

**Are we changing the identity
of the Avon River Basin?**

**Stockbrands Community Fox
Shoot Weekend 2014.**

**Integrated Native Forage
Shrub Systems**

*Fog over Grass Valley
Sue Carter*



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Australian Government

Winter in 2014



We hope everyone has stayed warm during in this cold weather and strong winds! Hopefully not many crops were damaged in these adverse conditions, but I'm sure most in the region are enjoying the rain!

Wheatbelt NRM had a very busy autumn; with the Trial & Demonstration and Bushcare Grants programs ramping up, some great events held around the region, an exciting move to a new office on the main street of Northam and the Australian Government's budget indicate a tenuous funding future for landcare and Regional NRM organisations.

Projects Ramp-up

Wheatbelt NRM has recently commenced with the first year of the Sustainable Agriculture's Trial & Demonstration projects and there are some very innovative and exciting trials. These projects will be supported for up to four years to maximize learning by local communities about the costs and benefits of incorporating sustainable farming practices into farm enterprises. More information about these innovative projects will be coming soon so keep an eye on our website.

Wheatbelt NRM's first round of Bushcare Grants has also begun. These grants support our community to manage and undertake on-ground activities which will protect remnant Bushland and conserve biodiversity values and help cover the cost of materials for a range of activities including fencing, revegetation and weed & feral animal control. The Biodiversity team is out around the region on site visits and are very excited to see the enthusiasm from landholders to protect their beautiful Bushland.

The budget and Landcare's future

The Government's 2014/15 budget brought significant expenditure reductions across many programs and Natural Resource Management (NRM) programs did not escape these reductions. Reduced funding for natural

resource management programs total an approximately 26% reduction in funding; New projects totalling \$124 million were included in the allocation, putting pressure on the remaining with reduced funding for regional delivery, community environment and landcare grants is expected. The budget contains a number of new initiatives such as the Green Army, which, Wheatbelt NRM has submitted a project to have a green team working on the regions environmental needs.

Wheatbelt NRM moves out

That we move into a new building at a time of funding uncertainty is an example of win-win negotiation and prudent project budgeting. A Shire owned building on the main street of Northam has been brightened up, and we believe will have a dynamic and engaging presence. The cost to our balance sheet is neutral after four years through reduced rent, with this being a great example of a negotiation with the Shire of Northam that has genuine mutual benefits.

The office was opened by Shire of Northam President Cr Steven Pollard and we thank the 100 or so people who attended our morning tea in the beautiful Wheatbelt sunshine. We are proud to have achieved a long term goal; to find a space that marked us as a community organisation. We have been housed for the past 20 years in the Department of Agriculture and Food Western Australia and thought it's time we moved out of home.

Please note our Phone number remains 08 9670 3100. Feel free to drop into our offices 269 Fitzgerald Street, Northam and we'd be happy to show you around

Keep warm and here's hoping for more of that rain!

Kind regards,

The Wheatbelt NRM Team

Integrated Native Forage Shrub Systems: Establishment and Economic Analysis



Underperforming land is now being made to pull its weight in the whole of farm system, there is no longer a “let’s just plant it to trees and leave it” attitude.

Making this land productive again is a costly activity so farmers need to look at the options that are available and make informed decisions. As part of the Wheatbelt NRM Soil Conservation Incentive Project, Greening Australia looked at an integrated native forage shrub system and compared the economic results with different feeding regimes, feed lotting and paddocks with lick feeders.

This article contains a summary of these findings, for the complete story go to our website at www.wheatbeltnrm.org.au

The Forage Shrub Planting Design

For the trial the mixed native species were direct seeded into belts containing 4 to 6 rows. The belts were placed on the contour about 10m apart for stock and vehicle movement. The species included groundcovers, small to medium shrubs and some larger small to medium trees, all native to WA. The trees were included in the mix to provide shade and shelter to stock, though it is difficult to place an economic value of these benefits.

The inter-row pasture plays an important part in the feed value of the site. The value of feed from the inter-row can be improved with either planting an annual legume pasture or oats, either allowed to go to seed or “hay frozen” (sprayed at earlier stage and left standing).

The table below shows the comparison between the selected systems.

Table 3: Economics. How many years it takes to recover upfront cost of Forage Shrubs.

