

## SWIFFT Video conference notes 14 November 2007

### Native Grassland Conservation

*SWIFFT meeting notes are a summary of the videoconference and not intended to be a definitive record of presentations made and issues discussed.*

#### TOPICS & SPEAKERS

1. [Long Term Ecological Grazing Project](#) (research results to date) - *Dr Vivienne Turner, Senior Scientist, Flora Ecology – DSE, Arthur Rylah Institute, Heidelberg*
2. [Lowland and Grassy Ecosystems Research Initiative](#) - *Dr John Morgan, Terrestrial Ecology Group, Dept. of Botany, La Trobe University*
3. [Native grassland management & issues form around the Parks Victoria South West](#) - *Evan McDowell*
4. [DSE, Native Grasslands Policy Overview](#) - *Vanessa Craigie, Department of Sustainability & Environment, Victoria.*
5. [V/Line](#) – *Leanne Bassett, Manager Environment, V-Line*
6. [CFA](#) – *Tony Brady, Ballarat*
7. [Local Government](#) – *Moyne Shire, Southern Grampians Shire, Golden Plains Shire, Moorabool Shire and City of Greater Geelong*
8. [Corangamite Catchment Management Authority](#) – *Nick McCrystal, Manager Biodiversity*
9. [Private landholder perspective](#) – *Ray Draper*

The fourth and final videoconference for 2007 was held on 14th November, with 48 participants across the South West region of Victoria, also Arthur Rylah Institute at Heidelberg and DSE Bendigo (Ballarat 15, Geelong 9, Warrnambool - 5, Hamilton 8, Horsham 3, ARI 6, Bendigo 2). Participants included representatives from Corangamite CMA, Glenelg Hopkins CMA, Field Naturalists Clubs (Ballarat, Geelong & Hamilton), Ballarat Environment Network, ANGAIR, Land for Wildlife, Melbourne University-Creswick, La Trobe University, City of Greater Geelong, Horsham Rural City, Moyne Shire, Golden Plains Shire, Southern Grampians Shire, Moorabool Shire, Geelong Landcare, Leigh Catchment Group.

#### SPEAKER SUMMARIES

**Long Term Ecological Grazing Project (research results to date) - Dr Vivienne Turner, Senior Scientist, Flora Ecology – DSE, Arthur Rylah Institute, Heidelberg**

Vivienne presented progress results from research also involving Heidi Zimmer & Claire Moxam from the Arthur Rylah Institute. The project is being funded by the Department of Sustainability and Environment -ARI, Department of Primary Industries, Corangamite Catchment Authority (PlainsTender), Grain and Graze, and Glenelg Hopkins Catchment Management Authority.

A key aim of the project is to provide empirical evidence on the influence of grazing management on the vegetation attributes of native pastures of the Victorian Volcanic Plain. This research is extremely important as it is estimated that less than 8% of native grasslands now remain on the Victorian Volcanic Plains with most remnants on private property.

Research is being conducted using Experimental Plots and Paddock-scale Management and Monitoring. The experimental plot study has been running for 5 years on 3 separate properties, each property having a series of 15 x15 metre plots which have been subject to various seasonal grazing and rest periods. The paddock-scale study was established in 2005 and now includes 17 sheep grazing properties which are used in testing management recommendations at the paddock-scale, the aim is to maintain a 70% cover under 'Spring rest' and other grazing regimes.

Because forbs are so rare in the landscape higher resolution plots were established; for the Experimental Plots (50cm x 50cm quadrates) and for the 'Paddock –scale' sites (4m x 4m quadrates).

Grazing rest periods included: Winter rest, No rest, Spring rest, Summer rest, Always rested, Spring-Summer rest.

