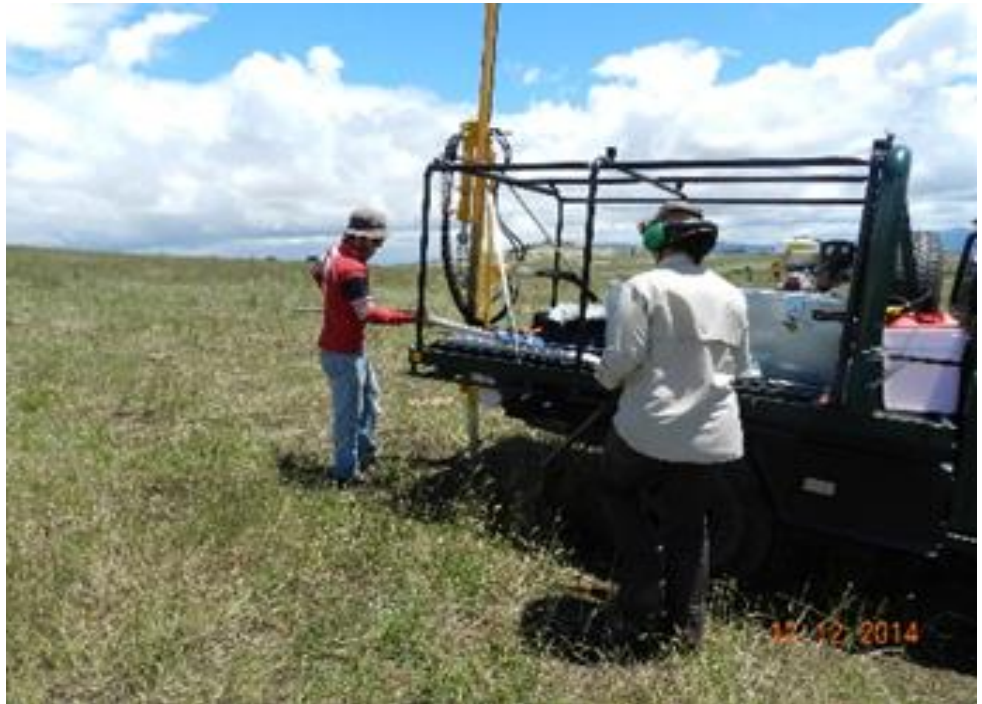


# Newsletter

Number 53

February 2015



## **Soil coring and monitoring being undertaken for the Action on The Ground project**

**Adrianna of Bootstrap Environmental Services assisted by Jack**

Photograph: Graeme Hand

**Inside: AGM key outcomes; Action on the Ground Project Update; Bushfires ~ Rural Challenges.**

[www.stipa.com.au](http://www.stipa.com.au)

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**STIPA is not an acronym.** The association was named after the *Stipa* genus of grasses, now *Austrostipa*. One of the *Stipas* is commonly known as spear grass. At its inception in 1997, the association aimed to spearhead a change in attitude to native grasses. As that change is occurring, Stipa continues to promote the use of native grasses to achieve profit from a healthy landscape.

### Stipa Native Grasses Association (ABN 42 300 161 459)

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## From the Chair

### Annabel Walsh

Welcome to the first of our 2015 Stipa newsletters.

What a fabulous start to the year with that wonderful summer rain event over most of the South-Eastern Australia, this rain event highlights the importance of having native perennial summer grasses, in your pasture mix.

This year Stipa traditionally would conduct our bi-annual conference but we are instead organizing field days in different locations in NSW, Victoria, South Australia and Tasmania. The focus of these field days will be regenerating pastures and cropping systems to increase soil carbon and landscape function.

While the soil carbon/climate change debate has been raging Stipa has been getting on with the business of tweaking management to maximize carbon in our soils using livestock, recovery and pasture cropping systems. With funding from the Action on the Ground initiative and in conjunction with Sydney University over the past three years we have been putting the scientific rigour into our management and measuring techniques.



We greatly appreciate the assistance of the participating landholders and look forward to their further support enabling us to use their demonstration sites for the upcoming field days.

