



WETLAND MANAGEMENT

NATIVE GRASSLAND AND GRASSY WOODLANDS

SUMMARY

Wetland is a general term used to describe any area that is inundated with water either permanently or seasonally.

There are several types of wetlands, these being fresh or saltwater, permanent or seasonal/ ephemeral wetlands. Another variation can be the vegetation present, some wetlands are grass dominated and others have large varieties of herbs whilst the more permanent water bodies may have little vegetation at all.

Wetlands provide many benefits within the landscape such as habitat for plants and animals, this includes the many aquatic invertebrates that are a food source for birds and frogs. Some wetlands can also be grazed, providing a valuable food source for sheep and cattle and various times of the year.

The management of wetlands is important, activities such as fencing can help manage any grazing pressure and eliminate any soil disturbance especially from machinery. Restoration of the natural water regime is extremely important for modified wetlands.

WHY ARE WETLANDS SIGNIFICANT TO THE VVP?

Wetlands are important for biodiversity, carbon sequestration, water retention in the landscape and quality of life for people who live on the VVP.

When Major Mitchell went south across the Western District of Victoria his passage was hindered by the numerous wetlands that existed on the gently undulating grassy plains. Bullock drays were frequently bogged, and scouts had to go ahead to find the best passage through the areas of swamp and open water. As he returned to the Murray-lands he noted that the swamps had dried out and the clay surfaces were harder than the surrounding dry-land soil.

We call these areas 'wetlands' now, and recognise that rather than being a hindrance, they provide a unique character to the region. They typically wet-up in the cooler months, and dry out in the summer, a natural cycle of temporary wetting and drying that encourages a particularly diverse flora and fauna.

Now that much of the landscape is used for growing pasture grasses, legumes and crop species, wetlands are some of the few areas where native vegetation still exists. Although many wetlands have

been drained or modified, the region still contains one of the highest densities of individual temporary wetlands in Australia, and possibly the world.

In some places there is one wetland per 2km². These add up to less than 10% of the land area. Despite being less than 10% of the area, wetlands can contain 90% of the biodiversity found on farms.

They provide habitat for plants, invertebrates, amphibians, reptiles, birds and mammals. The abundance of Brolga, Cape Barren Geese, Magpie Geese, Ducks and Ibis that was noted by early settlers was a consequence of the abundance and diversity of wetlands. The current decline in these large, migratory birds is due, in part, to a reduction in wetland habitat in the region.

There are a lot of things that people love about the region; the sound of frogs on a warm and wet spring night, the sight of brolgas dancing, the flying acrobatics of dragonflies in the early summer, the childhood joy of catching tadpoles; many of these depend on the abundance of wetlands in the landscape.

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WHERE ARE THEY FOUND?

Permanent and temporary wetlands occur throughout the VVP. They occur in low-lying areas where water can accumulate in the landscape. These can be in hollows and dells in the stony-rises, and across flatter parts of the VVP.

There are large saline lakes in the Corangamite region are wetlands as well. Many temporary wetlands have a rocky outcrop on the east, and slope away to the west. The temporary ones can be difficult for the untrained eye to detect when they are dry, being just flat areas of land within the paddocks. However, they are noticeable from the air (or from satellite images) by the concentric rings

of wetland vegetation or red gums; a consequence of the frequent presence of water.

Wetlands occur in varying densities throughout the VVP, and they are usually well-marked on fire-maps. This is because they signify a different topography, soil type or vegetation, and potentially a barrier to fire-trucks accessing a fire-front. Some wetlands are formed as a consequence of river-flow. Where a floodplain is wide the changing channel of the river can create billabongs and back-waters. Low spots on the floodplain can retain water after over-bank flows (floods).

TYPES OF WETLANDS

Wetlands are often classified according to their water regime: the pattern of the presence and absence, seasonality and depth of water in them. They can be saline, brackish or freshwater. In the VVP wetlands that depend on rainfall fill during the cooler months and the water level gradually decreases as the year progresses.

Wetlands range from permanent lakes, swamps and springs; habitats that can be deep, and those that dry only in the most severe droughts; to the most temporary of grassy swamps or bogs; habitats that dry out every year, and those that fill only in the wettest years; and everything in between.

Areas of permanent open water are the most recognisable, and vary the least.

Temporary or ephemeral swamps can be dry for years before above-average rainfall stimulates the germination and hatching of plants and animals.

