

Water is Essential for Life

Water is essential for life. Living systems (ecosystems) provide the necessary conditioning and filtering for the water within our landscapes for us and our environment to be healthy. We have breathable air, drinkable water, and land with a nutrient/toxin balance suitable for growing plants because of the “free services” (filtration and conditioning) which living systems provide.

To achieve healthy water in our rivers, creeks and landscapes – and therefore our reservoirs, cities and farmland – removal of excessive sediments, nutrients and salts is necessary. In natural systems this is proportionally achieved through filtration processes associated with aquatic and riparian vegetation within rivers, on floodplains and particularly within wetlands.

Wetlands through biotic (living) processes are able to clean water of nutrients, certain pollutants, sediments (including deposition and the locking down of carbon from fires), and in some circumstances, salts. Carbon accumulated in wetlands (particularly fresh carbon washed in from fires) acts as a huge carbon filter, particularly for water entering into leads (underground watercourses) and aquifers, as well as rivers and streams flowing out of wetlands.

WETLANDS ARE THE KIDNEYS OF OUR LANDSCAPES

Loss of Wetlands

Draining of wetlands, raising water levels of wetlands for recreation and water storage, infilling for urban and industrial development, and the straightening and channelling of rivers and floodplains contributes to the loss of wetlands and floodplains. Loss of wetlands and floodplains in Victoria is significant, with approximately 1,944 square kilometres officially stated as being lost*.

* [Wetlands The Heart of the South-west Wimmera](#) Department of Natural Resources and Environment, 2000

If considered in terms of ecological communities, it is likely that wetland studies would find that the vast majority of Victoria’s wetland ecosystems have been destroyed.

In addition to wetland loss, substantial losses of floodplains and lowland wet areas has occurred. Drainage schemes of such lands (including wetlands) exceeds over 2,000 square kilometres* within the Glenelg-Hopkins Catchment Management Authority area alone, with many areas not being accurately recorded. A significant omission is Nekeya Swamp representing 10 square kilometres of drained marsh.

*[Glenelg-Hopkins CMA Strategy for Existing Rural Drainage Areas](#), August 2003

Loss of wetlands and floodplains on this scale represents vast losses of soil moisture and impounded water from the landscape, resulting in detrimental effects on water quality and the landscape as a whole.

Wetland and floodplain losses contribute to:

- lower water quality
- extended periods of soil dryness
- loss of flood mitigation
- decreased recharge into aquifers
- lower water quality in aquifers
- reduced evaporation and transpiration, possibly leading to a drier local climate
- decreased biodiversity and wildlife

NO WATER = NO LIFE

In addition, the systematic removal of wetlands from the landscape enhances the impact of high nutrient runoff entering our waterways. Outbreaks of blue-green algae (which require high nutrient levels to bloom) often poison our water due to the loss of these filter systems (loss of wetlands and wetland function) which maintain our landscape.

Actions to Achieve Healthy Landscapes

Wetlands = Healthy Water = Healthy Landscapes

To achieve healthy landscapes we must have clean water. To achieve clean water, the living landscape processes which purify the water must be in place.

This includes:

- wetlands with vegetation filter beds
- restored flood plains
- riparian and in-stream vegetation, logs and other natural structures
- restoration of pools and pond systems along our waterways

Necessary actions

- exclude grazing from rivers and wetlands (other than for ecological management in accordance with environmental management plans)
- protection of wetland landforms (ie. no drainage or development)
- protect ecological communities in and around wetlands
- water for wetlands – environmental reserves of sufficient quantity for wetlands to facilitate ecological processes of filtration, aquifer recharge and to sustain biodiversity
- restoration of drained wetlands and floodplains
- creation of new wetlands as an offset for wetlands which can not be restored

Strategic implications

Bio-filtration processes operating in wetlands need to occur at strategic points along our river systems if we are to regain and maintain quality water. The restoration and creation of significant wetland systems along our waterways, floodplains and low-lying areas is essential for this to occur.

