



WETLANDS – finally recognised as the ‘good guys’ – but still under threat

By Dr Paul Adam

Human society has long engaged in a love-hate relationship with wetlands. On the one hand, they have sustained distinctive cultures whose economies have been based on the sustainable harvest of fish and waterfowl – such as the Marsh Arabs in the Euphrates delta, the inhabitants of the Fens before drainage, and the peoples of the Okavango. On the other, they have been viewed as impediments to progress; preventing productive agricultural use of land or the development of buildings, while also being a source of disease which sometimes proved fatal.

For a long time miasmas emanating from wetlands were accepted as the cause of many illnesses. When scientific knowledge advanced to recognise viruses, bacteria and protozoa as the agents of disease, and the role of insects in transmitting them, arguments for the destruction of wetlands as their habitat gained new impetus as a means of disease control.

For many centuries, the dominant paradigm in western culture with regard to wetlands was one which saw draining and filling as economically and socially desirable, and their comprehensive destruction was a measure of civilisation. Following European colonisation, Australia’s wetlands were regarded as wastelands, ripe for conversion. Bob Jelly’s observation in the popular ABC TV series *Sea Change* that, when he saw a mangrove, he saw a shopping mall, would at least until recently, have resonated with many developers, councils and engineers.

What has changed?

Today, wetlands are environmental icons, one of the few ecosystems which has its own international treaty promoting protection. (The Ramsar Convention, to which Australia was one of the first signatories, is one of oldest environmental treaties, dating from 1971).

Internationally, the public view of wetlands began to change in the 1950s and 60s, the main driving force for change being recognition of what are now referred to as the ecosystem services which wetlands provide. These include a range of water management functions such as flood storage (there is increasing global recognition that the severity of urban flooding is related to the earlier filling of wetlands), regulation of flow, maintenance of water quality through filtering (President Bush senior was moved to refer to wetlands as the kidneys of the landscape), and as a habitat for a diverse biota, including juvenile fish of commercial and recreational importance. Wetlands also help to protect shorelines from erosion and have a role in global biogeochemical cycles.

In the 1980s the National Trust was in the forefront of the campaign to protect wetlands in New South Wales. Many of our aims appear to have been met. Today, coastal wetlands are protected by State Environmental Planning Policy 14 (Coastal Wetlands), while others are recognised in Regional Environmental Plans, some Local Environmental Plans and policies at national and state levels. A number of wetland communities have also been listed as Endangered Ecological Communities, while community support for their protection has also grown.

So, with all of this, are wetlands really protected?

Unfortunately the answer is no. Some of the threats are global. Climate change will have many impacts, although different combinations of circumstance make

Wingecarribee Swamp – the devastating impact of peat mining. Pictured from the top:

The imposition of a Heritage Order came too late to prevent the collapse of the swamp. The height of the blocks illustrates how much other parts have sunk.

Wingecarribee Swamp, post collapse, looking east towards Robertson. The creek was formed by the collapse, and the once continuous surface of the swamp has been broken into blocks.

As a result of the collapse a new creek formed, and the surface of the swamp has been fragmented into blocks.

A large amount of peat was swept out of the swamp and now forms a floating mass in Wingecarribee Reservoir.

it difficult to predict the consequences for specific wetlands. Increases in temperature and carbon dioxide will alter the distribution and relative abundance of species; changes in rainfall patterns may lead to increases in wetlands in some areas and declines in other. Along the coast, rising sea levels and increased storminess will threaten the survival of habitats such as mangroves and salt marshes. To address these problems will require national and international action, although success will only be achieved if individuals change their behaviour and use of resources.

Within New South Wales a major threat to many inland wetlands has been the regulation of flows in rivers and the diversion of water for other purposes (primarily irrigation). Important wetlands such as the Macquarie Marshes, including the Ramsar listed Macquarie Marshes Nature Reserve, have suffered from flow regulation. Addressing the issues in order to secure greater water for wetlands will require a balance between environmental, social, economic and political considerations. Failure to achieve acceptable outcomes has led to conflict within rural communities (between irrigators and graziers), and between environmentalists and those seeking economic return on investment.

