



Traditional Aboriginal Uses of the Barwon River Wetlands

Craig Woodfield

Funding support provided by



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A Commonwealth Government Initiative

Acknowledgements

I would like to thank the following people for their time and advice in the production of this report:

Dr Stuart Blanch, Anthony English, Ted Fields Junior, Ted Fields Senior, Dr Heather Goodall, Robbie Lloyd, Dr Judy Messer, Ellen O'Brien, Kathy Ridge, Brad Steadman, Peter Terrill, Dr Martin Thomas, Dietrich Willing, Bruce Wilson, and Jason Wilson.

Craig Woodfield
Project Officer
September, 2000

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The Inland Rivers Network

The Inland Rivers Network (IRN) is a coalition of environment groups and individuals concerned about the need to conserve the biological diversity, natural functioning and health of the inland rivers and wetlands of NSW. Together with local and regional environmental groups, IRN seeks to promote a greater understanding amongst landholders, conservationists, government, scientists and inland communities of the threats to inland rivers from unsustainable land and water management practices.

IRN was formed in 1991. The IRN steering committee comprises of representatives from the following groups:

Australian Conservation Foundation
Coast and Wetlands Society
Friends of the Earth
National Parks Association of NSW
Nature Conservation Council of NSW

IRN produces a quarterly newsletter, The Inland Rivers Network News, and holds regular workshops and conferences. IRN supports conservation representatives sitting on water management committees throughout inland NSW. For more information, contact:

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Introduction

Aim

This report was compiled to give an overview of the traditional Aboriginal uses of wetlands of the Barwon River, and the values these wetlands hold for Aboriginal people. **This report is not intended to speak for Aboriginal people.** It is instead a white person's interpretation of Aboriginal peoples' history, culture and aspirations for the future in regards to the wetlands of the Barwon River.

Although a number of Aboriginal people were consulted in the preparation of this report, because of the limited resources available much of the information presented here was gained from literature review. Therefore it has a limited value in recording Aboriginal peoples contemporary associations with wetlands of the Barwon River. This information is readily available from the Aboriginal people of the region themselves, as is further discussed in the conclusion.

The Barwon River

The Barwon River comprises the northern end of the Barwon Darling River system, which runs for over 2,700 kilometres from southern Queensland to the New South Wales/Victoria border. The Barwon River becomes the Darling River just upstream of Bourke, at the confluence of the Bogan and the Culgoa Rivers. Major tributaries that flow into the Barwon include the Macquarie, Castlereagh, Namoi, Gwydir and Macintyre Rivers. During major flooding, overflow from the Narran Lakes and Narran River also flows into the Barwon.

In hydrological terms, the Barwon Darling is one of the most variable river systems in the world. The Barwon Darling generates virtually no flow of its own, and is dependent on inflow from its many tributaries. High rainfall in spring and early summer causes flooding and inundation of wetlands and floodplains, while in the relatively dry winter the water recedes.

The area considered in this report is that adjacent to the lower Barwon River, from Mugindi on the Queensland/NSW border to Brewarrina, including the Narran River and Narran Lakes. This region is part of the Darling Riverine Plains Bioregion. 400 species of terrestrial animals have been recorded in this region, including 47 mammals, 256 birds, 20 frogs and 77 reptiles. 175 plant species are also thought to occur in this area.

Wetlands of the Barwon River

The most widely accepted definition of wetlands is that adopted at the Convention on Wetlands of International Importance at Ramsar in 1971, where wetlands were defined as:

“Areas of marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is either static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six metres.”

Using this definition, the Barwon and Narran Rivers, their smaller tributaries, ephemeral lakes such as Narran Lake, and all associated floodplain can be considered wetlands.

Wetlands are well known to be ‘hotspots’ of biodiversity, and this is particularly true of the wetlands of the Darling Riverine Plains. The vast majority of terrestrial fauna is distributed

along the rivers and floodplains of this region, and its ecological health is reliant on regular inundation.

