



'Sunnybrae' Burra *Kathy Eyles*

UMCCC — UPPER MURRUMBIDGEE CATCHMENT COORDINATING COMMITTEE

UNEARTHING WETLANDS OF THE UPPER MURRUMBIDGEE...

Wetlands – valuable natural assets

Wetlands are now recognised as important assets in the rural landscape. Their multiple values and functions provide many environmental services for rural landholders and for the catchment.

In the past wetlands were seen as problem areas - land lost to production because of waterlogged soils or that created difficulties with access. It was a common practice to fill or drain boggy land without understanding its importance and value.

This fact sheet is designed to assist rural landholders to identify and manage wetlands in the upper Murrumbidgee catchment.

How are upper Murrumbidgee wetlands different?

We may think of wetlands as the billabongs and extensive floodplain systems of our inland rivers (like the lower Murrumbidgee) or the lakes and swamps of our coastal floodplains.

The types of wetlands that occur in the Upper Murrumbidgee are different. They reflect our location and altitude at the top of the catchment. They include a wide range of freshwater wetland systems, such as:

- upland peat bogs and fens;
- upland montane swamps in the headwaters of rivers;
- lowland backswamps or soaks (often ephemeral or temporary);
- break of slope seepages;
- chain of ponds watercourses;
- the edges of freshwater lakes; and
- the edges of farm dams.



Constructed wetland farm dam fringe

Nigel Philpot

WHAT IS A WETLAND?

Wetlands are areas of land that are either permanently or temporarily covered with water. They are characterised by plants and animals that are adapted to changing water levels. Wetlands often fringe permanent water and many have a regular wetting and drying cycle.

Wetlands occur naturally in the landscape – as lakes, swamps and floodplains. Some are constructed - effluent treatment ponds, farm dam fringes, drains and culverts, quarries and gravel pits.



Natural wetland Chain of ponds system

Donna Hazell

Some better known upper Murrumbidgee wetlands are Ginini Flats, an internationally important complex of Sphagnum (peat) bogs in Namadgi National Park and, Gooramoon Ponds, a former chain of ponds system on the northern ACT and NSW border.



'Tanith' Royalla Estate
Depression above contour bank

Val Wiseman

Do I have a wetland on my property?

Wetlands lie in critical parts of the landscape, including the headwaters and deposition zones of streams. They may not always be obvious. It may be a low-lying paddock that holds water in a wet year or an area that gets inundated when the creek floods. You may have an area on your property that is wet or boggy only for a short time. These areas are wetlands.

The soil may be heavier (contains more clay) than in surrounding areas. Small depressions even 100 metres away from a creek can support reeds and rushes but may only rarely hold much visible water.

Wetlands found in the headwaters of larger creeks and streams may be more easily recognisable as swamps, with tussock grasses and sedges.

Wetlands often form where surface and subsurface drainage has been modified on the property, for example along your access road.

Wetlands are often located by the appearance of the vegetation. Wetland plants look quite different to those in the surrounding countryside and are often adapted to withstand both wet and dry conditions. The capacity of wetland plants for rapid growth when conditions are favourable help make wetlands highly productive areas that support abundant animal life.

Wetland plants form a large and diverse group. Examples include mosses (including Sphagnum moss) and liverworts; sundews and other insectivorous plants that utilise nitrogen from captured insects; emergent species like rushes and sedges, as well as fringing grasses and shrubs, and flowering plants that grow in shallow water.

Five good reasons to care for wetlands on your property

1. Improve your water security

Wetlands are an integral part of the water cycle and can provide a reliable water source or supply. Unlike creeks, wetlands drain slowly and are often the last places to dry out in periods of drought or variable rainfall.

Many upper catchment wetlands are also connected to the groundwater system and may be fed by groundwater. In elevated parts of the landscape, wetlands retain surface water and play a role in groundwater recharge.

2. Improve your water quality

Wetlands act as natural filters and buffers protecting rivers and creeks from sediment and nutrient run-off, improving the quality of downstream water.

Wetlands intercept and retain run-off and floodwater releasing it more slowly, minimising erosion. As sediment settles, biological processes remove, recycle or immobilise nutrients and contaminants.

Wetland plants act as filters, stabilise soil and provide shade to moderate water temperature.

These functions help to manage high sediment and nutrient loads and decrease the likelihood of algal blooms in the water body and downstream.

3. Improve your productivity

Wetlands can assist agricultural production by providing habitat for insect eating birds and animals.