Feed Regime	Upfront Cost	1st Year Cost	2nd Year Cost	3rd Year Cost	Years to cover cost
Forage Shrubs	\$57500	-	\$2500 + 8580	\$2500 + 8580	-
Feed lotting Ration 1		\$11256	\$11256	- \$11256	7
Feed lotting Ration 3		\$8580	\$8580	\$8580	9
Lick Feeder Ration 1	\$6000	\$5400	\$5400	\$5400	7
Lick Feeder Ration 3	\$6000	\$4440	\$4440	\$4440	8

Economic Comparison

To determine how long it would take to recover cost of planting 100 hectares to forage

shrubs the following assumptions are made.

- (i) 50 hectares shrubs at \$1000/ha and 50 hectares \$150/ha planting inter row.
- (ii) \$50/ha management cost of inter row.
- (iii) 6 weeks grazing/supplementary feeding.
- (iv) Lick feeders \$1500, 250 sheep per lickfeeder.

Farmers clearly would not seed 100 hectares of forage shrubs in one year. Planting 20 hectares blocks would be achievable and realistic. Planting small blocks each year would spread the upfront cost associated with forage shrubs across the whole farm business. Although the number of years it would take to recover upfront cost of establishing forage shrubs is high, in seasons where there are poor stubbles, higher grain prices and a late break, supplementary feeding costs will increase and therefore the amount of years it will take to recover costs will decrease.



For information on forage shrubs

Please contact Jo Wheeler at Wheatbelt NRM on 9670 3121 or email: jwheeler@wheatbeltnrm.org.au

“Planting forage shrubs is a great concept on country which is underperforming...”

Another benefit that can’t be measured easily, and therefore an economical value is difficult to place on it, is the reduced labour costs of an integrated forage shrub system. There is no longer the need to check the feeder and make feed mixes.

Research conducted has clearly shown forage shrubs can provide the energy and protein to ‘grow’ sheep assuming the inter row is maintained with high quality feed sources such as annual legumes or quality grasses. Planting forage shrubs is a great concept on country which is underperforming due to salt, waterlogging, poor soil fertility or frost although the upfront cost is substantial.

This study clearly supports the idea that increasing the area of perennial forage shrubs on less productive areas of Wheatbelt farms can increase the whole of farm profitability in the medium term. This was a key finding of the Future Farm Industries CRC Enrich Project and highlights the important role forage shrub systems are likely to play in the future of the WA Wheatbelt.

References

Greening Australia. 2013. *Integrated Native Forage Shrub Systems Fact Sheet: Establishment and Economic Analysis*.
Revell D. et al. 2004, *Perennial Forage Shrubs Providing Profitable and Sustainable grazing. Key Practical finding from the Enrich Project, CSIRO*.

Acknowledgements

Economic analysis and reporting by Ryan Pearce, ConsultAg Northam.
Mixed forage shrub establishment by Anne Smith, Greening Australia.

How much carbon can be stored in salt tolerant trees and shrubs?



Courtesy of NACC

Economic returns from carbon farming activities is no competition for cropping or grazing on our productive and profitable soils, but, on soils that are affected by salinity...now there's an idea.

With the carbon market fluctuating regularly there has been a slowing of investment in carbon farming activity across the Wheatbelt. Changes to the carbon market and pricing mechanism have brought instability to the sector resulting in fewer revegetation activities for the purpose of carbon sequestration.

Salt affected soils benefit from the effect of deep rooted perennial vegetation – we have seen the positive impact of revegetation since farmers first planted trees on land showing signs of salinity. While saltland management has been traditionally dominated by the planting of saltbush forage shrubs, recent work is illustrating the potential of salt tolerant tree species to sequester and store carbon on salt affected land.

Species such as *Eucalyptus sargentii* (Salt river gum), *Eucalyptus spathulata* (Swamp mallet) and *Casuarina obesa* (Swamp Sheoak) are just some of the naturally salt tolerant trees that produce significant biomass on wheatbelt saline soils.

A collaborative project between the Department of Agriculture and Food, Western Australia (DAFWA), the

Northern Agricultural Catchments Council (NACC) and the Forest Products Commission (FPC) received support from the State Natural Resource Management Program to provide a greater understanding of the opportunities and threats that carbon farming may bring for salinity management.