Also to Graeme Hand, Sue Ogilvy and Peter Ampt for their attention to detail to ensure the results will stand the scrutiny of the scientific community. Graeme will describe the Action on the Ground project in more detail in the next few pages.

Stipa invites all who are interested in native grasses, landscape function, increasing soil carbon and profitable farming businesses to attend our 2015 field days.

Cheers

**Annabel Walsh**  
**Chair Stipa Native Grasses**  
**Association**

## From the CEO

**Graeme Hand**

### In this report:

- AGM and plan to relaunch Stipa
- Action on the ground project: Final round of sampling and monitoring
- Mongolia update
- Bushfires-Case for change to fire management?

### AGM

The AGM was held via telephone conference on Thursday 4<sup>th</sup> December 2014. Let me know if you did not receive notice of this meeting.

Key outcomes from this meeting were:

- Expanded executive committee – in alphabetical order - Angus Arnott, John Watson and Wal Whalley.
- A decision was made to relaunch Stipa using the Action on the Ground sites as a base for field walks



Photo By Lucy Hand

Let me know your thoughts on these ideas and in what direction you would like to see Stipa go.

### Action on the Ground Project

Sampling and monitoring the Action on the ground project (funded by the Australian Government) – Demonstrating practices that increase soil carbon has been completed. Thanks must go to the 13 farms that allowed us easy access and went out of their way to provide animals for grazing when required. The samples are now with Sydney University for analysis. Thanks must also go to Dr Peter Ampt and his team for their patience in providing Stipa with the research design and analysis service required to confirm if it

Is possible to increase soil carbon, biodiversity and soil health using grazing. Thanks also to Sue Ogilvy and Danny O'Brien for project management and Col Seis for ideas, field work and sounding board, and the steering committee of Annabel Walsh, Wal Whalley and George Taylor. Next steps are report writing and field walks at selected sites in NSW and Victoria. More details in article.

## Mongolia

This project has developed to include taking baseline soil carbon samples, around the Erdenestagaan soum centre (town), in the Sukhbaatar aimag (province) of eastern Mongolia.

The preliminary results from these trips (partly funded by an Australian Rangeland Society Travel Grant) based on using the positive deviant framework to identify uncommon regenerative practices are included in the article. It is anticipated that Mongolian herder management will provide Stipa members with insights in how to lower risk while maintaining native grasslands -.

Mongolian grasslands are dominated by *Stipa baicalensis*, *Stipa capillata*, and *Stipa grandis*

Details on the soil carbon sampling will be included in the next newsletter

## Other articles

The other articles are an attempt to synthesise discussions with Stipa members and others around possible new research approaches to some big rural challenges:

**Bushfires**-Case for change to fire management?

I would be interested in your thoughts on these issues or anything else of interest.

## Graeme



*Friends of  
Grasslands*

Supporting native grassy ecosystems

## Action on the Ground Project

Demonstrating practices that increase soil carbon: Update

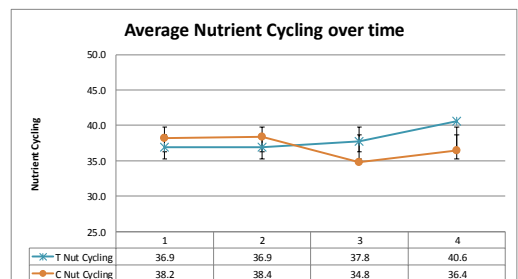
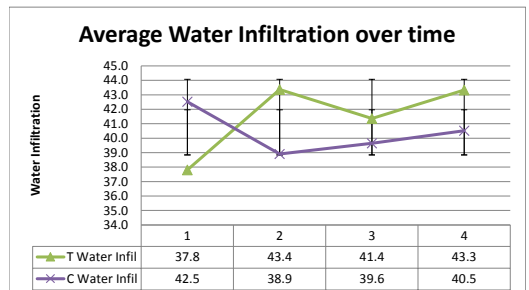
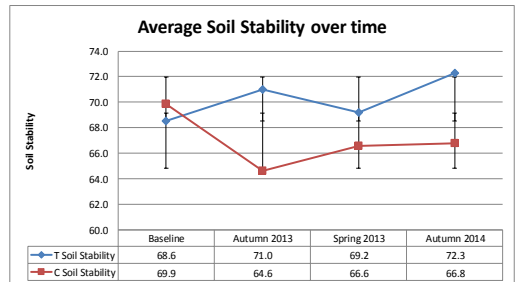
Graeme Hand

Sampling and monitoring the Action on the ground project (funded by the Australian Government) has been completed.