Vegetated wetlands form natural firebreaks and can act as shelterbelts for stock while also increasing productivity in adjoining paddocks.

Wetlands can be used during drought for stock watering and feed. Light grazing may be acceptable if stock access is carefully controlled and monitored particularly at those times when wetland plants are vulnerable to trampling or birds are nesting.

4. Protect our biodiversity

Wetlands are highly productive and dynamic ecosystems.

They often form a transitional zone between dry land and open water. At this important interface they provide a diversity of temporary and permanent habitats and food sources for aquatic and terrestrial animals.

Each wetland provides different habitat depending on its water regime. As they fill and slowly dry out, they provide a gradient of micro-climates. When full, wetlands provide habitat for fish and macro invertebrates.

Shallow and/or drying wetlands provide habitat for waterbirds and burrowing animals like adult frogs and land based invertebrates. In these different states, wetlands support parts of the life cycle of species like beetles and frogs.

The constant cycle of plant growth and decomposition associated with drying and wetting make shallow areas very productive.

With their range of plant species and forms, wetlands are important breeding and nursery areas for fish, waterbirds and frogs, and provide wildlife refuge in drought and bushfire.

5. Appreciate our landscape and history

Wetlands and their wildlife may provide opportunities for recreation. The presence of water in the rural landscape enhances visual amenity, improving perceived and real property values.

Wetlands allow us to appreciate our cultural history. They have special significance for indigenous people, because in providing food, water and other resources they are natural meeting places.



'Yaouk' swamp Monaro

Lori Gould

Managing wetlands: Where do I start?

Many rural landholders have taken steps to reinstate and rehabilitate wetland areas. This is often done in response to a land management issue - to improve a dam with poor water quality or repair an eroded stream and gully.

See overleaf Case Study - 'Bimbadeen'

The extent and nature of erosion will dictate whether it is feasible to restore wetlands. Where valley floors have not incised (eroded down) to a great depth, chain of ponds wetlands can re-form within gullies. Some wetlands are reappearing in the upper catchment.



Wetlands re-forming in the channel

Donna Hazell

Where valley floors are deeply incised, restoration is more difficult, risky and costly - seek specialist advice from professional land and water managers.

Always think at catchment scale when restoring a wetland on your property or constructing a wetland for a specific purpose. You will also need to check whether there are any legal requirements.

See Useful wetland contacts overleaf

Landholders lucky enough to have a healthy natural wetland on their property need only nurture the area around the wetland by:

- Retaining as much native vegetation as possible in the catchment of the wetland
- Leaving a vegetated buffer around the wetland to minimise impacts of rural activities. A buffer would normally extend from the edge of wetland dependent vegetation to the adjoining paddock
- Encouraging natural revegetation by fencing off areas of native vegetation
- Keeping stock and domestic animals out by fencing and providing alternative watering points
- Avoiding or reducing pesticide, herbicide and fertiliser use in wetland catchments.

What about my farm dam?

Most rural properties in the upper catchment have at least one farm dam. Farm dams have different roles and physical characteristics to natural wetlands. They are deep and

permanent, impound more water, and tend to be steep sided to minimise evaporation. Dams lack the gradual edges of wetlands and the associated wetting and drying cycles.

Even so, farm dams have the capacity to act as wetlands. Existing dams can easily be modified to attract wildlife.

See Information on Improving the habitat values of your farm dam - next page.

If building a new dam, it is possible to adapt the design so that your water requirements can be met while also providing habitat. You will need to check the legal requirements for farm dams if you intend to construct or enlarge a dam.

See Useful wetland contacts overleaf

Some wildlife like the Spotted marsh frog have adapted well to farm dams, although populations may not be as large as those found in natural temporary wetlands which used to be one of their primary breeding habitats.

Other species like the Eastern long necked turtle use farm dams as habitat but set out after rain to find better conditions. Temporary wetlands provide abundant resources for breeding. This well established behaviour is the reason why after rain we often see turtles crossing our paddocks and roads.

Improving the habitat values of your farm dam

Simple techniques like planting vegetation in and around dams and placing a log in the water provide a focal point for wildlife. Where a mix of native trees, shrubs and groundcovers are planted around the dam a greater diversity of wildlife will be attracted – bush birds as well as waterbirds will have habitat. See figure below

If part of your dam has an area that is sometimes wet and sometimes dry, you can grow tussocky species that cope with damp feet - try rushes (*Juncus species*), sedges (*Carex species*) and some grasses (like *Poa labillardieri*). You can also translocate water loving species from other parts of your property – look for vegetation in areas temporarily wet or boggy after rain.

