



# Victorian Volcanic Plain Biosphere Inc.

Association No: A0050709T ABN: 62 305 543 599

<https://www.facebook.com/groups/VVPBiosphere>

<https://www.vvpb.com.au/home/>

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Banner image: Collage of Eugene von Guerard's 'Stoneleigh, Beaufort near Ararat, Victoria' 1866 (CC 4.0 State Library of NSW) and Colleen Miller's wildflower snaps



## General updates

### Memberships

All memberships expired at the end of this financial year (June 30th). As a reminder, ongoing memberships are \$5 per year, and new memberships are \$15 in the first year.

Invoices have been sent out via e-mail to all current members inviting them to pay membership fees for the 2021-2022 FY.

#### **Current members, check your e-mail!**

You will find an email from "Victorian Volcanic Plain Biosphere Inc." via our accounting system (which is called RevolutioniseSport) which will direct you to the page where you can pay your membership renewal.

Your membership fees help support our annual website subscription and our field days, so thank you to all our members for your support!

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### Tax Deductible Recipient Status

As a reminder, our organization is now a registered charity organization with DGR status, meaning any donations made are tax exempt. Your donations will help us develop a nomination proposal that will be submitted to UNESCO.

### New Project Coordinator

The VVPB has recently engaged the services of Dr. Elia Pirtle to serve as a coordinator for our Biosphere proposal development over the next six months.

Elia's role will involve approaching LGAs, CMAs, traditional owners, environmental groups, industry groups (such as tourism enterprises and agricultural groups) and private landholders within the VVP to discuss the Biosphere proposal and:

- identify potential partner groups of diverse backgrounds for the proposed Biosphere, with an aim to build alliances between government, research and industry for sustainable economic development;
- determine appropriate zonation and boundaries of the proposed Biosphere based on regions of highest interest;
- determine the purpose and goals of the Biosphere, including but not limited to environmental, aesthetic, cultural and economic goals.

Then, Elia will work with the VVPB committee to develop a proposal map for the Biosphere, identifying areas that will form the core, buffer, and transitions zones and solicit expert feedback on our map. She will also approach Australia's four existing Biospheres to research possible structures for our own organisation, governance and funding.

Elia hails from the USA and grew up in the desert surrounded by a menagerie of animals. She has been passionate about





environmental sustainability and conservation ever since. She moved to Melbourne in 2012 to pursue a PhD studying the capacity of reptiles to cope with changing climates. Elia then moved into sustainable agricultural research, and over the last four years has spent considerable time on farms across Victoria, New South Wales and Tasmania 'vacuuming' up insects with a modified blower

vac in order to improve our understanding of insect ecology and build better pest management plans. This job suited her well as she loves nothing more than working out in the field. Elia lives with her partner James and their two dogs on the northern edge of the VVP at their property in Rhymney, Victoria, in Djab Wurrung country, overlooked by Gariwerd/Grampians.

Hi, my name is Elia. I am excited to be working with the VVPB group to develop our Biosphere proposal! A few years ago, I hadn't given grasslands much thought, but after tagging along to a spring field trip organized by the VVPB in 2017, my eyes were opened to the beauty of our native grasslands. I was particularly struck by how different the remnant and restored patches looked from the dense weedy roadsides which

I surveyed for insects around farms for my day job. I learned they have a subtle beauty and diversity which rewards those who stop and get a bit closer to the ground. I've been involved with the VVPB group ever since.

Over my nine years in Australia, I have worked as a research scientist in conservation, agriculture, biosecurity, and at the interface of all three. I have learned that there are certainly win wins between conservation and agriculture and I believe that our best path forward for the VVP's threatened habitats is to find ways for them to coexist with, and even benefit from, agriculture. I think it is important to think outside of the 'reserve' box and look for ways to invite these habitats back into our lives and livelihoods.

I am still learning a great deal about the VVP, the projects and people already working to preserve and restore its habitats, and the Biosphere program. I hope you enjoy learning along with me through this newsletter!