Soil core analysis has commenced at Sydney University.

Until those results are obtained it is too early to say if the project has confirmed the hypothesis that active adaptive management of grazing management increases landscape function (specifically Nutrient cycling index) and increases soil carbon.

Early analysis of the landscape function results show that even though the results are not smooth the averages look okay.



Some of the soil photos also indicate positive change:



**Treatment**



**Control**



**Treatment**



**Control**



*Action on the Ground Update from page 7.*

**Some of the soil photos also indicate positive change:**



**Treatment**



**Control**



Soil coring service provided by  
Adrianna, Bootsrap Environmental  
Services (assistant Jack)



Processing soil cores



It was also pleasing to see some changes in perennial grass diversity and succession. For example on the treatment site at "Winona", Gulgong the site shifted from a red grass (*Bothriochloa macra*) grassland to a Box/ Warrego grass (*Paspalidium constrictum/jubiflorum*) dominated grassland.

My experience has been that having 'practice' areas on a farm influences the broader management of the farm.

These low cost small areas allow management practices to be trialled at low risk. A group of farmers in South West Victoria have modified their management based on having practice areas/ paddocks that have been managed for increasing landscape function (in a similar way to the Action on the Ground project).

Most are now seeing grassland regeneration over large areas of their property

Part of the Action on the Ground project is to have field days at some of the farm sites so that farmer's departmental staff, local councils and advisors can have a detailed look at the changes produced.

A training day explaining in detail the decision making monitoring and outcomes achieved will also be held. These days will be advertised as well as sent around.

Please contact me if you would like more details

Graeme

## Looking for uncommon successful practices in Mongolia (Graeme Hand)

Mongolian grasslands “Stipa grasslands” are dominated by *Stipa baicalensis*, *Stipa capillata*, and *Stipa grandis*.

As mentioned in the last newsletter I was fortunate to obtain a travel grant from the Australian Rangeland Society to help fund a trip to Mongolia. The purpose was to trial a social research technique (positive deviant) based around looking for individuals or groups that are using uncommon practices that are more successful than the common practice.

### Defining successful practice

It is well known that unmanaged grazing produces a gradient of degradation the closer you get to water points. This is known in the scientific literature as the *piosphere* effect (from the Greek “pios” = to drink). It appears that within nomadic grazing system this also occurs around towns and cities. As Mongolia is communally owned without fences it is easy to see this effect close to the capital Ulaanbaatar and around towns like Erdenetsagaan soum centre in eastern Mongolia.

See map overleaf

### US Ecological Site Description

As an aside this method of monitoring is expensive and from what I have seen is too species oriented and underestimates the importance of litter and litter decomposition (burnt areas with erosion still ‘score’ the same as covered areas without erosion). Unless the monitoring procedure deals directly with biophysical processes and how these are affected by both weather and management, one is dealing with “second-hand” or lagging information. For management purposes this method does not directly suggest corrective action or next steps (like landscape function analysis [LFA] does).



So the search for the uncommon successful practice (positive deviant) became one of lots of driving and then monitoring using the Mongolian standard of US Ecological Site Description (ESD) at different distances from water points and towns looking for better perennials, larger basal areas and decomposing litter between the tussocks.

The positive deviant will have higher landscape function near the water point.

Many of you will have seen this near gateways and water point areas that are allowed to recover fully.

I often see this in 'marking' yards that are only used intensively once a year.

The traditional practice is to have two main areas summer ground and winter ground. Autumn and spring are spent moving between the two.