It is best to avoid growing reeds (*Phragmites australis*) and bulrushes (*Typha species*) if you have a shallow dam and no deep water.

You can also nurture moist areas around the dam, for example upstream areas where water flows into the dam. These shallow areas can be successfully revegetated if fenced to exclude stock. The thick vegetation will work like a biological sediment trap improving your water quality.

Trees and taller vegetation around dams (but not on the dam wall where roots may cause problems) help to reduce water loss through evaporation. By limiting available light they can suppress the growth of water weeds and algae, as well as slowing runoff and trapping sediment.

Also think about the surrounding landscape. It is useful to have some tree cover within 500 metres to a kilometre around the dam. Species like Perons tree frog need tree cover for protection and others species like the Smooth toadlet shelter under leaf litter and fallen timber.

Some farm dams are better suited to maintain, improve or increase frog habitat. Dams likely to favour frogs are:

1. used by sheep rather than cattle for watering, or are fenced in part
2. close to native tree cover that provides leaf litter and fallen timber
3. constructed with a gentle gradient in the inflow area rather than having steep sides all around

4. fringed by vegetation growing out of shallow water

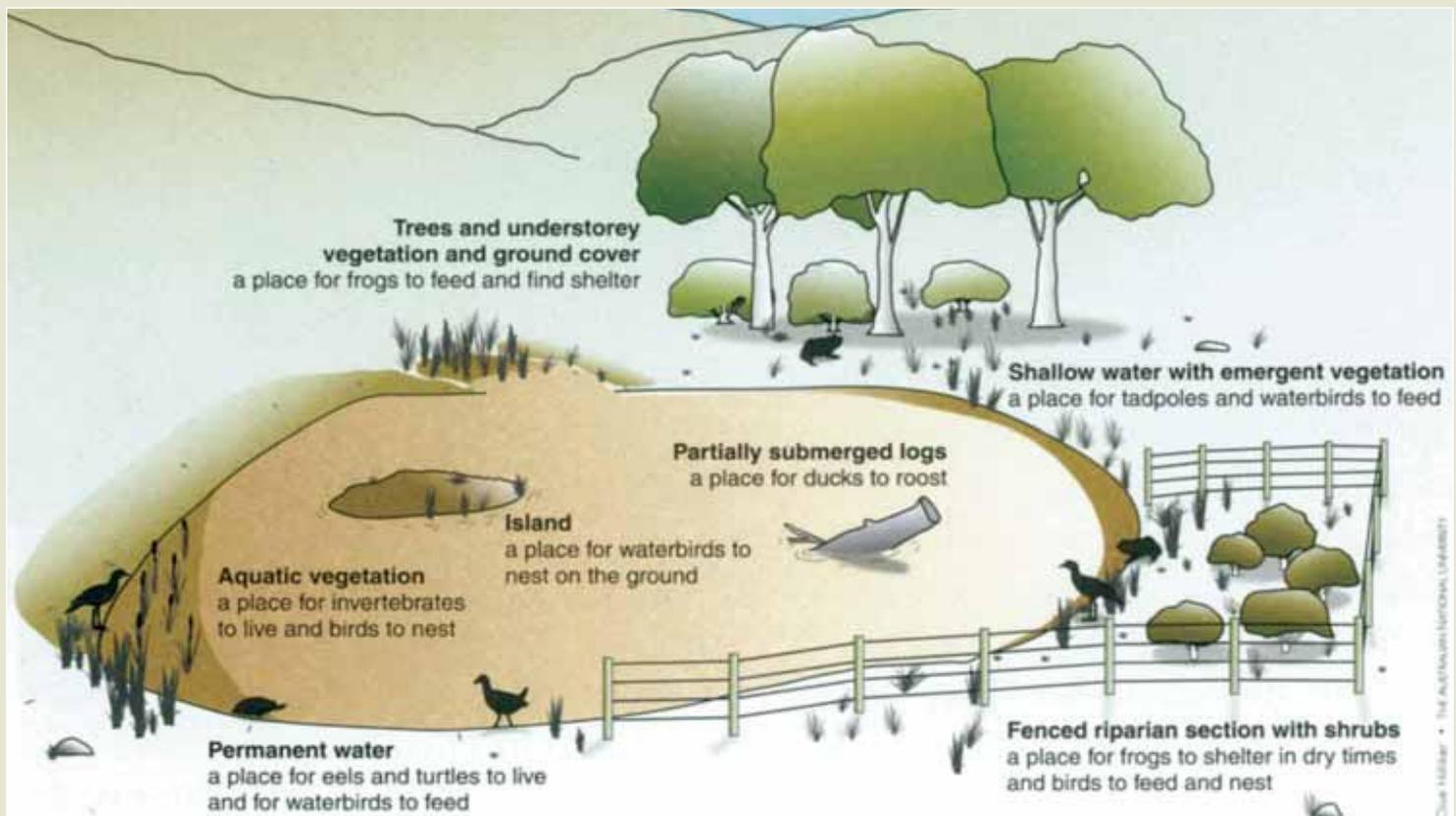
5. free of fish.

