



Australian Government

Department of the Environment

Celebrating Australia's wetlands

A showcase of Australian Ramsar sites



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The Department of the Environment acknowledges the traditional owners of country throughout Australia and their continuing connection to land, sea and community. We pay our respects to them and their cultures and to their elders both past and present.

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Cover: Barmah Forest, one of 16 Ramsar sites in the Murray-Darling Basin, supports significant cultural values and biodiversity (© Copyright, Jim Mollison)

Back cover: Cave diving in crystal clear deep-water is one of the main attractions at the Piccaninnie Ponds Karst Wetlands Ramsar site in South Australia (© Copyright, Dr Richard Harris)

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Kakadu National Park in the Northern Territory is one of Australia's most iconic landmarks and was designated as a Ramsar site in stages from 1980. Kakadu National Park is also a World Heritage Site for both cultural and natural outstanding universal values (© Copyright, Sarah Stuart-Smith)

Foreword

I am proud of the role Australia has played in managing its wetlands and contributing to global wetland conservation.

Australia was one of the first signatories to the Convention on Wetlands of International Importance, known as the Ramsar Convention. As evidence of its leadership and commitment to the Convention, Cobourgh Peninsula in the Northern Territory was designated as the world's first Ramsar wetland in 1974. As we celebrate the 40th anniversary of that listing, it is timely to reflect on four decades of implementation of the Ramsar Convention in Australia.

There is growing recognition that our wetlands play a vital role in supporting a strong economy, healthy environment and thriving communities. Wetlands can improve water quality and provide reliable water supplies, support primary industries, mitigate natural hazards and support tourism and recreation.

The Australian Government has taken a number of initiatives to support wetland health, including the Murray-Darling Basin Plan, which contributes to wetland protection by recovering water for the environment and identifying and managing important wetland assets.

Australia has now designated 65 internationally important wetlands to the Ramsar list, covering 8.3 million hectares and ranging from coral reefs to salt marshes, peat bogs, billabongs and permanent lakes.

This publication showcases a selection of Australia's Ramsar wetlands, and I hope provides the reader with a glimpse of the amazing beauty and diversity of Australia's wetlands.



Senator the Hon Simon Birmingham

Parliamentary Secretary to the
Minister for the Environment



Introduction

The Convention on Wetlands of International Importance (the Ramsar Convention) aims to halt the worldwide loss of wetlands and conserve, through wise use and management, those that remain.

The Ramsar Convention encourages member countries to nominate sites containing representative, rare or unique wetlands, or that are important for conserving biological diversity, to the List of Wetlands of International Importance (Ramsar sites).

Under the Ramsar Convention, a wide variety of natural and human-made habitat types can be classified as wetlands, including swamps, marshes, billabongs, lakes, salt marshes, mudflats, mangroves, coral reefs, fens, peat bogs, or bodies of water. Water within these areas can be static or flowing; fresh, brackish or saline; and can include inland rivers and

coastal or marine water to a depth of six metres at low tide. There are even underground wetlands.

This publication showcases 23 Australian Ramsar sites, including the iconic Kakadu National Park in the top end, Barmah Forest in the Murray-Darling Basin, the Coorong and Lakes Alexandrina and Albert Ramsar wetland in South Australia and Moulting Lagoon in Tasmania.

Further information on all Australian Ramsar sites can be found on the Department's website:

www.environment.gov.au/wetlands



Cobourg Peninsula Ramsar site in the Northern Territory contains a range of wetland types that support biodiversity, and was the world's first Ramsar site (© Copyright, Jeanette Muirhead)

Cobourg Peninsula Ramsar Site, Northern Territory

The world's first Ramsar site

In 2014 the Australian Government is celebrating the 40th anniversary of Cobourg Peninsula being listed as the world's first Wetland of International Importance under the Ramsar Convention. In May 1974 Australia showed its initiative, leadership and commitment to the Convention by listing this remote and unspoilt wilderness area in the Northern Territory.

Australia's commitment to identifying and conserving its environmental assets, especially those of global significance, continues to the present day. Australia now has 65 wetlands on the Ramsar list, covering 8.3 million hectares.

Ramsar designation: 1974
Location: On the far northern coast of the Northern Territory
Size: 220 700 hectares

Cobourg Peninsula's Ramsar status recognises its diversity of inland, coastal and marine wetland habitats, and its role in supporting biodiversity, including threatened species.

Green turtles (Chelonia mydas) use the beaches of Cobourg Peninsula Ramsar site for nesting

(© Copyright, Tony Howard)





Saltwater crocodile (Crocodylus porosus) taking a break on a sandbar off the coast of the Cobourg Peninsula
(© Copyright, Jeanette Muirhead)

Very few people have visited the Cobourg Peninsula. Its isolated location on the far northern coast of the Northern Territory, about 570 kilometres by road north-east of Darwin, means it is relatively undisturbed and retains many of its natural values. Cobourg is about 100 kilometres north of Kakadu National Park, Australia's second Ramsar wetland.

Most of the Cobourg Peninsula Ramsar site is managed as part of Garig Gunak Barlu National Park. *Garig* is a local language name, *Gunak* means land and *Barlu* means deep water. Land uses include conservation, regulated tourism, education, fishing and Indigenous use.

The Arrarrkbi are the Traditional Owners of the Cobourg Peninsula who uphold traditional land management practices, customary law and cultural practices. Cobourg Peninsula is managed jointly by the Traditional Owners and the Parks and Wildlife Commission NT. The health of Cobourg's plants and animals is dependent on traditional Indigenous management practices, including burning, established over a long period of time.

Cobourg has a huge diversity of habitats, including sandy beaches, rocky headlands, small islands, mangroves, eucalypt forests, coastal vine thickets, patches of rainforest, lagoons, tidal flats and estuaries, coral reefs and seagrass meadows.

The beaches provide regular nesting habitat for a number of species of threatened marine turtles (including the green turtle (*Chelonia mydas*), flatback



Rock formations at Smith Point on the Cobourg Peninsula (© Copyright, Jeanette Muirhead)



Cobourg Peninsula Ramsar site supports large populations of the adult roseate tern (Sterna dougallii)
(© Copyright, Graeme Chapman)



Coastline near the Victoria Settlement, Cobourg Peninsula (© Copyright, Michelle McAulay)

turtle (*Natator depressus*), leatherback turtle (*Dermochelys coriacea*) and olive ridley turtle (*Lepidochelys olivacea*) and the waters around Cobourg support the internationally vulnerable dugong (*Dugong dugon*). Significant seabird breeding colonies are found on the islands and some headlands support large populations of crested terns (*Thalasseus bergii*), bridled terns (*Onychoprion anaethetus*), black-naped terns (*Sterna sumatrana*) and roseate terns (*Sterna dougallii*).

Permanent wetlands provide a dry season refuge for animals including waterbirds, reptiles such as saltwater crocodiles, and amphibians. Cobourg Peninsula provides important habitats, feeding areas, dispersal and migratory pathways, and spawning sites for numerous fish including barramundi (*Lates calcarifer*), giant trevally (*Caranx ignobilis*), mangrove jack (*Lutjanus argentimaculatus*), black bream (*Acanthopagrus butcheri*) and barracuda (*Sphyrna barracuda*). Cobourg has Australia's only population of banteng (*Bos javanicus*), wild cattle that came from Indonesia with Macassan traders in previous centuries.

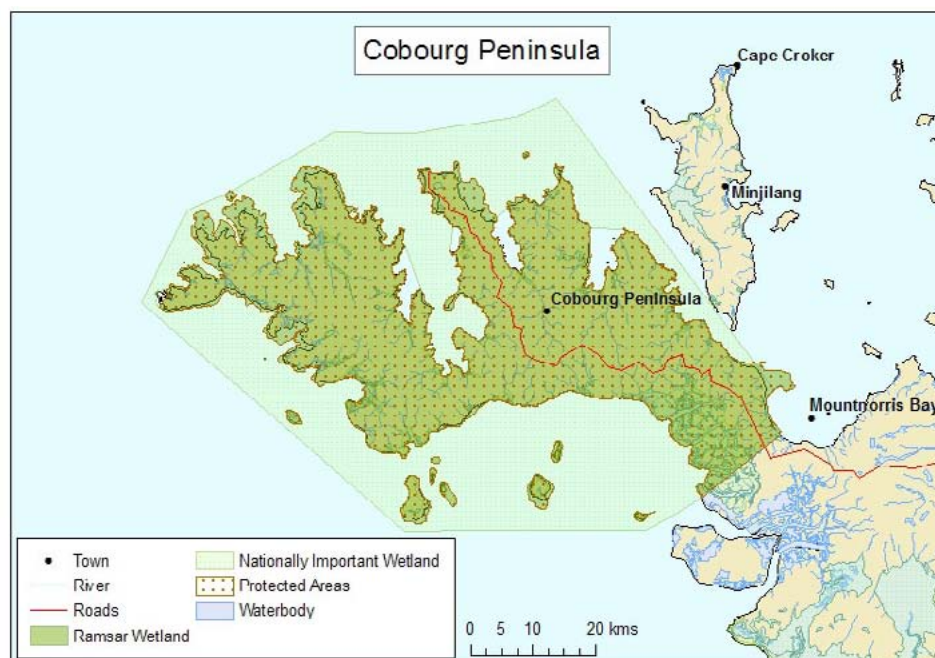
Cobourg Peninsula has a fascinating history and includes a number of historical and cultural sites. Aboriginal people have lived there for over

40 000 years, and continue to practise traditional hunting and fishing, including for dugong, turtle, magpie geese (*Anseranas semipalmata*), fish, crabs and oysters.

Macassans traded with Cobourg's Indigenous people for centuries, seeking trepang (sea cucumbers). In 1838, Europeans established Victoria Settlement in Port Essington, in response to British fears of Dutch and French expansion into northern Australia. The settlement was abandoned in 1849, due to disease and isolation, leaving ruins which are a popular destination for visitors. Since the mid 1800s, Cobourg Peninsula has supported industries such as cattle grazing, forestry, pearling and tourism.

The environmental values, Indigenous social and cultural values, and historical significance of Cobourg Peninsula make it one of Australia's most fascinating Ramsar sites. This peninsula of diverse tropical landscapes extending into the Arafura Sea is a place worth celebrating in 2014.

You can take a virtual tour of Cobourg Peninsula Ramsar Site at the following link: <http://www.environment.gov.au/water/topics/wetlands/database/virtual-tours/1-vt/index.html>



Cobourg Peninsula is located on the far northern coast of the Northern Territory, and was the world's first Ramsar site

(© Copyright, Department of the Environment)

Kakadu National Park Ramsar Site, Northern Territory

One of Australia's most iconic wetlands features a diversity of important cultural and ecological values.

Kakadu National Park stretches from the mangrove-fringed tidal plains in the north to vast floodplains, lowland hills and the sandstone cliffs of the Arnhem Land escarpment.