Six on-farm revegetation sites were selected for monitoring and measurement from Three Springs to Pithara. The sites were selected to cover a range of planting layouts and the geographic spread of the salinity in the region. Layouts varied from alley farming with cropping in between to perimeter plantings around scalds, corridor plantings, block plantings and saltbush fodder plantings. Sites of at least 10 years of age were used because this is consistent with the default growth parameters used in the FullCAM model that has the age of peak growth rate for mixed species environmental plantings as 10yrs. (FullCAM is the calculation engine which supports the estimation of carbon stock change on forest and agricultural systems. It can be used to estimate carbon sequestration in Carbon Farming Initiative projects.) Over 5000 trees and shrubs were measured and over 300 were destructively sampled, weighed and samples dried to determine the carbon content.

This sampling has enabled equations to be developed that can estimate the biomass or carbon mass of the trees and shrubs from the diameter of a tree's trunk or from crown volume measurements of shrubs.

The calculations have recently been completed and the main findings thus far include:

- Saline areas can sequester substantial amounts of carbon. The access to moisture and use of salt tolerant species seem to be the main reasons for this.
- There was considerable variation in carbon sequestration between species and planting layouts. Ranging between 121 tonnes CO₂ equivalent per hectare (CO₂-e/ha) after 23 years on an alley planting of trees to 8 tonnes CO₂-e/ha after 11 years on a grazed saltbush paddock.
- Planting saline areas provides considerable benefits such as wildlife habitat, mitigating land degradation and fodder reserves for grazing.
- Our data was generally estimating higher rates of carbon sequestration than the FullCAM model is suggesting. FullCAM is the calculation engine which supports the estimation of carbon stock change in Australia's forest and agricultural systems.
- Sale of carbon credits may provide modest levels of income from otherwise unproductive land.

The plots will become long term monitoring sites for future measurements as the trees grow over time. The knowledge gained and information products developed from this project will allow landholders, government and industry to make informed decisions on carbon farming our saline land.

Further analysis of the data will reveal more information on individual species, detailed results from this study will be released later this year.



For information on carbon

Please contact Georgie Troup at Wheatbelt NRM on 9670 3121 or email gtroup@wheatbeltnrm.org.au

Carbon farming fact sheets

Working in partnership with other NRM regions in WA, Wheatbelt NRM is delivering awareness raising activities relating to the Royalties for Regions Carbon Farming Project – a Rangelands NRM project.

Wheatbelt NRM is delivering a series of carbon farming awareness raising activities in the Avon NRM region – which includes a workshop, field days and the establishment and monitoring of demonstration sites.

This project is not directly linked to the Clean Energy Futures – Carbon Farming Initiative of the Australian Government. Instead, this project presents information primarily generated by the Department of Agriculture and Food WA, specifically for the project on carbon farming issues and opportunities in WA.

Through this project a number of demonstration sites will be established and/or monitored that demonstrate activities which;

- a) contribute to the sequestration of carbon
- b) reduce emissions produced through agriculture

A series of fact sheets have been published which provide information on carbon farming activities.



www.wheatbeltnrm.org.au/carbon-farming

Red Card For Rabbits and Foxes

Stockbrands Community Fox Shoot Weekend 2014.