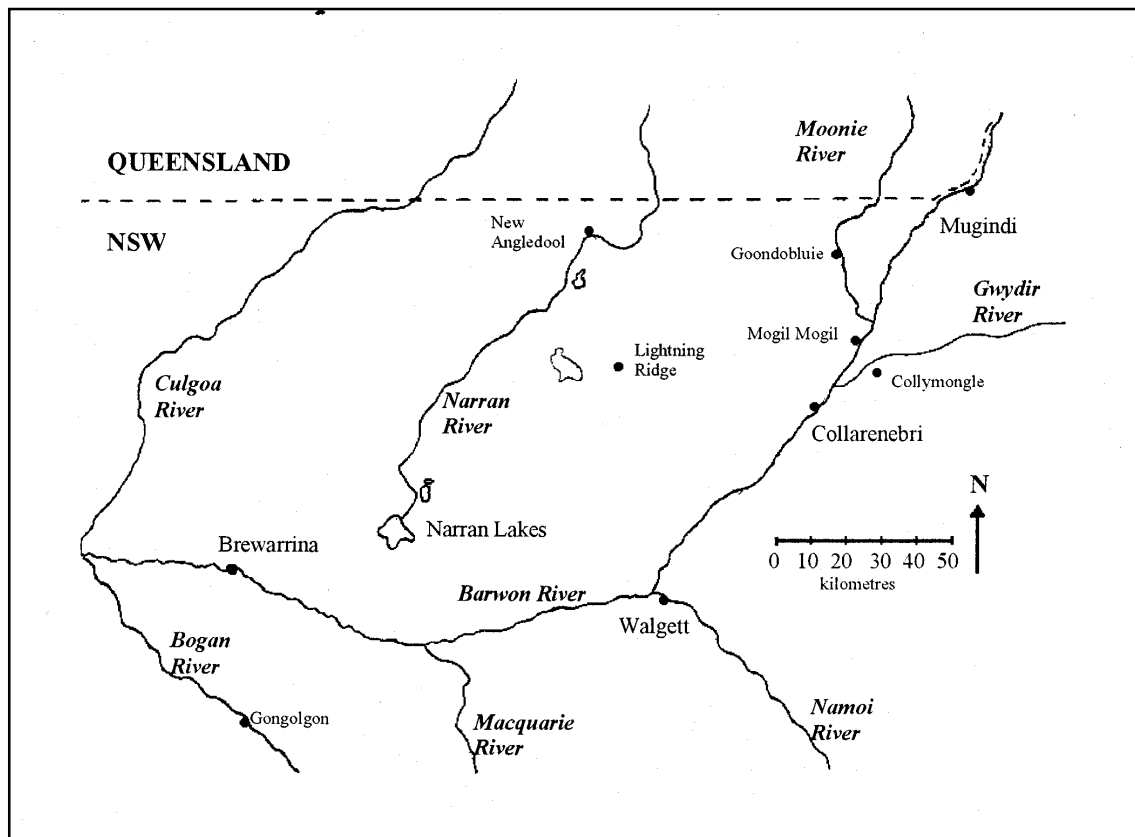


Figure 1: The northern Darling Riverine Plains

The Aboriginal people of the Barwon River

Aboriginal people have lived in Australia for at least 40,000 years, and represent what is probably the oldest continuing culture in the world today. Despite Australia's status as the driest and least-biologically rewarding (in terms of native plants and animals fit for domestication) of the six habitable continents, Aboriginal society and culture has flourished here. Prior to 1788, Australia was home to an estimated 300,000 Aboriginal people divided into over 600 distinct groups.

Aboriginal people from six language groups originally occupied the area of the Barwon River wetlands. These were the Ngemba (southwest of Brewarrina), Baranbinja (northwest of Brewarrina), Murrawari (north of Brewarrina), Ualayai (Narran Lakes), Weilwan (south of Walgett), and Kamilaroi (east of Walgett). The languages spoken by these peoples shared a common base, so communication between different groups was relatively simple. Natural features such as rivers and hills defined boundaries between the different groups.

These six major groups were further divided into family groups or clans who moved independently throughout their traditional lands, following a semi-nomadic lifestyle. During the winter months the people would move away from the rivers and wetlands, and then return to the river for spring and summer floods.

Because of their hunting and foraging lifestyle, large gatherings of Aboriginal people were

once only possible when there was sufficient food available in the immediate vicinity. The Barwon River wetlands were one of the few areas in eastern Australia of providing such large amounts of food, and it was not unusual for Aboriginal people from many other nations, including regions as far away as Lake Waljeers on the Lachlan and southern Queensland, to regularly visit the area.

Note on spelling of Aboriginal words

The Aboriginal peoples of Australia have no written language, so all written interpretations of their spoken language is phonetic. In this document the spelling most commonly encountered in the literature has been used, but it is worth noting that the relative lack of study of Aboriginal language has resulted in several common spellings of the same word.

Traditional uses of wetlands and the river

Aboriginal peoples traditional uses of wetlands can be broadly divided into two categories: hunting, fishing and gathering uses; and cultural association.

Fishing, hunting, and gathering on wetlands

The value of hunting, fishing and gathering to Aboriginal people goes far beyond just sustenance. The following statement may best sum up this relationship:

“Hunting, fishing and gathering are fundamental to our peoples’ contemporary and traditional cultures, help to define our identity, and are at the root of our relationship to the land. Hunting, fishing and gathering continue to provide a significant part of the diet of many of our people, and also provide a range of raw materials. As cultural activities, hunting, gathering and fishing are important vehicles for education, and help demonstrate to our succeeding generations our understandings of our place in the world.”

Aboriginal and Torres Strait Islander Commission Environmental Policy (1994:5)

Fishing

Fishing has always been a very important part of Aboriginal lifestyle and culture along the Barwon River. It was the abundance of native fish before European colonisation that made the Ngunnhu fish traps at Brewarrina one of the most important cultural centres in eastern Australia. Fish provide a nutritious high protein meal that is very low in saturated fats. The fish caught as food for many thousands of years in this area are the same species still sought by Aboriginal people and white anglers today, ie:

Boney Bream	<i>Nematalosa erebri</i>
Freshwater Catfish	<i>Tandanus tandanus</i>
Silver Perch (Black Bream)	<i>Bidyanus bidyanus</i>
Golden Perch	<i>Macquaria ambigui</i>
Murray Cod	<i>Maccullochella peelii peelii</i>
Spangled Perch	<i>Leiopotherapon unicolor</i>

These species have different environmental needs, but all are adapted to the variable nature of Australia’s inland rivers. The three most significant species to Aboriginal people, Golden perch, Silver perch and Murray cod, are dependent on spring and summer flooding to trigger their breeding cycles. With the floods and the increasing water temperature they migrate upstream and out of the rivers to the floodplains, billabongs and wetlands to spawn. As the floods recede, adults and surviving young return to more permanent waters.

Fish are traditionally be caught by a wide variety of means, as would be expected of such an important food source. Stone fish-traps erected in shallow sections of the river, of which the Ngunnhu at Brewarrina is the best known example, provide the means for many people working at once to harvest large numbers of fish. Another stone fish trap was once situated at Gongolgon, 45 km south of Brewarrina, on the Bogan River. Sturt noted this fishery in 1827 during his exploration of the area. Smaller streams often had less permanent traps and barriers constructed from boughs and young saplings, which served to trap fish in billabongs after flooding.

Individual fishers armed with spears can also take fish in the shallows, from a canoe (often at night), or by diving into deeper waters and stalking the fish underwater. Line fishing in the manner of white anglers is also practiced. Lines are traditionally made from possum fur, and hooks from mulga, mussel shells, catfish barbs or eagle talons. Bruising the leaves of the pituri bush and placing them in small billabongs has the effect of stunning small fish, causing them to float to the surface and providing yet another way of catching fish.

