

The Barwon-Darling River

A Wide Variety of Animal and Plant Life



Biodiversity is the variation of life forms within an ecosystem and is often used as a measure of environmental health. The Western Catchment supports a wide variety of plants and animals with 471 species of animals and 1,351 species of plants recorded to date.

Biodiversity along the Barwon-Darling River can be found in a range of habitats, from the waters of the River itself and its riverbanks to the expanses of the floodplain where billabongs, swamps and open plains provide a myriad of habitats for wildlife.



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Floodplains

Many species rely on healthy floodplains for habitat, food sources and breeding. Floodplain wetlands also provide breeding habitat for migratory birds such as the painted snipe (*Rostratula benghalensis*).

Floodplain life is significantly affected by river regulation and floodplain development. Habitat plants of the Darling River and floodplain rely on regular flooding and so do the breeding processes for invertebrates, fish, birds and other animals.



The brolga (*Grus rubicunda*) lives in wetlands and on floodplains and is well known for its intricate mating dances. The dance begins with a bird picking up some grass and tossing it into the air, catching it in its bill. It progresses to jumping a metre into the air with outstretched wings, then stretching, bowing, walking, calling and bobbing its head.

Plants

The main plant species along the Barwon-Darling River is the river red gum (*Eucalyptus camaldulensis*). Tree hollows in mature river red gums provide habitat for animals and birds. River cooba (*Acacia stenophylla*) and coolabah (*Eucalyptus coolabah* ssp. *coolabah*) are also common. On the floodplains coolabah/black box (*Eucalyptus largiflorens*) woodlands dominate the landscape. These woodlands are listed as an endangered ecological community. Lignum (*Muehlenbeckia florulenta*) and cooba (*Acacia salicina*) are also common species along the river system.

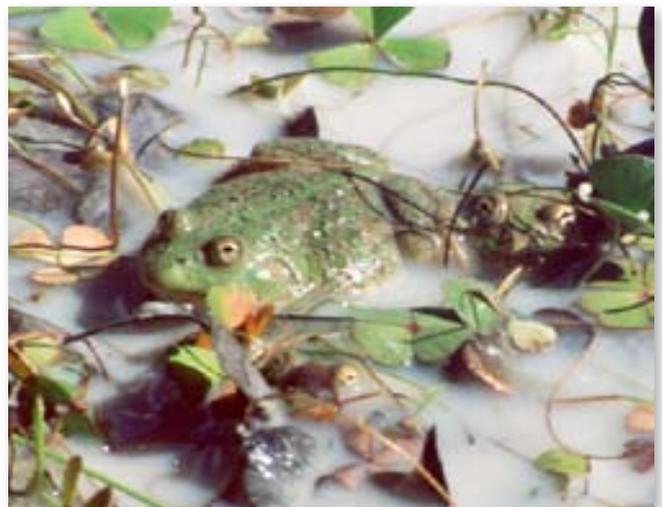
Groundcover is made up of a variety of grasses, shrubs and forbs and can be a mixture of annual

and perennials. The Darling lily (*Crinum flaccidum*) is a unique flower, found only on the Barwon-Darling floodplains.



Darling lily with Wilcannia lily (yellow) in the background.

Nardoo (*Marsilea drummondii*) is another species of interest. This aquatic fern is only common during and after floods. Aboriginal people used nardoo (pictured below) as a food plant, grinding seeds into flour. When nardoo is incorrectly prepared, it can cause thiamine deficiency – a factor that contributed to the deaths of explorers Burke and Wills in 1861.



Annual vegetation varies in response to the quantity and timing of rainfall. Changes in perennial vegetation are usually due to events such as drought, fire and floods. Past and present grazing can also affect the composition of plant communities.

Mammals and Reptiles

A wide range of animals are found along the Barwon-Darling River. The water rat (*Hydromys chrysogaster*) lives in rivers and swamps, and is an opportunistic predator, eating large aquatic insects, fishes, crustaceans and mussels.