## Looking for uncommon successful practices in Mongolia continued

The summer ground is usually around wells or rivers and from our monitoring is degrading from not receiving sufficient recovery. Stock density was observed to be generally quite high (see photo)



Breakfast in the ger



School kids walking 20km back to their home (ger) after staying in the town for the week. Mongolia has a very high literacy and tertiary education levels.

## Possible new approach to bushfire and grassland fire management

Graeme Hand

### Case for change to fire management?

Current fire management is a combination of many components with the key practice being fuel reduction burning. Can we continue to use this as the only line of attack considering the following?

“Over the past decade, every forested continent has seen an alarming surge in large, uncontrollable fires. Mega-fires..... these are extraordinary fire events..... So extraordinary, they demolish the very ecosystems that have thrived with fire for millennia”<sup>1</sup>.

A recent CSIRO report<sup>2</sup> has suggested that with climate change not only will the fire season become longer but also suitable conditions for fuel reduction will be reduced “so there’s a double whammy”.

Other less discussed outcomes from this practice include decreasing biodiversity. For example according to leading wildlife expert Professor John Woinarski - “We’ve been monitoring the fauna of Kakadu for the last decade or two and over that period, we’ve witnessed the decline by about 75 to 90 per cent of many of the small native mammal species in Kakadu”. He states that the overwhelming cause is burning too often for fuel reduction<sup>3</sup>

Peter Donovan and others argue that to limit climate change we need to increase photosynthesis while reducing oxidation<sup>4</sup> (See diagram 1 below). Burning does the opposite by reducing photosynthesis while increasing oxidation.

Therefore, one of the unintended consequences of fuel reduction burning is probably the acceleration of climate change. If so, it is surely obvious (like to a blind man on a galloping horse), that we should consider alternative practices for managing bushfires.

## Possible new approach to bushfire and grassland fire management (continued)

### Possible causes for the increase in bush & grassland fire intensity

It is hard to find any research on why bush and grassland fire intensity in southern Australia is increasing but recent research on the impact of plant community structure as well as fuel load may be important.

Some of the possible causes could be:

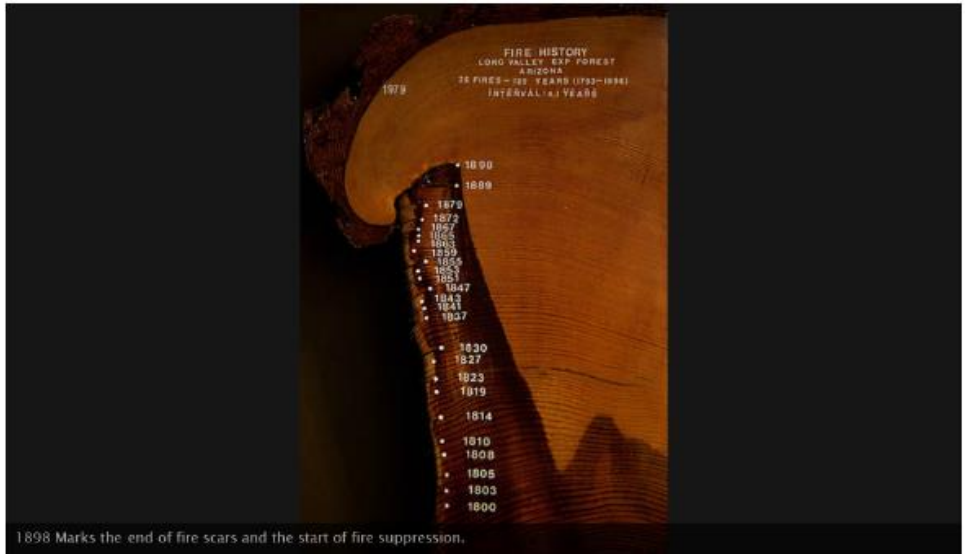
- Shift from summer growing (C4) perennial grasslands to winter growing (C3) annual grasslands that can be dry and hayed off over summer<sup>6</sup> which the CSIRO Grassland Fire Spread meter\* predicts will at least double the rate of spread 100% cured versus 70% cured (same air temperature, relative humidity, fuel moisture content, wind speed and pasture condition).
- Shift from summer growing (C4) grasslands to cereal stubbles<sup>6</sup> as above
- Decreased biological fuel reduction (landscape function from nil litter decomposition to slight decomposition)<sup>7</sup>
- Reduced water infiltration and water holding capacity<sup>7</sup>.
- Modified stubble structure from reduced grazing<sup>8</sup>

\* CSIRO Grassland Fire Spread meter also predicts different rates of spread for different pasture conditions – eaten out, grazed and natural (ungrazed) indicating to me that that grazing, as all farmers know, changes fire behaviour.