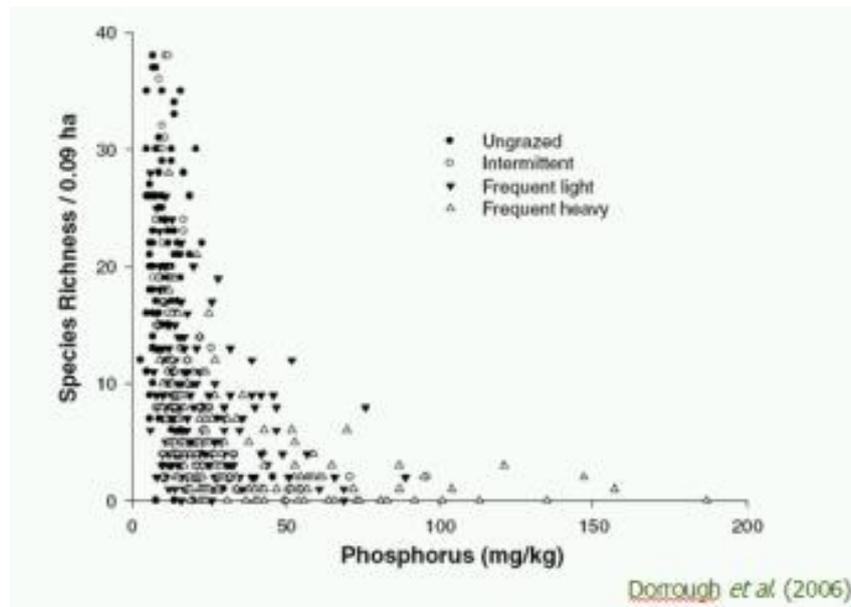


1. Common Everlasting *Chrysocephalum apiculatum*, 2. Clover *Glycine latrobeana*, 3. Parson's Bands *Eriochilus cucullatus*, 4. Early Nancy *Wurmbea dioica*, 5. Basalt Daisy *Brachyscome basaltica*, 6. Blue Pincushion *Brunonia australis*.

The point was also made that Common Everlasting is not so common anymore!

#### **Species diversity reduces with increased phosphorus**

Since 2006 there has been a focus on forbs (herbaceous flowering plants) as they are an element of grasslands that are particularly rare, highly palatable, and often absent from degraded grasslands. Forbs are also highly susceptible to impacts from fertilisers (Phosphorus) and high stocking rates.



Species diversity reduces with increased phosphorus

#### Outcomes of research so far

- Native forb richness is most significantly related to the site (soil, topography, rainfall etc.).
- Spring rest is best (resting increases native species richness).
- No rest (constant grazing) yield the worst results.
- Complete rest (no grazing at all) yielded variable results (it is thought that complete rest beyond 5 years may increase an over dominance of grassy species to the detriment of forbs).

#### Conclusions

- Resting increases native species richness (especially spring rest).
- The effects of rest can be variable (especially complete rest).
- A mix of grazing strategies over the landscape is best.

#### Future Research

- Include soil analyses (focus on Plains Tender properties).
- Measure the effect of 1-year rest (particularly where sites have become degraded).
- Work in conjunction with Southern Farming Systems, through Grain & Graze and Cam Nicholson on Integrated Pest Management (IPM) (Good quality native grassland promotes beneficial insects).
- Small mammals survey.
- Examine Winter-spring rest treatment (may favour early flowering species e.g. Lilies).

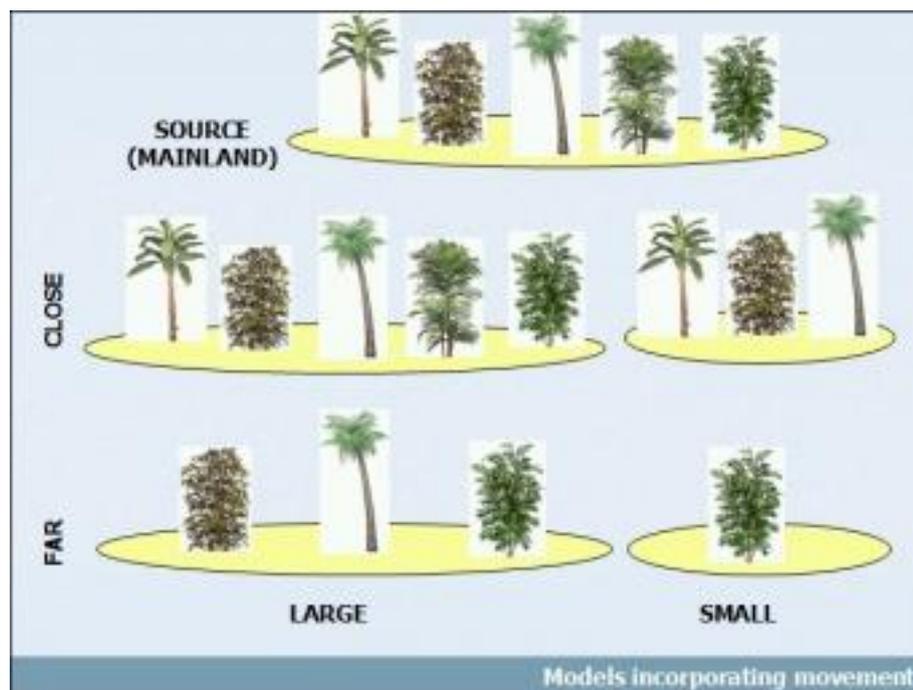
Potential to expand project to consider fire on grazing properties (fire is mainly used on roadsides as a management tool but not so much on grazing properties that have native grasslands).

