeding

pairs of Malleefowl remaining, but with the numbers of foxes and cats out there the chances of survival are significantly reduced. Once the survey has been completed a report will be compiled with results sent to all the participants. This project has also provided an opportunity for more people to learn about the LAP with more landholders wanting to receive our newsletter.

'... impressive is that the majority of landholders are implementing control of these ferals...'

‘...in the warmer months, the view from the Mt Torrens village was of undulating fields of green kangaroo grass...’

Roadside Fuel-Reduction Trial

This article has been taken directly from NGRG eGrassNotes No. 31, Summer 2014

Summer is here once again. By the end of December, South Australia had already had dozens of grass, crop, stubble and bushland fires. In rural areas, roadside verges also provide a generous source of flammable materials.

Let's now go back in time. In 1839, William Randell, an

employee of the South Australian Company, wrote to his bosses. He said that, in the warmer months, the view from the Mt Torrens village was of undulating fields of green kangaroo grass, the summer-active Themeda triandra.

Now, summer-active native grasses aren't the dominant species in the area. Bob Myers, however, hopes that, one day, these native grasses might return to some of the area's roadsides.

Bob is part of a multi-agency project - the Roadside Fuel Reduction Initiative - that is trialling some of these perennial grasses. A year into the project, another season of weed-control is needed before sowing of the eight trial sites near Woodside, Mt Torrens, Birdwood and Forreston can go ahead.

The Adelaide Hills is believed to be one of the most densely populated, high fire risk areas in the world. Its roadsides contain summer-dry grasses

‘..introduced grasses can have summer fuel loads of 17-30 tonnes per hectare. Native grasses, in comparison, have fuel-loads of only 2.5-8 t/ha.’

Roadside Fuel-Reduction Trial *continued*

and weeds such as phalaris, wild oats and cocksfoot that could be up to 2 m high. These introduced grasses can have summer fuel loads of 17-30 tonnes per hectare. Native grasses, in comparison, have fuel-loads of only 2.5-8 t/ha. The Adelaide Hills Council spends big money each year on roadside slashing and mowing and other bushfire-prevention work. Bob says that, in Victoria, local

Councils and the CFA have successfully replaced phalaris with native grass species that stay green over summer, and which grow only to ankle or calf height. He firmly believes that the aim to change the roadside vegetation in the Hills from introduced, high-fuel-load pasture grasses to native, lower-fuel-load, summer-green perennial grasses is definitely practicable.

Simply Saltbush

The Mid Murray LAP has been working with Nadine Brown, local saltbush expert and Amy Hermann from Splitpants Productions to put together a chenopod identification booklet, titled 'Simply Saltbush'. It includes detailed information on all chenopod species with genus information, identification key and species details. It will soon be available to purchase from the LAP, details will be put up on our website

‘...majority of these nature reserves are managed only with the assistance of dedicated volunteers’

NTSA Natural Heritage Reserves; Lenger Reserve in the Riverland

The National Trust of South Australia (NTSA) is an independent, non-government, not-for-profit organisation whose charter is to conserve natural and cultural heritage for the people of South Australia.

NTSA has championed nature conservation since its inception in 1955. Some of the first properties donated to the Trust were nature reserves. Since then the National Trust of SA has become responsible

for a total of 28 reserves across South Australia. The majority of these nature reserves are managed only with the assistance of dedicated volunteers and access to small grant funding from a variety of State and Federal schemes.

Reserves span the state including several well known reserves in the Mount Lofty Ranges, some tiny 'islands of biodiversity' on Yorke Peninsula while reserves in the

SAMDB region conserve vegetation and habitat ranging from Mallee on low dunes to cliff top vegetation to Murray River frontage, river flats and accompanying wetlands.

Nearly all the reserves are open to the public for walking visitation and enjoyment by the people of SA and many have interpretative trails. Some nature reserves are also linked to historic buildings or important cultural sites and

'NTSA volunteers have tried to ensure the European and Aboriginal cultural heritage connections to these nature reserves have not been lost....'

NTSA Natural Heritage Reserves; *continued*

activity. NTSA volunteers have tried to ensure the European and Aboriginal cultural heritage connections to these nature reserves have not been lost with collation of historic materials and inclusion in trail materials.

Lenger Reserve near Mannum is a good example of where all these elements combine under the NTSA umbrella. It is an oasis of diversity in the mallee landscape with Saunders Creek gorge traversing the Mallee reserve and providing additional creek, creek flat

and low cliff habitat. This 92 ha property was gifted to the National Trust of South Australia as a bird sanctuary in 1978; there have been over 100 bird species recorded on the reserve, with over 20 species of reptile and 2 frog species also recorded. A plant list compiled by skilled botanists in 1992 identified over 208 indigenous species; 26 of these are of conservation significance.