## Why care about grass?

### What is a temperate grassland?

Grasslands cover up to 40% of the planet's surface. They are made up of large, grassy and generally flat open areas with limited tree cover. A grassland forms in an area that doesn't receive enough rainfall to sustain a forest, but more than would a desert. If asked to imagine a grassland, you might picture the African Serengeti, dotted with flat topped umbrella trees and wandering herds of zebra and wildebeest. Or perhaps you imagine of the prairies of North America, with bison standing shoulder deep in wildflowers.

Grasslands fall into two categories: savannas (such as the Serengeti) and temperate grasslands (such as the North American prairie). Savannas are dotted with trees and experience a distinct rainy season and a dry season marked by frequent fires. Temperate grasslands, on the other hand, get less rainfall, and it does not occur in such distinct wet/dry seasons. The summers are hot and the winters are cold. Temperate grasslands also experience seasonal drought and occasional fires, but not in such a dramatic way as do savannas. Their soil is deep and fertile.







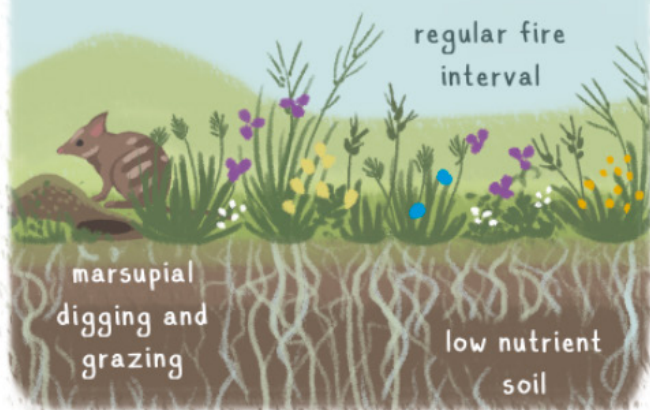
## A short history of temperate grasslands in southeastern Australia

Temperate grasslands occurred naturally across southeastern Australia, in Victoria, New South Wales, South Australia and even Tasmania. These fertile grasslands were a staple resource for Aboriginal peoples for tens of thousands of years. Evidence suggests that aboriginal peoples actively managed these grasslands to cultivate food plants such as Myrnong, and facilitate hunting of marsupials through fire management. As such, these temperate grasslands evolved in harmony with the influence of marsupial grazers, regular fires, and light human cultivation.

When European settlers first arrived and discovered a passage west from Sydney through the Blue Mountains into these grasslands around 1815, they found, as pioneer John Batman wrote in 1835, “the most beautiful sheep pasturage I ever saw in my life”. With the high price for wool exports and these seemingly ever-giving grasslands, grazing expanded rapidly (and often illegally onto aboriginal lands as it must be said) and remained highly lucrative over the next few decades. By 1890, sheep numbers across Victoria and New South Wales reached over 50 million.

### Pre 1815 -

Aboriginal peoples manage grasslands for food species



### 1815

European settlers begin grazing sheep





However, it was not too long before graziers saw the productivity of native grasslands begin to decline. The most palatable native species, including herbs and forbs, began to disappear, in favor of the more hardy but less palatable than thus 'unwanted' species such as spear grass. To combat the declining productivity, the graziers began to sow over large areas with the more sheep and cattle tolerant pasture grasses (such as rye grass) and clovers they knew from 'back home', in an attempt to replace the dwindling native grasses and provide better feed for stock.

Agriculture was then revolutionized in the late 1800s with the creation of powerful fertilizers, such as super-phosphate. When applied to the pastures, the introduced European species, which had evolved under higher fertility conditions, flourished (along with introduced weeds). But the native grassland species, which had evolved in comparably low fertility conditions and had thus never evolved a means to take advantage of nutrient excess, found themselves dramatically outcompeted.