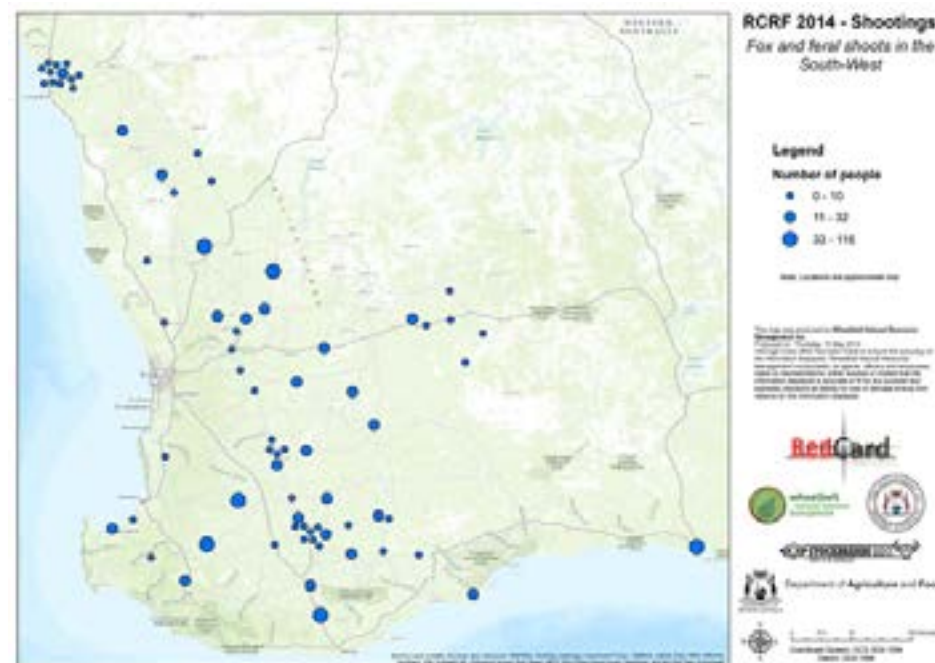
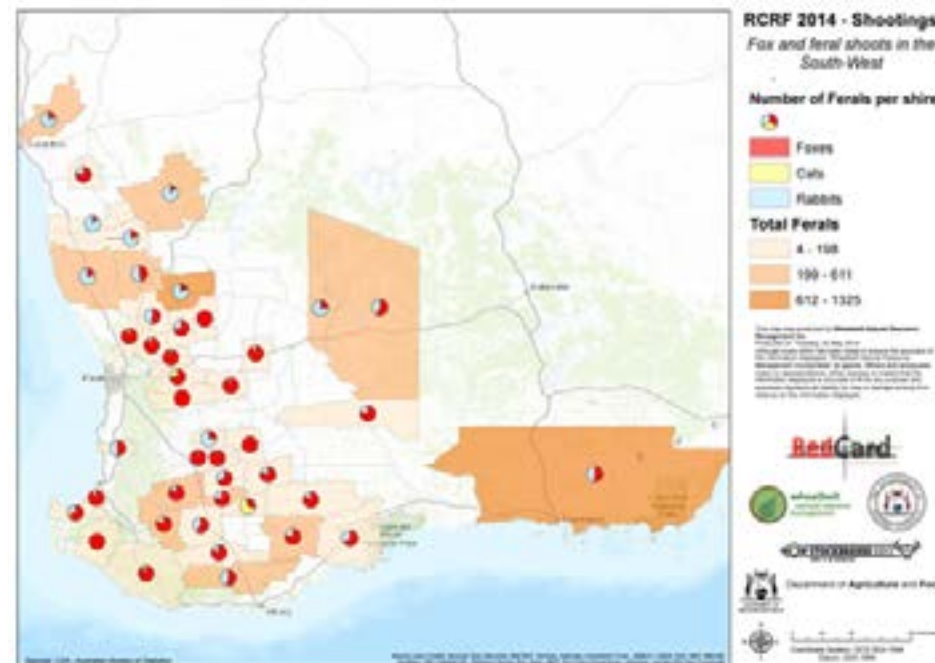
Red Card For Rabbits and Foxes, a co-ordinated community predator control program, has been running for about 10 years in the south-west of Western Australia.

Community and sporting groups, local governments and individual landholders come together to run the program. On certain weekends in autumn culling of foxes, feral cats and rabbits occurs at the same time, maximising the impact of the effort. Autumn is considered to be a good time to target foxes in particular as:

- Young foxes are finding new territory— plenty of foxes to be seen in the paddocks
- Farmers are preparing for lamb and are keen to reduce predators
- Paddocks are bare enabling foxes, feral cats and rabbits to be seen more easily
- The nights are not too cold for shoots
- And the farmers have some time available.

Along with the Stockbrands Community Fox Shot Weekends, Red Card holds a HOTBAITING period, which in 2014 ran from 15th February –15th April. During the Hotbaiting Period, landholders are encouraged to control foxes and rabbits using 1080 baiting. Baiting in autumn is effective because:

- There is minimal feed around which increases the likelihood of pests taking the baits
- Foxes are highly mobile
- Young foxes are seeking new territory and are not streetwise yet.



