

February 2014 Project Update

What has been happening with the Cross Property Planning Project?

The Murrumbidgee Landcare Inc. Cross-property Planning Project involves 64 landholders across and Illabo/Bethungra and Junee, Kyeamba Valley and Tarcutta/Humula. The majority of the landholders have had property maps produced for them and have participated in a baseline survey to determine their current expectations, goals, practices and knowledge in relation to the management of their native vegetation.

Nicole Maher, Project Officer, has been busy with property visits and is available to assist with funding applications. To date, a third of all landholders have applied and received funding for their on-ground works in the following areas: biodiverse plantings, protection and enhancement of existing remnants and invasive species management.

Specific works includes:

- Fencing out and planting along creek lines and eroded gullies
- Planting tree lines
- Erosion control
- Adding trees to existing tree lines
- Controlling foxes and rabbits
- Planting scattered paddock trees
- Fencing off and enhancing existing remnant vegetation patches
- Fencing and planting around dams
- revegetating with understorey in existing remnant vegetation

For further information please contact Jacinta Christie on 0431 953 778 or Nicole Maher on 0487 953 776.

Local Landcare and Cross-Property Planning project Christmas parties

Throughout mid-December, three Christmas Parties were held at Illabo, Tarcutta and Ladysmith for Landcare and Cross Property Project landholders. The three nights were well attended and gave everyone the chance to catch up and reflect on a busy 2013 and also to hear Alison Elvin from Natural Capital speak about the results from the extensive Flora and Bird survey that was conducted on 30 sites across the three Cross Property project areas.



Alison Elvin above discussing findings from the recent Flora and Bird Surveys conducted in the area

Cross-Property Panning (CCP) project – summary of results from the flora and bird Surveys

In August and September 2013, the CCP project funded Dr Fiona Christie, University of Melbourne and Alison Elvin, Natural Capital to conduct 30 fauna and bird surveys across the project areas (Humula, Kyeamba Valley, Illabo/Bethungra and Junee).

The aim of this survey was to identify what species of birds and fauna are currently in the landscape, how canopy vegetation type (age, size of remnant, species) influences diversity and provide some directions on how to increase biodiversity across the project areas.

Overall, 5 major vegetation communities were recorded –

Grey Box Grassy Woodlands, Box Gum Grassy Woodlands (BGGW), Dry Sclerophyll forests (usually dominated by Red Stringybark and Mugga Ironbark), River Red Gum Forests (along waterways), and re-vegetation areas. Although White Cypress Pines grew strongly in some sites, they were an integrated part of a White-Box BGGW.

Within these vegetation communities there where:

- 90 plus total species of birds (including 3 species of exotic birds)
- 154 species of native plants (and 34 species of exotic plants, including noxious woody weeds).
- Threatened Ecological Communities with varying levels of disturbance
 - Inland Grey Box tall grassy woodland communities – 3 farms
 - Box-Gum Grassy Woodland communities, especially White and Yellow Box -9 farms
- 7 species of Threatened birds
 - Superb Parrots, Varied Sittella, Flame Robin, Scarlet Robin, Brown Treecreeper, Grey Crowned Babblers, Diamond Firetail

One of the most interesting findings was that larger and more ecologically intact the vegetation remnant and the closer it was to other similar remnants, the higher the total number of bird species including Threatened bird species lived there. In particular it was common to find the smaller insectivorous and nectarivorous woodland birds that are currently declining in the south-west slopes and tablelands dominate the suite of bird species recorded in such remnants.

Across the more fertile areas where box gum grassy woodland (BGGW) has been mostly cleared for farming, the remaining vegetation remnants have less understorey and tend to be dominated by exotic grass and weed species. Such sites often recorded a high total number of bird species, BUT few of these species were the declining insectivorous woodland birds. Instead, opportunistic and 'generalist' bird species dominated. These birds adapt well to the agricultural matrix surrounding them, and their numbers are not declining.

Interestingly, the Threatened Superb Parrots were recorded in both BGGW and River Red Gum sites providing sufficient tree hollows and flowering eucalypts were available, irrespective of the overall diversity of flora and structure.

The shape, age and connectivity of re-vegetation areas also affected the suite of bird species living there, with long, linear sites not inter-connected with larger remnants recording the most common birds, some exotic species, and many Noisy Miners (an aggressive native bird that out-competes woodland birds for territory).

Most vegetation communities with the least floristic diversity and medium to low structural complexity had plentiful Noisy Miners and exotic birds such as Starlings and Sparrows. Such bird species tend to prevent the declining, and often threatened, species of woodland birds from establishing their territories in these sites.

Many of the landholders whose properties were surveyed are making significant efforts to link-up their remnant and re-vegetation areas with other remnants and mature paddock trees, both throughout their own property and across into neighbouring farms, increasing the overall landscape connectivity without adversely impacting on their productivity. Many are also conserving tree hollows, leaving dead trees standing and not disturbing fallen timber within their remnants which provides critical habitat for local animal species.