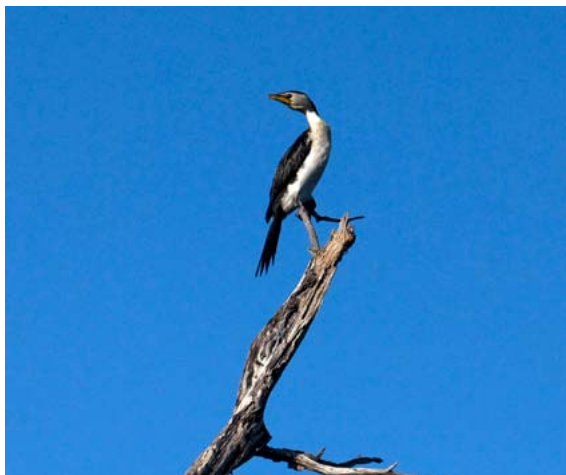
It is home to one third of Australia's bird species including magpie geese (*Anseranas semipalmata*), egrets, wandering whistling ducks (*Dendrocygna arcuata*) and brolga (*Grus rubicund*).

Kakadu supports 20 per cent of Australia's native freshwater fish species and nearly 1600 plant species.

Ramsar designation: 1980

Location: Approximately 220 kilometres east of Darwin in the Northern Territory

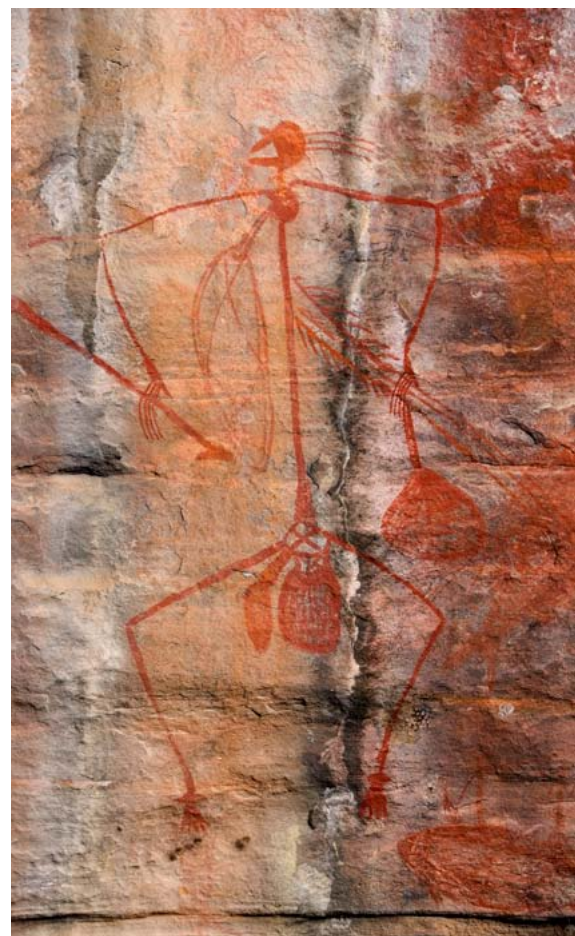
Size: 1 979 766 hectares



Birdlife alongside Yellow Water Lagoon in Kakadu National Park (© Copyright, Michelle McAulay)



Nourlangie Rock and Anbangbang billabong in Kakadu National Park (© Copyright, Allan Fox)



Indigenous cave paintings and rock art at Ubirr Rock, Kakadu National Park (© Copyright, Michelle McAulay)

Kakadu National Park is also a World Heritage Site and is one of very few places listed for both its cultural and natural values. The land and its people have always been linked. Kakadu has one of the greatest concentrations of rock art sites in the world, and one of the longest historical records of occupation by a group of people.

The park features a successful model of joint management between the Aboriginal Traditional Owners and the Australian Government's Director of National Parks. The Aboriginal people of Kakadu (known as Bininj in the north and Munguy in the south) work together with park staff to combine traditional skills and knowledge with contemporary park management, enabling the park to be managed in accordance with world's best management practices.

The Bininj/Munguy are proud to share their country with visitors. Each year up to 225 000 people visit Kakadu National Park to see Indigenous art sites, bushwalk, bird watch and go on boat cruises of the wetlands of Kakadu.

You can take a virtual tour of Kakadu National Park Ramsar Site at the following link: <http://www.environment.gov.au/water/topics/wetlands/database/virtual-tours/2-vt/index.html>



Kakadu National Park is a major tourist destination. Here, tourists enjoy a boat ride on Yellow Water Lagoon in Kakadu National Park (© Copyright, Sally Greenaway)



Magpie geese (Anseranas semipalmata) at a paperbark swamp in Kakadu National Park (© Copyright, Allan Fox)



Kakadu National Park Ramsar site is located in the Northern Territory (© Copyright, Department of the Environment)

Barmah Forest Ramsar Site, Victoria

The largest stand of river red gum forest in Australia is found on the extensive floodplains of north Victoria, along with the adjoining New South Wales Millewa Forest.

The Barmah Forest Ramsar site is one of sixteen Ramsar sites in the Murray-Darling Basin. It is also one of six 'icon sites' under *The Living Murray* program, chosen for its high ecological and economic value as well as its cultural significance.

Ramsar designation: 1982

Location: On the Murray River floodplain between Tocumwal and Echuca in Victoria

Size: 28 500 hectares

The majority of the forest functions as a single floodplain system and is dependent on seasonal flooding. Vegetation consists of river red gum and black box forest and woodland, as well as floodplain marshes.

The site is particularly important for species that depend on river red gums for foraging, shelter and breeding. An extensive range and number of waterbirds are found within the Ramsar site, including herons, ibis, spoonbills and terns, sometimes in large breeding colonies. Eight fauna species within the Barmah Forest are nationally threatened, including the endangered Australasian bittern (*Botaurus poiciloptilus*), trout cod (*Maccullochella macquariensis*) and winged peppercreep (*Lepidium monoplocoides*), and the vulnerable superb parrot (*Polytelis swainsonii*) and Murray cod (*Maccullochella peelii*).

There are hundreds of sites of cultural significance to Indigenous people within the forest, including occupation sites, burial grounds, mounds, middens, scarred trees and stone artefacts. Current uses of the Ramsar site include recreation, tourism, education and scientific research.



The Barmah Forest Ramsar site is significant for supporting at least seven wetland dependent species, including the superb parrot (Polytelis swainsonii)

(© Copyright, Kirsty Wilkes)



The Barmah Forest Ramsar site helps to support Australia's largest river red gum forest (© Copyright, John Baker)



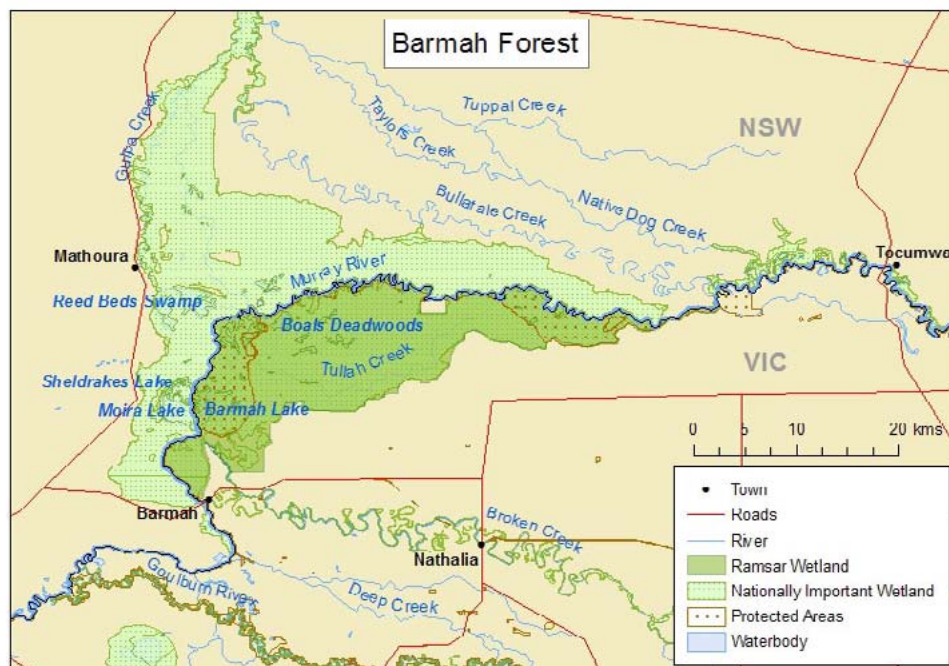
A diversity of waterbirds are found at the Barmah Forest Ramsar site, including spoonbills (© Copyright, John Baker)



Natural features of the Barmah Forest Ramsar site include major streams, anabranches, swamps, billabongs and permanent lakes (© Copyright, Jim Mollison)



*The Barmah Forest Ramsar site supports the nationally vulnerable Trout cod (*Maccullochella macquariensis*)* (© Copyright, Gunther E. Schmida)



Barmah Forest Ramsar site is located along the Murray River in northern Victoria (© Copyright, Department of the Environment)

Flood Plain Lower Ringarooma River Ramsar Site, Tasmania

Threatened species, migratory birds and dairy cattle are all residents of this coastal wetland in Tasmania.

The Flood Plain Lower Ringarooma River site consists of a mosaic of landforms including dunefields, lunettes, natural levees, active and abandoned stream channels, sand splays, lakes, ponds, lagoons and intermittent wet areas. While these landforms and habitats are part of a naturally dynamic system, the rate of geomorphic change has been accelerated by the input of sediments from historic mining activities in the catchment.

Ramsar designation: 1982

Location: On the far north-east coast of Tasmania

Size: 3519 hectares

Vegetation comprises a range of wetland species, with some communities listed as rare or threatened in Tasmania, including the coast paperbark swamp forest, blackwood swamp forest, scented paperbark scrub, freshwater aquatic rushland and sedgeland, saltmarsh, coastal heathland and wet heathland.

The site supports a range of mammals, fish and birds, including the threatened dwarf galaxias (*Galaxiella pusilla*) and spotted-tailed quoll (*Dasyurus maculatus gracilis*). Eleven migratory birds listed under international agreements related to the East Asian-Australasian Flyway use the site, including the cattle egret (*Ardea ibis*), great egret (*Ardea alba*), Latham's snipe (*Gallinago hardwickii*) and the curlew sandpiper



*The Flood Plain Lower Ringarooma River Ramsar site supports a number of threatened species, including the Spotted-tailed quoll (*Dasyurus maculatus gracilis*)*

(© Copyright, Dave Watts)



A diversity of wetland habitats exist within the Flood Plain Lower Ringarooma River Ramsar site

(© Copyright, Michelle McAulay)

(*Calidris ferruginea*). The site also provides feeding and breeding habitat for the Australasian shoveler (*Anas rhynchos*), little tern (*Sternula albifrons*), hooded plover (*Thinornis rubricollis*) and fairy tern (*Sternula nereis*).

Just over half of the Flood Plain Lower Ringarooma River Ramsar site (the eastern portion) is freehold title land used for dairy cattle grazing. The dairy operators

are continually adapting and improving their land-use practices under the management plans to ensure 'wise-use' principles are applied to their dairying activities.

