



## Avon Arc Flood Risk and Water Quality Mapping



*Aerial view of a flooded Wheatbelt river system (courtesy Lance Mudgway)*

Recent flooding throughout Australia provides a strong reminder of just how important effective urban and rural planning is in areas of potential flood risk.

Wheatbelt NRM has also teamed up with the Shires of Northam, Toodyay and York to implement the State-funded project designed to better understand and manage the impact of stormwater within rural towns. The work includes monitoring of stormwater, and modelling of flow and nutrients to better inform local government strategies for reducing potential flooding and the environmental impacts of stormwater discharge.

River pools adjacent to rural towns are often eutrophic (nutrient enriched) as a result of stormwater discharge.

Most Avon Arc towns discharge stormwater directly to the Avon River and/or its tributaries, before entering the downstream Swan Estuary. The Avon River contributes approximately half (69% and 43%) of total annual nitrogen and phosphorous loads to the Swan Estuary. Population growth and associated residential and rural – residential development within Avon Arc towns has the potential to almost double nutrient discharge to downstream environments unless appropriate planning strategies are put in place.

Senior Hydrogeologist, Matt Giraud, has recently been contracted by Wheatbelt NRM to work on the project.

"Given that the Avon River is such a significant contributor of nutrient loads to the downstream

*Continued next page 2*

# Avon Arc Flood Risk and Water Quality Mapping - continued

Swan Estuary, any actions to reduce stormwater impacts on the river system will yield broad positive environmental and social benefits” says Matt Giraud.

“There have been some very interesting outcomes, in terms of the potential impact of residential development on the river and understanding flood risk”.

The project is timely, with the Acting Minister for Environment Peter Collier recently announcing changes to the regulation of domestic fertilizers, effectively reducing the concentration of phosphorous within lawn and garden fertilisers to reduce leaching into waterways.

“Modelling undertaken to date indicates that domestic fertilisers are potentially a significant contributor of nutrients to the river system”, said Matt Giraud.

The project is due to wrap up in June 2011, with a series of forums expected to discuss the outcomes from the project.

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## Soil Conservation Incentives Program Round 4 & 5 now open!



### Round 4 (Tree Projects)

340,000 seedlings are available for farmer groups or individuals to protect the soil resource from wind erosion. Farmer groups and landholders in the following shires are eligible for this program:

- Narembeen
- Kondinin
- Kulin
- Lake Grace
- Kent

Applications close Friday 18 March 2011

### Round 5 (Grower Groups)

Grower groups in the Avon River Basin are encouraged to submit an expression of interest for projects that aim to trial and/or demonstrate technologies and techniques for improving soil quality.

Round 5 is ongoing

For more details on both rounds or to download the application form please visit:

[www.wheatbeltnrm.org.au/funding/scip/](http://www.wheatbeltnrm.org.au/funding/scip/)



# Wheatbelt NRM Summer update

Welcome to the summer edition of the Wheatbelt NRM Newsletter and the first for 2011.

Wheatbelt NRM has recently announced the commencement of round 4 and 5 of the Soil Conservation Incentives Program. Round 4 invites Farmer groups and landholders in the Shire of Narembeen, Kondinin, Kulin, Lake Grace and Kent to apply for part of 340,000 seedlings to protect the soil resource from wind erosion. Applications for this round close Friday 18 March 2011.

Round 5 is open to grower groups in the Avon River Basin to submit an expression of interest for projects that aim to trial and/or demonstrate technologies and techniques for improving soil quality.

Both of these initiatives can be found on:

[www.wheatbeltnrm.org.au/funding/scip](http://www.wheatbeltnrm.org.au/funding/scip)

The Wheatbelt NRM Community Survey conducted by the Centre of Excellence in Natural Resource Management (NRM) has been compiled and a sample of results available for you to view on page 5 of this newsletter. The survey's aim was to determine landholders' levels of knowledge and skills in natural resource management and their engagement with Wheatbelt NRM.

Our Aboriginal NRM project will be hosting workshops in April to discuss the Wheatbelt NRM program work with the Aboriginal community and how best to move forward. This will include an understanding of Indigenous Protected Areas and the management of sites of cultural and ecological significance.

Further training opportunities are being made available to the Aboriginal land managers in the Avon region to learn about native seed collection techniques. If you would like to know more about the dates of these training days, please contact Rod Garlett, the Wheatbelt NRM Aboriginal Facilitator on 9690 2250.

Finally, Wheatbelt NRM would like to welcome Georgie Troup and David Grasby to the team.