Fencing stock out of your dam or managing access for watering will assist frogs. Cows love wading in mud, they eat and trample wetland plants and can disturb frog eggs.

Avoid fish unless you have a large dam with complex vegetation that can provide protection for frogs. Fish should not be translocated from nearby creeks – fish that are actively swimming around in the middle of the day are not likely to be native!

If your dam has deep water and steep edges you could place some large logs in the water at an angle to the bank. Debris will collect on the upside of the log forming a bench for wildlife like frogs and allowing for the addition of rushes and sedges.

A more expensive option is to construct a shelf. A bulldozer with a tilt able blade would be required to cut a shelf into the dam wall. Once again check out whether there are any legal requirements before you plan or start work.



The wide range of roles played by farm dams for native animals

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'BIMBADEEN' - *place of many frogs*

When John and Mary Walsh first set out to fix an eroded gully on their Dalton property 'Mt Pleasant' 30 years ago little did they realise they would end up creating a healthy functioning wetland system.

John started to think about the use of a control bank to manage erosion and sediment, and dreamed of constructing a wetland at the bottom of the gully system where water would have gathered naturally. The Walshs' attempted to source technical information and advice about how to proceed but found little published material. With assistance of staff from the then Department of Land and Water Conservation, they ended up 'winging it'. In 1997 John applied for Rivercare funding (NHT1) and received funds (\$9,000) to construct a control bank to form the wetland.

A seam of sand encountered during construction changed the shape of the control bank and the wetland. John would have liked to achieve more coverage and water storage but the resulting extent provides a diversity of habitat with deep water (depth of five metres when full), vegetated shallow water margins and a riparian zone around the dam planted with native grasses, groundcovers and shrubs.

The extended drought has meant that the wetland (until recently) hadn't been full since Spring 1999. But even during this dry time the top photo shows that the wetland provides a wonderful refuge with habitat for a range of wildlife. There are frogs like Perons tree frog, water rats, yabbies, long neck tortoises, waterbirds like the shy Nankeen night heron, black swans and bush birds including a rare flock of grey crowned babblers.

Photo top: 'Bimbadeen' December 2004 *Kathy Eyles*
 Photo bottom: 'Bimbadeen' January 2005 *John Walsh*



Can I get assistance to help me manage my wetland?

Murrumbidgee Catchment Management Authority (MCMA)

Management advice and possibly funding for riparian protection and restoration on-ground works.

Email: murrumbidgee@cma.nsw.gov.au
 Queanbeyan ph: 6297 6477
 Yass ph: 62261433 and
 Cooma ph: 6452 1455

Australian Government Envirofund

Supports on-ground actions by groups and individuals and wetland management works may be eligible if they involve:

1. native vegetation planting or other works to stabilise soil reduce groundwater recharge or prevent erosion;
2. fencing or other management techniques to protect and preserve habitat;

3. controlling stock access - piping and pumps to locate watering points away from watercourses and fencing.

For details of next funding round <http://www.nht.gov.au/envirofund/index.html>

Australian Government Community Water Grants

Supports surface and groundwater health projects that improve surface or groundwater health, including erosion control, creek and riverbank repair, or cleaning up a local creek or wetland.

For details of next funding round <http://www.communitywatergrants.gov.au/>

NSW Conservation Partners Program

Landholders interested in formal or voluntary partnership to conserve their wetlands
 Department of Environment and Conservation
 Queanbeyan Office ph: 6299 2929

Useful wetland contacts:

Department of Natural Resources

www.dipnr.nsw.gov.au
 Licences for farm dams in NSW
 Leeton Office ph: 6953 0700
 Working in wetlands and watercourses in NSW
 Queanbeyan Office ph: 6298 4017.