## Lowland and Grassy Ecosystems Research Initiative - Dr John Morgan, Terrestrial Ecology Group, Dept. of Botany, La Trobe University

John posed the question; *Why are there lots of species in some places and not so many in other places?*

Two hypotheses were discussed;

- the niche-based hypothesis where organisms are specialised to different niches in the environment and changes in the environment are likely to favour some species and be detrimental to others.
- competition hypothesis, where organisms compete for resources and some exclude others.



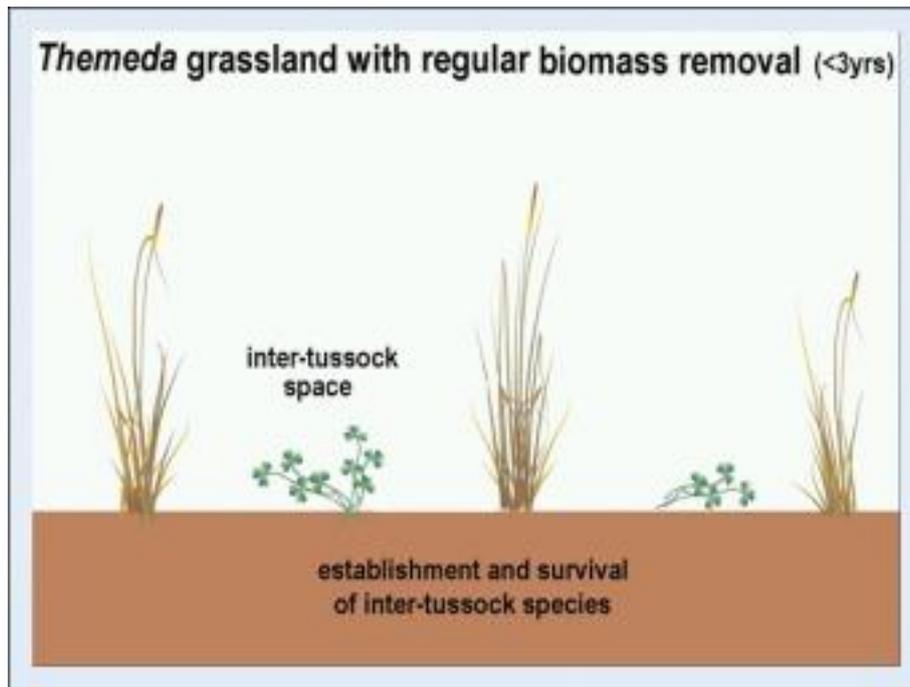
Source: J. Morgan

**The Theory of Island Biogeography** (MacArthur and Wilson 1963) was explained, which demonstrates why small isolated remnants support fewer species than larger patches closer to a major area of habitat.