**Georgie Troup** takes up the role of Project Manager (Sustainable Agriculture). She has been working in the NRM sector for the past 7 years since graduating from Curtin University's Environmental Biology and has a passion for all things forestry,

and enjoys helping landholders achieve their 'green goals'.



**David Grasby** also assumes the role of Project Manager (Sustainable Agriculture). David returns to his roots in the heart of the Western Australian Wheatbelt. With a PhD in Rural Sociology and a diverse employment background that has taken

him from Rockhampton to Toowoomba to Mildura and now to WA, David brings a broad range of experiences and skills to his position.

Kind regards,

Wheatbelt NRM

## Nyungar Seasons

### Birak

#### December - January

Hot and dry with easterly winds during the day. Nyungar people burned sections of scrubland to force animals into the open to make hunting easier.

### Bunuru

#### February - March

Hot easterly and north winds. The hottest part of the year with sparse rainfall throughout. Nyungar people moved to estuaries for fishing.

# Modern day art of seed collection



*Some of the participants of the seed collection training*

## By Kate Raston

Indigenous families living in the Avon Valley are now learning about the modern day art of seed collection.

Wheatbelt NRM is helping traditional owners revegetate two of their properties at Mawson, near Quairading, and Baker's Hill.

Wheatbelt NRM's Rod Garlett said seed collection played a big part in Aboriginal culture.

"Most people know about the burning of the bush for re-growth," Rod Garlett said.

"Aboriginal women then used to collect seeds for medicine, jewelry and bush tucker.

"But nowadays seed collection is important for retaining the genetic species of an area."

Wheatbelt NRM has already hosted two workshops at the Nguna Morrt Aboriginal Corporation Property at Mawson and Woolah-Wah Aboriginal Corporation at Bakers Hill.

In the last couple of years the former sheep and cropping properties have been handed over to local indigenous groups working to restore the bush.

Guest speaker at both of the workshop was environmental scientist Johnny Prefumo, also known as the "frog doctor".

"Each area has different types of plant species, specific for that landscape," Johnny Prefumo said.

"That's why seed collection is so important, to help safe guard the genetics of an area.

"It also makes sense from a dollar point of view.

"Because we have cleared so much land, seed is in short supply and we've seen some Banksia species selling for up to five dollars per seed."

He said blood roots or haemodorun, which existed in the Wheatbelt and has been used as a bush tucker was fetching up to \$5000 a kilogram for seed.

Johnn Prefumo said climate change was also having an impact.

"Take last winter, the frost killed a lot of native plants, and the plants that did survive, produce pinched seed which wasn't as viable."

About 15 people attended each workshop, and were also taught how to store native seed.

Johnny Prefumo said seed could be collected in many different ways.

"Often the best seed is at the top of a tree where the most sunlight is," he said.

"This may mean you have to use unusual methods to access the seed, including shooting branches off really tall trees.

"This of course all has to be done using permits and knowing when is the best time to collect the seed."

Wheatbelt NRM's Rod Garlett said seed collection was also helping local indigenous people re-connect with the land.

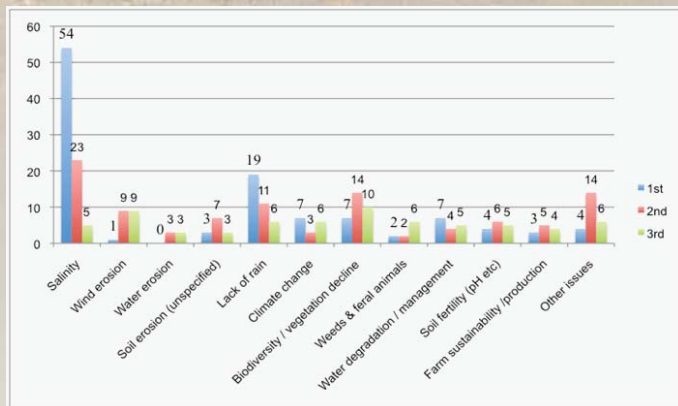
"We have some really exciting projects coming up on these properties, and with this knowledge, we can start planting out trees native to the area to restore parts of the bush," he said.