Environment ACT

www.environment.act.gov.au
 Construction and/or modifications to a dam and working in waterways in the ACT
 Macarthur House Lyneham ph: 6207 2350

Greening Australia ACT & SE NSW

www.greeningaustralia.org.au
 Riparian restoration, revegetation, erosion control works and advice on wetland plants
 ph: 6253 3035

Useful wetland publications:

Improving Farm Dams

Fact Sheet - Improving farm dams

<http://www.greeningaustralia.org.au/GA/NAT/TipsAndTools/exchange/>

Department of Land and Water Conservation NSW (1998) The Constructed Wetlands Manual Volume 2 (See Chapter 19 Design of Farm Dam Wetlands)

Managing and monitoring wetlands

McKeon J, Richardson K & Dunn I (ed) (2002) Managing wetlands on your property – Inland NSW: Guidelines

<http://www.dlwc.nsw.gov.au/care/wetlands/manageonproperty/inland/index.html>

Lloyd P & Alexander P (2002) Wetlands Watch: A field guide for monitoring wetlands in the southern section of the Murray Darling Basin. NSW Murray Wetlands Working Group Inc. Albury

Upper catchment wetlands

Environment Australia (2001) A Directory of Important Wetlands in Australia Third Edition. Search for important wetlands online <http://www.deh.gov.au/water/wetlands/database/index.html>

Benson J.S & Jacobs S.W.L (1994) Plant communities of the Monaro Lakes Cunninghamia 3(3) 651-667

Starr B.J (Author) Wasson R.J & Caitcheon G (Eds) (1999) Soil Erosion Phosphorus & Dryland Salinity in the Upper Murrumbidgee: Past Change & Current Findings

Wetlands and Wildlife

Lintermans M & Osborne W (2003) Wet and Wild A Field Guide to Freshwater Animals of the Southern Tablelands and High Country of the ACT and NSW

Copies can be purchased from Wildlife Research and Monitoring, Environment ACT ph: 6207 9777

Lindenmayer, Claridge, Hazell, Michael, Crane, MacGregor & Cunningham (2003) Wildlife on Farms – How to conserve native animals. Contact CSIRO Publishing ph. 1800 645 051 or www.publish.csiro.au

Wetland water regimes and plants

Brock M (1997) Are there seeds in your wetland? Assessing wetland vegetation

Brock M (2000) Does your wetland flood and dry? Water regime and wetlands plants

Brock M & Casanova M (2000) Are there plants in your wetland? Revegetating wetlands

These wetland handbooks are available online from Land and Water Australia <http://www.lwa.gov.au/products.asp>

The last word - Why protect upper catchment wetlands?

Wetlands are an integral part of the water cycle. Their loss means our landscape has a reduced ability to hold water and regulate flow, resulting in dry eroded streams and problems with salinity etc.

Upper Murrumbidgee wetlands are our 'forgotten ecosystems' - they are not well studied or understood, nor do we have a complete picture of their remaining extent and condition. However the alpine or high country wetlands, mainly found within protected areas, are well recorded. Some information is also available about the Monaro Lakes and the other listed nationally important wetlands.

Even with limited data, we know that the distribution, types and abundance of wetlands in the upper catchment has changed due to both natural events and human modification. Many rivers and

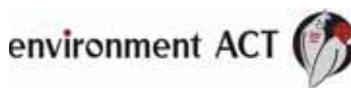
streams in the upper catchment were not continuous channels but chain of ponds wetlands - a series of ponds connected by short lengths of channel or divided by grassy intervals surrounded by swampy meadows.

These incised chain-of-pond systems are now rare though some sections of our streams may retain pond structures. Other wetland types, like the upland swamps and freshwater lakes on the Monaro, have been substantially drained and modified for grazing.

This loss of wetland diversity in the upper catchment is of concern to both rural landholders and our town and urban populations reliant on healthy water catchments.

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The Upper Murrumbidgee Catchment Coordinating Committee (UMCCC) brings together local government, community groups, and relevant ACT and NSW government agencies in the Upper Murrumbidgee Catchment with an interest in natural resource management (NRM). The Committee provides a network for the exchange of information, ideas and experiences and facilitating awareness about regional NRM issues.

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www.actlandcare/umccc.htm