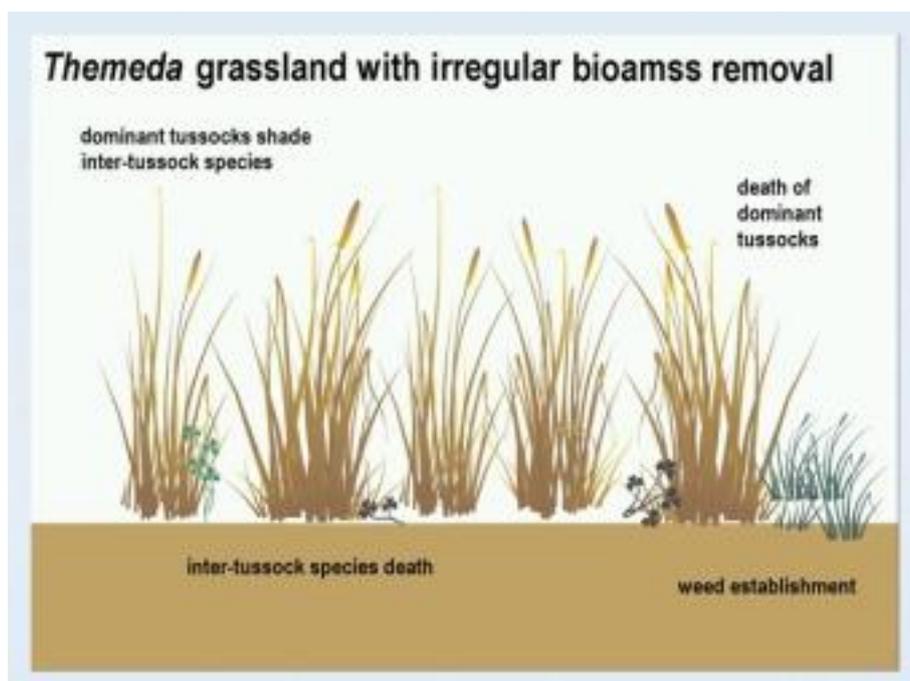
John used the example of Yellow Gum herb-rich woodlands in the Terrick Terrick area to demonstrate niches and species coexistence where there is a diverse array of life forms (annuals, geophytes, forbs, grasses, sub-shrubs, twiners), these exist with more than 100 species in 1000 m<sup>2</sup> - these are some of the most diverse temperate ecosystems in Australia at small-scales.

### **Competition as an organising force in tussocks and inter-tussock spaces**

John discussed the necessity for periodic removal of biomass in native grasslands which prevents dominant tussock growth from crowding and shading out inter tussock species. Increase in biomass (also associated with levels of rainfall, soil organic carbon and total nitrogen) can influence the eventual death or decay of many grassland species and creation of conditions more suitable to weedy species.



Source: J. Morgan



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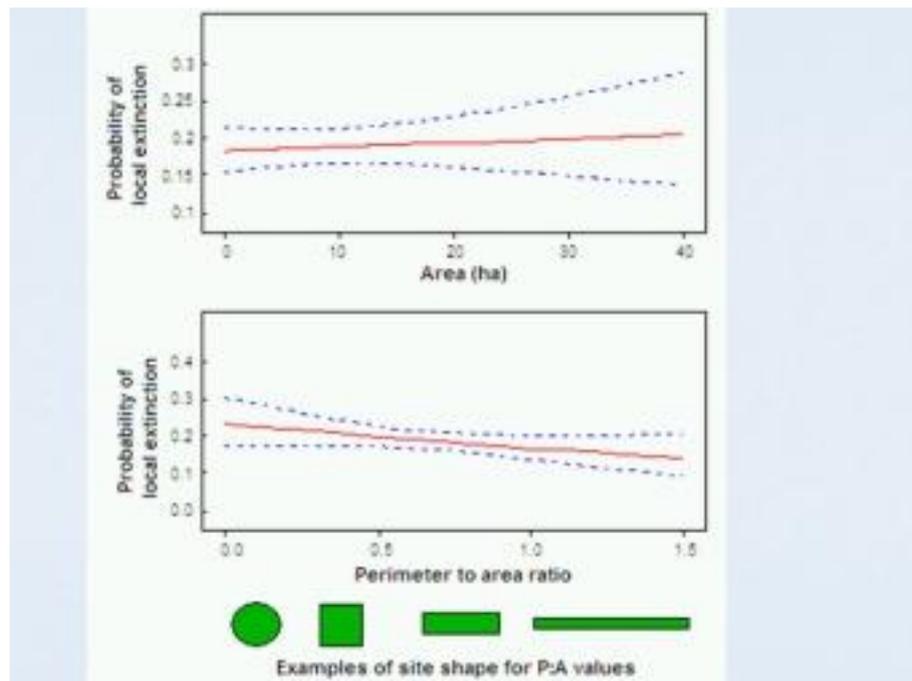
### Key points

- The absence of disturbance does not seem to have negative effect on species richness and composition in the less-productive *Austrostipa* and *Austrodanthonia* grasslands of Victoria.
- Over 10-15 years, competitive exclusion is not a key organising feature of non-*Themeda* grasslands.
- The role of disturbance should not be considered equal in *Themeda* and non-*Themeda* grasslands of Victoria.
- Conservation management of grasslands will be fundamentally different across their range (this has been poorly acknowledged).
- How we manage grasslands at Terrick Terrick National Park should be different to grasslands at Derrimut Nature Conservation Reserve (at present, it isn't).