# 2010 Survey of the Avon River Basin Farming Community

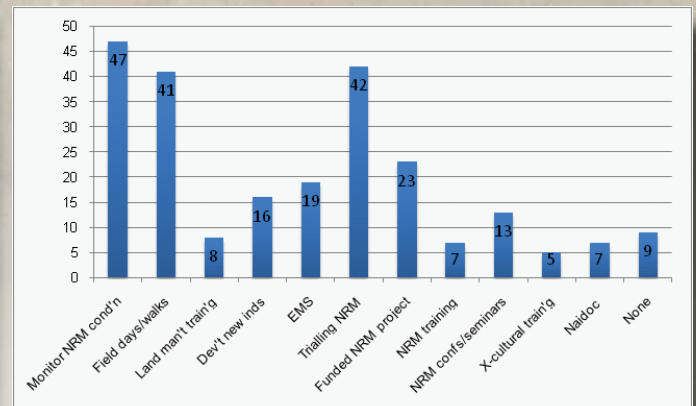
In August 2010 the Centre of Excellence in Natural Resource Management (NRM) conducted a survey of the Avon River Basin farming community on behalf of Wheatbelt NRM. The aim of the survey was to determine landholders' levels of knowledge and skills in natural resource management and their engagement with Wheatbelt NRM. The survey was funded by the Australian Government under its Caring for Our Country program. 112 people participated in the survey. A portion of the results is shown below:

## Top 3 Environmental Concerns



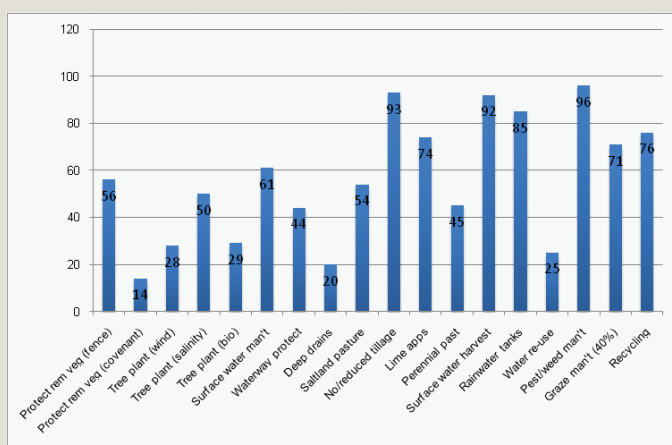
Salinity is the most important environmental concern (73.2% of 2010 respondents). Lack of rain was regarded as the second most important issue (32.1%). Other issues identified include wind erosion, soil erosion, climate change, biodiversity/vegetation decline, water degradation/management, soil fertility and farm sustainability/production, as shown in the above graph.

## Involvement in NRM related activities



It was found that 61.6% of the survey participants were involved in NRM activities. Involvement in NRM across the sub-regions (Avon, Yilgarn, Lockhart) varied marginally. Lockhart had the lowest involvement (55.5%) and the Avon the highest (69.7%). The graph above shows participants involvement in NRM related activities over the past two years.

## NRM practices



Notable NRM practices currently in use by survey participants are:

- Pest/weed management (85.7%)
- No/reduced tillage (83%)
- Surface water harvesting (82.1%)

- Use of rainwater tanks (75.9%)
- Liming (66%)
- Recycling (67.8%)
- Grazing to maintain 40% cover (63.4%)
- Surface water management (54.5%)
- Use of saltland pastures and protecting Remnant vegetation with fencing (50%)
- Tree planting to help control salinity (44.6%)

NRM activities not so widely adopted are:

- Perennial pastures (40.2%)
- Waterway protection activities (39.3%)
- Tree planting for biodiversity purposes (25.9%)
- Tree planting for wind protection (25%)
- Use of deep drains to help control salinity (17.8%)
- Protection of remnant vegetation through use of covenants (12.5%)

To view the complete survey results please visit:

[www.wheatbeltnrm.org.au/reports-publications/wheatbelt-nrm/](http://www.wheatbeltnrm.org.au/reports-publications/wheatbelt-nrm/)

# Project to examine farming practices and their influence on levels of Soil Organic Carbon

By David Grasby

Organic carbon is an important element of soil health, and, a project being managed by Wheatbelt NRM's Sustainable Agriculture team (funded through the Australian Government's Caring for our Country program) will help farmers in the Avon River Basin (ARB) improve their farm management practices and increase levels of soil organic carbon (SOC).

The depletion of SOC is assuming greater relevance within the Wheatbelt due to a traditional reliance on farm practices that are now recognised as unsustainable. Historically, excessive cultivation combined with overstocking played a key role in soil degradation, erosion and depleting stocks of SOC. The total organic carbon measured for soils (particularly sands) in the Avon River Basin is currently characterised as ranging from poor to fair with the decline in soil carbon content varying according to the type and intensity of land use. Sustainable agricultural practices, such as no-tillage methods of farming, more effective crop rotation and incorporating perennial pastures, are now helping to retain plant residue in the soil and thereby assist the restoration of SOC.

Carbon is an important component of soil due to the contribution it makes to improving soil structure, water retention and fertility. As a result increasing SOC will improve productivity and profitability and help farmers adapt to a warming climate and increasingly unpredictable rainfall patterns.