Besides fish, many types of freshwater invertebrates are gathered from wetlands. Freshwater mussel were once a very important food source for Aboriginal people, and large middens of discarded mussel shells can still be found in many places throughout the region. There are 33 species in 3 families of freshwater mussels (Class Bivalvia) found in Australia, and a great many of these species would be found in the Barwon River wetlands. Mussels can be dived for or felt for in the mud in virtually any permanent or semi-permanent water source. Cooking is simply a matter of dropping onto hot coals. When the shell opens, the mussel inside is cooked, providing a tasty meal that is high in protein, and contains virtually no fat. Mussel shells also provide raw materials for hooks, needles, jewelry and blades.

Freshwater crabs (Family Sundathelphusidae) also provide tasty meal, as well as a source of water during dry times. These small crabs can survive dry periods by burrowing into the mud, and lining the burrow with crushed shell and other material the holds the water. Aboriginal people learnt to dig out the burrows, suck out the water or soak it up with grass, and then snack on the crab.

Freshwater Prawns (Family Paleomonidae) and Shrimp (Family Atyidae) are another wetland and river species frequently sought for food. According to Katherine Parker, the method of catching these species was quite unusual:

“Quite nude, the women sit down in the water, let the shrimps bite them; as they nip, seize them.”

These species can also be caught using a baited line, or by placing the small hollow logs or tree branches in the water. Various species of crustacea will take refuge in this apparent shelter, only to be caught when the branches were removed.

Undoubtedly the most important crustacea are from the Family Parastacidae, the yabbies and crayfish. Species such as the freshwater Yabby (*Cherax destructor*) and Murray Cray (*Euastacus armatus*) are still eagerly sought after today for the excellent eating and nutritious meal that they provide. These can be caught using baited line, or by puddling (muddying) the water, forcing the yabby or cray to move and reveal it's position.

Hunting Waterbirds

Spring and summer flooding attracts many species of waterbirds to the Darling Riverine Plains, as vast areas of land become prime habitat for waterbird breeding. Appendix 2 lists 59 waterbird species recorded at Narran Lake in 1993, an indication of the biological wealth of this area.

Ducks have also long been an important food source for Aboriginal people, and ten species have been recorded in this region. These are traditionally caught in a variety of ways, often simply speared or brought down with boomerangs as they fed.

Katherine Parker describes in detail the way ducks were caught by the Ualayai people in the 1890's:

“Ducks were trapped, too, by making bough breaks across the shallow part of the creek, with a net across the deep part from break to break. A couple of the men would go up stream to hunt the ducks down, and some would stay each side of the net armed with pieces of bark. The hunters up stream frightened the ducks off the water, and sent them flying downstream to the trap. Should they seem flying too high as if to pass, the men would throw pieces of bark high in the air, imitating, as they did so, the cry of hawks. Down the ducks would fly, turning back; some of the men would whistle like ducks, others would throw the bark again, giving the hawk's cry, which would frighten the birds, making them double back into the net, where they were quickly despatched by those waiting.”

Ducks can also be caught by stealth, which involves a swimmer grabbing the ducks feet and pulling them under the water. Jimmie Barker records catching ducks by feeding them daily with mussels and scraps and thus accustoming them to human presence. The ducks were then snared using baited fishing line, but he comments that this was traditionally done using snares made from human hair.

Pelicans are also caught for food, and their fat provided a salve for burns. Jimmie Barker wrote:

“Our cure for burns was the best I have ever encountered. First we had to catch a fat young pelican and cook it in a camp oven. During this cooking process a large amount of fishy oil can be collected; the oil is very strong owing to the great number of fish eaten by the bird. When this oil was applied to burns the healing process was rapid and no scar was left.”

Other animals

Freshwater tortoises are also caught and eaten, and their eggs can be collected from the edges of rivers, billabongs and swamps during the spring. The Broad-shelled River Turtle (*Chelodina expansa*) and Eastern Snake-necked Turtle (*Chelodina longicollis*) are the most common species in this region, but the Saw-shelled Tortoise (*Elseya latisternum*) and Murray Turtle (*Emydura macquarii*) can also be occasionally found.

The Water Rat (*Hydromys chrysogaster*) is a native mammal that is dependent on water. Found anywhere that there is semi-permanent water, this native rodent is valued for his meat as well as his hide.

There are a great many other species that, although not wetland residents, rely on the wetlands for drinking water, particularly during the drier months. Such species include Galahs (*Cacatua roseicapilla*), Australian Bustards (*Ardeotis australis*), Flock Bronzewings (*Phaps histrionica*) as well as a number of mammal species including the Red Kangaroo (*Macropus rufus*) and the Eastern Grey Kangaroo (*Macropus giganteus*).

Katherine Parker describes the way that these species were caught using nets laid in shallow water at the edge of a billabong. She claims that such watering places were called Dheelgoolee, and that on the first day such a net was laid kangaroos and emus were avoided, and that the hunters endeavored to bring home their game alive. She also describes some of the species that were taken in such a manner:

“All day some birds come to the Dheelgoolee – pigeons, gilahs, young crows, and others, and the man watching catches them. When the game was thick on the net, the men in the holes would catch hold of the ends of the sticks in the net and quickly turn them over the lower ends, thus entrapping all on the net. In the evening turkeys, and such things as water at night-time, amongst which are opossums and paddy melons, would be trapped.”

Gathering

Many of the plant species used for food, medicine or tools by the Aboriginal people are dependent on water or seasonal flooding, and hence are only found in association with wetlands. A prime example is common nardoo (*Marsilea drummondii*), a perennial fern that is common on floodplains. This plant has achieved some notoriety in white Australian history as the explorers Burke and Wills starved to death despite having a large supply of nardoo flour.

Nardoo is often seen fully immersed in water, with leaves floating on the surface, but fruiting in water is rare. Instead it produces fruit as the water recedes, and the seeds thus produced can be swept up in large numbers from dry floodplains. The seeds are ground between stones and the black husks removed to reveal yellow flour, which is baked into cakes. These cakes are traditionally an important component of Aboriginal peoples diet, often eaten for breakfast.

Seeds from the Coolibah tree (*Eucalyptus microtheca*) can also be ground for flour, although there is more labour involved in gathering them. This medium sized tree, often found with River Red Gums or Black Box, is not reliant on flooding, but healthier trees found in regular flood areas.