Year	People involved	Foxes	Cats	Rabbits
2010	765	2992	163	3207
2011	729	2359	149	2319
2012	772	4031	234	3373
2013	1250	4949	418	4179
2014	1069	4538	394	4842

Location	Foxes	Cats	Rabbits	Volunteers	Dates
Beverley	42	0	0	6	Feb
Boyup Brook	237	32	18	76	Feb
Broomehill - Tambellup				5	Mar
Bruce rock	45	1	19	17	Both
Busselton	114	14	43	11	Feb
Capel	11	0	1	3	Feb
Carnamah	14	4	110	27	Mar
Chapman Valley	112	27	424	68	Both
Chittering	61	5	0	3	Both
Coorow	3	2	11	5	Both
Cranbrook	66	4	12	17	Feb
Cuballing	35	6	98	16	Mar
Dandaragan	73	3	314	1	Feb
Dowerin	6	0	0	11	Both
Dumbleyung	80	1	21	22	Both
Esperance	639	31	613	116	Both
Gingin				3	Both
Gnowangerup	266	4	73	15	Both
Goomalling	39	3	12	17	Mar
Jerramungup	131	2	65	30	Feb
Katanning	40	95	5	46	Mar
Kellerberrin	54	5	0	13	Feb
Kent	111	6	21	32	Feb
Kojonup	12	0	8	5	Feb
Kondinin	31	0	8	16	Feb
Manjimup	54	3	3	16	Mar
Mingenew	97	3	25	13	Feb
Moora	250	9	294	75	Both
Nannup	30	0	0	3	Feb
Narrogin	61	2	0	23	Feb
Northam	47	2	0	6	Both
Perenjori	71	16	520	7	Both
Plantagenet	315	19	277	61	Mar
Quairading	127	7	0	18	Feb
Toodyay	41	3	0		Mar
Victoria Plains	87	7	76	12	Mar
Wagin	120	8	53	7	Mar
Waroona	4	0	4	4	Feb
West Arthur	215	9	32	60	Mar
Westonia	68	9	233	20	Mar
Wickepin	4	0	0	15	Both
Wongan-Ballidu	239	37	1049	111	Both
Woodanilling	192	11	62	32	Mar
Yilgarn	188	1	129	18	Mar
York	8	3	0	10	Feb

In 2008 Stockbrands Co became involved in the Red Card for Rabbits and Foxes activities. They were very concerned about the damage that foxes and feral cats were causing to the native wildlife. Stockbrands also wanted to support the Royal Flying Doctor Service. Stockbrands sponsors the shoot by donating \$5 for every fox and feral cat culled to the Royal Flying Doctor Service. Prior to 2014, \$101,000 dollars had been raised.

The 2014 Stockbrands Community Fox Shoot Weekends were held over 56 shires in the south-west of Western Australia. In some localities there were two events, while others held one.

The first weekend was the 21st –23rd February (half moon), and the second weekend was 28th—30th March(new moon).

There were 29 co-ordinated events on the February weekend, and 31 co-ordinated events in March (Table 2).

This represents many volunteer hours by the co-ordinators. In a general survey asking people to provide information on their experience with Red Card for Rabbits and Foxes co-ordination, it was estimated that is took at least 16 hours of volunteer time to co-ordinate a fox shoot event. This represents at least 960 hours of volunteer work, which at \$25/hr equates to \$24,000 minimum worth of labour.

A conservative estimate of the number of community people engaged is 1069 people (Figures 1 & 2). Making a rough estimate that each community shooter put in 8 hours of labour, this equates to 8552 hours. At \$25/ hr => \$213,800 worth of labour!

There were 9774 feral animals culled over both months—4538 foxes, 394 feral cats, 4842 rabbits.



For information on the Red Card Program

Please contact Jacquie Lucas at Wheatbelt NRM on 9670 3113 or email jlucas@wheatbeltnrm.org.au



Courtesy of DPAW

Bilby

Macrotis lagotis

Family: Peramelinae

Conservation status: Vulnerable

Size (head and body length)

300 – 550 mm (males)

290 – 390 mm (females)

Size (tail)

200 – 290 mm (males)

200 – 278 mm (females)

Weight

1000 – 1500 g (males)

800 – 1100 g (females)



Identification

The bilby has distinctive, long pink ears, a pointy nose, silky grey fur and a long, tri-coloured tail. The base of the tail is grey, the mid-section is black and there is a white, crested final section with a hairless tip.

Habitat and distribution

The first specimen of the bilby in Western Australia was collected in the Swan Valley, near Perth. Bilbies used to inhabit large areas of semiarid and arid Australia, but they are now confined to sandy, desert areas where they shelter underground in extensive burrow systems to escape the heat of the day. The bilby was last recorded in the wheatbelt near Wagin in the 1940s, their disappearance coinciding with the arrival of foxes. The bilby's burrow may be three metres long and 1.8 metres deep and its entrance is often built near a termite mound or small plant. Burrows are occupied by a single animal or a pair, sometimes with their young.