### Fragmentation and species survival - Local extinction over 30 years

John discussed a revisitation study in the Coleraine/Nareen area which is resurveying work from records collected 30 years ago. In 1975, 775 populations of 177 native species were recorded. By 2006, 199 populations (25.6%) of 98 species are considered locally extinct.

The reasons for this level of extinction were discussed, generally there is not much difference between small and larger remnants, however the shape is a major factor with long and thin shapes being more vulnerable (high perimeter to area ratio). John pointed out that in some cases a long thin shape actually produced results opposite to what would be expected, particularly in cases where there has been frequent burning such as CFA roadside burns.



Source: J. Morgan

Species reliant on wind for dispersal of seed have the highest probability of local extinction along with those that have the shortest height.

In general terms

- areas burnt annually have high flora species diversity (summer burns are best; Spring burns are not recommended unless one-off to reduce exotics).
- changes to biannual burns have reduced results.
- absence of fire can lead to local extinction.

John acknowledged Nathan Wong, Jodi Price, Sera Cutler, Fiona Sutton, Nick Williams, Ian Lunt, Nick Schultz, Amber Briggs, Julia Franco, Brad Farmilo, Bill Wallach, David Cameron, Andrew Scott, Ross Thompson, Anna Murphy, Pete Green, Bob Parsons, Lisa Seberry`

There was discussion regarding the need to consider fauna habitat as part of native grassland and grassy woodland management e.g. Plains Wanderer, Hooded Scaly-foot. There is also a need to adapt management to consider impacts from climate change.

## **Native grassland management & issues form around the Parks Victoria South West region - *Evan McDowell was an apology but provided information on PV areas that was presented by Ian Smith.***

Parks Victoria manage 63 reserves which contain at least 1 hectare or greater of Plains Grassland EVC, Plains Grassy Wetland EVC and/or Plains Grassland/ Plains Grassy Woodland Mosaic.

Most significant reserves with the area of the reserve (not the area of Grassland).

Craigieburn Grassland NCR	350 ha
Derrimut Grassland NCR	134 ha
Mt Ridley Grassland NCR	129 ha
Boonderoo NCR	184 ha
Cobra Killuc WR (incl. Ridge Paddock)	662 ha
Mortlake Common FR	304 ha
Illabarook Grassland FR	118 ha
Lake Goldsmith WR	912 ha
Blacks Creek NCR	221 ha
Mt Mercer NCR	215 ha

Boonderoo NCR, Ridge Paddock, Blacks Creek NCR and Mt Mercer NCR were recently purchased by the Department of Sustainability and Environment with funding from the Federal Government.

### **Management/issues**

- Biomass accumulation is identified as a major threat and is generally managed through fire and/or an appropriate sheep grazing regime.
- Parks Victoria has started to review some of the reserves where there is stock grazing to consider if the reserve would benefit from a burn on a regular basis.
- Adaptive experimental management study of Parks Victoria's management (grassland management guide), this is being conducted in association with Dr John Morgan at LaTrobe University.

One issue for discussion was that Parks Victoria are having to manage many new areas from existing ranger resources, this could pose a problem considering that native grasslands require active management to maintain vigour and species diversity.