You can take a virtual tour of the Flood Plain Lower Ringarooma River Ramsar Site at the following link: <http://www.environment.gov.au/water/topics/wetlands/database/virtual-tours/9-vt/index.html>



The Flood Plain Lower Ringarooma River Ramsar site contains excellent examples of wetland systems for the Flinders Biogeographic Region, within the Tasmanian Australian Drainage Division. These include a floodplain with a system of permanent and seasonal marshlands and a large river estuary (Boobyalla Inlet)

(© Copyright, Michelle McAulay)



*A number of migratory birds use the Flood Plain Lower Ringarooma River Ramsar site, including the Latham's snipe (*Gallinago hardwickii*)* (© Copyright, Graeme Chapman)



The Flood Plain Lower Ringarooma River site is located between Cape Portland and Tomahawk in Tasmania

(© Copyright, Department of the Environment)

Gippsland Lakes Ramsar Site, Victoria

A diverse array of wetlands on the south-east coast of Victoria forms the largest coastal lagoon system in Australia.

The Gippsland Lakes Ramsar Site includes a diversity of wetland types ranging from coastal lagoons and seagrass beds, to saltmarshes and tree-dominated wetlands. The wetland habitats support a variety of fauna species, including many waterbirds.

Ramsar designation: 1982

Location: On the south-east coast of Victoria

Size: 60 000 hectares

The lakes are linked to the sea by an artificial entrance near the eastern end, opened in 1889, where the town of Lakes Entrance is now situated.

Gippsland Lakes provide important feeding, roosting and breeding habitat for about 80 waterbird species, in numbers up to 50 000. This includes many migratory shorebirds that fly between Australia and north-east Asia. The lakes support at least one per cent of the population of seven waterbird species, including black swan (*Cygnus atratus*), musk duck (*Biziura lobata*), chestnut teal (*Anas castanea*), fairy tern (*Sternula nereis*),

little tern (*Sternula albifrons*), sharp-tailed sandpiper (*Calidris acuminata*) and red-necked stint (*Calidris ruficollis*).

The fish community within the Gippsland Lakes Ramsar site is diverse, with approximately 179 species. Seagrass beds are particularly important to many species of fish as a nursery area and the lower reaches of the rivers are spawning sites for key species of fishery significance such as black bream and dusky flathead.

The site supports permanent refugia and breeding sites for two nationally threatened frog species; the growling grass frog (*Litoria raniformis*) and the green and golden bell frog (*Litoria aurea*).

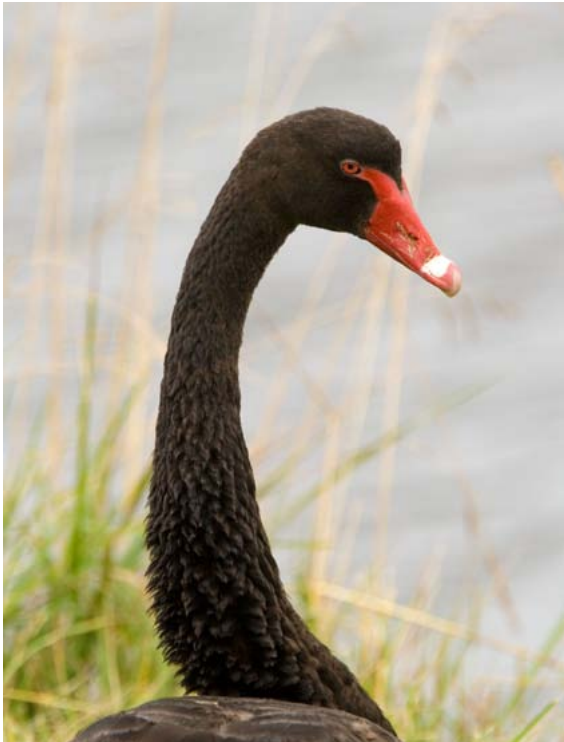
Gippsland Lakes Ramsar site is important for conservation, tourism, recreation, education, scientific research, and commercial activities such as fisheries.



The Port of Lakes Entrance in the Gippsland Lakes Ramsar site provides for a variety of recreational and commercial boating activities (© Copyright, Yarden Oren)



McLennan Straits and Victoria Lagoon contribute to the diversity of wetland types found within Gippsland Lakes Ramsar site (© Copyright, Yarden Oren)



Gippsland Lakes Ramsar site supports at least 1 per cent of the population of Black swans (Cygnus atratus)

(© Copyright, Nick Raines)



Green and golden bell frogs (Litoria aurea) breed within the Gippsland Lakes Ramsar site (© Copyright, Dave Watts)



The Gippsland Lakes Ramsar site is located between Sale and Lakes Entrance on the south-east coast of Victoria

(© Copyright, Department of the Environment)

Logan Lagoon Ramsar Site, Tasmania

Thousands of shorebirds visit an island wetland in Bass Strait on their annual migration between the northern and southern hemispheres.

Logan Lagoon Ramsar Site is enclosed within the Logan Lagoon Conservation Area and is part of the extensive eastern Flinders Island parallel dune–coastal barrier system.

Ramsar designation: 1982
Location: On the south-east corner of Flinders Island in Bass Strait, Tasmania
Size: 2257 hectares



Logan Lagoon Ramsar site is one of three large estuarine lagoons which make up a coastal lagoon system along the south-east coast of Flinders Island (© Copyright, D. Ziegeler)

The site is an excellent, regionally representative example of a coastal estuarine wetland system, and comprises a diverse range of seasonal and permanent marshlands, grass and heathlands, forests, and woodlands, many of which support threatened species.

More than 160 bird species have been recorded on Flinders Island, many of which occur in the Ramsar site which is an important part of the East Asian-Australasian Flyway. Twenty-one migratory waders have been recorded at the site including the red-necked stint (*Calidris ruficollis*), common greenshank (*Tringa nebularia*), eastern curlew (*Numenius madagascariensis*), bar-tailed godwit (*Limosa lapponica*) and double-banded plover (*Charadrius bicinctus*). Other non-avian fauna with conservation value that use the site for foraging, breeding, or as habitat refuge include the threatened dwarf galaxias (*Galaxiella pusilla*).

The site is used for conservation, education, research, and recreation activities including walking, sightseeing, bird watching, off-road vehicle driving and beach fishing.



Several migratory birds have been recorded at Logan Lagoon Ramsar site, including the common greenshank (*Tringa nebularia*) (© Copyright, Georgina Steytler)



The Logan Lagoon Ramsar site is located on Flinders Island in Bass Strait (© Copyright, Department of the Environment)

Moulting Lagoon Ramsar Site, Tasmania

The largest and most significant wetland area in Tasmania is also an important breeding area for large numbers of Black Swans.

Moulting Lagoon Ramsar site is a coastal estuarine lagoon system that has areas of both shallow and deep water and is surrounded by periodically exposed mudflats and saltmarsh. The western shore has been largely cleared and is used for livestock grazing and viticulture, while the eastern shore is relatively undisturbed and covered with native vegetation.

Ramsar designation: 1982

Location: On the central-east coast of Tasmania

Size: 4507 hectares



Large concentrations of chestnut teals (*Anas castanea*) use Moulting Lagoon Ramsar site during the summer

(© Copyright, Brian Furby)

The site supports large numbers and a high diversity of waterbirds. Twenty-two species of resident and migratory waders have been recorded onsite, with nine species regularly using the area. Moulting Lagoon also provides an important staging area for many species of waterfowl in Tasmania, with particularly large summer concentrations of the Australian shelduck (*Tadorna tadornoides*) and chestnut teal (*Anas castanea*).

The Ramsar site is the prime site for black swan (*Cygnus atratus*) breeding in Tasmania, and provides year round habitat for over 7000 swans. It has been estimated that up to 85 per cent of historic black swan breeding in Tasmania occurred at Moulting Lagoon. The name Moulting Lagoon is derived from black swans shedding their flight feathers, which can often be seen piled up along the shoreline. Moulting is considered a critical life-stage for waterfowl, as the birds are flightless during the moult of primary flight feathers and require protection from predators.



Moulting Lagoon Ramsar site supports a range of vegetation, including saltmarsh communities

(© Copyright, Michelle McAulay)



Moulting Lagoon Ramsar site supports large numbers of breeding black swans (Cygnus atratus)

(© Copyright, Michelle McAulay)

The area was historically used for the harvest of waterfowl and their eggs by Indigenous people who lived around the lagoon. Current use of the Ramsar site includes recreational activities such as fishing and hunting, and commercial activities such as aquaculture and tourism.

You can take a virtual tour of the Moulting Lagoon Ramsar Site at the following link: <http://www.environment.gov.au/water/topics/wetlands/database/virtual-tours/3-vt/index.html>



Moulting Lagoon Ramsar Site is located on the central-east coast of Tasmania, between the townships of Swansea and Coles Bay (© Copyright, Department of the Environment)

Port Phillip Bay (Western Shoreline) and Bellarine Peninsula Ramsar Site, Victoria

The natural and artificial wetlands of this unique site combine to make it the most important area in Victoria for migratory waders.

The Port Phillip Bay (Western Shoreline) and Bellarine Peninsula Ramsar site is comprised of many different wetland types including freshwater lakes, mangrove-lined estuaries, seasonal freshwater swamps, sewage ponds, saltmarshes, intertidal mudflats and seagrass beds. The site comprises six distinct areas that include Point Cook/Cheetham, Werribee/Avalon, Point Wilson/Limeburners Bay, Swan Bay, Mud Islands, and the Lake Connnewarre Complex.

Ramsar designation: 1982

Location: Near Geelong in Victoria

Size: 22 897 hectares

A large number of migratory species have been recorded at the site including pied oystercatchers (*Haematopus longirostris*), banded stilts (*Cladorhynchus leucocephalus*), red-necked stilts (*Calidris ruficollis*), sharp-tailed sandpipers (*Calidris acuminata*), Australasian shovellers (*Anas rhynchos*), red-necked avocets (*Recurvirostra novaehollandiae*), blue-billed ducks (*Oxyura australis*) and freckled ducks (*Stictonetta naevosa*).

The Ramsar site supports a range of biodiversity. Six nationally threatened species are known to occur there – the Australasian bittern (*Botaurus poiciloptilus*), orange-bellied parrot (*Neophema chrysogaster*), Australian painted snipe (*Rostratula australis*),



Swan Bay near Queenscliff in the Port Phillip Bay (Western Shoreline) and Bellarine Peninsula Ramsar site supports important shoreline vegetation

(© Copyright, John Baker)



The Port Phillip Bay (Western Shoreline) and Bellarine Peninsula Ramsar site supports the vulnerable growling grass frog (*Litoria raniformis*) (© Copyright, Alexander Dudley)

fairy tern (*Sternula nereis*), Australian grayling (*Prototroctes maraena*) and growling grass frog (*Litoria raniformis*). The critically endangered orange-bellied parrot, in particular, uses habitat around Port Phillip Bay during winter. Over 50 species of fish have been recorded in Swan Bay (a component of the Ramsar site) and the seagrass beds are an important feeding and nursery ground for commercially important fish species.