Diet

Invertebrates including larval and adult insects form a large part of the bilby's diet, as does plant material such as seeds, bulbs, fruit and fungi. Droppings often contain a large amount of sand as this is often licked up when the bilby is picking up items of food. Bilbies have poor eyesight so they locate their food primarily by smell and sound. They do not require fresh water as they can extract what water they need from their food. While searching for food, bilbies throw soil in all directions and leave numerous excavations, up to a depth of 25 centimetres.

Reproduction

In captivity, bilbies will breed all year round. In keeping with its burrow dwelling lifestyle, the bilby's pouch faces backwards, unlike the familiar forward-facing pouches of kangaroos. A backward-facing pouch makes it easy for newborn young, since they have only a short distance to crawl from the birth canal into the pouch. In a digging animal, it also has the added advantage of preventing sand from covering the babies.

Although bilbies have eight teats, they rarely carry more than two young. Young stay in the pouch for 80 days after which the female leaves them in the burrow while she forages, returning every few hours during the night to feed them. Once the young are weaned, they sometimes share the adults' burrow for a few weeks before heading out on their own.

Threats

Foxes, changing fire regime, grazing by rabbits and livestock and drought have probably all had an impact on the bilby. Habitat fragmentation through land clearing would also have been a factor in southern parts of their former range.

Habitat

Arid sandy areas, lives in extensive burrow. Diet Invertebrates, seeds, bulbs, fruit and fungi.

Mooditjboodja.com.au Community telling their stories



Mooditjboodja.com.au is an interactive website showcasing the land management practices Aboriginal people have carried out in the Wheatbelt. The website features short films and interviews about Noongar land management projects recorded over the past five years. The community are driving the development of the website and we see the community using it to help develop their own projects on country.

The website is designed to give Wheatbelt Natural Resource Management a new way of sharing projects with the community. Local schools and training organisations will be able to use the website as a learning tool for students. We also see this project being used by Aboriginal Natural Resource Management organisations that evolve as the Noongar people gain greater access to country in the future. The Noongar people, as Traditional Owners of the Wheatbelt region, have a great responsibility to look after country and we foresee the website enhancing the opportunities for Noongar people to access and work on country.

The project also aims to bring together the Aboriginal and non-Aboriginal community to manage many projects, including sites of cultural significance, on private property within the Wheatbelt. The website will demonstrate how Aboriginal people can develop a dialogue with local communities and reduce the perceived threat of land being taken away from non-Aboriginal landholders.

The website can be found at:

www.mooditjboodja.com.au

For further information contact Kerry Horan, Wheatbelt NRM on 9670 3100.

Leigh Whisson Regional Landcare Facilitator

Our new regional land care facilitator has begun the new role, designed to help landholders improve soil and ecosystem health.

Leigh Whisson has worn many hats over the past two decades, many of them focusing on the health of native wildlife and fauna in the WA Wheatbelt.

The Australian government has funded the position for the next two years, with an emphasis on helping farmers adopt sustainable agricultural practices and continue investment in the environment, such as tree planting.

Leigh Whisson is well equipped for the role, after spending time on different conservation projects in the Wheatbelt. One of his first jobs after graduating from Roseworthy Agricultural College in South Australia was trying to save the then threatened Western mouse or *Pseudomys occidentalis* in the central Wheatbelt.

"My role is to connect people to researchers, scientists and other land managers and help with grant opportunities," Leigh Whisson said.

"We need to work to make a more sustainable farming community."

For more information contact Leigh Whisson on 9670 3100 or email: lwhisson@wheatbeltnrm.org.au



Are we changing the identity of the Avon River Basin?

Dr Elizabeth Kington



The Regional NRM strategy currently under review by Wheatbelt NRM is identifying the major ‘tipping’ points of our regional system. We know we have already made some irreversible changes but how many more environmental issues, once beyond their ‘tipping’ points, will fundamentally change the identity of the Avon River Basin?