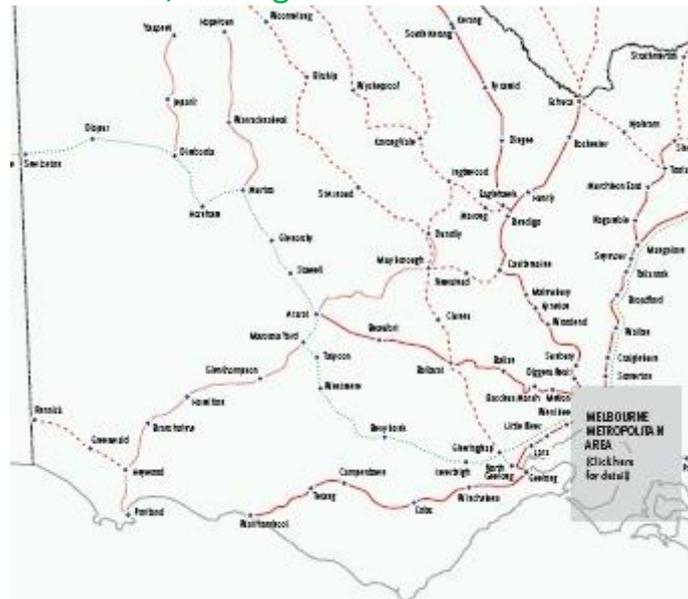
## **DSE – grassland policy overview - *Vanessa Craigie, Department of Sustainability & Environment, Victoria***

Vanessa provided an overview of policy work regarding Vegetation Management Guidelines for Rail Reserves which has been developed and awaiting publication (these will be distributed around the state). The guidelines cover routine management and major projects, weed management and fire. It is important that the implementation phase be acted upon by the various parties involved. Further refinement of how exemptions from having to have a permit to carry out works could operate may pose a problem and more work is required to determine agreement/licence options, however the Flora & Fauna Guarantee Act and EPBC Act provisions still apply.

Vanessa spoke about work being done in East Gippsland regarding EPBC listings of various grassland and grassy woodland communities where it was decided to role three EVC's into one to get around variants and issues of is it or isn't it a particular EVC. The new combined EVC will be put up to the EPBC is 'Lowland temperate grasslands and grassy woodlands of Gippsland Plains'.

*SWIFFT Video conference Notes – Native Grasslands, 14 November 2007*

## V/Line – Leanne Bassett, Manager Environment



Within the SWIFFT area V/Line rail reserves include rural Victoria except: Geelong – Maroona – Ararat – Serviceton, there is a shared corridor Werribee – Geelong. Some disused corridors are under review.

Leanne spoke about how the rail network is managed by a number of different organisations. VicTrack are the land owner, and rail operators (V/Line/ARTC/Connex) lease land, whilst Department of Infrastructure are the transport manager. Leanne spoke about V/Line's core role of transport and safety and the how the environment can be balanced to fit in.

- Safety is a key priority within rail reserves. Rail operator safety management systems governs train operation, and includes requirements for safe access by 3rd parties.
- Challenge of balancing rail safety and operational requirements with other areas including bushfire, native vegetation and at times competing legislation.
- Development of VRIEF vegetation management guidelines is a key initiative V/Line have been involved with along with other rail and government stakeholders.
- Information on grasslands within rail reserves may be held by various stakeholders, V/Line's Key reference is Biosites provided by DSE, which is of a general nature only, but defines locations of significant vegetation.
- V/Line tries to keep off native grassland where possible as part of day to day activity.
- V/Line can facilitate access for monitoring etc.
- Opportunities and Challenges for Grasslands management; include working with government and community stakeholders to develop and build relationships, improve grassland quality, utilise grasslands as a resource.
- There is opportunity to have a structured / planned whole of reserve management.
- VicTrack has initiatives 'Community Revegetation Opportunities' and Grassroots sponsorship. See <https://www.victrack.com.au/services-and-capabilities/property/environment-and-heritage>

Leanne stated that she is very open to building relationships with DSE staff to improve opportunities for enhanced management of native grasslands.

## CFA – Tony Brady, Ballarat CFA

Tony spoke about the positive role CFA makes in protecting the community from fire through burning programs on roadsides. He felt that the interaction between agencies can at times be difficult regarding jurisdiction and where approvals are required. A partnership approach is necessary to streamline approvals in getting works done.

## Local Government

**Moyne Shire** - Keith Davis spoke about their Roadside Environment Plan which is a review of the former 2001 plan. The new plan will focus on implementation and will use more GIS mapping and roadside schedules that will identify high value areas for maintenance & construction. The new plan should be out mid-2008.

**Golden Plains Shire** - Dale Smithyman spoke about a Management Plan for Rokewood grasslands. He also discussed the results from burning on grazed and ungrazed sites, finding that best results for grassland diversity were achieved on ungrazed sites following a burn.