One type of wetland that has been recognised as nationally important are the grassy and herbaceous swampy areas, described as 'Seasonal Herbaceous Wetlands of the Lowland Plain' under the *Environmental Protection and Biodiversity Conservation Act*.

They have been recognised as critically endangered because of the decline in the abundance and condition of swamps over the last century, and particularly over the last 20 years since cropping has become more common.

WHAT ARE THEIR BENEFITS WITHIN THE LANDSCAPE?

A single wetland provides habitat for a range of plants and animals. Plants live their entire lives in the one spot, persisting via seeds, tubers or rhizomes in the soil. Some animals don't move far from their wetland home as well.

Aquatic invertebrates hatch from eggs or resting-bodies in the soil, swim around, reproduce and die as a wetland dries out. A mosaic of wetlands provides a spatially variable set of habitats for different things.

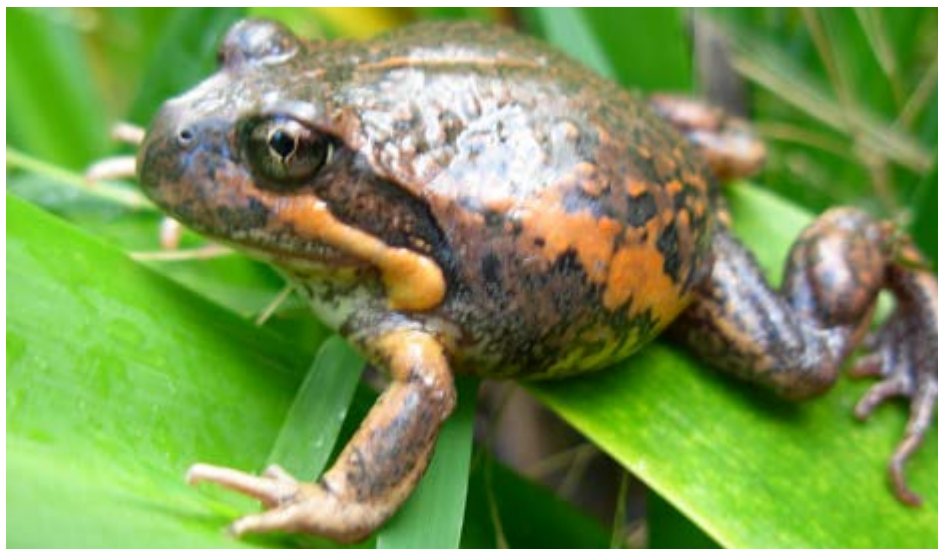
Many animals (frogs, beetles, dragonflies) migrate from one wetland to another and this helps to maintain the genetic diversity of the population. If there are no close wetlands there is the risk that populations will become inbred and less viable over time.

A landscape of wetlands provides habitat for birds that migrate within southern Australia, or down to southern Australia from the north. Larger birds require more resources (more food, more nesting area), so species such as the Brolga need many hectares of wetland to provide food for their chicks. Migrating birds like Freckled Duck use VVP wetlands when other areas of Australia experience drought. Having wetlands in the landscape means that these plants and animals can exist.

Wetland areas have also provided grazing for sheep and cattle for the last 100-150 years. They can be green when other areas are dry, and they can form a barrier to fire if they remain wet through the summer.

Studies have shown that some wetlands can create a significant store of carbon in the soil. Maybe the biggest benefit is that the diversity and abundance of wetlands on the VVP brings nature to our doorstep.

There's no need to go to a forest or a desert to enjoy the natural Australian landscape if you have a wetland near-by.



ABOVE: Pobblebonk

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Wetlands range from
permanent lakes, swamps
and springs

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HOW DO WE PROTECT THEM?

Wetlands need **Connectivity, Diversity and Integrity** to provide all the benefits we expect.

Connectivity refers to the links among wetlands, either by water flow, terrestrial corridors or aerial connections (mostly birds and insects). This allows wetland flora and fauna to migrate, interbreed, and replenish their populations after local extinctions.

Diversity encompasses both physical and biological diversity. Physical diversity creates a variety of habitats, different depths, drying rates, salinities and seasonalities. Biological diversity ensures that if one species fails to establish, other species will be able to take its place.

Integrity refers to having all the right physical, chemical and biological components to function. Physical components are water, soil, space and light, chemical components are nutrients, salinity, oxygen and carbon dioxide.