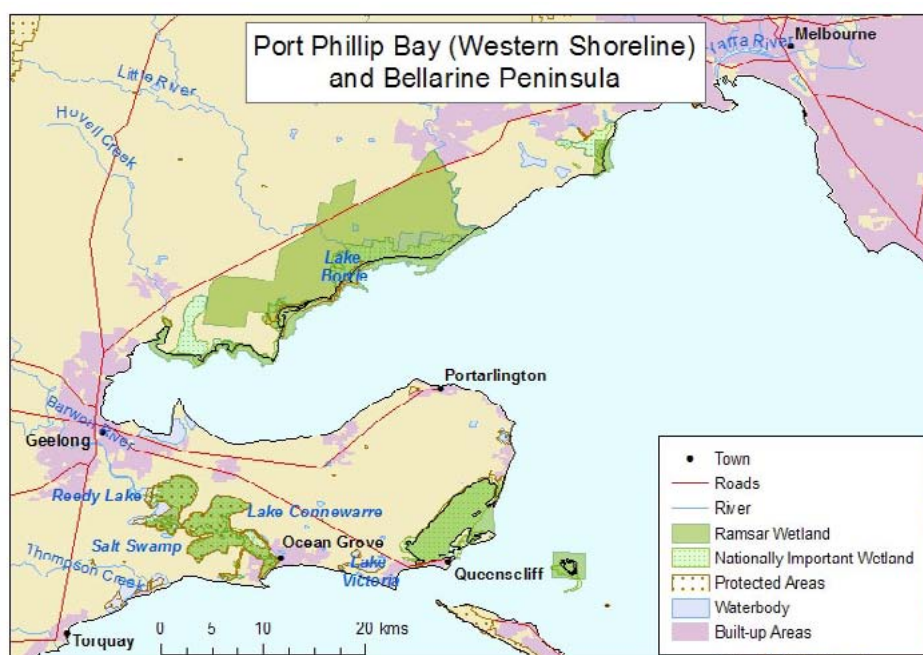
There are a number of important Indigenous sites within the wetlands, including burial sites, middens and artefacts. The oldest known midden in the area is at least 5000 years old. More than three million people live around Port Phillip Bay and the area is used for recreation, nature conservation, sewage treatment, aquaculture, fishing and salt production.



Lake Borrie in the Port Phillip Bay (Western Shoreline) and Bellarine Peninsula Ramsar site is the site of the largest breeding colony of Pied Cormorants in Victoria
(© Copyright, B. Edgar)



*The Port Phillip Bay (Western Shoreline) and Bellarine Peninsula Ramsar site supports the Australian painted snipe (*Rostratula australis*)* (© Copyright, Graeme Chapman)



The Port Phillip Bay (Western Shoreline) and Bellarine Peninsula Ramsar site is located near Geelong in Victoria
(© Copyright, Department of the Environment)

Hunter Estuary Wetlands Ramsar Site, New South Wales

Community education, wetland conservation and wise use principles are actively promoted by the Hunter Wetlands Centre Australia, a very important part of this New South Wales Ramsar site.

The Hunter Estuary Wetlands Ramsar site consists of two components – the Kooragang component in the estuary of the Hunter River, and the Hunter Wetlands Centre Australia. These components are not adjacent to each other but they have hydrological and wildlife links.

Ramsar designation: 1984
Location: Near Newcastle in New South Wales
Size: 2968 hectares

Habitats at Kooragang include mangrove forests, samphire saltmarsh, paperbark and she oak forests, brackish swamps, mudflats and sandy beaches. Hunter Wetlands Centre Australia is a small but unique complex of wetland types largely surrounded by urban development. This previously degraded site has been restored to semi-permanent freshwater and brackish ponds and marshes, freshwater swamp forests and a coastal estuarine creek.

The Ramsar site provides important feeding, roosting and refuge habitat for waterbirds and is a stopover site for migratory species, many of which are listed under international agreements. The site regularly supports a significant proportion of the eastern curlew (*Numenius madagascariensis*) and red-necked avocet (*Recurvirostra novaehollandiae*) populations. Threatened species found within the site include the green and golden bell frog (*Litoria aurea*), red goshawk (*Erythrotriorchis radiates*), estuary stingray (*Dasyatis fluviorum*) and Australasian bittern (*Botaurus poiciloptilus*).



The Hunter Wetlands Centre Australia was restored from a previously degraded site, and now promotes wetland conservation and wise use through community education and involvement. (© Copyright, Sarah Stuart-Smith)

The Ramsar site was traditionally used by Indigenous groups and there are numerous middens and campsites scattered throughout the area. The Kooragang component is currently used for recreational and nature-based activities.



The Hunter Wetlands Centre Australia component of the Ramsar site regularly supports a number of waterbird species

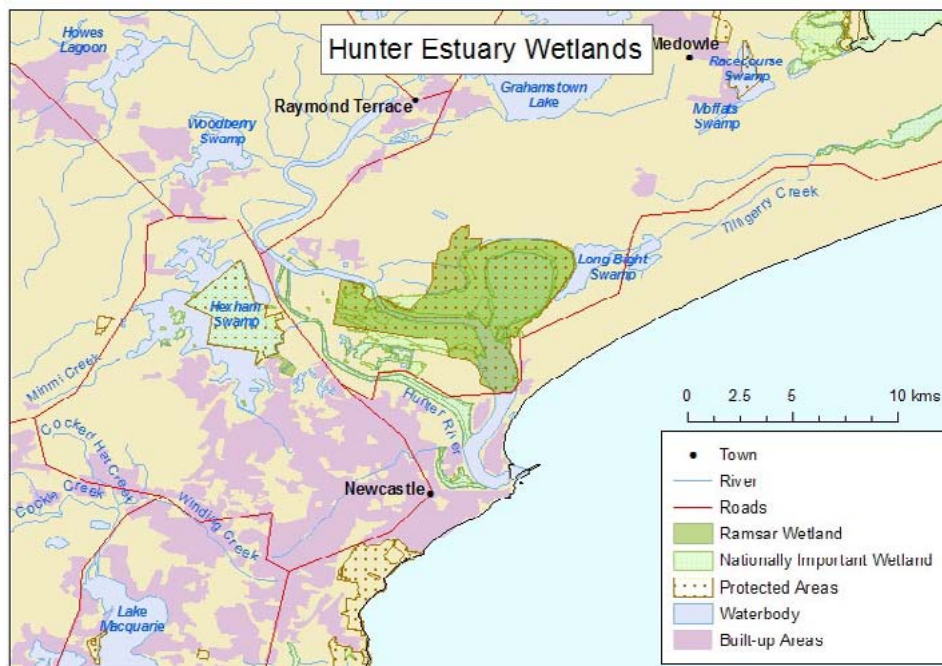
(© Copyright, Sarah Stuart-Smith)



The Hunter Estuary Wetlands Ramsar site includes a diverse range of wetland habitats (© Copyright, Sarah Stuart-Smith)



*The Hunter Estuary Wetlands Ramsar site regularly supports large numbers of eastern curlews (*Numenius madagascariensis*)* (© Copyright, Brian Furby)



The Hunter Estuary Wetlands Ramsar site is located just north of Newcastle in New South Wales

(© Copyright, Department of the Environment)

Towra Point Ramsar Site, New South Wales

The largest wetland of its type in the Sydney Basin region provides an important sanctuary for migratory birds within the surrounding urban and industrial areas.

The estuarine Towra Point Ramsar site includes a mixture of spits, bars, mudflats, dunes and beaches. Habitats include seagrass meadows, mangroves, saltmarshes, dune woodlands, casuarina forest, some littoral rainforest and sand dune grasslands. The Ramsar site contains a large proportion of the remaining mangrove and saltmarsh communities in Sydney.

Ramsar designation: 1984
Location: On the northern side of Kurnell Peninsula near Sydney in New South Wales
Size: 603.7 hectares

Towra Point is important for birds. Approximately 200 species of birds have been recorded at the site, including numerous migratory species listed under international agreements. The birds roost in the



Ruddy turnstones (Arenaria interpres) are known to breed within Towra Point Ramsar site (© Copyright, Georgina Steytler)



Mangroves at the Towra Point Nature Reserve (© Copyright, David Heap)

saltmarsh communities in the Ramsar site and feed in the intertidal zone along the shoreline of Botany Bay to replenish their fat reserves before embarking on a long northward migration. Large numbers of eastern curlews (*Numenius madagascariensis*), lesser golden plovers (*Pluvialis dominica*) and ruddy turnstones (*Arenaria interpres*) have been recorded within the complex. Little terns (*Sternula albifrons*) and pied oystercatchers (*Haematopus longirostris*) are known to breed there also.

Towra Point Ramsar site provides significant habitat and a food source for at least 60 species of fish, of which 25 are of economic significance. Fish utilise the saltmarsh, mangrove and seagrass habitats at and adjacent to Towra Point for food, protection and as nursery habitat during the early stages in their life cycle.

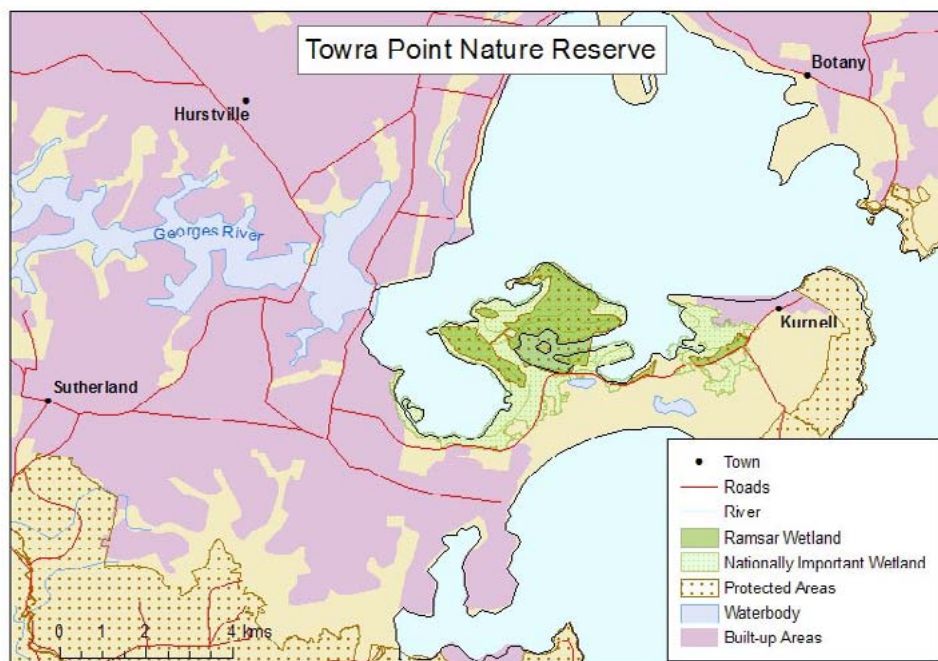
Evidence of Indigenous links to the site includes middens, rock shelters, engravings, burial sites and other items of Indigenous heritage. Captain Cook anchored at Botany Bay in 1770 and Towra Point was explored, mapped and used as a source of fresh water. It was at this site that the ship's botanist, Sir Joseph Banks, took the first recognised botanical samples of Australian flora.



Early morning mist over the Towra Point Nature Reserve
(© Copyright, Bruce Gray)



Birds roost in the saltmarsh areas of the Towra Point Ramsar site (© Copyright, Daryl Chapman)



Towra Point Ramsar site is located near Sydney in New South Wales (© Copyright, Department of the Environment)

The Coorong and Lakes Alexandrina and Albert Ramsar Site, South Australia

This unique mosaic of 23 wetland types has received substantial publicity in recent years due to its significance at the end point of the Murray-Darling Basin.

