APPENDIX 6. WETLAND MANAGEMENT STORIES

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ALAN WRAGGE - 'YALOKE'

Where	**25km west of Deniliquin on the Wakool River**
Enterprise	**Sheep & cropping**
Size	**3200 hectares**
Wetland area	**240 hectares**

What they did

Erected 9km of fencing to control stock access to the wetland

Installed an off-dam stock watering system (to remove the reliance on dams within the wetland)

Provided an allocation of 156 ML of 'environmental water' to the wetland

Monitored the results.

Why they did it

To breathe new life into a wetland that had been dry for too long

To reinvigorate the black box trees within the wetland that were showing signs of stress.

Cost

The project infrastructure cost approximately $55,000 (i.e. this figure does not including the price of the water used to flood the wetland).

Assistance

- Environmental water provided by NSW government (managed by the Murray Wetlands Working Group - MWWG)
- The infrastructure costs were divided between the MWWG and the landholder.

Benefits

- Dramatic improvement in the health of the black box trees and other wetland vegetation
- Significantly increased water bird numbers
- Reduced area of weedy plants
- Better management of stock access to the wetland.

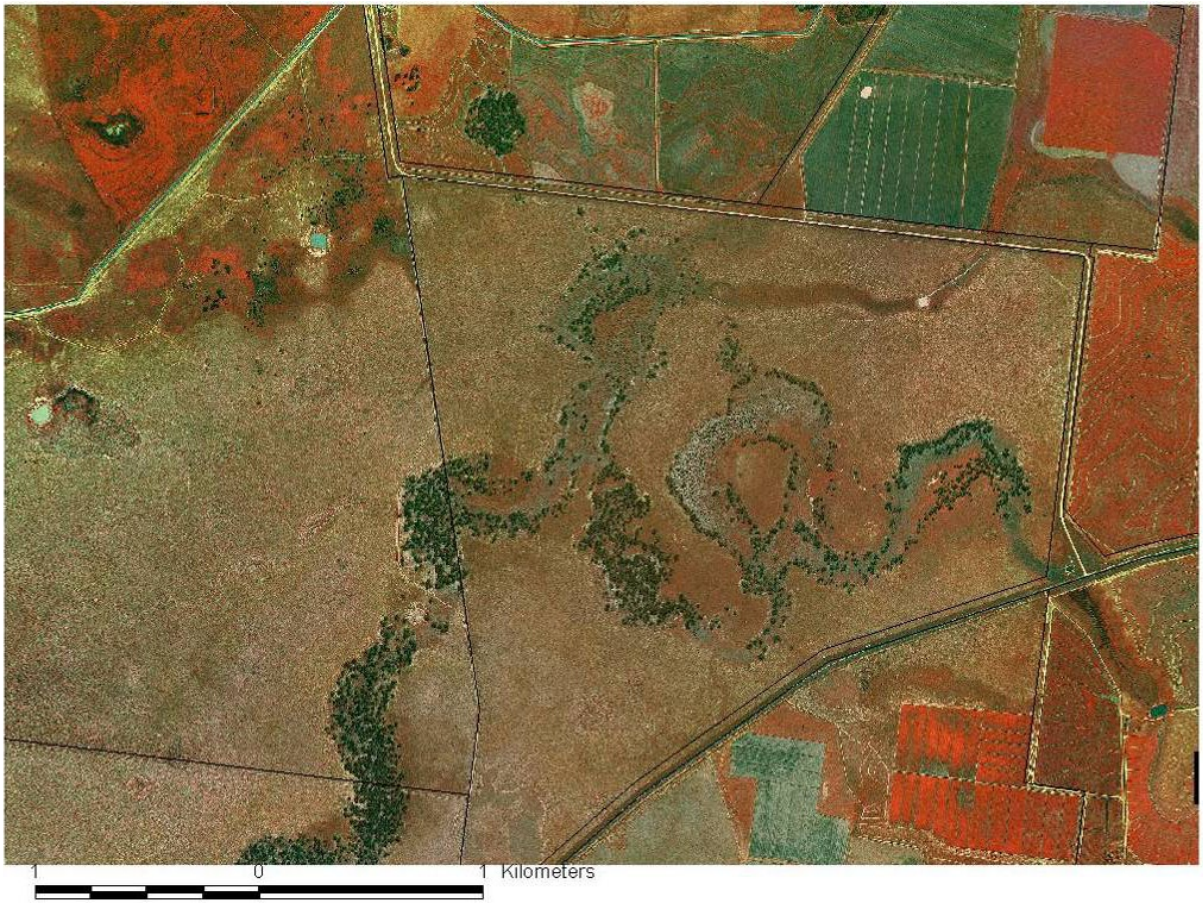
Monitoring & evaluation

- Bird and vegetation assessments carried out by MWWG
- Re-watering the wetland led to a significant increase in the number of native wetland plant species and a parallel decline in weeds.