Priddiwalkatji (*Arabis eremigena*), a native brassica, and Menindee clover (*Trigonella suavisima*), a native grass, are two green leafed plants found on river banks and floodplains. Both can be eaten either raw or cooked, and plants such as these provide a valuable source of fibre and vitamins.

Many wetland plant species provide cures and remedies rather than a source of food. Leopardwood (*Flindersia maculosa*) can be used for a variety of ailments, including applying boiled root to aching teeth, or using the gum for gastric problems. Fruits and shoots of the Eurah (*Eremophila bignoniiflora*) can be used as laxatives and purgatives. Both these small trees can be found on floodplains around the Barwon and Narran Rivers.

The bark of wetland trees, particularly the River Red Gum (*Eucalyptus camaldulensis*), is used for making important tools such as coolamons (dishes), canoes, shields, and shelters. The bark canoe was a particularly important part of traditional Aboriginal lifestyle in this region, and its construction was a long and skillful process.

Cultural importance

Dreaming Stories

The mythology of Aboriginal people, as well as many aspects of their customs, laws and oral history, is expressed through Dreaming stories. As well as explaining the creation of the land and animals, these stories also express important aspects of Aboriginal culture. In the words of Auntie Beryl Carmichael:

“The Dreamtime stories are really a way of giving us a direction in life – a clear direction. We must have respect for different things in our country, as well as people and belongings, we must have respect for different cultural values, and we must abide by these laws.”

There are a number of very significant dreamtime stories associated with this region; many of them concerned with the great leader Baiame. Whilst referred to by several different names (including Booroola and Gurya) by different peoples, the stories remain basically the same. They tell of a great journey made by Baiame through the country, during which he left many marks on the landscape, as well as forming many of the region's natural features. (See Appendix 1)

Baiame's footprints in the bed of the Barwon River can be seen at Byrock and at Brewarrina, and his knee and hand print can be seen in the rock on the shore of Narran Lake where he knelt to drink.

More importantly than his impact on the landscape, Baiame gave the Aboriginal people many of their traditional laws, customs and initiation rites. Traditional Aboriginal law has been developed over many thousands of years of experience and observation, and reflect Aboriginal people's intimate relationship with the land. Such laws relate directly to the sustainable use of land, water, and resources.

Corroboree and initiation ceremonies

Large gatherings of Aboriginal people were once only possible if there was a large source of food available in the immediate area. The Ngunnhu fish traps presented such a source of food, and for this reason it became one of the most important cultural centres of eastern Australia. These gatherings allowed large corroborees to take place, the exchange of information and the trading of goods, marriages were arranged and initiation ceremonies took place.

Initiation ceremonies marked the transition from boy to man amongst the Aboriginal people. These events were of considerable significance to the whole community, as well as being the most important event in a young boy's life.

The initiation ceremony was usually carried out on a Bora ground, a place of great significance to Aboriginal people, comparable in some ways to Christian churches. These areas were always situated on flat ground close to some permanent source of water. They would be bounded by a number of carved trees, also called dendroglyphs, though the number associated with each Bora ground varies. These dendroglyphs also provided a store of knowledge on law and boundaries between different nations.

Totem animals

Totem animals are important to Aboriginal people as reminders of their identity and customs, as well as their link with the land. Many totem animals were those of most importance to Aboriginal people as food, and included many river and wetland species.

Recreation and competition

Cultural value aside, Aboriginal people have a love of water at least as great as that of European people. Their children learn to swim at an early stage, and many of the early European explorers commented on the considerable water skills of Aboriginal people. Mary Gilmore refers to games of skill and endurance in the Barwon River during large gatherings, including diving, swimming and fishing. Such inter-group competition is certain to have been as widely enjoyed and culturally important as modern Australia's organised sports, as well as providing valuable practice for hunting and gathering skills.

Areas of special significance to Aboriginal people

Ngunnhu

It is likely that this structure is many thousands of years old, but no accurate dating of the rocks has ever been done. The Ngunnhu are located on a natural rock bar on the Barwon River near the town of Brewarrina, where the river flows over a series of shallow rapids about 400 metres long. As can be seen in figure 1, the traps consist of four primary 'walls', each consisting of a number of traps. At no point is the river blocked completely, and if left to its own devices, a fish may eventually negotiate the area and continue up or down stream. The walls are made of large rocks and boulders that are found naturally in the area, with largest forming the bases.

The Ngemba people are the traditional custodians of the Ngunnhu. Each individual trap has a name, and it's care and maintenance was assigned to one of the Ngemba family groups. It was considered theft to take fish from another family's trap, but large gatherings involving people other than Ngemba, usage of Ngunnhu was reassigned, so all could benefit from the harvest. Maintenance of the traps was an important family duty, as floods dislodged stones and clogged the traps with debris.