The Giles planigale (*Planigale gilesi*) and narrow-nosed planigale (*Planigale tenuirostris*) are small, carnivorous marsupials which may be found along the Darling-Riverine Plains and frequent the cracks found in the clay soils on the floodplains.

The white-striped freetail-bat (*Nyctinomus australis*) searches for high flying moths by flying very fast, directly above the tree canopy, usually favouring river red gums. The eastern snake-necked turtle (*Chelodina longicollis*) lives in swamps and slow moving water habitats. They can be found in the River where they dig into its sandy bottom and rest on rocks and logs. Although the kultarr (*Antechinomys laniger*) is not strictly linked to the Darling Riverine Plains, they have been recorded in the Gundabooka National Park, located adjacent to the Darling River, south of Bourke.



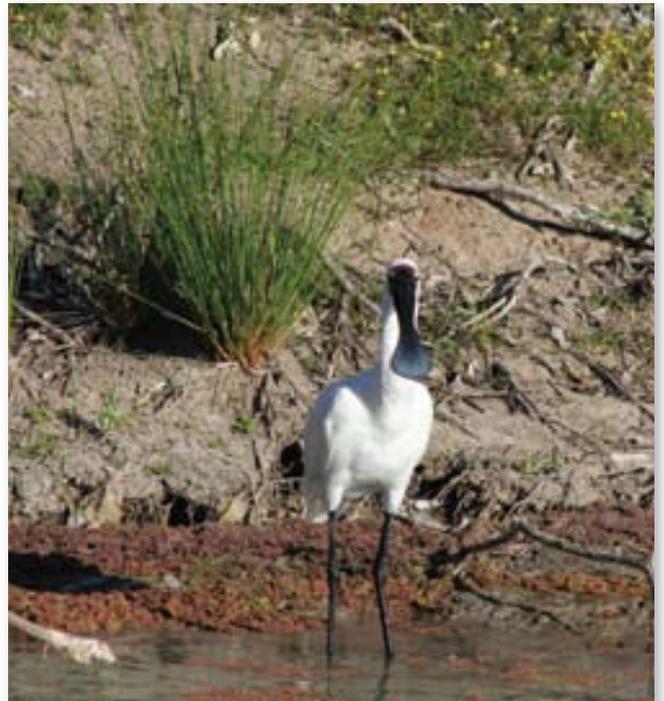
Fresh water turtles are some of many species that depend upon the Barwon-Darling River. John Cann/ANTPhoto.com

Birds

Birdlife is abundant along the river corridor including red-tailed black cockatoos (*Calyptorhynchus banksii*), red-rumped parrots (*Psephotus haematonotus*), rainbow bee-eaters (*Merops ornatus*) and sacred kingfishers (*Todiramphus sanctus*).



A healthy river and floodplain is essential to support the many plants and animals, including the rainbow bee-eaters (*Merops ornatus*) that live in the Western Catchment. Jurgen Otto/ANTPhoto.com



The royal spoonbill (*Platalea regia*) sweeps its distinctive bill from side to side catching aquatic insects and small fish in rivers and wetlands.

The Narran Lake Nature Reserve Wetland near Walgett is a nationally and internationally significant breeding site for waterbirds and many other species.

Fish

Fish are an important indicator of water quality. At its healthiest the river had an abundance of fish and a variety of species such as Murray cod, golden perch, silver perch and freshwater catfish.

Over the past 50 years the number of native fish has declined significantly. Factors that contributed to this decline include:

- introduced species such as carp, redfin perch, gambusia and banded grunter
- low and changed water flow caused by weirs, extraction and drought
- loss of feeding and breeding habitat such as deep pools, gravel beds, bank rock ledges, snags, reeds and weed beds
- degradation of floodplains and wetlands
- barriers to fish migration such as weirs and low water flow
- pollution and sediment from riverbank and floodplain erosion

The Murray cod is Australia's largest freshwater fish and was originally abundant throughout the Murray Darling Basin. It is estimated that native fish numbers are now only 10% of the pre-1770 fish population.