**Southern Grampians Shire** - Cr Coralie Coulson spoke about their Roadside Advisory Committee, which is focusing on education through the flora & fauna brochures. See [[Victorian Volcanic Plains Grassland Species]]  
The Shire has also used an innovative way of raising the profile of native grasslands through inclusion of a pamphlet regarding roadside uses in rate notices.

**Moorabool Shire** - Thea Laidlaw spoke about revision of their 2001 Roadside Management Plan. The new plan will have more on operational procedures for contractors and council employees. There will also be a focus on updating new employees regarding conservation of native grasslands. The Shire is currently undertaking biodiversity mapping that will improve knowledge of important areas.

**City of Greater Geelong** - Alex Shackelton spoke about a ecological burn at Corio and research into the use of wick wiper to control Chilean needle grass *Nassella neesiana*.

## Corangamite Catchment Management Authority – Nick McCristal, Manager Biodiversity

Nick provided an overview of the NHT Plains Tender program in which \$3.8 million was provided by NHT for Plains Tender 2004/08 for the Volcanic Plains. Landholder contracts covered an area of 4,500 Ha of private land, approximately 50% for plains grasslands. The contracts stipulated no fertilisers, no site disturbance, no rock removal and no cropping. The objective was to provide 70% cover. Fencing was also included where appropriate. Nick said there has been a high level of compliance with management contracts and that there is a thirst for knowledge regarding management and one on one extension. Some landholders wanted advice ahead of funding.

## VicRoads – Joel Benjamin Environment Officer Biodiversity

Joel's presentation was titled: Identifying Strategic Offset Opportunities for Multiple VicRoads Projects Associated with Linear Infrastructure Development

Joel outlined that VicRoads activities impact on native vegetation in a number of ways, e.g. road maintenance, road safety improvements, road widening and duplication improvements and new road projects.

VicRoads currently manages: 23,000 km of Roads (freeways and arterials) and approximately 80,000 hectares of roadside. Environmental management of roadsides is estimated to cost \$4.8m (excluding net gain costs) in 07/08. VicRoads acknowledge that roadsides are a valuable ecological resource. There is a need to quantify how much vegetation is being managed and its quality. If the vegetation can be ecologically managed and secured, opportunity exists to achieve net gain in roadsides. VicRoads is also investigating the use of mapping to quantify the extent and quality of vegetation within VicRoads roadsides.

The concept of Net Gain is incorporated through an assessment phase where consultants are commissioned to prepare a flora/fauna and net gain assessment which normally includes information on:

- Conservation significance of vegetation
- Extent of potential net gain loss; and
- Corresponding offset requirements and sometimes options to achieve this though avoiding and minimizing impact e.g. Alignment changes (where applicable), reduced median, forgo pedestrian pavement, use of retaining walls (rock gabions) for service road to reduce formation width, installation of guard rail or wire rope barrier and no-go zones during construction.



*Example VicRoads off sets (orange) to enhance conservation values of Park area.*



*Off sets to enhance Volcanic Plains native grasslands*

The use of off sets is used where possible, they are bilateral agreements with landowner to implement agreed management plan e.g. Geelong Bypass, Gisborne Kilmore Rd, Bass Highway. They can also be on VicRoads managed land such as roadsides and on riparian zones in conjunction with CMA's. There is a Credit Auction Trial - joint project with DSE in VVP Bioregion, this is to satisfy offset requirements for about 12 projects.

VicRoads is seeking to develop a more strategic approach to use of off sets by;

- Forecasting and consolidating demand for offsets across VicRoads regions and projects.
- Investigating use of 'Works Program' option.
- Bundle up and offset as a package seeking parcels that maximise flexibility (eg very high conservation significance vegetation and threatened species habitat).
- Focus on larger parcels that result in superior conservation outcomes and 'economies of scale' savings to the organisation.
- Developing principles for purchase of strategic offsets in advance of project demand.

VicRoads are also carrying out roadside mapping to fully determine areas for offsets and protection.

### **Private landholder –Ray Draper**

Ray thought that there are a lot of areas on private land e.g. Trust for Nature areas that require burning of native grasslands but there is often a difficulty in accessing resources to get these done. Tony Brady from the CFA indicated that it is the landholder's responsibility re burns on private property, however there is provision in the CFA Act that provided for CFA engagement upon request. Under the burn restriction program an 80% curing is required and this can prove difficult in getting approval through the relevant LGA as it would normally be in the fire danger period.