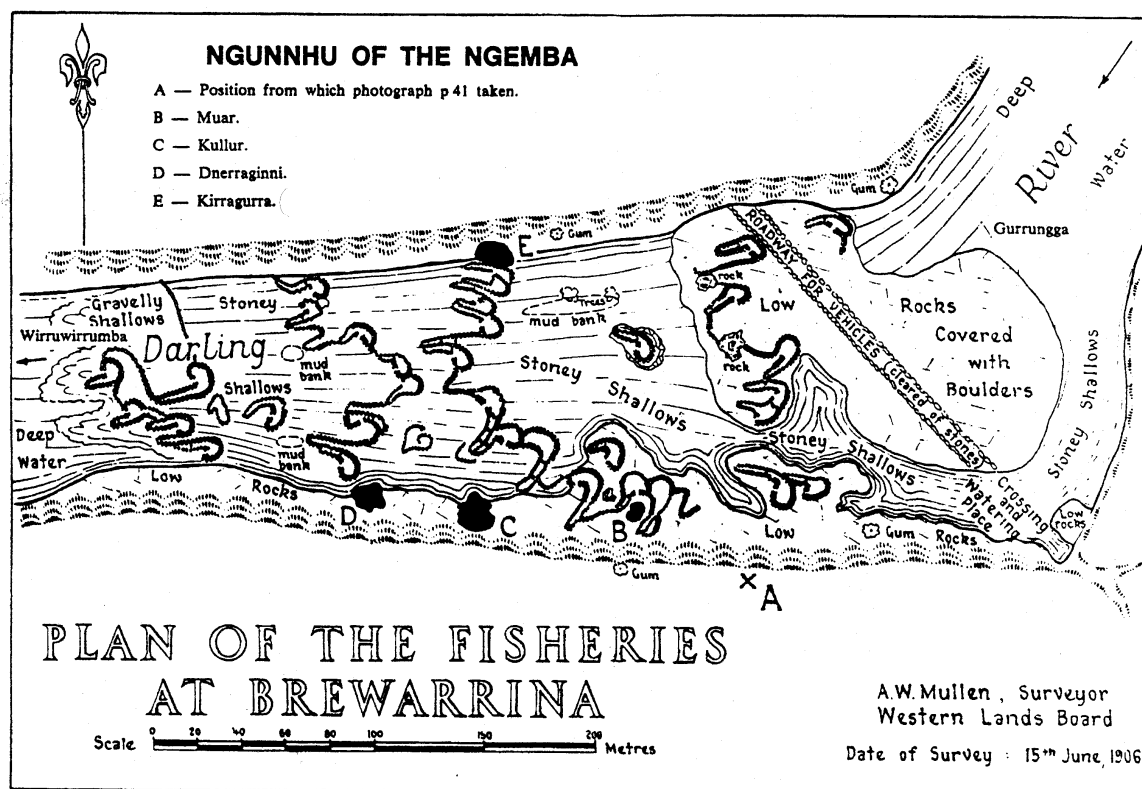


Figure 2: The Ngunnhu as they were in 1906. From Dargin, page 37.

The traps are capable of catching fish moving in either direction along the river. When sufficient numbers of fish have entered a trap, its entrance would be closed with stones left in place for just that purpose. The fish can then be caught using spears or even hands, with the largest fish removed first so they do not devour the smaller ones. It common practice to remove all the fish from a trap, so none were left to warn the other fish of the traps.

The Ngunnhu was once one of the great meeting areas in Eastern Australia. Mary Gilmore recalled:

“...two of my uncles said they once witnessed what they reckoned were five thousand blacks assembled (at Brewarrina), and people who were older said that before the massacres began there were even larger gatherings. The tribal groupings and family camps extended along the tributaries of the main stream for miles, but each group was place within general reach of all the others.”

Narran Lakes

The Narran River is a terminating branch of the Condamine-Ballone Rivers, beginning near Dirranbandi in Queensland. It feeds into three lakes, Back Lake, Clear Lake and Narran Lake, which are connected by lignum channels. These Lakes are ephemeral wetlands that historically flood approximately once every two to five years. After very large floods, the lakes overflow into the Barwon River. In such conditions, the Lakes may retain water for up to two years. The Narran lakes are listed on Environment Australia's Directory of Important Wetlands, as well as the Ramsar conventions list of wetlands of international importance.

When inundated, the region supports an extremely rich ecosystem. Fifty-nine species of waterbirds have been recorded in the Narran Lakes area during breeding events (see Appendix 2). The ecological richness of this area was demonstrated in 1983 when a survey recorded 200,000 breeding pairs of ibis, the largest aggregation of these birds ever recorded in Australia. Even during droughts, the lakes would provide water for a considerable period of time.

The Narran Lakes area has a long and rich Aboriginal history, and is part of the traditional lands of the Ualayai people. An interim archaeological survey of the area by Dan Witter in 1986 found that it is a “...locality where the sites are so large, extensive and complex, as well as having a great abundance of materials, that ordinary survey techniques fail as a means of evaluation.”

The abundance of materials noted by Witter include a shell midden at least 50 metres in diameter and 1 metre high, multiple hearth sites, flaked stone from tool making, and many other artifacts. Witter also noted that “From the pattern of site distributions it is clear that the Narran lake area played a vital role in the Aboriginal settlement of the region.”

The Narran lakes also has a significant connection with local Dreaming stories, and many of the natural features of the area are directly associated with these stories.

Bora grounds

Several important Bora grounds were once associated with the Barwon River wetlands.

One was at Collymungle Holding, around 30 kilometres northeast of Collarenebri, now the site of Colly Farms cotton producers. An unknown number dendroglyphs (perhaps as many as 90) were originally present, though they seemed to have been removed around the turn of the century. A few are now preserved on the site, though not in there original positions or aspects.

Another was once at Gundabloi, on the Moonie River, about 20 kilometres south of the Queensland border. A reputedly important site, consisting of only about 12 dendroglyphs. The last recorded initiation ceremony to occur here was in 1894 (Mathews).

Dumiendi holding, on the Barwon River, about 45 kilometres north east of Mogil Mogil, was reported to have eight dendroglyphs grouped in a rough circle close to a well-known camping site. Etheridge expressed some doubt about the authenticity of this area, as Europeans may have carved some of the dendroglyphs.

Burial sites

Like Europeans, Aboriginal people regard burial sites with great reverence. Unlike Europeans, however, Aboriginal people make little distinction between a grave that is 10 years old, and a grave that is 10,000 years old. An underlying principle of Aboriginal philosophy is that all Aboriginal people are related to each other, as well as to the land. There are doubtless many burial sites around the region of the Barwon River wetlands, although the location of most are not widely known.

Missions and stations

Despite the negative connotations often associated with them, sites such as the old Brewarrina and Angledool missions remain important to local Aboriginal people. A great many people in the region have some family association with the missions, and many Aboriginal people are buried there. Such sites also represent Aboriginal people's survival and cultural continuity despite considerable oppression and adversity.

The role of Aboriginal labour in the development of the region is not widely recognised. Aboriginal people contributed significantly to fencing and land clearing, as well as working as stockmen, domestic staff, general labourers, and in many other capacities. Much of what is generally referred to as colonial heritage is also of significance to Aboriginal people, and can be a source of considerable pride.