The Coorong and Lakes Alexandrina and Albert Ramsar site is a long, shallow brackish to hyper-saline lagoon that stretches for 140 kilometres in length. It is separated from the Southern Ocean by a narrow sand dune peninsula. The Lakes Alexandrina and Albert are comprised of fresh to brackish/saline waters.

Ramsar designation: 1985

Location: At the downstream end of the Murray River, in south-east South Australia

Size: 140 500 hectares

The site provides habitat for a large number of waterbirds and 43 species of fish, including nationally threatened species such as the orange-bellied parrot (*Neophema chrysogaster*), the southern Mount Lofty Ranges emu wren (*Stipiturus malachurus intermedius*), the Murray hardyhead (*Craterocephalus fluviatilis*), the Yarra pygmy perch (*Nannoperca obscura*) and the Murray cod (*Maccullochella peelii*).



Meningie Lakefront within the Coorong and Lakes Alexandrina and Albert Ramsar Site

(© Copyright, South Australian Department of Environment, Water and Natural Resources)

The site also contains (in part) the critically endangered ‘Swamps of the Fleurieu Peninsula’, as well as the threatened *Gabunia* sedgeland ecosystem and a number of nationally listed plant species. The site is also significant because it forms the only estuarine habitat in the Murray-Darling Basin and is the only access point for diadromous fish species within the Basin.

The area is popular for recreational activities such as fishing, camping, boating, walking, bird watching, canoeing, sailing, water-skiing, picnicking and research. The area also supports tourism, commercial fishing and farming.

The Ngarrindjeri Indigenous people have a close association with the area and some of the northern islands within the Coorong lagoon are reserved for their use. This association is expressed through Creation stories about Yarluwar-Ruwe (Sea Country), which reveal the significance of the relationship between the country and the people, both practically and spiritually.

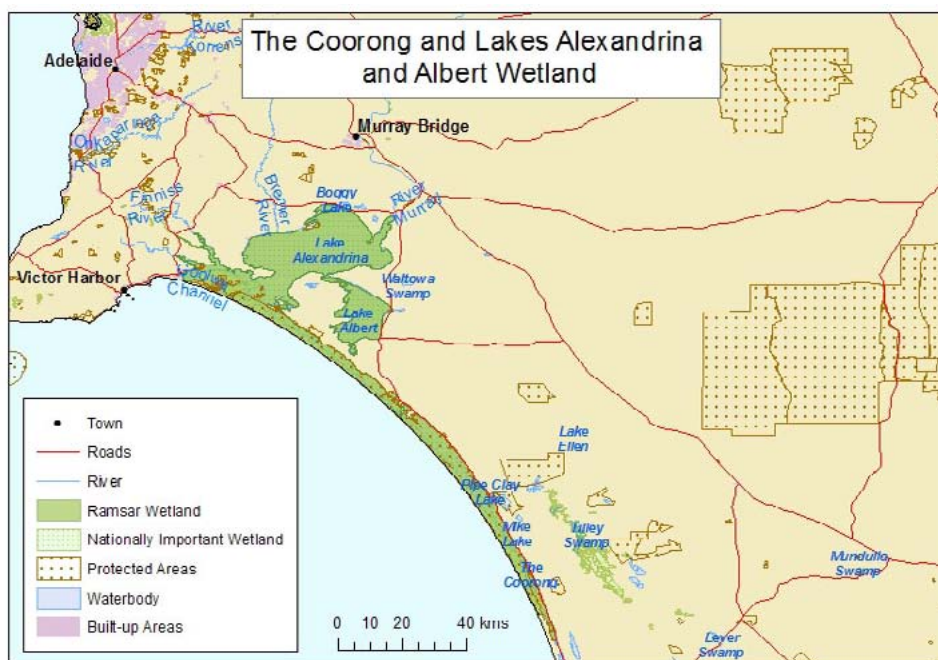


Pelicans (Pelecanus conspicillatus) at Goolwa Channel in the Coorong and Lakes Alexandrina and Albert Ramsar Site (© Copyright, Russell Seaman)



Bird watching is a popular activity in the Coorong and Lakes Alexandrina and Albert Ramsar Site

(© Copyright, Paul Wainwright)



The Coorong and Lakes Alexandrina and Albert Ramsar site is located near Victor Harbor on the south coast of South Australia (© Copyright, Department of the Environment)

Macquarie Marshes Ramsar Site, New South Wales

One of the largest freshwater wetland systems in the Murray-Darling Basin is also one of the most biologically diverse.

The Macquarie Marshes Ramsar site encompasses semi-permanent wetlands that include forests, woodlands, reed beds, marshes, rushlands and open water lagoons.

Ramsar designation: 1986

Location: Within the Murray-Darling Basin in central-northern New South Wales

Size: 19 850 hectares

Permanent habitat is provided for nationally threatened species including the silver perch (*Bidyanus*

bidyanus), Murray cod (*Maccullochella peelii*), Australasian bittern (*Botaurus poiciloptilus*) and Australian painted snipe (*Rostratula australis*).

The habitat also supports significant colonial nesting waterbird breeding events and particularly high levels of microinvertebrates, which form the basis of the food web for many animal species. The marshes are located at the lower end of the Macquarie catchment and native fish such as silver and golden perch (*Macquaria ambigua*) move into the floodplain to breed and spawn in high flows.



A number of native fish breed within the network of water bodies at Macquarie Marshes Ramsar site (© Copyright, Bruce Gray)

Vegetation communities range from river red gum woodland and water couch grasslands to extensive beds of common reed, coolibah, black box, lignum, reed swamp, cumbungi and river cooba.

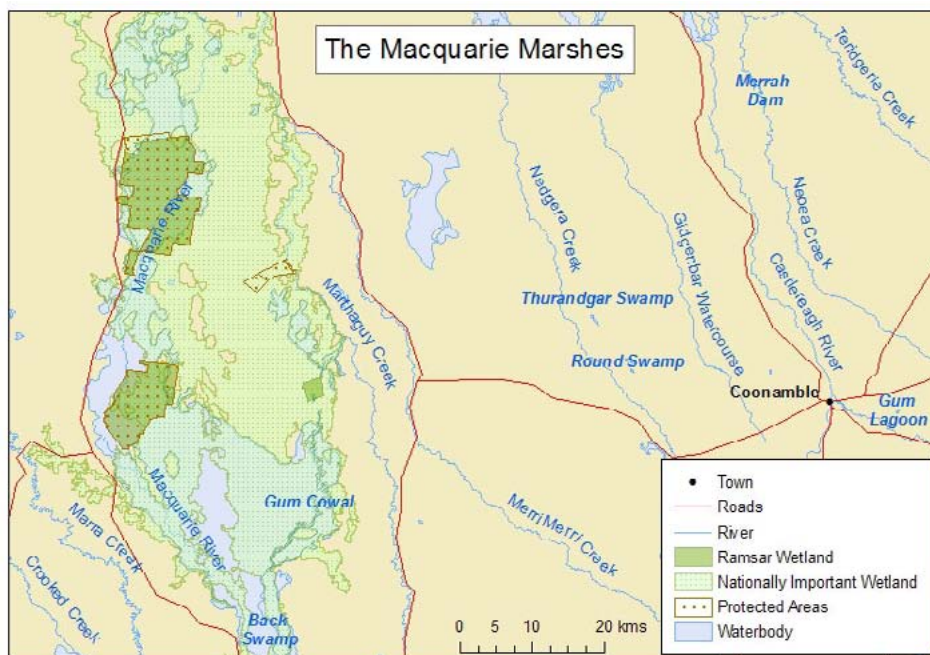
The Macquarie Marshes are an iconic natural area with significant cultural values. Many people have attachments to the site based on family history, agricultural production, scientific research and conservation. Aboriginal cultural values relate to both the deep history of Aboriginal involvement with the wetlands, and the values, interests and aspirations of contemporary Aboriginal communities with custodial relationships to the wetlands.



The Macquarie Marshes Ramsar site features a diversity of wetland types (© Copyright, Allan Fox)



The Macquarie Marshes Ramsar site supports the endangered Australian painted snipe (Rostratula australis) (© Copyright, Tim Hosking, NSW Office of Environment and Heritage)



The Macquarie Marshes Ramsar site is located at the lower end of the Macquarie catchment in central-northern New South Wales (© Copyright, Department of the Environment)

Coongie Lakes Ramsar Site, South Australia

Migratory birds from around the world descend on Australia’s largest Ramsar site to breed and feed following major floods.

Coongie Lakes Ramsar site is an extensive and complex ephemeral and semi-permanent freshwater wetland system in the floodplain of Cooper Creek, which is one of the world’s largest rivers still in a natural state.

Ramsar designation: 1987
Location: In the Lake Eyre Basin near Innamincka, South Australia
Size: 2 million hectares

The hydrology of the site is one of the most variable in the world, and is linked to El Nino Southern Oscillation events because the upper catchment area of

the Lake Eyre Basin lies on the southern edge of the tropical zone. Some wetlands in the system fill only rarely, others hold water for a limited period after flooding, and others are permanent.

A major flood heralds a period of flourishing plant growth and an influx of wildlife. Large numbers of waterbirds, especially pelicans, cormorants, herons, ibises, spoonbills, ducks and waders congregate to feed and breed, dispersing as waters recede. Other fauna includes native fish such as the Cooper Creek catfish (*Neosilurooides cooperensis*) and the Kati Thanda-Lake Eyre callop (*Macquaria ambigua*), and frog species including the water-holding frog (*Cyclorana platycephala*) and the



Coongie Lake Ramsar wetland is made up of a series of ephemeral and semi-permanent freshwater wetlands
(© Copyright, Paul Wainwright)



The hydrology of Coongie Lake is highly variable
(© Copyright, Paul Wainwright)

trilling frog (*Neobatrachus sudellae*). Notable reptiles include red-naped snake (*Furina diadema*), black-headed goanna (*Varanus tristis*) and the woma python (*Aspidites ramsayi*).

A significant number of Indigenous cultural sites have been found within the Ramsar site, including examples of archaeological sites (occupation sites), burials, art sites, ritually significant locations, tool

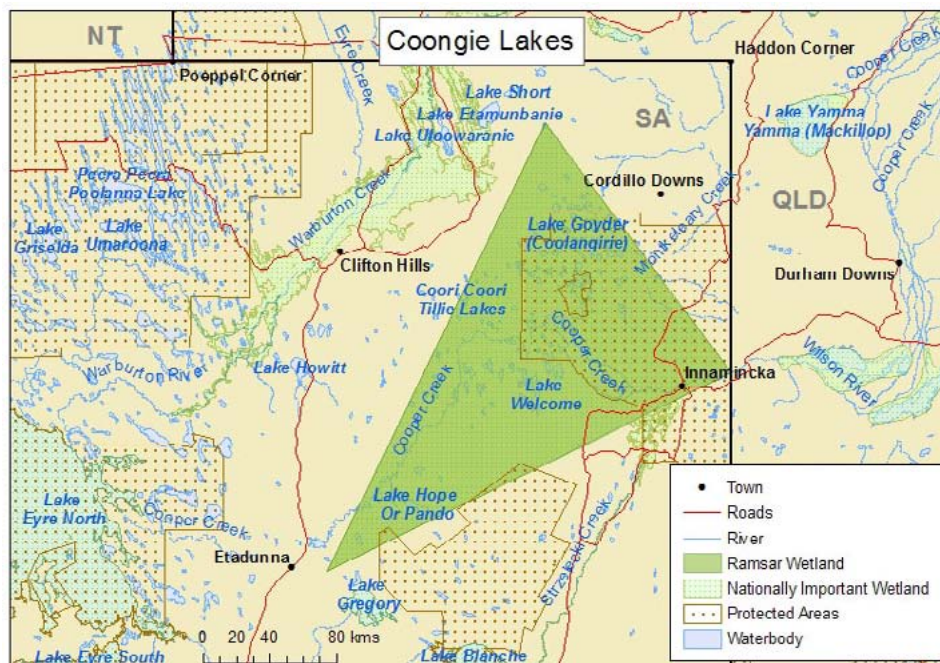
manufacturing sites, grindstone quarries, remains of wiltjas, early historic campsites and stone arrangements. European settlement and pastoralism came to the area in the 1870s following the expeditions of Charles Sturt in 1845 and Burke and Wills in 1861. Present day activities at the site include cattle grazing and oil and gas production, however the site is becoming increasingly important for recreation and tourism.