The National Trust recognises the multifaceted complexity of the debate, but will continue to advocate for sustainable solutions.

While wetlands may be stressful environments for many organisms, many wetland plants are among the world's most prolific weeds. They include such established problems in NSW as the water hyacinth (*Eichhornia*) and water primrose (*Ludwigia peruviana*). Control of wetland weeds is particularly difficult, but unless it can be achieved, the future of many wetlands is bleak.

Within and adjacent to urban environments, there have been substantial losses of wetlands over the last two hundred years, and of those that remain, many still suffer from the legacy of past decisions (such as alterations to drainage, or the discharge of storm water). An increasing threat in

recent years is damage caused by unauthorised vehicle use, particularly from trail bikes and BMX bikes whose wheel ruts destroy vegetation in their path and, by altering drainage patterns, can affect much larger areas – sometimes with long lasting effect. This occurs even within National Parks, such as the Georges River NP.

Despite the recognition of wetland values, there is still the risk in urban areas of loss by attrition as small encroachments are permitted (or not prevented) while, in the case of major infrastructure developments, perceived social and economic benefits are likely to override environmental concerns. In these latter instances approval for development is likely to involve mitigation – in return for loss of one site others may have to be rehabilitated, or even be created. While recognising that many wetlands which have been created (often accidentally) are now of considerable conservation value (for example the Norfolk Broads in the UK), our ecological understanding recognises that it is very difficult to create wetlands to order, and that like-for-like replacement is rarely possible.

Wingecarribee Swamp – a catastrophic loss

In the 1990s, at the Mining Warden's Court, the National Trust and a number of non-government groups and government departments argued strongly – to no avail – against the continuation of peat mining at the Wingecarribee Swamp, the largest upland swamp on mainland Australia. Although mining was subsequently stopped by the imposition of a Heritage Order, this came too late to prevent the Swamp's collapse; the largest known example of such a catastrophe anywhere in the world. Despite advice sought from worldwide experts on peatland ecology, no one so far has been able to put Humpty together again; the loss appears irreversible.

The loss of Wingecarribee Swamp gave important impetus to the Trust's campaign to persuade the gardening public and industry not to use peat. Industrial scale mining for horticultural peat is unsustainable, and using imported peat just increases the degradation of overseas peatlands. Given the large number of alternative products – which are at last being given

prominence in the market place – there is no excuse for continuing to use peat.

The need to protect – and understand – what is left

For many years the Trust has been concerned about the fate of the wetlands along the M6 corridor. These include the Sylvania Waters wetland, the site of the first oyster farm in Australia. The remains of the farm are still visible under the mangroves, and the whole complex is listed by the National Trust for its natural and historic-cultural significance.

North of the Georges River the M6 is intended to pass through the Rockdale Wetlands Corridor, a series of wetlands which would once have been a depression behind the Botany Bay foreshore dunes extending from the Cooks to the Georges River. These wetlands have been highly modified, but are still important habitats for birds and fish, as well as providing an indication of the pre-settlement landscape. The Rockdale wetlands demonstrate that, even in an urban context, it is possible for wetlands to retain important ecosystem functions.

Many wetlands in urban areas contain features indicating previous use (or abuse) – such as the oyster farm remnants in Sylvania Waters. These features may themselves be worthy of recognition and, although the listing of a site for its industrial, archaeological and natural significance may seem paradoxical, such a practice is in accord with the Trust's principles. Providing that we don't perpetuate the damage to our wetlands caused by inappropriate structures or uses, we can learn much about the impact of our interactions with the environment from our mistakes of the past. Today we have a greater appreciation of the functional, and aesthetic, role that wetlands play in the environment, but the physical evidence of past structures is a constant reminder of how much society's understanding has evolved.

Assoc. Prof. Paul Adam is Head of the School of Biological, Earth and Environmental Sciences at the University of New South Wales, and has had a long involvement with the National Trust. He is currently a Board Director, Chair of the Conservation Committee and the Bush Management Advisory Committee and a member of the Landscape Conservation Committee.