European impacts

The European occupation of Australia that began in 1788 has fundamentally and inalterably changed the Australian landscape and the culture of Aboriginal people. The following is a brief, but by no means complete, list of some of the continuing impacts of European colonisation on the Aboriginal people's traditional uses of the Barwon River wetlands.

Occupation of land

The most immediate and longest lasting impact of Europeans in Australia was the occupation of Aboriginal people's land. This had the effect of limiting Aboriginal people's access to food, hunting grounds, permanent water sources and spiritual and cultural sites. Much of the land that Aboriginal people retained access to was of low quality, lacking in surface water and food animals and plants.

Around the turn of the century, remaining Aboriginal people were gathered together in missions under government supervision. One of these was at Brewarrina, and another shorter lived one at Angledool. The Brewarrina Mission was established in 1887, and operated until 1967. For a first hand account of life at this mission, Jimmie Barker's biography is essential reading. Not all Aboriginal people in the region lived on these missions, but virtually all had at least some contact with mission life. The concentration of Aboriginal people at these missions served to further strain ties with their traditional lands, as well as eroding their self-sufficiency.

Introduction of disease

The introduction of exotic diseases such as smallpox and influenza had a devastating effect on Aboriginal people. As happened to indigenous people in many other parts of the world, the Aboriginal people had no resistance to these diseases. It is reasonable to assume that a significant percentage of Aboriginal people in the region succumbed to these diseases.

Conflict

Armed conflict between Aboriginal people and European colonisers was common until the early years of the twentieth century. Reynolds estimates that around 20,000 Aboriginal people were directly killed by Europeans between first colonisation and federation. Some of these deaths resulted from skirmishes or outright battles, but many were for trivial reasons such as sheep or cattle rustling, or for no reason at all.

The area around the Barwon River wetlands was no exception to this. Jimmie Barker comments on several massacre sites around Brewarrina. The worst occurred at Hospital creek, about 20 kilometres north east of Brewarrina, where a large camp of local Aboriginal people was attacked by a number of European colonisers. A great many people were killed, and Barker comments that bones and skulls could be seen in the area as recently as the early 1970's.

Impacts of stock and other introduced animals

The widespread grazing of sheep and cattle, as well as the introduction of goats, rabbits, foxes and other feral animals has had three major impacts on the traditional Aboriginal lifestyle. All these animals competed directly with many native mammal species for fodder, indirectly and directly contributing to extinction of many species. Secondly, many introduced

species browsed plants that were used for food, medicines and materials by Aboriginal people. Thirdly, large animals compacted the ground and destroyed riparian habitat.

Competition with native mammal can be easily demonstrated. In “Bourke Bush Foods”, Eric Knight and Athol Gillon note eleven mammals that were common sources of food for Aboriginal people. These are:

Common name	Scientific name	Status
Red kangaroo	<i>Macropus rufus</i>	Common
Bridle nail-tailed wallaby	<i>Onychogalea fraenata</i>	Extinct in region
Eastern hare-wallaby	<i>Lagorchestes leporides</i>	Extinct
Brush-tailed bettong	<i>Bettongia penicillata</i>	Extinct in region
Burrowing bettong	<i>Bettongia lesueur</i>	Extinct in region
Pig-footed bandicoot	<i>Chaeropus ecaudatus</i>	Extinct
Western-barred bandicoot *	<i>Perameles bougainville</i>	Extinct in region
Bilby	<i>Macrotis lagotis</i>	Extinct in region
Numbat	<i>Myrmecobius fasciatus</i>	Extinct in region
Water rat	<i>Hydromys chrysogaster</i>	Conservation concern
Echidna	<i>Tachyglossus aculeatus</i>	Common

(* Interpretation of the author. Referred to as Short-nosed bandicoot in text)

As can be seen from the list, only three of these can still be found in the Bourke area, the rest having become locally or even totally extinct. Many other important species to the Aboriginal people are in decline or have disappeared altogether, such as the Common brushtail possum (*Trichosurus vulpecula*) and the Common ringtail possum (*Pseudocheirus peregrinus*), both of which are of conservation concern. Of the 400 species known from the Darling Riverine Plains region, 26 are listed as extinct, 43 are listed as threatened in NSW, and 95 are of conservation concern.

As well as competing with native animals, these invaders also competed with the Aboriginal peoples. Many of the plants most prized by Aboriginal people are relished just as much by stock, goats and rabbits.

Cunningham *et al* lists 15 important food species to Aboriginal people that are also known to be eaten by stock or feral animals, including:

Common Nardoo	<i>Marsilea drummondii</i>
Emubush	<i>Eremophila longifolia</i>
Eurah	<i>Eremophila bignoniflora</i>
Kurrajong	<i>Brachychiton populneus</i>
Menindee Clover	<i>Trigonella suavissima</i>
Pigweed	<i>Portulaca oleracea</i>
Priddiwalkatji	<i>Arabidella eremigena</i>
Quandong	<i>Santalum acuminatum</i>
Wild Lime	<i>Eremocitrus glauca</i>
Wild Orange	<i>Capparis mitchellii</i>
Yam	<i>Micoseris lanceolata</i>

Stock animals had an effect beyond what they ate. Large groups of browsing cattle and sheep destroyed undergrowth, particularly around river banks and billabongs. This effected the regrowth of plant species. The hard, hooved foot of ungulates also compacted the ground, reducing the capacity of native plants to regrow.

The effects of introduced animals were not entirely negative. Rabbits became an important food source to Aboriginal people, and to an extent replaced species such as the Bilby. The sale of rabbit skins also provided many Aboriginal people with a small but important income during the early part of the twentieth century, when wages were for considerably lower for Aboriginal people than Europeans.

However, generally speaking, the introduction of many new species dramatically decreased the productivity of the bush, and reduced the ability of Aboriginal people to collect traditional foods.

Land clearing

The effects of widespread land clearing are now an issue of national importance. As well as impacting on native plant species, land clearing promotes erosion, dryland salinity and removes habitat for fauna. The Darling Riverine Plains has a relatively high percentage of undisturbed vegetation when compared with the rest of NSW, but the rate of clearing is still significant.