Coongie Lakes Ramsar site regularly supports in excess of 20 000 waterbirds, including populations of the freckled duck (*Stictonetta naevosa*) (© Copyright, Brian Furby)



Cooper Creek flows into Lake Coongie Ramsar site (© Copyright, Derek White)



Coongie Lakes Ramsar site is located in the Lake Eyre Basin, near Innamincka, South Australia

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Eighty-mile Beach Ramsar Site, Western Australia

Each year hundreds of thousands of migratory birds use northern Western Australia as a stopover point on their southward migration.

Eighty-mile Beach Ramsar Site is comprised of two separate areas, Eighty-mile Beach extending 220 kilometres along the coastline from Cape Missiessy to Cape Keraudren and the adjacent intertidal mudflats of Mandora Salt Marsh 40 kilometres to the east.

Ramsar designation: 1990

Location: Between Port Headland and Broome in northern Western Australia

Size: 175 487 hectares

Eighty-mile Beach includes extensive white sand beaches, tidal mudflats, sand dunes and the most inland occurrence of mangroves in Western Australia. Mandora Salt Marsh contains peat deposits estimated to be about 7000 years old and contains one of only two inland mangrove communities in Australia.

Mound springs from water deep within the Broome sandstone aquifer rises through fractures in the rock, resulting in permanent mostly fresh surface water that supports unusual plant assemblages. The permanence



Flatback turtles (Natator depressus) are known to nest within the Eighty-mile Beach Ramsar site

(© Copyright, Great Barrier Reef Marine Park Authority)

of these freshwater wetlands makes them extremely important to biodiversity in the arid area, providing habitat and drinking water in an otherwise dry environment.

Eighty-mile Beach is part of the the East Asian-Australasian Flyway Network and contains the most important wetland area for waders in northwestern Australia. The site supports up to 336 000 birds, and is considered to be the most important site in Australia for migrant shorebirds on their southward migration between August and November each year. In addition, flatback turtles (*Natator depressus*) regularly nest at scattered locations along Eighty-mile Beach.

Eighty-mile Beach is used for recreation including four-wheel driving, motorcycling, fishing and shell collecting. Mandora Salt Marsh is mainly used for cattle grazing. The site is traditionally part of Karajarri Country in the north, Nyangumarta Country in the south and Ngarla Country in the southern end of Eighty-mile Beach.



*Eighty-mile Beach Ramsar site is one of the most important sites in the world for the migration of the great knot (*Calidris tenuirostris*)* (© Copyright, Brian Furby)



Sand dunes behind Eighty-mile Beach

(© Copyright, Sarah Stuart-Smith)



Eighty-mile Beach Ramsar site is located south of Lagrange Bay in northern Western Australia

(© Copyright, Department of the Environment)

Lake Toolibin Ramsar Site, Western Australia

An innovative groundwater pumping solution has been put in place to protect this site from salinity in the Western Australian wheatbelt.

Lake Toolibin Ramsar site is located in a low rainfall zone and fills from surface water runoff. It is intermittently inundated and generally fills in years of above average rainfall. As the lake is perched above the saline groundwater table, it is the only natural wetland in the bioregion that has not become saline. Infrastructure has been put in place to pump groundwater away from the site to prevent salinity issues.

Ramsar designation: 1990

Location: 40 kilometres east of the town of Narrogin in south-west Western Australia

Size: 493 hectares

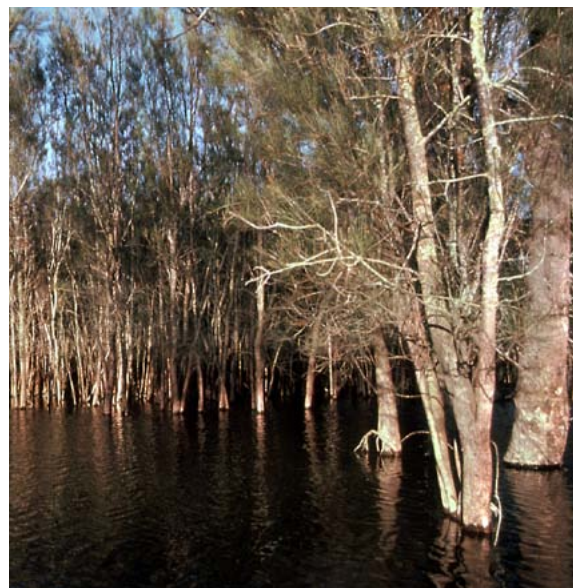
Lake Toolibin provides important habitat for native fauna, particularly waterbirds. A total of 50 waterbird species have been recorded, 25 of which were observed breeding. It is the last, large, *Casuarina obesa*-dominated wetland in the inland agricultural area of south Western Australia. Wetlands of this type were formerly widespread, however, most have become severely degraded by rising saline groundwater.

The Lake is reserved for nature conservation, and current activities include a low level of nature-based recreation.



Lake bed vegetation at Lake Toolibin Ramsar site provides important habitat for birds

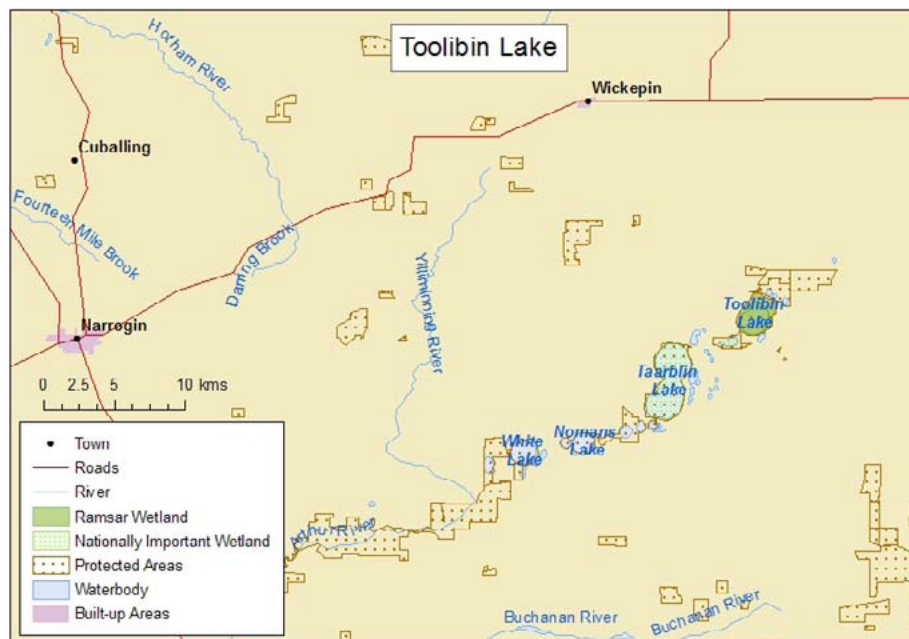
(© Copyright, Amanda Smith)



Thickets of Casuarina obesa inundated during a high flow event at Lake Toolibin (© Copyright, Roger P Jaensch)



Successful revegetation at Lake Toolibin (© Copyright, Kate Reid)



Lake Toolibin Ramsar site is located approximately 200 kilometres south-east of Perth in Western Australia

(© Copyright, Department of the Environment)

Peel-Yalgorup System Ramsar Site, Western Australia

Ancient thrombolites, sometimes called living rocks, are part of this geomorphically complex and biologically diverse Western Australian wetland.

The Peel-Yalgorup System Ramsar site includes the Peel Inlet, Harvey Estuary, Lake McLarty, Lake Mealup and ten Yalgorup National Park wetlands. It is made up of shallow estuarine waters, saline, brackish and freshwater wetlands.

Ramsar designation: 1990

Location: Near Mandurah on the south-west coast of Western Australia

Size: 26 530 hectares

The site is the most important area for waterbirds in south-western Australia. Large populations of waterbirds utilise the estuary and lakes and there is a diversity of fish, aquatic invertebrates and fringing salt marsh vegetation.

The system also contains rare microbial communities in the form of thrombolites. The thrombolites at Lake Clifton are considered to be 2000 years old. They are one of only two examples of living thrombolites in Western Australia, with only a handful known in the world.



View of Lake Clifton in the Peel Yalgorup System Ramsar site (© Copyright, Nerida Sloane)

The Peel-Yalgorup Ramsar site lies within Pinjarup country, a dialect group of the Nyoongar. The Ramsar site contains sites of significance to the Indigenous community, including sites of artefact scatter, camps, ceremonies, fish traps, and skeletal remains.

The Peel Inlet and Harvey Estuary are mainly used for recreational and commercial fishing, and other aquatic activities. The estuary system supports the largest professional and amateur estuarine fishery in Western Australia.

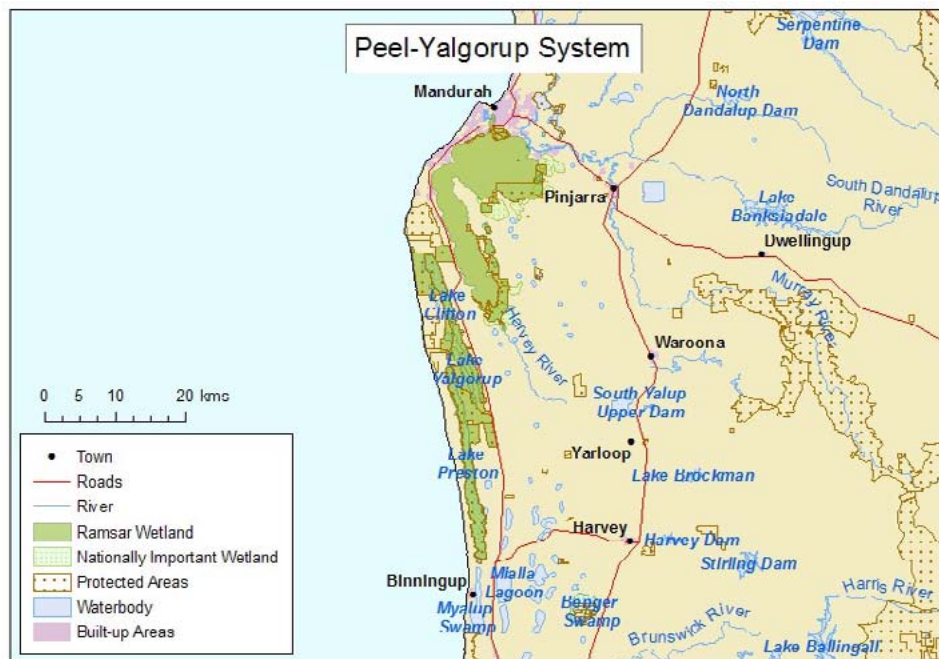


Lake Clifton supports important thrombolite communities (© Copyright, Kate Reid)



Black swans (Cygnus atratus) on Lake Clifton in the Peel Yalgorup System Ramsar site

(© Copyright, Jeanette Muirhead)



The Peel-Yalgorup System Ramsar site is located between Mandurah and Binningup on the south-west coast of Western Australia (© Copyright, Department of the Environment)

Blue Lake Ramsar Site, New South Wales

At 1800 metres above sea level the air is clear and the water is fresh in this alpine wetland.