"A Murray Cod weighing 90lb (almost 41kg) taken from the Darling River by Mr. Harold Selleck, aged 74, of Melbourne." Photo: Terry Rowe 1970, National Library of Australia.

Native fish populations are increasing and being protected by improving passage and habitat by installing fishways, discouraging carp populations, reinstating snags and improving riverbank stability and feed sources in the river.



Many native species such as the silver perch (pictured) are now restricted or endangered. Photo: Industry and Investment NSW.

Snags are the inland river equivalent of coastal reefs. Studies have shown that streams with snags are likely to have higher numbers of fish and invertebrates than those without. Snags provide hiding, spawning and resting places for native fish, rich reservoirs of food for invertebrates and other organisms, roosting places for birds, and habitat for animals such as tortoises and native water rats.

Many snags have been removed from the Barwon-Darling for ease of navigation on the once busy commercial waterway. This activity has contributed to a number of Darling River species becoming endangered, including silver perch, olive perchlet, purple spotted gudgeon and the river snail.



In 2008, 200 snags were reinstated at 11 sites between Brewarrina and Bourke and a further 500 snags reintroduced at 12 sites around Wilcannia to improve aquatic habitat and bring back the fish into the River.

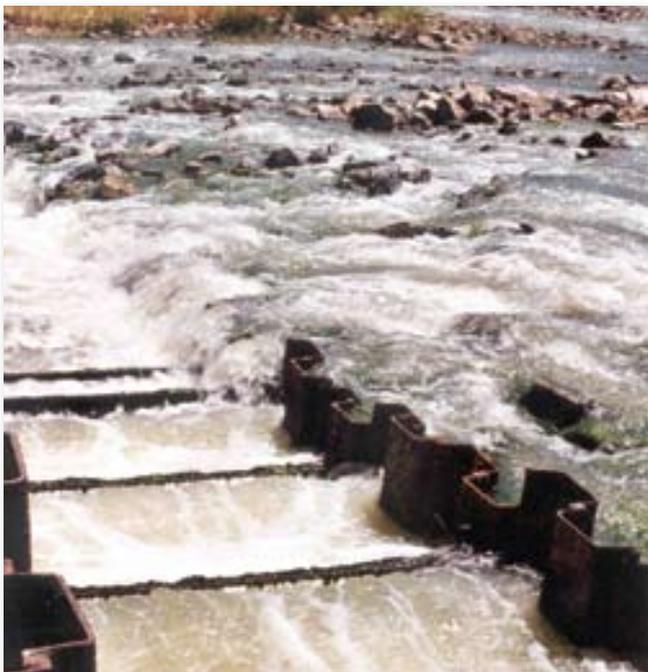
The Western CMA and Industry and Investment NSW have undertaken large-scale re-snagging between Brewarrina and Bourke and near Wilcannia to increase numbers of native fish.

The re-snagging between Brewarrina and Bourke is one of a number of initiatives to improve the aquatic habitat on that section of the Barwon-Darling River. The \$2.5 million Demonstration Reach project includes revegetation works and the installation of a fishway at Brewarrina weir.