### 1815 - 1900

Grazing expands dramatically

native grass productivity waning

exotic grasses sown to boost productivity



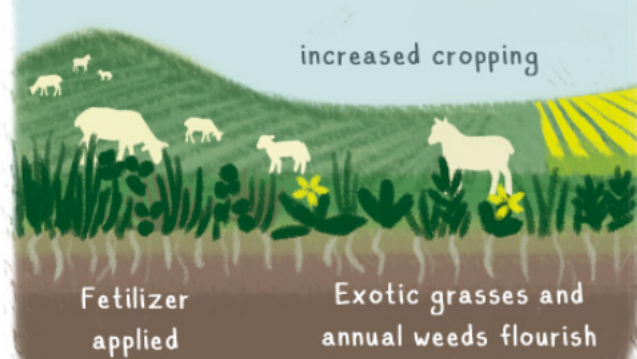
### 1900 and beyond

Advent of superphosphate and increasing industrialization of agriculture

increased cropping

Fertilizer applied

Exotic grasses and annual weeds flourish



native species outcompeted





This was another blow for the native grasslands, which by had now been reduced to marginal areas which had never been subjected to heavy grazing pressure, cultivation or fertilization, such as railway lines, road sides, and cemeteries.

We have now lost over 99% of our original temperate grassland habitats.

With that has come a loss in plant and animal diversity, and we are now at risk of losing many iconic species that were once common on the Plain, such as the Plains Wanderer, Australian Bustard, Eastern Barred Bandicoot, Bush Stone-curlew and Striped Legless Lizard.



Diversity on the volcanic plain, including the threatened eastern barred bandicoot (far left, image: Elia Pirtle), striped legless lizard (bottom left, image: Colleen Miller), and bush stone-curlew (top left, image: Glen Fergus CC)





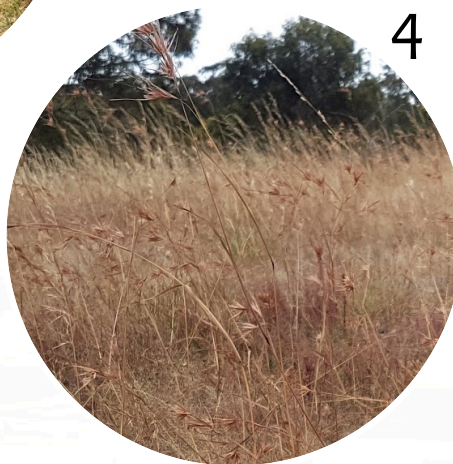
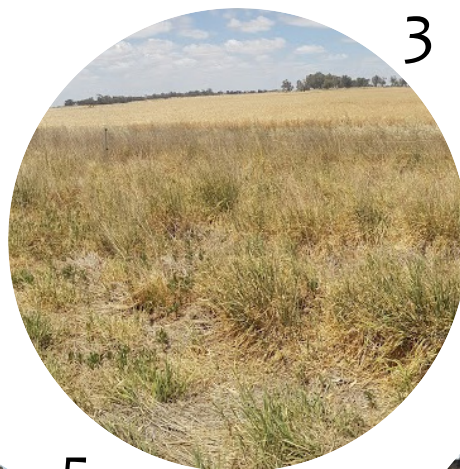
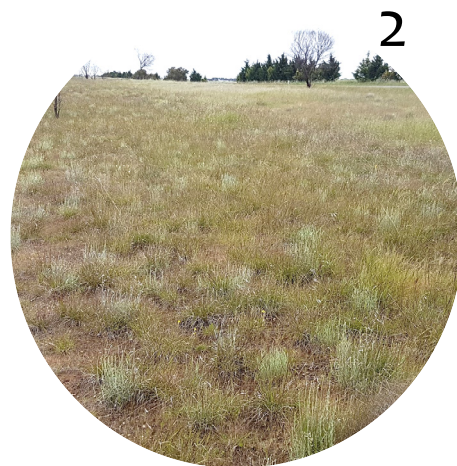
## Challenges of co-existence

If we are to reclaim some of our lost grassland habitats, we will need to find a way for these habitats to coexist alongside the human and agricultural systems which have allowed them to decline. However, there are major challenges we must overcome:

### 1. *Telling grass from grass*

To most people, grass looks like grass! Until you get your eye in, it can be hard to know if you are looking at a remnant native grassland or a roadside dominated by escaped pasture species. We can't protect what we can't recognize!