Blue Lake Ramsar site is one of only four cirque lakes on mainland Australia. The others are Cootapatamba, Albina and Club Lake also in New South Wales. Blue Lake is the deepest, at up to 28 metres in depth. Together with Hedley Tarn, another glacial lake, these are Australia's highest alpine lakes.

Ramsar designation: 1996

Location: In the Kosciuszko National Park in New South Wales

Size: 338 hectares

The shores of Blue Lake are lined with boulders and pebbles. The water surface is frozen for approximately four months of the year, thawing and then overflowing in spring. Tall alpine herbfield communities surround

the north-eastern area with wet heaths and grasses abutting the shoreline of the lake.

The Ramsar site is known to support one nationally listed species, the vulnerable anemone buttercup (*Ranunculus anemoneus*). The endangered mountain pygmy possum (*Burramys parvus*) is also found in the surrounding area.

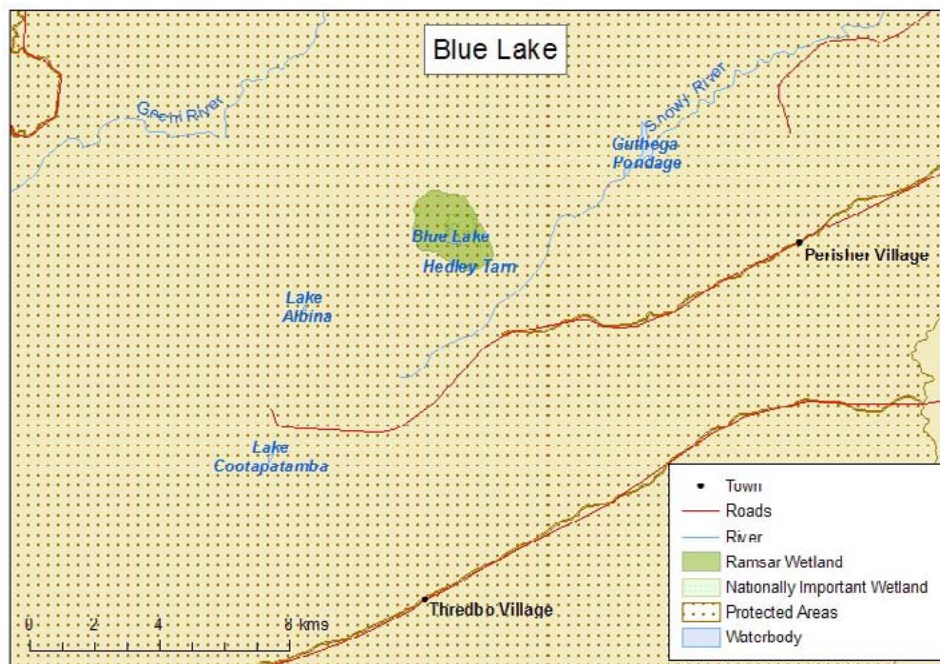
The first official European exploration of the region was undertaken by the Polish explorer, Paul Edmund Strezelecki, who climbed and named Mt Kosciuszko in 1840. Historically, Indigenous people did not live permanently in the alpine area but probably visited in summer to perform ceremonies and collect bogong moths for food. Blue Lake is a popular tourist destination within the national park.



Blue Lake Ramsar site was created during the Pleistocene by glacial action (© Copyright, John Baker)



Part of the shoreline of the Blue Lake Ramsar site is rocky with wet heaths and grasses (© Copyright, Sarah Stuart-Smith)



Blue Lake Ramsar site is located in the alpine region of New South Wales, within the Kosciuszko National Park

(© Copyright, Department of the Environment)

Ginini Flats Wetland Complex Ramsar Site, Australian Capital Territory

South-east Australia's largest, deepest and least disturbed subalpine sphagnum bog is critical for supporting an endemic species.

Ginini Flats Wetland Complex provides critical breeding habitat for the critically endangered northern corroboree frog (*Pseudophryne pengilleyi*) which is endemic to the southern highlands of New South Wales and the Australian Capital Territory. The numerous pools scattered throughout the bogs and wet heaths at the site provide habitat for the species.

Ramsar designation: 1996

Location: In the Namadgi National Park in the Australian Capital Territory

Size: 40 hectares

The site includes subalpine sphagnum bogs and associated wet heath and wet grassland habitats. Peat has developed up to two metres deep beneath areas of wet heath and bog and is estimated to be over 3000 years old.

Snow cover on the subalpine ranges in this area provides a significant winter water storage that is released slowly as the snow melts. Snowmelt is thought to be an important factor in maintaining the hydrological conditions that encourage sphagnum development within the wetlands.



The vulnerable northern corroboree frog (Pseudophryne pengilleyi) breeds within the Ginini Flats Wetland Complex Ramsar site (© Copyright, Murray Evans, Australian Capital Territory Government)

Between 1936 and 1969 the site was adjacent to a ski lodge, evidence of which can still be seen today. Today the site is used for conservation, catchment management, education and recreational activities such as bushwalking and cross-country skiing.

A video of the Ginini Flats Wetland Complex Ramsar site is available on the Department of the Environment's YouTube channel: <http://www.youtube.com/watch?v=2R77wTnmOSo>

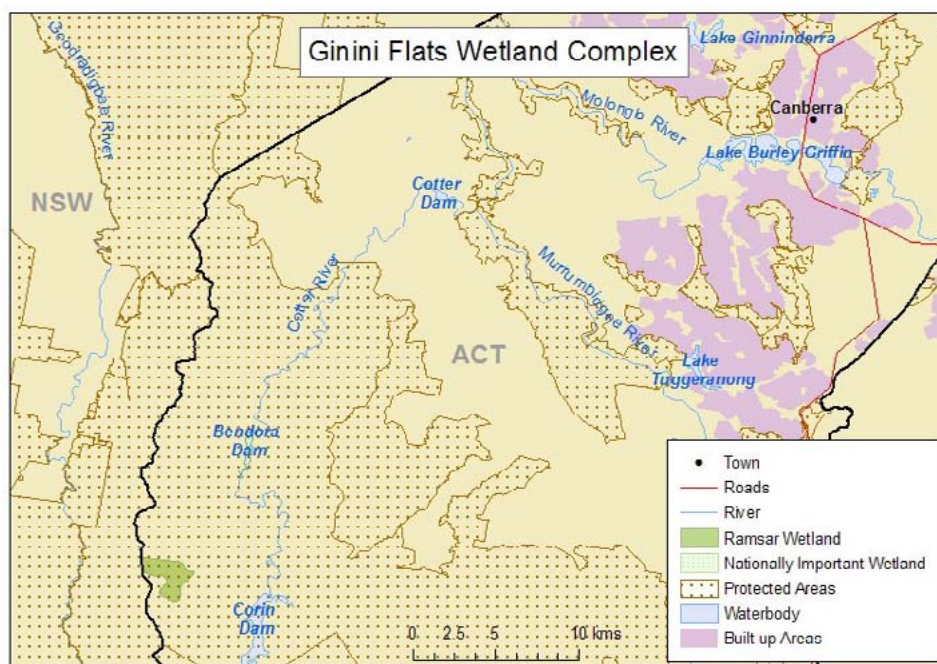


Ancient rocks amongst the wetland growth in the Ginini Flats Wetland Complex Ramsar site

(© Copyright, Nerida Sloane)



Early season snow in the Ginini Flats Wetland Complex Ramsar Site (© Copyright, Di Conrick)



Ginini Flats Wetland Complex is located in the Namadgi National Park in the Australian Capital Territory

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Great Sandy Strait Ramsar Site, Queensland

The largest and least disturbed sand passage estuary in south-east Queensland is a significant site for a number of internationally listed migratory species.

The Great Sandy Strait Ramsar site includes many different types of wetlands and occurs at the transition between tropical and temperate zones which results in a rich biodiversity. The site also supports rare patterned fens that, alongside those adjacent to the Ramsar boundary, are the only known sub-tropical fens and the only known examples in the world of patterned fens flowing into tidal wetlands.

Ramsar designation: 1999
Location: In south-east Queensland between the mainland and Fraser Island
Size: 93 000 hectares

The Great Sandy Strait is a significant site in the East Asian-Australasian Flyway for migrating shorebirds. It supports at least 25 migratory species. Numbers of shorebirds have been recorded at over 20 000, with the world's largest number of far eastern curlews (*Numenius madagascariensis*) gathering here. The site also provides feeding habitat for four nationally threatened turtle species, as well as dugongs (*Dugong dugon*). It supports the nationally and internationally vulnerable humpback whale (*Megaptera novaeangliae*) during its southward migration to Antarctic waters.

The Great Sandy Strait is highly valued for commercial fishing, recreational fishing, boating and tourism related activities. The site is also of significance to Traditional Owners, with evidence of occupation in the area dating back at least 5500 years. The site is part of the traditional lands of the Butchulla Nation (including Wondunna clan), and is currently used by these people.