The key though is the evidence and research from work done by Professor Tom Swetnam and his team at University of Arizona, Laboratory of tree ring research, USA showing that heavy (non-regenerative) grazing resulted in eliminating bushfires for around 100 years in ponderosa pine forests in New Mexico<sup>1</sup>.



## Possible new approach to bushfire and grassland fire management (continued)



**Source:** Catalyst - Earth on fire<sup>1</sup> See website for more legible version

## Possible solutions research

Following are some of the possible solutions to fire and climate change that we need to develop and research. We need scientists to research the future that we need rather than confirm the past that we have. Luckily there are a few scientists not prone to 'system justification'<sup>9</sup> that can see that co-designing practices with farmers and others that regenerate our ecosystems is required. It is then necessary to confirm that these practices do reduce fire intensity and stabilise our climate. See reference<sup>10</sup> for an example.

## Possible new approach to bushfire and grassland fire management (continued)

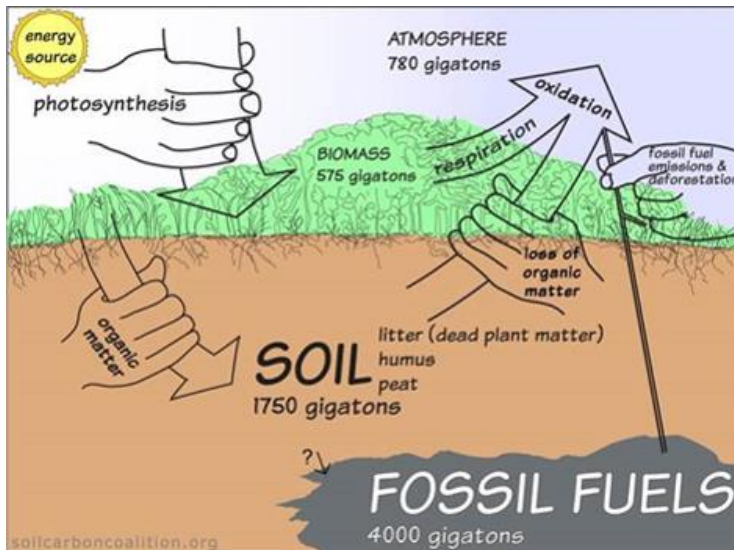
### Possible solutions research (cont)

Peter Donovan's diagram (Diagram 1) clearly shows that addressing fire intensity and reducing climate change is very simple. Increase photosynthesis and reduce oxidation. As farmers, we can directly influence the largest carbon flows of the carbon cycle for the land that we manage.

**Capturing carbon** through photosynthesis and then capturing organic matter in the soil. This is easily achieved through increasing landscape function<sup>5</sup> and increasing perennial grass diversity including summer growing (C4) and winter growing (C3) perennial grasses.

**Reducing oxidation** through eliminating grassland burning, ploughing, and weathering/ oxidation of perennial grasses (versus biological decay).

Diagram 1 Carbon cycle (source: soilcarboncoalition.org)



## Possible new approach to bushfire and grassland fire management (continued)

### Summary of research topics

These topics need to be researched in southern Australia within the context of a successful operating farming method that increases farmer profitability while increasing their quality of life and regenerating biodiversity both above and below ground. These farming methods include:

- Farming that increases photosynthesis and landscape function
- Farming that increases perennial grass diversity including summer growing (C4) and winter growing (C3) perennial grasses
- Farming that does not require burning of grasslands and stubbles
- Farming that does not require ploughing
- Farming that promotes biological decay

It is clear that many decisions farmers, researchers and governments are making produce farming methods contrary to those listed above and the result is increasing bushfire frequency and intensity. Stipa members have shown that deciding to practice farming that creates healthy, bio-diverse native grasslands is profitable, low risk and increases biodiversity.