Costs and Benefits of Wetlands

Natural wetlands provide substantial benefits to the landscape, environment and people.

Clean water is provided to rivers, streams, lakes and aquifers through a process of bio-filtration carried out by wetland plants as well as filter-feeding creatures like shrimps, mussels and macro-invertebrates.

Wetlands and floodplains provide a vegetated basin where flood waters are restrained and distributed more evenly within the landscape. These natural processes of flood retention reduce the damage caused to infrastructure, disruptions to economic activity and limit erosion. Wetland vegetation structures form an essential component within landscape processes, allowing both aquatic and terrestrial ecosystems to function in a balanced manner.

Wetlands (including lakes) provide direct economic benefit

- 1) Commercial fisheries
- 2) Recreational angling
- 3) Water sports and passive recreational pursuits
- 4) Tourism
- 5) Land value

It is estimated that Lake Wendouree, Ballarat, contributes over AUS\$15 million to the local economy per annum. (Minutes from NRE meeting Re European Carp in Lake Wendouree, 2001)

Wetlands provide indirect benefits

Water quality is essential for the large majority of Australia's economic activities including agricultural exports, industry and our cities with their plethora of economic outputs. It can therefore be argued that the "free services" provided by wetland filtration as part of river systems provides quality water fundamental to our economic sustainability.

“It has been calculated that 1 hectare (2.5 acres) of tidal wetland can do the job of US\$123,000 worth of state of the art waste-water treatment, and many communities and companies are now recreating wetlands to cleanse their waste.”

David Bellamy, Introduction to Wetlands in Danger (1993)

Costs of wetland loss

Lack of biotic (living) filtration occurring in wetlands within river systems, in combination with agricultural nutrient runoff, can lead to outbreaks of toxic Blue Green Algae, rendering both lakes and rivers toxic to stock, humans, and the creatures of our natural environment.

Economic loss can be vast, both in terms of disruption to agriculture, recreation, tourism, as well as the loss of potable water contained within reservoirs, leading at times to acute shortages of water for towns and cities. If water has to be trucked in to elevate such shortages, the costs are enormous.

Altered hydrological processes (changes in the rates of transpiration, evaporation and ground water recharge due to irrigation, drainage of wetlands and flood plains, altered flood regimes and vegetation loss), has caused salts to rise to the surface, and the salinisation of vast tracks of land. The cost of rectifying such extensive landscape degradation is likely to ride into the billions of dollars. However the cost of inaction (due to the fundamental necessity of clean fresh water) could be devastating to our gross domestic product.

Flood damage to infrastructure is costly. Infrastructure built on flood plains is inherently susceptible to damage and loss. Also the loss of wetlands and flood plains increases flood peaks, water velocity and hence the destructive capacity of flood waters.

“In the Charles River of Massachusetts in the United States preservation of 38 square kilometres (15 square miles) of mainstream wetlands provides natural valley storage of flood waters. It is estimated that had 40 per cent of these wetlands been reclaimed, the increased flood damage would have cost US\$3 million each year. And had they been filled completely, the added flood damage would have been over US\$17 million per year.”

Mitchel Beazley, p23 Wetlands in Danger (1993)

Not only the immediate cost of infrastructure loss must be taken into account, but also the ecological costs, and the disruptive cost of economy loss due to infrastructure disruption.

Costs / Benefit Ratios

When taking into account the cost of managing, maintaining, restoring and creating wetlands, and provisioning for environmental reserve for these wetlands, it is important not just to look at the immediately obvious management and project costs, but the less obvious (but substantial) costs of their absence, as well as the indirect and direct economic benefits that wetlands provide. This in combination with the landscape and environmental services the wetlands provide, means that they are substantial cost savers, while at the same time facilitating (through the “free services” they provide) substantial economic outputs.

Wetlands are extremely valuable to our community and our environment. Investment by our nation in wetland management, restoration, and re-creation should reflect the benefits we derive from them.