Biological components are primary producers (algae and plants), herbivores (tadpoles, insects), consumers (frogs, beetles) and top-predators (birds and snakes). If wetlands have all these things, then they can BE wetlands!

Wetlands are broadly protected under state (*Victorian Flora and Fauna Guarantee Act*) as areas of native vegetation, as well as specifically under the *Commonwealth Environmental Protection and Biodiversity Conservation Act*. The *EPBC Act* provides protection for certain wetland types (e.g. Seasonal Herbaceous Wetlands) and for Ramsar sites.

These Acts specify that wetlands are not to be damaged or have 'resources' removed from them, the primary resource being water. Land managers who do damage wetlands can be liable for fines and/or restitution activities.

On individual farms wetlands can be fenced off from the rest of the paddock to manage livestock access, or avoided during cropping by the strategy of 'Lift and Turn Off'; lifting cultivation machinery while crossing a wetland area, and turning off the chemical spray or seed application.

There are supporting programs that encourage the conservation of wetlands on the VVP, contact your nearest Catchment Management Authority for more information.



ABOVE: Brolgas

HOW DO WE MANAGE THEM?

Wetlands can be self-sustaining if they are not too modified. If they continue to hold water, if that water is not contaminated with excess nutrients, if they are allowed to wet and dry naturally they can persist, and provide us with grazing for sheep and cattle, and biodiversity benefits.

If they are drained, cropped, dug out or dammed to become more permanent then they will suffer. Drained wetlands that only provide a flow-through of water, or dry out quickly, can't provide habitat for frogs to develop from tadpoles, or time for water plants to flower and set seed. If excess nutrients are added through fertilisers, or using the wetland as a 'dead-heap', there is a risk that unsightly or toxic algal blooms will occur.

If wetlands are made more permanent they can't support the diversity of amphibious plants and animals that require drying as part of their life-history. Wetlands that have been grazed in the past can usually be grazed on a regular basis, and it can even have the beneficial effect of reducing weeds and creating gaps for colonisation for small plants.

It is possible to over-graze wetlands and studies are currently being undertaken to determine the 'sweet-spot' of stocking rate and seasonal grazing strategy.

The best management practices are likely to be easy to implement.



ABOVE: Dreerite

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DEFINITIONS

Ephemeral Wetlands

Ephemeral Wetlands are a type of wetland that is wet only seasonally or in wet years. The wetting and drying cycle creates a distinct ecosystem which many bird species require for survival.

Carbon Sequestration

Carbon sequestration is the process by which carbon dioxide is removed from the atmosphere and held in solid or liquid form. Wetlands play a role in this because they can store carbon in the soil.

Water Regime

Water regime refers to the duration and timing of flooding resulting from surface **water** (overland flow), precipitation, and ground **water** inflow.

Brackish

Slightly salty water within the wetland. This can create a completely different combination of flora compared to freshwater.

Seasonal Herbaceous Wetlands

These wetland types are categorized by containing a diverse range of wetland plants within a shallow freshwater environment that is seasonally inundated by rainfall and surface water run off.



ABOVE: Purple Fairy Aprons

FURTHER READING

Author Nick Romanowski has published numerous useful wetland books.

These are:

1. *Australian Grasses*
2. *Planting Wetlands and Dams*
3. *Wetland Habitats*
4. *Wetland Weeds*

OTHER ONLINE RESOURCES

<https://www.water.vic.gov.au/waterways-and-catchments/rivers-estuaries-and-waterways/wetlands/managing-wetlands>

https://www.gbcma.vic.gov.au/downloads/Biodiversity/Seasonal_Herbaceous_Wetlands_Handbook.pdf

https://www.dpi.nsw.gov.au/__data/assets/pdf_file/0009/633744/WoF-Recommendations_Final.pdf

<https://www.environment.gov.au/system/files/resources/d736a715-40b0-4801-b39f-39b440577a00/files/wa29-full.pdf>

Victorian Volcanic Plains Native Vegetation Management Guides are a joint initiative of:



The update and reprint of these fact sheets are supported by the Corangamite and Glenelg Hopkins CMA, the addition of the Wetland Management and Aboriginal Cultural Heritage fact sheets achieved with thanks to Michelle Casanova and Ada Nano through funding from the Australian Government's National Landcare Program.

Photography credit to Rob Addinsall, Dean Robertson, Elspeth Swan, Donna Smithyman and Ian McNiven.