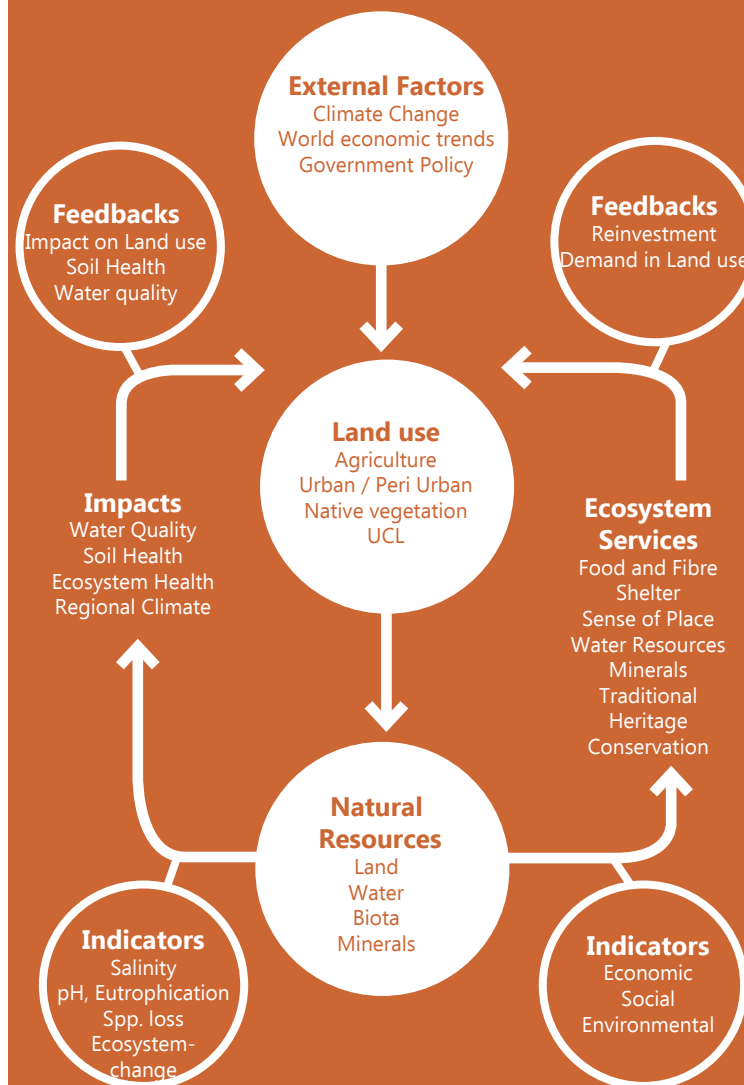
Resilience, Thresholds and ‘tipping’ points

Resilience is the ability of a system to absorb disturbances, to be changed and then to re-organise and still have the same basic structure and ways of functioning; it is an attribute of a system - not the objective as is often quoted.

When we interact with our environment, the change we cause can result in negative feedbacks that in turn impact upon our own activities. If we ‘push’ the system too far in one direction so that it is no longer resilient it is often much more difficult to ‘pull’ it back. Our objective is to keep away from those thresholds that would result in things we don’t want, to stop our system from reaching these tipping points in the first place.

There are some major environmental issues for our region; dryland salinity, river eutrophication and local species extinction (to name a few). We passed the ‘tipping’ point for a number of these when we large-scale cleared the native vegetation to make way for agriculture in this region. Unfortunately, some of these problems are irreversible, such as native species extinction.

Regional Ecosystem Services Model



Dryland Salinity

Once we cleared more than 30% of our landscape of its deep rooted native vegetation we put in motion a change to the catchment water balance that took decades to be fully realised as dryland salinity – and it’s still happening. Once the groundwater table reached a threshold of two metres below the surface, salts were drawn to the surface that had previously been evenly dispersed through the soil profile. We have spent the last two decades trying to push this system back to recover land from salinity; to lower groundwater tables, but this has proven to be not so easy (especially given the scale of resource investment).

We currently have secondary dryland salinity occurring in about 6% of the region and one of the big future ‘drivers’ that will influence this further is the Wheatbelt’s changing climate.

The last decade has been much drier than normal and our salinity problem does not appear to have expanded as quickly as expected, but a normal future climate is less than certain. Also, we have had a clearing ban in place for the last two decades and invested heavily in tree-crops. Putting a resilience lens over this system brings a realisation that the land lost to salinity is not easily recovered or reversed and we are going to need to adapt to this new environment. The best response is prevention.

Is there a new threshold for this resource issue?

When we learnt that we were going to lose up to 30% of our landscape to dryland salinity, as predicted at the end of the ‘90’s, it was a looming disaster for many of the region’s farmers. Within the system, not only was the loss of agricultural land a significant concern to the industry, but every other part of the system would be similarly impacted. The biodiversity within native vegetation remaining in valley floors and our river system were also highly vulnerable. Preventing our system from moving towards further saline expression in our environment is still something we need to do – even if we don’t know when, how quickly or how much more is going to happen. Learning to adapt to dryland salinity is also important for managing this system in the future – as dryland salinity is a change that the system has already experienced.