While researching this article it was great to see that Stuart Hill is also calling for such research and provides a clear summary for this article. The quotation below is from the ABC website Catalyst - Earth on fire<sup>1</sup>.

### ***Emeritus Prof Stuart B Hill - 04 Jun 2014 5:17:36pm***

Congratulations on a great documentary. Hopefully it will help to enable 'climate deniers' to question their beliefs. I was, however, disappointed that virtually nothing was said about the bio-ecology of the soil (as the decomposer system within terrestrial landscapes) and its role in reducing fires (by reducing fuel load, and increasing soil water-holding capacity)

## Possible new approach to bushfire and grassland fire management (continued from previous page)

*Emeritus Prof Stuart B Hill - 04 Jun 2014 5:17:36pm (cont.)*

and, by improving soil fertility, and helping forests to evolve to communities of less fire-dependent species.

There is also the possibility of 'conditioning' earthworms (and possibly other members of the decomposer system) to better accept leaf-litter that contains resins (e.g., from Eucalypts and Conifers) as food - by treating their cocoons with the juices of these plants. On emergence from the cocoon, earthworms eat the cocoon shell, and this may be used to condition them to better accept previously less palatable plant materials as being acceptable. At least, research should be conducted on this. Then we could include bio-ecological approaches to reducing fire load; instead of having to rely just on burning, which further increases greenhouse gasses, and soil erosion, decreases soil water-holding capacity, kills beneficial soil organisms and forest wildlife, and sometimes causes the fires it intends to prevent.

### References:

1. Catalyst - Earth on fire <http://www.abc.net.au/catalyst/stories/4014144.htm>
2. New climate change projection says Australia could warm by up to 5.1 degrees Celsius in 2090 <http://www.abc.net.au/pm/content/2015/s4169125.htm>
3. Fight to save Kakadu wildlife after dramatic decline <http://www.abc.net.au/worldtoday/content/2014/s4120215.htm>
4. Turning air into dirt: Using atmospheric carbon and solar energy to grow the water-holding soils that can feed the world. <http://soilcarboncoalition.org/manifesto>