Land is cleared primarily for two reasons. The first is for grazing of stock, as has been discussed above. The second is for cropping, often large monoculture plots such as cotton. As well as requiring large amounts of water, resulting in substantial water extraction, crops such as cotton also require regular spraying of pesticides, which may impact on the local ecology. The introduction of crops to the region also brought many European weed species, which have added to the pressure on the ecosystem.

River modification

European colonisation of the area had an almost immediate effect on the Barwon River, a legacy that stands to this day. To allow easy passage for paddle steamers, many of the rock fishtraps were wholly or partially dismantled. Even the Ngunnhu was not spared, with passage being cleared through its centre to allow traffic to pass. This destruction continued well into the 1920's, as stone was removed for building foundations, and then later for roadworks.

Ending up as building materials wasn't the only fate of the fish traps. Mary Gilmore notes that:

“The barriers were destroyed in two ways. One was by pulling out the stones and timber that formed them; the other was by making them the site of a dam.”

She remarks that a common opinion of the day was that “no one but a self opinionated fool ever thought of putting a dam anywhere else.” The presence of the Brewarrina weir adjacent to Ngunnhu emphasises this point. There are now nine weirs of at least 1.5 metres height on the Barwon River between Brewarrina and Mugindi.

Snags and fallen logs, which provided habitat and shelter for many freshwater species, were also removed to facilitate movement of river traffic. The combination of removal of habitat, and the placement of barriers to fish migration continues to have serious effect on riverine ecology in this region. Native fish in particular have suffered, and the introduction of many exotic species has compounded this problem. The NSW Rivers Survey, conducted by NSW Fisheries and the CRC for Freshwater Ecology in 1996, identified the following six introduced fish species in the Darling River:

Brown Trout	<i>Salmo trutta</i>
European Carp	<i>Cyprinus carpio</i>
Gambusia	<i>Gambusia holbrooki</i>
Goldfish	<i>Carassius auratus</i>
Rainbow Trout	<i>Oncorhynchus mykiss</i>
Redfin Perch	<i>Perca fluviatus</i>

These species, particularly European carp, now form the bulk of the biomass within most of Australia's inland waterways. Fecund and tolerant to a wide range of environmental conditions, they have all but replaced native fish species in many areas.

However, the greatest impact on the Barwon River has been the extraction of water for irrigation, and the diversion of water to off-river storages. Although the Barwon River is an unregulated system, that is flow is not dictated by releases from dams, the level of water diversion effectively regulates flow.

In 1995, the Murray Darling Basin Commission introduced a cap on water extraction at 1993/4 levels of development, in attempt to halt widespread environmental degradation. Despite this, the Barwon-Darling River system exceeded this cap every single year from 1995 until 2000. The impact of this level of water extraction on the ecology of the Barwon River wetlands can only be guessed, but is undoubtedly extreme.

A similar problem exists with the Narran River and its parent, the Condamine-Balonne. For example, the amount of off-river storages on the Narran River is estimates to be in excess of 950,000 Megalitres. The fact that the Narran River originates in Queensland while the Narran Lakes are in New South Wales demonstrates the difficulties as well as the underlying absurdity of natural resource management in the Murray Darling Basin.

Water quality has also deteriorated significantly within the Barwon River wetlands. Weirs impede the flow of the river, preventing small freshes and floods from flushing the river. Combined with an increased nutrient load from town sewerage and agricultural run-off, the perfect conditions for toxic blue-green algal blooms are created.

Conclusion

The Barwon River wetlands have played a central role in the life of the Aboriginal people of northern New South Wales for many thousands of years. However, since European colonisation of the area, the ability of Aboriginal people to practice traditional activities has been severely compromised.

The general environmental health of the region has also suffered during this time, resulting in widespread extinction of native species, degradation of soil and water quality, and the introduction of exotic species. These two issues are not coincidental, as traditional Aboriginal lifestyle and the ecology of the region were intrinsically linked prior to European colonisation.

Marginalisation

Aboriginal people living on the Barwon River are still denied access to land and water that was never legally or formally acquired from them, despite the recognition of Native Title, and the success of High Court cases such as Wik and Mabo. The generally degraded state of the environment means that what land and water is accessible to Aboriginal people is not as rewarding as it used to be.

Aboriginal people on the Barwon River are also effectively marginalised in decision making processes, not only in issues of natural resource management, but also in social and cultural matters. Aboriginal people have been seriously under-represented in government process, such as the water reform.

In cases where Aboriginal people have been consulted, it is often in a way that trivialises their involvement, and focuses on issues in context of the current environmental problems of the region. Very rarely are the concepts of ecological health examined, or the role of both Aboriginal and non-Aboriginal communities in maintaining ecological health.

The way forward

Restoration of environmental flows to the Barwon River wetlands is essential. Diversions from the Barwon Darling must be capped at 1993-94 levels of development **at the most**, in line with the rest of the Murray Darling Basin. Similarly, further development and water extraction on the Condamine-Balonne Rivers in Queensland must also be halted, in order to protect areas such as the Narran Lakes. These environmental flows should be considered as starting points only, and whenever and wherever possible additional water should be returned to the Barwon River wetlands.

Moves towards re-establishing Aboriginal people's involvement in the management of natural resources in this area must then be undertaken.

An important first step is acknowledging and accepting traditional Aboriginal knowledge of land and water, and their prior ownership and continuing attachment to land and water. Such an acknowledgment would confirm Aboriginal people's involvement in land and water management, and offer additional solutions to saving and restoring the ecology of areas such as the Barwon River wetlands.

Following from this, there is need for the establishment of Aboriginal committees to give voice to this traditional knowledge, as well as community concerns on natural resource

management, social, and cultural issues. In this way, advice and information could be provided to management groups such as the proposed Water Management Committees, the Water Advisory Council, NSW National Parks and Wildlife Service, NSW Fisheries, Department of Land and Water Conservation, and others.

Finally, and most importantly, the rights of Aboriginal peoples must be recognised and restored, particularly the following:

- traditional rights to access clean and healthy water;
- traditional rights to access birds, fish, crustacean and other traditional foods which require clean, healthy rivers, with sufficient water to function as an ecosystem; and
- the cultural, spiritual and identity aspects of water, rivers and wetlands.