Managing the direction of the system

In Natural Resource Management (NRM) we are attempting to manage a large complex regional system that has experienced large environmental changes that will take many decades to be fully experienced. Keeping our ‘finger on the pulse’ of change is difficult because of this, but essential for making good management decisions. By choosing where you don’t want the system to go, rather than defining optimal targets, leaves the system to self-organise and remain resilient. This then ensures that we can progress and develop the region into desired futures.

The Wheatbelt NRM Strategy Summary will guide and prioritise where our management efforts are needed for the whole system by the whole community. Wheatbelt NRM will be a part of this management picture, but we do not own the land to make management decisions and can only attempt to influence policy changes.

To learn more about Resilience, system thresholds and tipping points, as well as NRM management priorities for the Avon region join me for a seminar workshop on Friday the 25th of July at 10:30am in Wheatbelt NRM’s new office in Northam. RSVP to 9670 3100 to reserve a place.

For information on the NRM Strategy

Please contact Dr Elizabeth Kington at Wheatbelt NRM on 9670 3132 or email:

ekington@wheatbeltnrm.org.au

Draft Regional NRM Strategy online



Scan the qr code above or visit:

www.wheatbeltnrm.org.au/nrmstrategy

The Wheatbelt Regional NRM Strategy guides NRM investment priorities within the region. The regional community provided important guidance to the development of the strategy, which reflects their values and understanding of the environment they live in and know.

Habitat Connectivity

We are all familiar with the natural beauty of the Salmon gum and York gum woodlands and Heathland with their wildflower display in spring. These are the things that make our region so unique yet so fragile. Our region still has many significant remnants that contain plants and animals found nowhere else in the world. They also contain populations of Numbat, Quenda, Woylie, Tammar, red-tailed phascogale and Brushtail possum. There are things we can all do at a local level to help look after this bushland, including revegetating to reconnect remaining patches of bush as well as controlling threats – such as feral animals and environmental weeds.

Large patches of native vegetation provide core habitat

Long distance movement of migratory species

‘Buffers’ around natural areas protect them from external threats

‘Stepping stones’ of native vegetation such as paddock trees link larger patches

Linear strips of roadside and fence line vegetation form important links in the landscape

Native Grasslands provide habitat and pasture

Online NRM Knowledge Hub

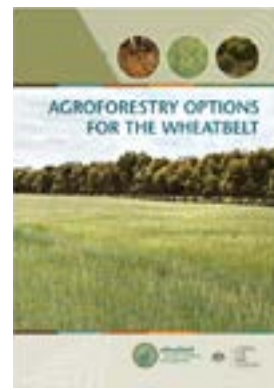
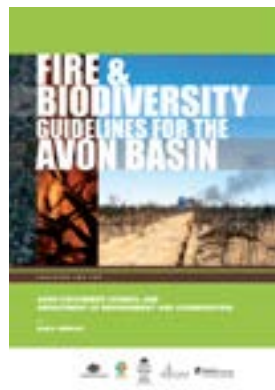
www.wheatbeltnrm.org.au/knowledgehub



The Wheatbelt NRM Knowledge Hub is your one stop repository of NRM information for the Wheatbelt. Almost 10 years of reports, fact sheets, booklets and more are stored online.

With easy to use search facilities, spatial representation options, videos, podcasts and more, the Knowledge Hub is bound to answer your pressing NRM questions.

The Wheatbelt NRM website has received a significant revamp so while you are there be sure to check out the myriad of new features across the whole site at: www.wheatbeltnrm.org.au



Djeran - Makuru

The Noongar people recognised six seasons in their year, Bunuru, Djeran, Makuru, Djilba, Kambarang and Birak, and managed the boodja (land) accordingly. The climate of this country ranged from mild to temperate and was divided into these six seasons, during which, land management practices and hunting & gathering patterns were guided.

Djeran - April to May

Becoming cooler with winds from south-west

Bulbs and seeds were collected for food.

Makuru - June to July

Cold and wet with westerly gales

Tubers and native potatoes were dug. Noongars travelled with a smouldering branch of bull banksia for warmth and other uses.

www.wheatbeltnrm.org.au