## Possible new approach to bushfire and grassland fire management (continued from previous page)

### References cont:

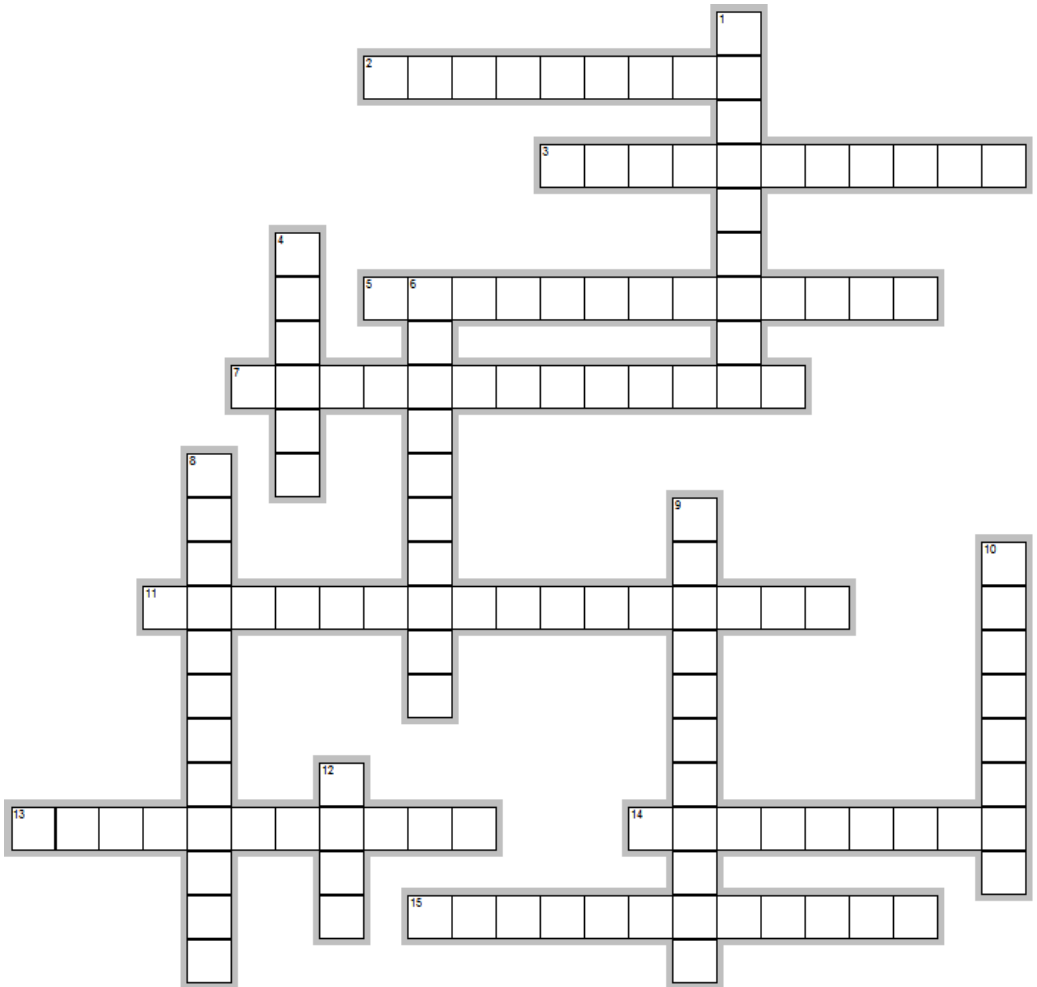
5. Landscape function analysis, Tongway et al, <http://www.csiro.au/Organisation-Structure/Divisions/Ecosystem-Sciences/EcosystemFunctionAnalysis.aspx>.
6. Seis C., (2014) pers. comm.
7. Hand G., (2014) unpublished data.
8. A review of the effect of farming practices, including continuous cropping, minimum tillage and direct drilling, on bushfire risk and prevention, Tolhurst K., Egan J., and Duff T. (2008).
9. System Justification Theory.
10. <http://www.savoryinstitute.com/evidence/holistic-management-research/>.

Example of moderate decomposition which is level required for biological fuel reduction