These issues go far beyond simple natural resource management. Cultural identity, training, employment and ultimately the community spirit of many regional centres all stand to benefit from Aboriginal peoples involvement in the restoration of the Barwon River wetlands and the rest of Australia's inland rivers.

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Appendix 1: The making of Narran Lake

Long, long ago in the time of the creation Gurya and his two wives were out hunting.

Guya's wives went out looking for yams, berries and roots and some fruit, while Gurya went hunting for meat, bundah (kangaroo) and Dinnawaan (emu).

Gurya told his wives he would meet them at the camp later on after he had caught something to eat.

After gathering enough food for the night Gurya's wives came back to camp early.

When they arrived Gurrakil (crocodile spirit) was waiting for them, because he saw Gurya out hunting and knew he wouldn't be at his camp.

Gurrakil told Gurya's wives that he wanted them, and that he would take them away from Gurya and marry them himself.

Gurrakil grabbed them, and as they struggled to get away from him he swallowed them, and left them in his belly.

When Gurya got back to his camp he realised something was wrong. He looked around for his wives and saw Gurrakil's tracks and where he went underground and left a hole in the ground which is now a spring and is called Gurya Springs. As Gurrakil went he drank up all the water in the water holes and left a big trail in the ground which is now the Narran River.

When he finally stopped to rest for the night Gurya caught up with him and speared Gurrakil and opened up his belly and got his wives out.

As Gurrakil lay dying and swinging his tail about he knocked all the trees down and made a big hollow in the ground and all the water that Gurrakil drank spilled out and filled the hollow which is now Narran Lake.

One of Gurya's wives died and he laid her down on a sand hill. Now if you go there you'll see where Gurya laid his wife, and where Gurya knelt down on the marilla (rocks) on the edge of the lake to have a drink, he left his hand and knee prints in the rock.

Ted Fields, *The Making of Narran Lake*, Department of School Education, 1993

Appendix 2: Waterbirds species recorded at Narran Lakes

Great Crested Grebe	<i>Podiceps cristatus</i>
Hoary-headed Grebe	<i>Poliocephalus poliocephalus</i>
Australasian Grebe	<i>Tachybaptus novaehollandiae</i>
Darter	<i>Anhinga melanogaster</i>
Little Pied Cormorant	<i>Phalacrocorax melanoleucos</i>
Little Black Cormorant	<i>Phalacrocorax sulcirostris</i>
Pied Cormorant	<i>Phalacrocorax varius</i>
Great Cormorant	<i>Phalacrocorax carbo</i>
Australian Pelican	<i>Pelecanus conspicillatus</i>
Brolga	<i>Grus rubundicus</i>
Cattle Egret	<i>Ardeola ibis**</i>
Little Egret	<i>Egretta garzetta</i>
Intermediate Egret	<i>Egretta intermedia</i>
Great Egret	<i>Egretta alba**</i>
White-faced Heron	<i>Ardea novaehollandiae</i>
Pacific Heron	<i>Ardea pacifica</i>
Nankeen Night Heron	<i>Nycticorax caledonicus</i>
Royal Spoonbill	<i>Platelea regia</i>
Yellow-billed Spoonbill	<i>Platelea flavipes</i>
Straw-necked Ibis	<i>Threskiornis spinicollis</i>
Sacred Ibis	<i>Threskiornis aethiopica</i>
Glossy Ibis	<i>Plegadis falcinellus**</i>
Black Swan	<i>Cygnus atratus</i>
Magpie Goose	<i>Anseranus semipalmata</i>
Plumed Whistling Duck	<i>Dendrocygna eytoni</i>
Freckled Duck	<i>Stictonetta naevosa*</i>
Maned Duck	<i>Chenonetta jubata</i>
Hardhead	<i>Aythya australis</i>
Pacific Black Duck	<i>Anas supercilliosa</i>
Australian Shoveler	<i>Anas rhynchotis</i>
Grey Teal	<i>Anas gracillis</i>
Chestnut Teal	<i>Anas castanea</i>
Pink-eared Duck	<i>Malacorhynchus membranaceus</i>
Blue-billed Duck	<i>Oxyura australis*</i>
Musk Duck	<i>Bizuria lobata</i>
Australian Spotted Crake	<i>Porzana fluminea</i>
Eurasian Coot	<i>Fulica atra</i>
Dusky Moorhen	<i>Gallinula tenebrosa</i>
Purple Swamphen	<i>Porphyrio porphyrio</i>
Black-tailed Native Hen	<i>Gallinula ventralis</i>
Banded Lapwing	<i>Vanellus tricolor</i>
Masked Lapwing	<i>Vanellus miles</i>
Red-kneed Dotterel	<i>Erthrogonyx cinctus</i>
Black-fronted Dotterel	<i>Charadrius melanops</i>
Red-capped Dotterel	<i>Charadrius ruficapillus</i>
Latham's Snipe	<i>Gallinago hardwickii</i>

Traditional Aboriginal uses of the Barwon River Wetlands

Sharp-tailed Sandpiper	<i>Calidris acuminata</i>
Curlew Sandpiper	<i>Calidris ferruginea</i>
Bar-tailed Godwit	<i>Limosa lapponica</i> **
Black-tailed Godwit	<i>Limosa limosa</i>
Marsh Sandpiper	<i>Tringa stagnatilis</i>
Common Greenshank	<i>Tringa nebularia</i>
Black-winged Stilt	<i>Himantopus himantopus</i>
Red-necked Avocet	<i>Recurvirostra novaehollandiae</i>
Australian Pratincole	<i>Stiltia isabella</i>
Sliver Gull	<i>Larus novaehollandiae</i>
Gull-billed Tern	<i>Sterna nilotica</i>
Caspian Tern	<i>Hydrpogne caspia</i> **
Whiskered Tern	<i>Sterna hybrida</i>

* listed as vulnerable or endangered in NSW

** listed under international migratory bird agreement