A full copy of the report is available on the Murrumbidgee Landcare website:
www.murrumbidgeelandcare.asn.au.

Encouraging beneficial insects by planting native vegetation

Insects occurring in crops may be broadly categorised as either harmful or beneficial. Beneficial insects such as ladybirds, parasitic wasps and predatory beetles protect crops from damage by reducing the pest burden. Increasing the number of beneficials relative to the number of pests is one way of increasing crop value.

An experimental trial has been established at Bill & Maria Muller's property 'Nunlong' near Illabo to investigate the effect of replanting with native vegetation on the pest and beneficial insect dynamics. It is hoped that by planting native vegetation, habitat complexity increases encouraging a greater diversity and abundance of beneficial insects.

The site selected consists of an existing shelter belt composed of naturally regenerating eucalypts adjacent to a cropping paddock. Two spatially separated areas within this shelter belt were selected for revegetation, with two adjacent areas left untouched for the purposes of comparison. Insect traps for both ground and flying insects were established in the shelter belt and the adjacent crop. This arrangement allows for comparison of insect diversity and abundance between untouched parts of the shelter belt and replanted areas, and between the shelter belt and the adjacent crop.

Locally native species were used in replanting. Species were selected to provide year-round flowering, so that insect populations could be sustained even at unfavourable times of the year. In July 2013, 11 species were planted in each of the two revegetation sites, with plans to add further species when conditions are suitable. Species included: *Acacia pycnantha*, *A. paradoxa*, *A. cardiophylla*, *A. lanigera*, *A. genistifolia*, *A. montana*, *A. buxifolia*, *Cassinia longifolia*, *Indigofera australis*, *Eutaxia microphylla* and *Hardenbergia violacea*. Species still to be planted include the summer-flowering herb *Senna barclayana* and several small forbs.

The experiment is expected to run for several years and no effects are expected at this stage of the trial. Sampling methodologies are currently being tested and may change. For the first sampling period, 24 pitfall traps were installed in a grid pattern in the remnant verge and the adjacent cropping paddock. Initial insect samples were collected in mid-October and these are currently being analysed. Many pest species were recorded and several – including mites, thrips and lucerne fleas – were found to be extremely abundant. Thrips increased in abundance conspicuously further into the crop, suggesting that the more complex habitat provided by the shelter belt is unsuitable for their survival. Several beneficial species were also recorded in large numbers. Parasitic wasps were by far the most abundant of these, though hoverflies and lynx spiders were also reasonably common.



Before (l) and after planting (r) of understorey species at Bill & Maria Muller's property 'Nunlong'



(l to r) Planting understorey species on 24 July 2013; Bill Muller and grandson Charlie inspect the plantings; and Phil Bowden, Murrumbidgee Landcare (formally NSW DPI) installing pit fall traps for insect trapping.



(l) Sticky and Pitfall traps; (r) Dr Peter Orchard, Graham Centre and Phil Bowden, Murrumbidgee Landcare (formally NSW DPI) setting out sticky traps and pitfall sampling containers mid-October 2013.

Using native species to manage roadside weeds

Roadsides often serve as vital refuges for native plant species and provide important corridors for the movement of native animals. Just as often, however, roadsides act as reservoirs and transmission vectors for weeds. Historical disturbance has left many roadsides entirely bare of natural groundcover and has allowed exotic species to multiply. From these reservoirs, weeds can spread into surrounding farmland and into areas of natural vegetation, diminishing the value of both. Replanting with native species may be one way of combatting this problem. Locally native species may possess specific adaptations to local conditions that give them a competitive advantage against exotics. This competition, as well as shading effects and possible allelopathic effects, may act to exclude introduced species and reduce weed infestations.

To this end, a series of trials are presently being conducted on the Marrar North Road. These trials, planted in the spring of 2013, aim to investigate the competitive effects of various native species on the weed flora of the site. Initial weed surveys revealed significant infestations of a number of important herbaceous weeds, including Paterson's curse (*Echium plantagineum*), St. John's wort (*Hypericum perforatum*), common horehound (*Marrubium vulgare*) and several species of thistle, as well as a dense understorey of undesirable grasses, chiefly wild oats (*Avena fatua*) and brome grasses (*Bromus* spp.).

On the northern side of the road, this weed community was sprayed and then mown to facilitate planting. The southern side of the road was scalped, with soil removed to a depth of roughly 5 cm, so as to reduce weed seed banks and soil fertility, giving the natives an advantage. A series of trials were then planted on each side of the road. Where possible, similar trials have been conducted on both sides of the road to allow an informal comparison of the effects of scalping versus the effects of spraying and mowing.