Can you tell the native grasslands from the weedy roadsides?



Answer: #2 and #4 are predominantly native species.



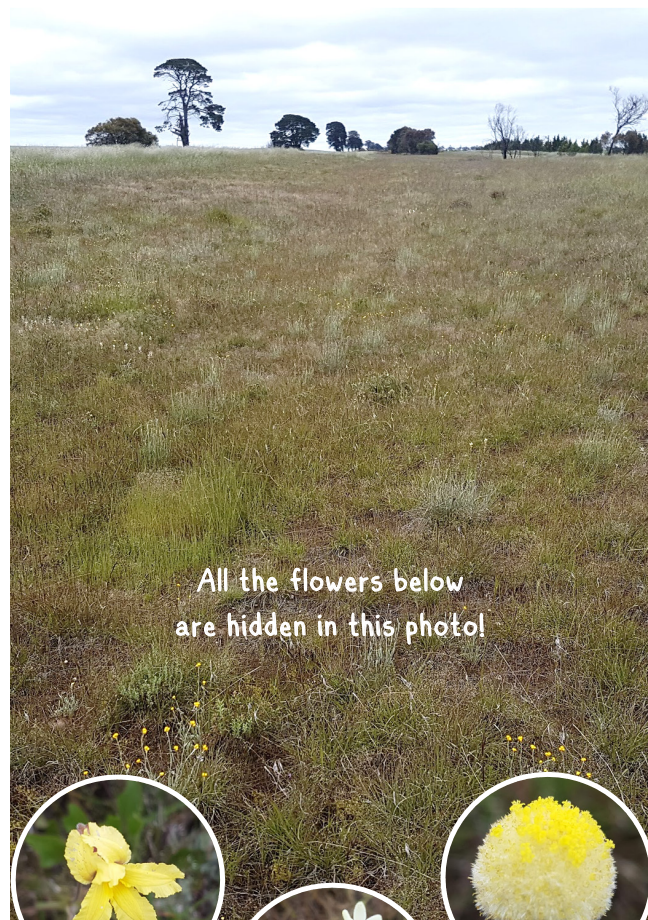


## 2. *Hidden biodiversity*

It can be difficult to recognize the species diversity within a native grassland - the diversity is not always so visually overwhelming as we expect from our beloved wilderness places, like the Daintree Rainforest or the Great Barrier Reef. But native grasslands reward those who give them a closer look. In our remnant patches, like the one shown on the right, you'll find a rich range of beautiful springtime wildflowers, representing plants that provide shelter and food for invertebrates, birds and mammals.



What we have left today must pale in comparison to the sweeping painted views which existed only a few hundred years ago. Imagine if our all out roadsides lit up in colour like this restored grassland in Woorndoo does each spring! Image: Colleen Miller







### 3. *Management needs and a future of farming*

Native grasses are adapted to low nutrient soils and are poor at taking advantage of excess nutrient availabilities. The application of fertilizers, common in improved pasture systems, allows the native grasses to be quickly outcompeted by annual weeds and introduced pasture species, which are much more adept at using abundant nutrients.

Native grasslands also require burning, as they evolved under a much more frequent fire regime. The (previous) fire regime was disrupted by a reduction in Aboriginal burnings and European attempts to control wildfires, as they were seen as a threat to livestock and crops. Without regular burning, some native species are unable to seed and germinate, while other species begin to dominate and choke out smaller species, transitioning the grassland to a largely monoculture structure.

Finally, native grasslands evolved with an abundance of animal activity, including grazing. While the intensity of sheep grazing may have been a major reason of decline throughout the late 1800's and beyond, grazing by large macropods was always an important part of VVP ecology. This grazing pressure would be important for maintaining grassland density and canopy cover. Additionally, small digging marsupials were also important

for aerating the soil and incorporating organic matter, creating the fertile spongy topsoil which the Plain was once known for. Birds and insects played important roles in seed dispersal and pollination. Thus, the loss of animal biodiversity is also a loss in key 'habitat managers', leading to further habitat degradation.