The project forms part of the Soil Carbon Research Program, an initiative jointly managed by the Australian Department of Agriculture, Fisheries and Forestry (DAFF) and CSIRO to provide "a national framework for soil carbon and greenhouse gas emissions research across Australia". For the Western Australian Wheatbelt component of the project, farmers' knowledge of paddock history combined with soil sampling and analysis by Associate Professor Dan Murphy and his team at the Institute for Agriculture at UWA, will compare current levels of SOC under traditional farming practice to the SOC levels in properties that have adopted a range of alternative land uses on similar soil types. Analysis will ascertain how the adoption of alternative and more sustainable farming practices affects the level of organic carbon in the soil.

As part of the project, an extension strategy will be implemented to provide information that addresses identified barriers and assists farmer decision making



*Associate Professor Dan Murphy (UWA) who delivered the soil health program (2005-10) with Wheatbelt NRM, will be undertaking a project to increase farmers knowledge and skills on practices that increase soil organic carbon*

to adopt practices that are verified as benefiting soil organic carbon. UWA will be conducting field days to advise landholders about the benefits of increasing SOC and an economic analysis will assist farmers in the decision-making process on changing land use or practices to improve levels of soil organic carbon.

Landholders considering adopting practices that increase levels of SOC may also be interested to learn how the proposed Carbon Farming Initiative (CFI) might affect them. While the legislation to put the CFI into effect has yet to be enacted, it should be pointed out that in its present state, the CFI does not allow SOC resulting from agricultural practices that increase levels of plant residue (i.e. carbon) to be included in the proposed carbon trading mechanism. This is due to uncertainty in relation to accurately measuring SOC stocks and ensuring the permanence of carbon stored over a sufficiently long period to produce a carbon sequestration benefit. Nonetheless, adopting practices that build levels of SOC is still considered to be worthwhile due to the increases in productivity and profitability that can result, whether or not the soil carbon can be sold through a carbon trading scheme.

## Relevant links:

For more information about soil organic carbon, visit: <http://soilquality.org.au/>

Wheatbelt NRM: [www.wheatbeltnrm.org.au/](http://www.wheatbeltnrm.org.au/)

Caring for our Country: [/www.nrm.gov.au/](http://www.nrm.gov.au/)

Soil Carbon Research Program: [www.csiro.au/science/Soil-Carbon-Research-Program.html](http://www.csiro.au/science/Soil-Carbon-Research-Program.html)



# Bob and Ross Huxley - Case study preview



**Names:** Bob and Ros Huxley

**Farm Name:** Huxley Farms

**Location:** Gabbin, Central (NE) Wheatbelt in WA

**Catchment Group:** Mt Marshall NRM Committee and Lake McDermott Catchment Group

**Rainfall:** 310mm

**Soil types:** 25% light/Wodjil land, 25% medium, 50% salmon gum/gimlet – 'user friendly heavy land'

**Farm size:** 1,200 hectares

**Enterprise mix:** 800 hectares wheat, sheep and 240ha agroforestry – 'need to use every square foot of the farm to 100% keep the bank happy'. 90% of the arable land is salmon gum/gimlet – very good productive country for the area.

**Species planted:** 240 hectares mainly local hosts and Sandalwood on light land (wodjil and deep sands)

**Been planting since:** 1999

**Number planted:** About a million mainly host trees, a few oil mallees and brushwood, on his own land and 450,000 planted for other landholders on either a contract or 'barter' system. A lot of hosts more recently have been established by direct seeding.

**Overall success/survival rate:** Droughts, a grasshopper plague, water resistant areas, bare-rooted stock where initial survival is 70%. 'terrorist rabbits and 28s' can decimate a plantation'. Bob estimates a first year survival rate of about 65%. Some good years are higher

and dry years are lower. Infilling is required to keep the host stocking rate around 1,000 or more per hectare.

'So the initial survival rate is about 65% but the success rate is 100% because it is fun putting something back into the country which has given so much to me and my family.' Said Bob.

**Approximate % of the arable land planted:** 23 %

Bob Huxley comes from a family that has been farming at Gabbin in the eastern central wheatbelt since 1922. Bob left the area in 1977 at the age of 27. He studied for his Bachelor of Social Work degree at Curtin University and worked in the field of addictions treatment for ten years. A bit worn out from trying to 'save the world' he purchased a 41 foot Jarrah plank fishing vessel, studied for his Master Class V skippers ticket and spent the next few years shark fishing and wetlining from Mandurah to the Abrolhos islands.