## Crossword

Graeme Hand





## Across

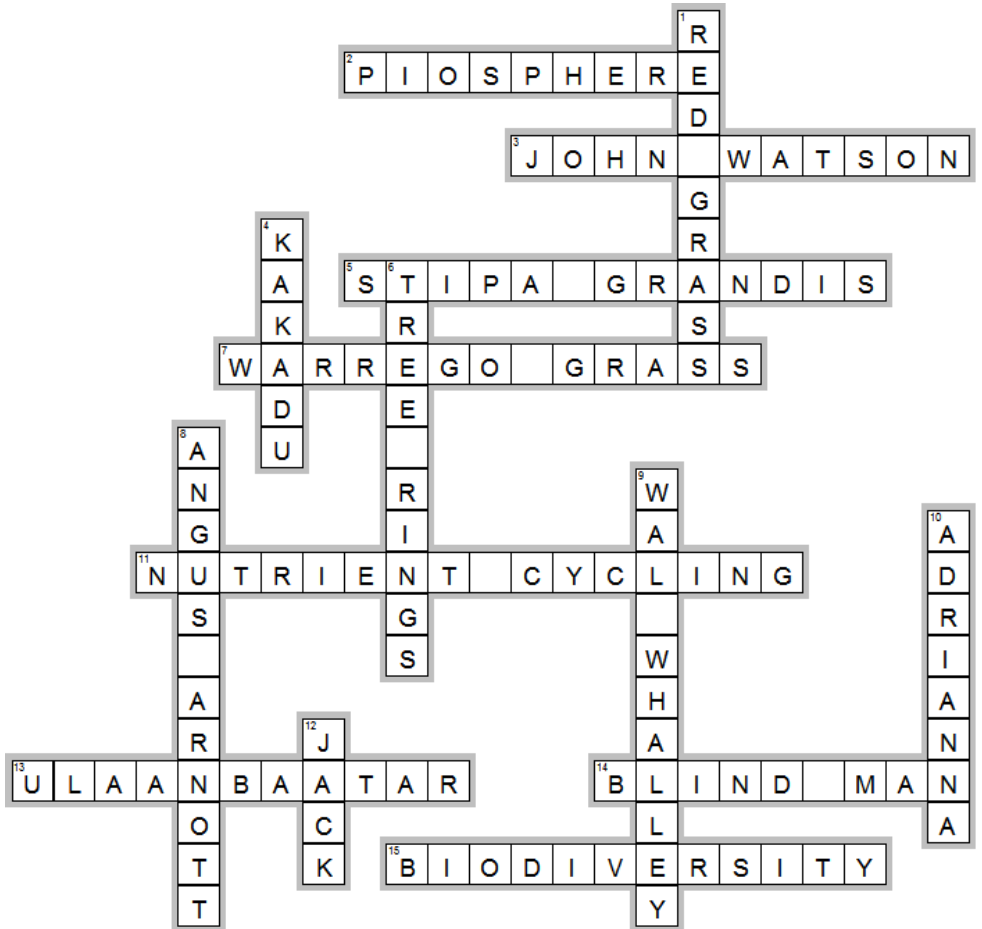
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2. Unmanaged grazing produces this around water points
3. New executive committee member
5. One of the dominant grasses of Mongolia
7. Dominant species at Winona after treatment
11. LFA index that relates specifically to soil carbon
13. Capital of Mongolia
14. Who is it obvious to that fire management needs to change
15. Less discussed outcome from fuel reduction burns

## Down

---

1. Dominant species at Winona before treatment
4. Area with 75-90% decline in small mammals
6. Evidence to show that grazing reduces blazing
8. New executive committee member
9. New executive committee member
10. Provider of soil coring
12. Adrianna's assistant



## Membership renewals

### Please note

Stipa is changing the way they renew memberships. We will endeavour to mail out your renewal tax invoice one month prior to your expiry date. If you would like to renew please mail us a cheque or EFT your membership.

Please remember to make reference on all EFTs and return cheques your **INVOICE NUMBER** (found on the top of your Stipa tax invoice).

## Attention all members

To ensure that you continue to receive Stipa newsletters and updates, please remember to advise us of any change of address.

Also if you wish to receive emails about forthcoming events and other matters of interest, it is important that we have your correct email address.

## Contact Stipa

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Or

### Administration

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Email: [stipa8@bigpond.com](mailto:stipa8@bigpond.com)



*Stipa promotes and proves the profitable management of native grasses by motivated people in healthy landscapes.*

(please keep a copy for your records) **TAX INVOICE**

## MEMBERSHIP APPLICATION/RENEWAL

Name: .....

Company or trading name: .....

Address: .....

Town: ..... State: ..... Postcode: .....

Phone: ..... Mobile: .....

Email: .....

Annual membership (please select one – note that subscriptions include GST):

ACT & NSW \$/5  Interstate \$45  Student \$30  Corporate \$500

Payment options (please select one):

**Cheque/money order** (to Stipa Native Grasses Association Inc.) for \$..... is enclosed.

**Direct deposit** Deposit of \$..... made on ..... (date).  
Stipa Native Grasses Association account at Westpac BSB: 032 647 Account: 108 524  
Please include your surname in the reference field to help us match your payment to your membership.

Send your completed membership form (with your payment, if applicable) to:  
**Stipa Native Grasses Association, 150 Caroono Lane, Branxholme Vic 3302**

For more information contact: Stipa CEO Greville Hand on 0419 532 133, fax 03 5579 6570 or email [greville.hand@stipa.org.au](mailto:greville.hand@stipa.org.au)

**Stipa Native Grasses Association** aims to:  
\* promote native grass as pasture and for conservation \* educate the community about native grasses \* document pasture systems using native grass \* distribute information to agencies and landholders \* network with other groups with complementary activities.