In all, thirteen trials have been planted, employing a range of native shrubs, forbs and grasses:

- Trials 1 and 2 (S and N) compare the competitive abilities of three species of native grass (*Rytidosperma* sp., *Austrostipa densiflora* and *Austrostipa elegantissima*) against the background weed population.
- Trials 3 and 4 (S and N) investigate the effects of varying rates of sugar on the establishment of a native grass (*Microlaena stipoides*) and on the emergence of weeds. Sugar stimulates microbial activity, depleting soil nitrogen and potentially conferring a competitive advantage on native species adapted to low soil fertility.
- Trials 5 and 6 (S and N) investigate the effects of varying rates of sugar on the establishment of a native herbaceous legume (*Hardenbergia violacea*) and on the emergence of weeds.
- Trials 7 and 8 (S and N) investigate the effects of mycorrhizae on the establishment and growth rate of the native wattle *Acacia cultriformis*. Addition of mycorrhizae (soil-borne fungal symbionts) may increase the nutrient-uptake abilities of the host plant and increase its competitive ability.

- Trials 9 and 10 (S and N) compare the competitive abilities of a range of local wattle species: *Acacia cardiophylla*, *A. decora* and *A. hakeoides* on the southern side, and *A. aspera*, *A. acinacea* and *A. doratoxylon* on the northern side. Species were selected to represent a range of growth forms.
- Trial 11 (S) investigates the competitive ability of the native shrub *Senna artemisioides* planted at varying densities.
- Trial 12 (N) compares the competitive abilities of the native shrub *Rhagodia spinescens* and the native forb *Calotis cuneifolia*, planted at a range of densities.
- Trial 13 (S) compares the competitive abilities of the native forb *Xerochrysum viscosum* and the native grass *Austrodanthonia* sp., planted at a range of densities.

Planting was initially planned for the spring of 2012, but dry conditions prevented all but a few plots of a grass trial from being established. Most species failed to persist but wallaby grass (*Rytidosperma caespitosum*, formerly *Austrodanthonia caespitosa*) survived and flourished (figure 1).



Figure 1. Wallaby grass (*Rytidosperma caespitosum*) planted in spring, 2012. Around the edges of the plot can be seen dense stands of wild oats (*Avena fatua*), successfully excluded by the native grass.

In spite of extremely dry conditions during spring 2013, all trials have now been planted and preliminary data collected. Though some species, chiefly *H. violacea* and *C. cuneifolia*, initially died back after planting, these have now revived or are beginning to revive (figure 2).



Figure 2. Seedlings of purple coral-pea (Hardenbergia violacea) have begun to re-emerge.

By contrast, the fast-growing shrub *Rhagodia spinescens* (figure 3) shows early promise in suppressing weeds. Additionally, both *Xerochrysum viscosum* and *Calotis cuneifolia* have begun to flower (figure 3), hinting at the possibility of revegetation from seed. Although some trials may have impacts in the short term, the slower growing shrub species will take several years to evaluate.



Figure 3. (l) Successful seedling of *Rhagodia spinescens*; (r) Both *Xerochrysum viscosum* (left) and *Calotis cuneifolia* (right) have begun to flower at the site

For further details, contact David Orchard (mob: 04 3980 2850).

Spy (remote wildlife) cameras available

Remote wildlife cameras, or spy camera as one child at the recent Family Night Stalks like to call them, will soon be ready to borrow from Murrumbidgee Landcare Inc. The cross property project has purchased three cameras which are used to remotely monitor the presence and behaviour of mammals in our environment.

The infra-red cameras are simply set-up in a location of interest and focused on bait and left undisturbed for a number of days. The camera takes photographs of any animal which comes to investigate the bait. Two types of bait are generally used (at different times), one to attract herbivorous or omnivorous species (e.g. rodents, marsupial mice, bandicoots, potoroos) and one to attract carnivores (e.g. Tasmanian Devils, quolls, cats, foxes). The camera can then be collected, all photos downloaded to a computer and species identified.

It is hoped that each of the three cross property groups will circulate a camera between properties over a number of months as each SD card inside the camera can hold between 50,000 and 70,000 images. Please contact Jacinta Christie on 0431 953 778 if you are interested in using a camera on your property.



(l) Dr Fiona Christie from the University of Melbourne setting up a remote wildlife camera and bait station at the Humula Night Stalk; (r) Wallaby playing a flute - Black Wallaby or Swamp Wallaby (Wallabia bicolor) nibbling one of our dropped pencils! Information on the photograph includes date, time and temperature, data which can be used to investigate behaviour.

Possible future workshops funded under the Cross Property Planning Project

The Cross Property Project is pleased to be able to offer the following workshops and field days to Junee district landholders:

- Summer crop and pasture weed control (late winter-early Spring topic)
- Herbicide resistance and weeds (autumn topic)
- Livestock Production from Pasture
- Silage and Hay Production
- Winter Crop Walk
- Pastures and Grazing
- Pasture Cropping
- (WOPR) Whole of Paddock and Woodland Rehabilitation
- Beneficial insects

If you are interested in any of these topics please contact Jacinta Christie on 0431 953 778 or Nicole Maher on 0487 953 776.