In 1997 he returned to the farm and having decided that he needed to make the enterprise more environmentally and economically sustainable and started on the road to what is now his main passion – planting WA Sandalwood (*Santalum spicatum*) on a large scale. Bob likes Sandalwood as it is iconic of the WA wheatbelt, native to the Mount Marshall area and grows well on soils which are not very profitable using traditional farming methods.

Bob enjoys the diversity of farming and likes the mix of cropping, merino sheep and tree cropping. He is proud of his breeding flock of about 800 AMS ewes whose wool averaged under 18.5 microns and returned 680 cents/kg for the top line of wool when sold last year.

However he has noticed a change in the rainfall pattern over his lifetime and believes that future agricultural production systems need to be more flexible and diverse than they are now.

Bob remembers Sandalwood from his childhood 'I remember the kitchen fire being lit in the mornings with Sandalwood twigs and it smelled nice'.

Since 2000 Bob has planted 20 to 40 hectares every year on parts of the farm that were not yielding a return from grain growing. Bob has found that it is just these areas that the Sandalwood particularly likes. 'Sandalwood grows in harsh but very varied conditions' and has focused on the wodjil soils of his farm.

*These farmer case studies will be published by Wheatbelt NRM throughout 2011. This article is just a preview of whats to come.*

# Successful applicants of the 2010 Community Small Grants

## **Avonvale Primary School \$15,000**

### **Caring, Learning and Engaging our Avon Valley**

To give teachers, students and future generations an opportunity to learn, engage and care for the Natural Environment incorporating site visits, guest speakers and relationship building with community organizations.

## **Beacon Progress Association \$6,594**

### **Digitisation of the Herbarium - Mt Marshall Flora ID Book and Database**

Workshop and creation of digital herbarium freely available upon request.

## **Koorda Community Resource Centre \$1,392**

### **Greening Koorda – Information sessions on NRM issues in the Koorda area**

To raise awareness on NRM issues in the Koorda area, working with School children to encourage the next generation to think/act/instill knowledge on such issues and to provide an opportunity for stronger community relationships.

## **Living Communities Goomalling \$10,000**

### **Bush Tucker Garden**

Creating greater understanding and awareness of the pre-existing natural environment and its significance to the Indigenous people.

## **Men of the Trees \$15,000**

### **Treemendous Trees for Schools**

Men of the Trees in conjunction with the Public Education Endowment Trust produced an education kit called Treemendous Trees designed for upper and lower primary school students. Visits to schools will promote the need for revegetation, and develop and appreciation for the role of trees and the products and services they provide. The project will also introduce children and teachers to propagation of the most common species and commonly used NRM terms.

## **Millennium Kids \$13,255**

### **Life for Environment, Wheatbelt**

To develop a series of environmental education programs as a direct result of consultation with young people from local schools.

## **Northam Senior High School \$4,790**

### **Bush Food Garden extension to include Bush Medicine Garden**

Extension of the existing Bush Food garden to include Bush Medicine and increase student understanding of critical issues in NRM and sustainability as relevant to the Avon Region and its associated climate.

## **Quairading LCDC \$3,000**

### **Community Awareness and development of the Quairading LCDC Committee**

Strategic Planning to re-establish purpose for the group and increasing awareness of NRM initiatives within the community.

## **Shire of Koorda \$3,366**

### **Tree Planters**

To assist farmers to replant trees that were lost during the dry 2010 winter.

## **Shire of York/Friends of Mt Brown \$1,100**

### **Revegetation of 'The Triangle', Mt Brown Reserve Stage 1**

Revegetation project in a key part of Mt Brown Reserve.

## **Talbot Brook Land Management Association \$1,020**

### **Tree Planters**

Purchase of 3 tree planters to assist the group to complete planting of 30,000 native seedlings on 3 degraded creek lines in conjunction with the Department of Water and the Swan River Trust.

## **Toodyay Friends of the River \$4,400**

### **Millards Pool Interpretative Signage/Shelter**

Information boards to publicise information about the local environment.

## **WA Wheatbelt Forest Growers \$15,000**

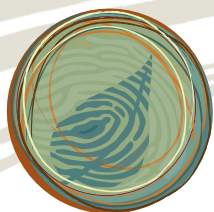
### **Australian Master Tree Growers Program for the WA Wheatbelt**

To increase the knowledge and skills of individuals with an interest in incorporating trees as part of the agricultural production systems.

## **Wildflower Society Inc Avon Branch \$5,644**

### **Signage for Bushland Garden and Seed Orchard**

To provide signage for education of the local community and visitors about the range of native plants in bushland and verges within the Shire of York. The seed orchard provides seed for revegetation projects within the York Shire.



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management

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