Fishways

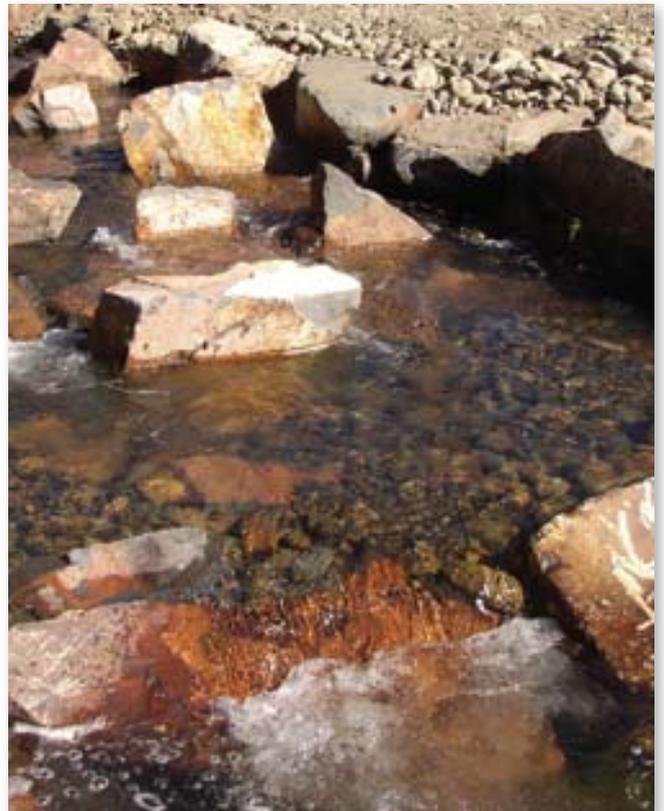
Fishways offer an alternative route up a stream for fish normally stranded at the base of a weir or dam. These structures are often made of rock, steel or concrete, and sometimes mimic the shape of a natural channel. A fishway reduces the slope of the channel and the speed of the flowing water so the fish can slowly negotiate their way over the barrier and into the pool upstream.

In the past, some fishways installed in Australian rivers were designed to suit northern hemisphere fish, such as salmon and trout, which swim strongly against the current and are able to jump. These are being replaced with fishways that are better suited to our slower moving native fish and feature a more gentle gradient.



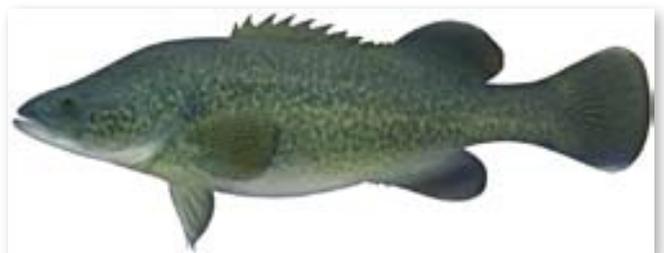
Earlier fishways were not well suited to Australian native fish behaviour.
Photo: Phillipa Blythman

Each site for a fishway has to be carefully assessed before a custom design is formulated. For example, the proposed reverse rockramp fishway at Brewarrina was designed to extend back into the weir pool so as not to impact on the Aboriginal fisheries below the weir.



Fishways are custom designed to incorporate resting pools into areas where water has a high velocity, allowing the fish to use a burst of speed to progress upstream. Photo: Industry and Investment NSW.

The origin, colour and size of the rock to be used was selected to complement the Aboriginal fisheries while allowing fish to negotiate the weir. The rocks are arranged in a flattened 'stairwell' configuration to create a series of shallow steps and resting pools.



Murray cod are popular with anglers. Size, bag and gear limits are in place to reduce overfishing and encourage native fish numbers. Photo: Industry and Investment NSW.