Since its dedication as a reserve, the very active NTSA Friends of Lenger Reserve (FOLR) group that have

worked tirelessly, controlling invasive species, fencing to protect native vegetation, revegetating formerly cleared areas, creating walking trails, preserving an historic building on site and working on interpretive and monitoring projects. NTSA often works with other like-minded organisations and FOLR have worked with the Field Naturalist Society of SA volunteers, carrying out extensive surveys of flora and fauna on the reserve.

By Janet Pedler Natural Heritage Trust Officer

'Lying snug in bed on a cold winter night, it was annoying to have ones sleep interrupted by continuous yapping.'

Feral cats, dogs and a koala *by Rose Laucke*

Quite few years ago, we had a dog named Judy. She was a kelpie / border collie cross. As a sheep dog she was pretty ordinary, but as a watch dog she was excellent. She was never tied up at night, but must have spent some of the dark hours prowling around looking for burglars. If ever she found one we were never aware, but she did manage to sniff out feral cats.

Wise enough not to tackle them personally she learnt to 'tree' them and call for help.

Lying snug in bed on a cold winter night, it was annoying to have ones sleep interrupted by continuous yapping. It was even more annoying to know it would not stop, and worse still, knowing I would have to get out of bed, get the .410 out of the locked safe, get the ammunition from another

locked safe, and with the gun in one hand and a torch in the other, search for the origin of the call for help.

Where was 'the husband' i hear you ask? Only an earthquake would get him out of bed on a cold night, and being slightly deaf, he didn't find the yapping so annoying.

As the cat fell dead from the tree, Judy would wildly give it a

'She' killed 23 cats this way, in a 12 month period and many more over the years.'

Feral cats, dogs and a koala *continued*

'coup de grace' and I could see her smile of satisfaction as I told her what a clever dog she was. She' killed 23 cats this way, in a 12 month period and many more over the years. Sadly she died from a snake bite, but thankfully left a son who had the same attributes, (along with fox killing). Being a male, we did not allow Billy to roam free at night, but sometimes we would forget to tie

him up and on many of these occasions he would find and tree a cat. He also found quite a few during daylight hours, so the feral cat population was kept down. Early one morning I left him off and he raced down to the river flat and a few minutes later he started yapping. I drove down to see the problem and when I saw him at the base of a huge red gum the trunk too smooth for

a cat to climb, I presumed it was a possum he had found. Imagine my suprise to see a koala!! Just like Aimee (Working Together Spring 2013) I was just so excited. Couldn't wait for the grandchildren to wake and 'come and see'. I took a movie, but the koala was nicely settled on a leafy branch so it was difficult to get a good photo, like Aimee's. Worried that there

MID MURRAY LAP

Project Manager
Aimee Linke
Nursery Supervisor
Irene Bugeja

PO Box 10
CAMBRAI, SA, 5353

Phone Aimee: 8564 6044
Fax: 8564 5003

midlap@internode.on.net
Cambrai Community Nursery
Irene Bugeja: 8564 6034
cambrai_nursery@internode.on



Committee Members

Chairman: Terry Franklin
Vice Chair: Glenn Donnell
Executive: Ian Mann
Councillor: Brian Taylor
Don Webster
Elisabeth Wood
Rose Laucke
David Peake
Dawn Horton
Alan Brown
Advisor: Kelvin Goldstone
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Feral cats, dogs and a koala *continued*

were no Manna gums in Kongolia for the animal to eat I phoned the zoo, but was told that koalas can eat any eucalyptus. Sadly one week later, not long after dispatching his last cat, Billy had to be 'put down' when his hip became displaced, and an X-ray found he had bone cancer. (January 2006). Further dog members of our family have failed to

carry on the tradition.

One presumes the feral cat population is now on the increase, and the koala could still be living in the area. Now and then I glance up into the trees, but we need a 'sniffer in residence!'
Rosemary Laucke.'

The Mid Murray LAP has several traps available for hire to help you trap feral animals. We are also interested in your stories just like Rose Laucke's to help piece together the true number of feral cats, we hope to put together a map with an indication of numbers of feral cats being captured in the region, Hopefully it will assist in lobbying some more support in feral control.

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- I wish to be added to the mailing list
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- I wish to become a volunteer

Return to:
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Volunteer opportunities



ALOC team helps out again, the Kungan team from Berri helped the LAP out by potting on some seedlings in the nursery including *Eutaxia microphylla* and *Kennedia prostrata*. They also did some weed control at Meldanda, they are

a great team to have and we appreciate their contribution to our projects. Volunteers are welcome to become involved in our nursery where we grow native seedlings and will soon be growing edible plants as well, the nursery is open Mondays and Tuesday for any enquiries contact Irene Bugeja. Volunteers are also welcome to help out at Meldanda where we are working on establishing different plant communities of the region. We have a great team of peo-



ple working there and a Friends group the 1st Friday of every month.