Their story

The property 'Yaloke' is situated within the Riverina Plains country approximately 25km west of Deniliquin. The wetland on the property is 240 hectares in size and an example of what is usually referred to as a 'Black Box Depression' wetland. These types of shallow wetland are typically found along drainage lines that convey runoff after heavy rain, only to quickly dry out again once the rain ceases. The channels connecting the wetlands are often hard to discern as they tend to be wide, shallow, sinuous and of very low gradient.

As their name suggests, the wetlands form in shallow depressions along the drainage lines and can hold water for some months after the stream has ceased to flow. These periods of inundation favour vegetation that can tolerate occasional waterlogging. At Yaloke, black box *(Eucalyptus largiflorens)* and the understorey shrub, nitre goosefoot *(Chenopodium nitrariaceum)*, predominate.



Map 4: Infra red enhanced aerial photograph of the Yaloke wetland, 2001. (Courtesy of Murray Irrigation Ltd.)

For more than 60 years the wetland at Yaloke was part of the property's 600 hectare 'Fifteen Mile Paddock'. With no internal fences, this paddock was subject to a set-stocking grazing regime. The wetland area is likely to have been preferentially grazed as the more moist conditions would have provided good feed, especially in dry times.

Over the past 10-15 years many landholders in the area have noticed a general loss in vigour in the black box trees within local wetlands. Taking up this issue, the Wandook Landcare Group worked with the NSW DPI Forestry to research the likely causes. The Deniliquin office of Greening Australia made funding available to fence out native vegetation, including the black box remnants within the depression wetlands.

In 2001 Alan accessed this funding assistance and installed some internal fencing to the Fifteen Mile Paddock which allowed for better control of stock within the wetlands.

Although already alert to the problem of declining tree health, Alan was surprised when he noticed how sparse the canopy of a particular patch of black box had become. Visible from near the house, the trees in question form part of the landscape. *'One day I noticed that I could see right through them, the canopy had become that thin'* Alan remembers. In addition to this, closer inspection of the black box remnants on the property revealed that there was little, if any, natural regeneration taking place.

The strong evidence of declining health in a major native vegetation community on the property did not sit well with Alan's overall land stewardship ethic.

The strong evidence of declining heath in a major native vegetation community on the property did not sit well with Alan's overall land stewardship ethic. The desire to move towards genuinely sustainable production at Yaloke had led Alan to seek organic certification with the National Association for Sustainable Agriculture, Australia (NASAA). A certified organic farm with dying native trees seemed incongruous: something had to be done.

While acknowledging the role that excessive stock grazing may have been playing, Alan also felt that getting more water into the wetlands would also be of benefit. Having grown up on the property, Alan recalled that the wetland seemed to receive water far more regularly in the past than has been the case in more recent years.

Established in 1992, the MWWG is a community based wetland rehabilitation organisation that brings together landholders, government agencies and researchers to plan and deliver projects within the NSW Murray River and lower Murray-Darling catchments.

Working with the Murray Wetlands Working Group (MWWG), a project was designed to provide the wetland with what Alan felt it really needed: a good soaking. Importantly for Alan, the Working Group manages an allocation of environmental water on behalf of the NSW government that, with irrigation infrastructure and appropriate seasonal conditions, can be used to provide a flood to long dry wetlands.

Given the history of black box canopy decline, the key result that Alan was looking for was an improvement in tree vigour. An improvement in both native shrub and wetland groundcover plants was also expected.

Image 10: As part of his drive towards genuinely sustainable production, Alan Wragge of Yaloke near Deniliquin is currently pursuing organic certification through the National Association for Sustainable Agriculture, Australia. Alan felt that taking steps to halt the decline in condition of his black box depression Wetland was an important part of restoring the overall ecological health of the property.

1. Delivering the environmental water

Due to the configuration of the wetland at Yaloke and the layout of the existing irrigation infrastructure, the watering of approximately one-third of the wetland area was a relatively easy proposition. Water was supplied to this area in the first year of the project.

The following year, after installing a 12" diesel pump, constructing new connecting channels and overcoming some local political difficulties (see 'Challenges' section of this case study). Alan watered the remaining two thirds of his wetland. *'This was reasonably successful',* Alan recalls, *'we managed to get water into about 80% of the wetland before the seepage and evaporation losses equalled the input rate and we had to call a halt'.*

One final problem that Alan remembers was the timing; *'for best results we were advised to fill the wetland in spring, but as this is the same time that we were watering crops it put a real strain on the infrastructure. It was very difficult to do all this at the same time.'*

Alan was impressed with the results achieved, with noticeable improvements in the health of the black box community as well as the natural regeneration of wetland plants being recorded.