## Other reports

### Orchid pollination – Andrew Pritchard

Andrew showed some remarkable video footage of the pollination process between the Common Spider Orchid and the male thynnid wasp. The orchid attracts the male wasp by mimicking the scent of the female wasp, the male begins copulating on the orchid's labellum and pollen is deposited on the back of the wasp and subsequently transported to another orchid, thus completing pollination. Andrew mentioned that baiting for the wasps is carried out to attract wasps to areas where various species of spider-orchid exist; this increases the probability of the thynnid wasp finding orchids and completing pollination process.

Andrew mentioned that a large population of the Gaping Leek-orchid *Prasophyllum correctum* has been covered at the Mortlake Common and a survey was being organised.

### Grassland sign – Cath Grant

**Native Grassland Roadside Reserves**

Vast native grasslands once covered the volcanic plains surrounding Shelford, Rokewood and Cressy. Unfortunately very little of these magnificent grasslands remain today. Soon after World War II large pastoral stations in the district were divided into much smaller smaller settlement blocks. The cropping and more intensive grazing methods adopted by the settlers caused almost all the native grasses and herbs on the farms to disappear.

Today, most of the native grassland remnants in the area occur on roadside reserves. Decades of regular burning by local rural fire brigades has seen these remnants thrive to become some of the most diverse and intact grasslands in south-west Victoria.

This kind of management is beneficial as it keeps the biomass low, reduces the risk of weed infestations and maintains the diversity of the grassland species. Adjacent landholders also benefit as these roadsides pose less of a fire risk than poorly managed ones that have many weeds.

The volcanic plains are home to a wide array of flora and fauna species. Some are depicted on this board. If you travel along roads in the area you will appreciate the true beauty of the grasslands, especially in spring as a spectacular display of wildflowers unfolds.

This sign is proudly supported by:

- Environment Victoria
- Golden Plains Shire
- CFA
- Department of Environment and Planning

**Shelford Leek-orchid**  
*Prasophyllum fastii*

A nationally threatened species known only from a single roadside in this area. Grows to 30cm tall. Flowers in October with up to 25 greenish brownish flowers.

**Kangaroo Grass**  
*Themeda triandra*

Most common species found on the roadsides. Dense tussock perennial, about 50cm in height with distinct orange-brown seedheads. Summer growing species so leaves are green over warmer months.

**Common Everlasting**  
*Crotophaga spicatum* s.l.

A tufted grey-green herb usually less than 20cm tall. Piny bright yellow flowers, in clusters of about 2 to 10. Flowers in late winter and spring.

**Blue Devil**  
*Eryngium oahu*

Perennial herb with prickly leaves usually less than 60cm. Flowers spring to mid summer with distinct metallic blue and spiky flowerheads.

**Spiny Rice-flower**  
*Pilea spinescens* subsp. *spinescens*

A nationally threatened species whose largest known population occurs on one of the roadsides in the area. Small shrub which grows to 30cm tall. Flowers over winter with small yellow or cream flowers.

**Featherheads**  
*Phlox maculosa*

Unmistakable herb when in flower with large white fluffy flowerheads. Grows to 50cm tall. Flowers spring to late summer.

**Pink Birdweed**  
*Convolvulus erubescens* spp. agg.

Perennial herb with pink flowers on leaved green vine. Flowers spring to summer.

**Striped Legless Lizard**  
*Dietia inopis*

A nationally threatened species. Grows to 30cm long. Identified from a juvenile snake by the dark parallel lines along the length of the body.

**Fat-tailed Dunnart**  
*Sminthopsis crassicaudata*

House sized nocturnal marsupial carnivore. Can be identified from a house mouse by larger ears, eyes, plumper tail and a portlier snout.

**Little Whip Snake**  
*Suta suta*

Small snake growing to 50cm. Bronze with a black cap, can be confused with a juvenile brown snake.

This is a joint project between Shelford CFA, Golden Plains Shire & DSE. The sign covers the Shelford-Rokewood-Cressy areas. It is located at the Shelford CFA shed and is 2.5m x 1.5m. The main purpose of the sign is to raise the profile of native grasslands on roadside reserves.

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