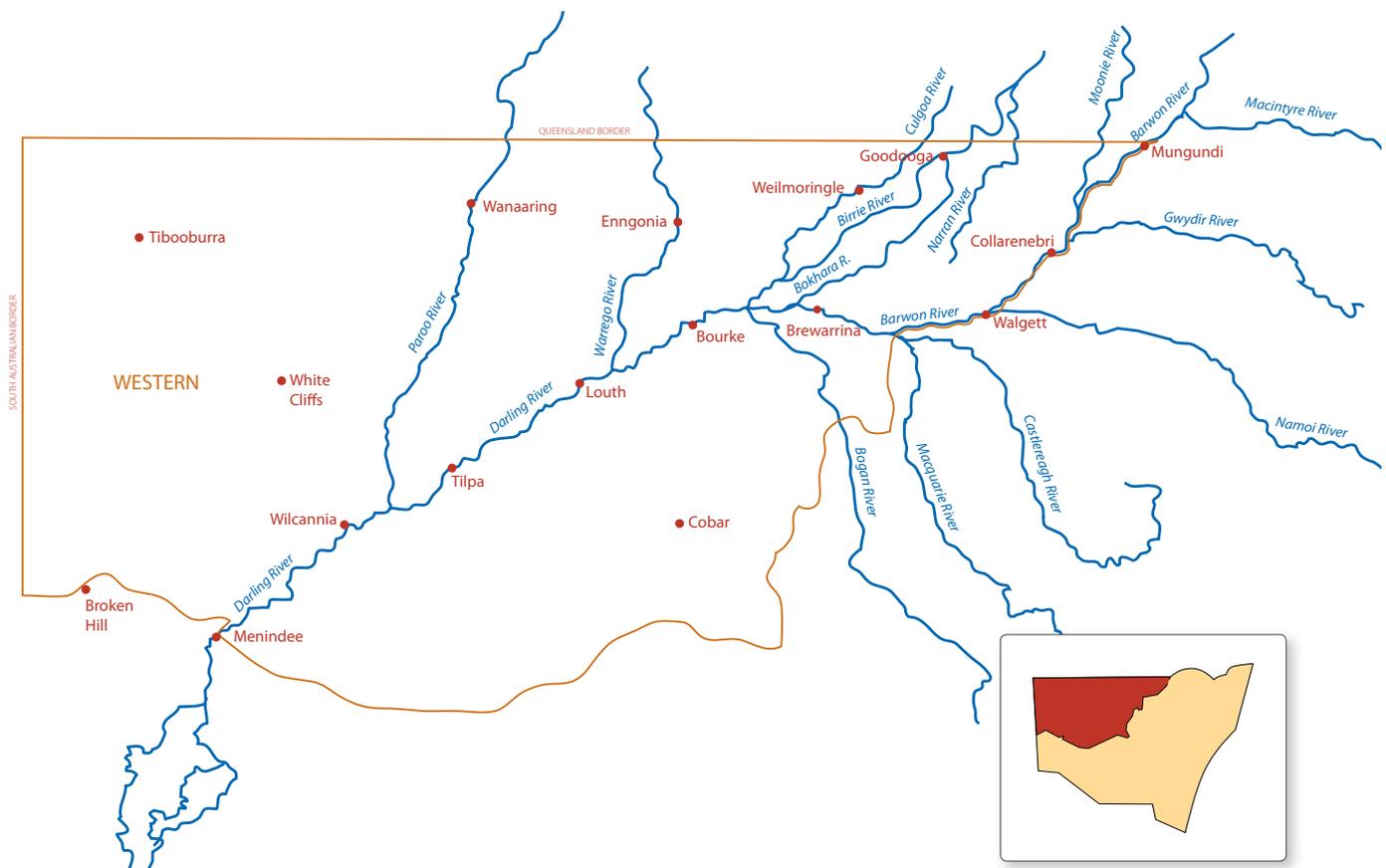
The Western Catchment river systems

Like many rivers within the Western Catchment, the Barwon-Darling River system originates outside the Catchment boundary.

The River is part of a complex system with highly variable flows. Droughts may be followed by heavy rains which fill thousands of small creeks, flooding the wetlands and lakes, flowing across the floodplains, creating new watercourses and reaching widely dispersed billabongs and waterholes.

Water supports and attracts life. It provides habitat for plant and animal biodiversity and supports commerce through industry, irrigation and domestic use.

The Western Catchment Management Authority, together with local government and the Australian Government, is working with the community to better manage natural resources: land and vegetation, rivers and groundwater, cultural heritage and biodiversity.



References and further information

Fauna of Western NSW - The Northern Floodplains Region. Published by the NSW Department of Environment and Climate Change.

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Through the Western Catchment Management Authority 2009

Disclaimer: The information contained in this publication is based on knowledge and understanding at the time of writing (July 2009). However, because of advances in knowledge, users are reminded of the need to ensure that information upon which they rely is up-to-date and to check currency of the information with the appropriate officer of the Western Catchment Management Authority or the user's independent advisor.

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