Top: Burning in the Moolapio grasslands (image: Stuart McCallum). Bottom: An eastern barred bandicoot



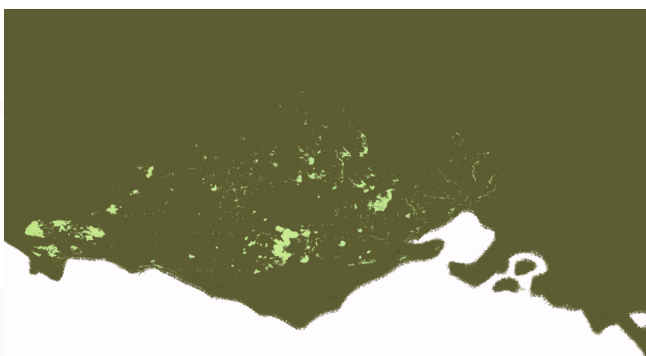


### 3. Fragmentation

These compounding challenges have left the native grasslands of the volcanic plains highly fragmented and degraded. Overwhelmingly, the very best remnant grasslands exist as tiny patches (almost all less than 1 hectare in size), primarily on country roadsides or cemeteries or sometimes patches on farms. This means we simply can't draw a nice circle around a huge area of native grassland to protect it as a park – these areas just don't exist.



High quality habitat on the VVP pre 1815 (top) and post 2000 (bottom, highest quality vegetation recorded during 2005 Victoria Native Vegetation Quality Survey)



Grassland remnants along roadsides and on farms. Images: Colleen Miller



## A vision for the future

While these challenges do seem to paint a foreboding picture of the future of native grasslands in Victoria, there is a great wealth of organizations working across Victoria to protect their local patches of native grasslands, grassy woodlands, and wetlands. And within these patches are inspiring stories of success - grasslands not just being protected, but even restored. There is growing interest in finding mutual benefits for native habitats and farm businesses, often spearheaded by farmers eager to maintain the ecological and cultural heritage of native grasslands, as well as reaping the economic benefits of having healthy soil systems, water cycling, and invertebrate biodiversity on farm.

Some potential examples of areas where we could find 'win-wins' between conservation and economy are given on the right. Some of these benefits are already backed by scientific evidence, while others are ideas that are in need of more research.

For example, many of our native grasslands have evolved the capacity to be "Summer active". They grow and remain green well into the Australian spring and summer due to their particular Carbon 4 pathway. Many of the introduced annual grasses have Carbon 6 pathways and die off over the summer. Consequently perennial native grass pasture, though tough on the teeth, if not overgrazed, can supplement introduced annual grasses and provide a longer more profitable grazing season.

We will explore these and more possible win wins in more detail through this newsletter, including:

- Ecotourism driven by cultural, geological and ecological assets
- Branding and customer loyalty to local and sustainably sourced products
- Integration of climate adapted, drought tolerant, and low input requiring native pastures into farming systems
- Nature strips and shelter belts of native woodland and grassland forming a reservoir for beneficial insects, keeping crop and pasture pests at bay
- Revegetation along waterways and dams to reduce erosion and improve water cycling
- Cultivation of native grains for specialty products
- Creation of a native seed production industry to open the gate for large scale restoration projects improving at connectivity between remnant patches and creating new cultural and ecological assets, promoting tourism

### Sources:

<https://ucmp.berkeley.edu/exhibits/biomes/grasslands.php>

<https://www.nationalgeographic.org/article/grasslands-explained/>

Williams, N., Marshall, A., & Morgan, J. (Eds.). (2015). Land of sweeping plains: managing and restoring the native grasslands of south-eastern Australia. Csiro Publishing.

Crothwaite, J. (1995). Economic benefits of native grassland on farms. Department of Conservation and Natural Resources.