In an effort to improve the diversity of native vegetation within the wetland a direct seeding project was also implemented. However, drought conditions in the seasons following the direct seeding led to poor establishment.

Image 11: In addition to the wetland rehabilitation works at Yaloke, riparian areas such as this section of Wakool River frontage are receiving attention. This area was fenced and off-stream watering installed in 2007 as part of a joint project with the Murray Catchment Management Authority.

2. Fencing & stock watering

Approximately 9km of additional fencing were required at Yaloke to complete the fencing of the wetland. Off-dam watering points were also installed using solar powered pumps.

3. Monitoring & evaluation

This site was included in the MWWG's 2005-06 monitoring and evaluation programme under which both bird and vegetation surveys were carried out. The results were presented in the MWWG publication *Watering of Private Property Wetlands – Final Report 2005/06.*

The Yaloke wetland was particularly rich in terms of the bird species recorded during the MWWG survey. The migratory waterbirds recorded at the Yaloke wetland included: wood sandpiper, sharp-tailed sandpiper, common greenshank, Latham's snipe, curlew sandpiper and marsh sandpiper. In addition, the following threatened species were also recorded: brolga; grey-crowned babbler and freckled duck. This report notes that 'with nearly half the species present [31 out of a total of 64] being waterbird species, [this] shows the importance of vegetation structure and diversity, which provides habitat for a wide range of species'.

Photographs taken at regular intervals from fixed photo-points often provide the best visual picture of vegetation changes over time. The pictures of the Yaloke wetland demonstrate clearly the value of this monitoring and evaluation technique (see page 52).

Challenges

With an initial environmental allocation of up to 1400ML the delivery of water to the wetland was always going to be a challenge. The Dethridge wheel on Alan's existing irrigation system could only deliver 10ML per day and clearly this was going to be insufficient to deliver the quantity of water required within a sensible time span. In a bid to overcome this, Alan approached his neighbours who, after a little negotiation, agreed to help out with their wheels giving a potential delivery rate of 30ML per day.

Particularly challenging at this point were concerns voiced by the wider community regarding the need for the project. These arose because implementation was to occur during a period of low water allocation for irrigators who were under pressure to be as efficient as possible with the little water available. Spreading water out onto land for environmental purposes seemed to some incompatible with these pressures, and a further round of negotiation and explanation was required before the project was accepted and could go ahead as planned.

The problems Alan faced with respect to the supply and delivery of water to his wetland underline some common difficulties faced when attempting the artificial re-watering of wetlands:

- under natural flood conditions very large volumes of water are 'delivered' to a wetland over a short period of time
- mimicking a natural flood can be very difficult because even when irrigation infrastructure is available, it has usually not been designed to deliver large volumes of water quickly. This makes filling a 'leaky' wetland to its maximum extent a very difficult proposition
- at a time when irrigation water allocations are being cut, and the ongoing pressure to be as efficient as possible with what water is available, the use of water for environmental purposes is likely to be contentious.

When asked the question: *'Would you do it again, and if so, is there anything you would do differently?'* Alan responded that yes, overall it was a very worthwhile project that he would undertake again. Given the difficulty of delivering enough water over a relatively short period of time to get the desired result within the wetland, Alan did note that at one stage there was talk of installing a pump capable of delivering 20ML/day: *'This would have made the job a lot easier, especially given the problems encountered in trying to irrigate crops while trying to fill the wetland at the same time'.*

Alan also felt that the project highlighted both the benefits and problems associated with the artificial flooding of wetlands. While the response was terrific, both in terms of the vegetation growth and the birdlife that used the wetland, the cost to a landholder proposing to undertake such a project without the assistance of the MWWG could be prohibitive. This would particularly be the case where water had to be purchased on the open market. Had Alan had to do this during the low allocation year in which he carried out his project, he estimated that the high prices would have meant that the overall job could have cost *'somewhere between $300,000 and $350,000'.*

Alan's observation underlines an important point about wetland conservation and rehabilitation. Wetland rehabilitation can be expensive within a heavily regulated catchment as it often involves the purchase and delivery of water. Within unregulated systems, the water is essentially provided 'for free' which tends to make projects in these areas much cheaper.

Summary

The wetland watering project at Yaloke highlighted some of the greatest difficulties with this sort of work, both in terms of community acceptance and the practical constraints regarding water delivery. However, it also clearly demonstrated the benefits.

At a time when the allocation of irrigation water is under increasing scrutiny, getting community acceptance of the need to provide water for wetlands is always going to be controversial.

At the practical level, providing sufficient water over a short time frame to fill a 'leaky' wetland can also be very challenging and expensive to achieve.

The project at Yaloke demonstrates that, with a little persistence, these difficulties can be overcome to deliver a very worthwhile result.

Before wetland flooding

Week 6

Week 12

Week 15

Image 12: Monitoring of the Yaloke wetland.