## Resources

There are many great resources created by local councils, CMAs, state and federal government where you can learn more about the history and ecology of the VVP, including threats to its persistence, information on how to spot native vegetation and activities that can be done on your property or farm to support these habitats. Here are links to some of these resources:

### *Commonwealth publications*

- Nationally Threatened Ecological Communities of the Victorian Volcanic Plain: Natural Temperate Grassland & Grassy Eucalypt Woodland: A guide to the identification, assessment and management of nationally threatened ecological communities: <https://www.environment.gov.au/system/files/resources/e97c2d51-08f2-45e0-9d2f-f0d277c836fa/files/grasslands-victoria.pdf>
- Farming and Nationally Protected grasslands and Woodlands of the Victorian Volcanic Plain: <http://www.environment.gov.au/system/files/resources/747f2d3b-aed1-49a0-a64e-6a59f7811d7d/files/grasslands-victoria-fact-sheet.pdf>
- Natural Temperate Grassland of the Victorian Volcanic Plain: A nationally threatened ecological community (Policy Statement under the Environment Protection and Biodiversity Conservation Act 1999): [https://websites.sportstg.com/getfile.cgi?id=683727#:~:text=The%20Natural%20Temperate%20Grassland%20of%20the%20Victorian%20Volcanic%20Plain%20is,Act%201999%20\(EPBC%20Act\).](https://websites.sportstg.com/getfile.cgi?id=683727#:~:text=The%20Natural%20Temperate%20Grassland%20of%20the%20Victorian%20Volcanic%20Plain%20is,Act%201999%20(EPBC%20Act).)

- National Vegetation Information System Factsheets
- Eucalypt woodlands: <https://www.environment.gov.au/system/files/resources/2edcda80-d9b7-49d4-9e97-36236b91e9f9/files/mvg5-nvis-eucalypt-woodlands.pdf>
- Tussock grasslands: <https://www.environment.gov.au/system/files/resources/2edcda80-d9b7-49d4-9e97-36236b91e9f9/files/mvg19-nvis-tussock-grasslands.pdf>

Ecolink profile on the VVP: <https://bwvp.ecolinc.vic.edu.au/about>

Royal Botanic Gardens Victoria's profile on the VVP: <https://vicflora.rbg.vic.gov.au/static/bioregions/victorian-volcanic-plain>

Greening Australia's Landholders Guide to the Grasslands and Grassy Woodlands of the VVP: [https://www.greeningaustralia.org.au/wp-content/uploads/2017/11/GUIDE\\_VVP\\_Grasslands.pdf](https://www.greeningaustralia.org.au/wp-content/uploads/2017/11/GUIDE_VVP_Grasslands.pdf)

### *DELWP publications*

- Ecological Vegetation Classes of Victoria, including those of the VVP Bioregion: <https://www.environment.vic.gov.au/biodiversity/bioregions-and-evc-benchmarks>
- DELWP species lists for the VVP bioregion: [https://www.environment.vic.gov.au/\\_data/assets/pdf\\_file/0029/48755/VVP\\_EVCs\\_combined.pdf](https://www.environment.vic.gov.au/_data/assets/pdf_file/0029/48755/VVP_EVCs_combined.pdf)
- A 2012 DELWP Landscape Assessment Study of the VVP; including Significant Features of the Western Volcanic Plains and Landscape Character of the Western Volcanic Plains and Volcanic Lakes and Swamps: <https://www.planning.vic.gov.au/policy-and-strategy/south-west-landscape-assessment-study#documents>



## Upcoming Events

### **Bannockburn Bush Full Moon Family Fun Day**

Sunday August 22, 11 am to around 9 pm

To register, contact [stuartmccallum@westnet.com.au](mailto:stuartmccallum@westnet.com.au) by Saturday August 7 2021.

## Get involved!

If you are interested in being a part of a VVP Biosphere, please reach out to our project coordinator, Elia, who would love to discuss the project with you:

Dr. Elia Pirtle  
[eliapirtle@gmail.com](mailto:eliapirtle@gmail.com)  
0414143456

You can also join our Facebook group here:

<https://www.facebook.com/groups/VVPBiosphere>



The growling grass frog

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