Dugongs (Dugong dugon) feed on the vast seagrass meadows of the Great Sandy Strait Ramsar site

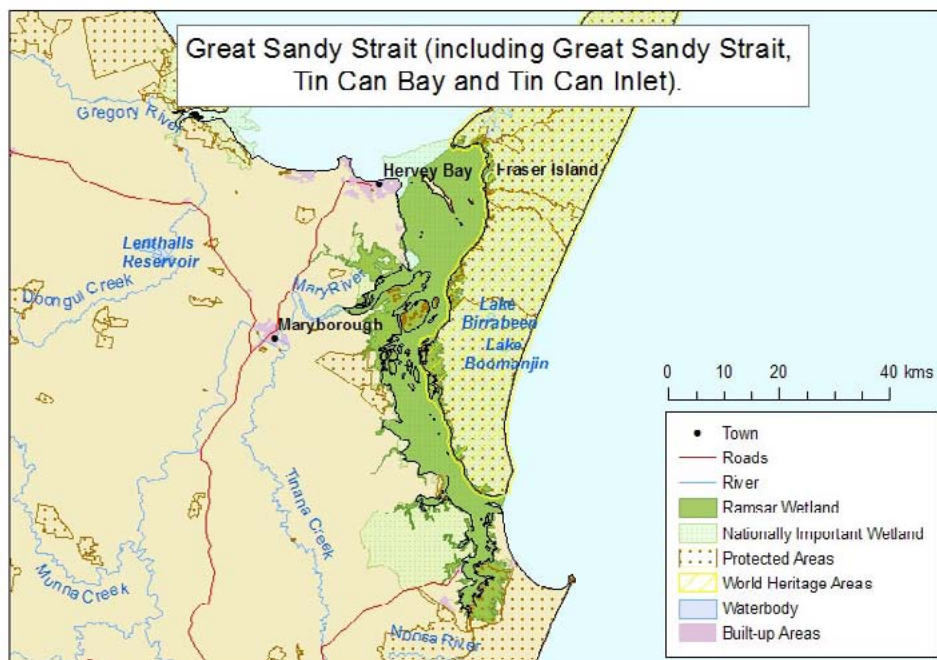
(© Copyright, Paul Anderson (CALM))



The Great Sandy Strait Ramsar site provides a number of benefits and services. Here, onlookers watch humpback whales (Megaptera novaeangliae) in Hervey Bay on their southward migration (© Copyright, Robert Thorn)



The Great Sandy Strait Ramsar site is an outstanding example of a sand passage estuary. Large, well developed expanses of sand and mud flats, salt flats, mangroves and seagrass beds are widespread along the Strait (© Copyright, Paul Candlin)



The Great Sandy Strait Ramsar site is located near the World Heritage-listed Fraser Island in the south-east of Queensland (© Copyright, Department of the Environment)

Banrock Station Wetland Complex

Ramsar Site, South Australia

Wine-makers, nature lovers, scientists, red gums, fish and frogs are just some of the visitors and residents that are happily co-existing at Banrock Station in South Australia.

The Banrock Station Wetland Complex Ramsar site is a floodplain wetland complex typical of the lower River Murray floodplain. It includes areas of freshwater and areas of secondary salinised floodplain with discrete wetland basins and channels.

Ramsar designation: 2002

Location: On the River Murray floodplain, downstream of Kingston in South Australia

Size: 1375 hectares

Floodplain vegetation at the site includes river red gum woodland, black box woodland, lignum shrubland, and sedgelands. Aquatic herblands are present in Banrock Lagoon providing significant habitat value for aquatic biota.

The freshwater catfish (*Tandanus tandanus*), rare broad-shelled turtle (*Chelodina expansa*) and the nationally vulnerable southern bell frog (*Litoria raniformis*) are all found at the site. The site is one of

the few locations in South Australia where the rare river snail (*Notopala sublineata*) has been successfully reintroduced and bred. The site also supports 138 species of bird including the freckled duck (*Stictonetta naevosa*) and regent parrot (*Polytelis anthopeplus*).

Murray-Darling Basin-wide water management and use in the 1920s led to an alteration of the natural water regime resulting in the original ephemeral wetland system becoming permanently inundated. Since 2007 the site has been managed to mimic more natural wetting and drying regimes in order to improve the long-term health of the wetland. This has seen the re-emergence of many plant species and the return of waterbird species.

Banrock Station demonstrates the Ramsar concept of 'wise use' providing for recreation, tourism, education and scientific research. The site adjoins a vineyard that is managed in a manner complementary to conservation of the wetland. In 2002 Banrock Station Wines received a Ramsar Wetland Conservation Award.



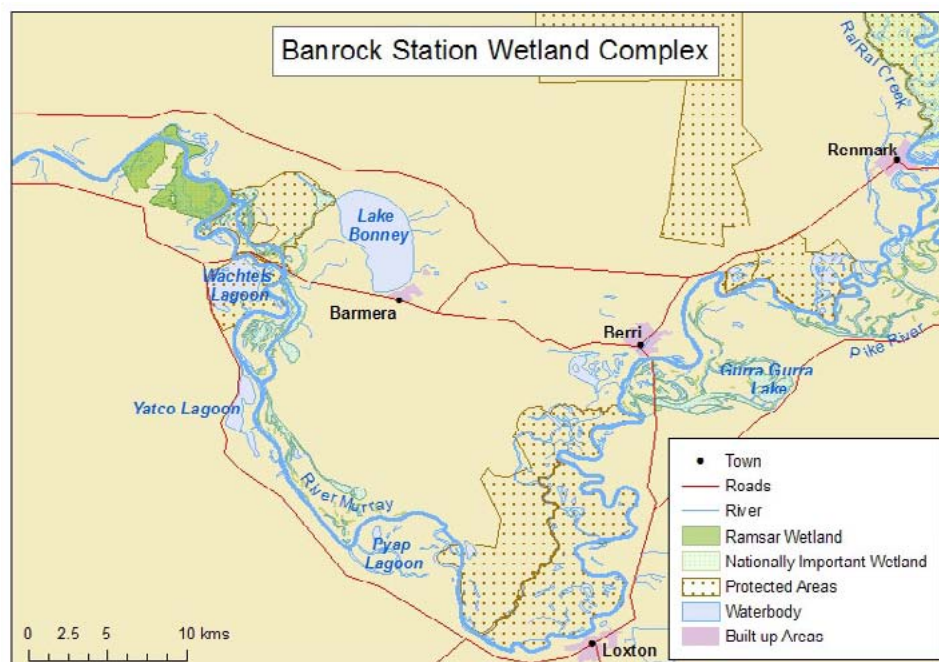
The Wine and Wetland Centre promotes wetlands conservation and ecologically sustainable land use practices. Nearly 100 000 people visit the centre each year and experience the series of interpretive walking trails, boardwalks and bird hides (© Copyright, John Baker)



The Wine and Wetland Centre promotes wetland conservation and ecologically sustainable land use practices. Nearly 100 000 people visit the centre each year and experience the series of interpretive walking trails, boardwalks and bird hides (© Copyright, John Baker)



One of the many lakes of the Banrock Station Wetland Complex (© Copyright, Paul Wainwright)



The Banrock Station Wetland Complex Ramsar site is located along the River Murray in South Australia

(© Copyright, Department of the Environment)

Elizabeth and Middleton Reefs

Ramsar Site, Coral Sea Islands Territory

The most southerly open ocean platform reefs in the world are home to a rich diversity of marine flora and fauna.

Elizabeth and Middleton Reefs are remote coral reef atolls that occur on isolated, oceanic sea mounts approximately 50 kilometres apart from each other.

Ramsar designation: 2002

Location: In the northern Tasman Sea, approximately 180 kilometres north of Lord Howe Island

Size: approx. 188 000 hectares

The Ramsar site supports a diverse range of tropical and temperate marine life, including both warm water and cold water corals and an abundance of fish species. This diversity, including many species at either the northern or southern limit of their distribution, is a result of their location in an area where tropical and temperate ocean currents meet.

The reefs support several vulnerable and endangered species, including species of whale, the green turtle (*Chelonia mydas*) and the black cod (*Epinephelus*



Elizabeth Reef has a small sand cay, and at low tides much of the reef flat at both reefs are exposed by the receding waters

(© Copyright, Director of National Parks)

daemeli). A number of migratory seabirds use the site for feeding (including the sooty tern (*Onychoprion fuscatus*), masked booby (*Sula dactylatra*), wandering albatross (*Diomedea exulans*) and white-bellied storm petrel (*Fregetta grallaria*) and it is a breeding ground for the common noddy (*Anous stolidus*).

At least 30 ships have been recorded wrecked on the reefs, dating back to the late 18th century. Except for the remains of more recent wrecks, which are striking features of the Ramsar site, the majority of wrecks have not been accurately located. The wreck *Fuku Maru* on Middleton Reef supports a small breeding colony of sea terns, which due to lack of suitable dry land, otherwise would not occur at the Ramsar site.

The reefs were designated as a marine reserve in 1987 and are currently managed within the Lord Howe Commonwealth Marine Reserve by Parks Australia. The Sanctuary Zone around Middleton Reef is a 'Strict Nature Reserve', managed principally for scientific research and environmental monitoring, while allowing passive use. The Habitat Protection Zone located around Elizabeth Reef is managed for scientific research, environmental monitoring and habitat protection.



Monrey Frontier wreck on Middleton Reef

(© Copyright, Director of National Parks)



*Elizabeth and Middleton Reefs Ramsar site supports several species of whale, including the Southern right whale (*Eubalaena australis*)* (© Copyright, Georgina Steytler)

The Dales Ramsar Site, Christmas Island

This Christmas Island wetland supports a number of unique ecological features, including significant numbers of seabirds and endemic crabs.

The Dales Ramsar site is a near pristine system of seven watercourses which include permanent and perennial streams, and permanent springs. It also contains the majority of surface water on Christmas Island.

Ramsar designation: 2002

Location: On the western coastline of Christmas Island

Size: 583 hectares

The Dales includes anchialine (a mixture of fresh and salt water) caves where basalt and limestone meet. It is also comprised of surface karst (limestone) communities, including the unique stepped tufa deposits at Hugh's waterfall.



Waterfall within The Dales Ramsar site on Christmas Island (© Copyright, Parks Australia)



Each year, millions of red crabs (Gecarcoidea natalis) migrate across Christmas Island during the breeding season

(© Copyright, John Hicks)

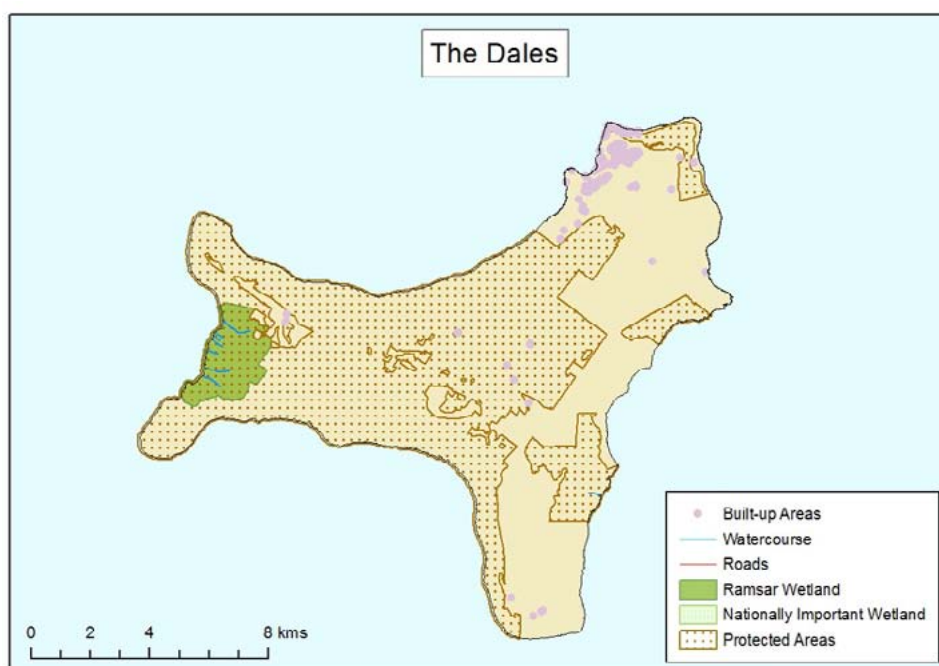
There are a significant number of breeding colonies of seabirds at The Dales, including the world's last active breeding colony of the endangered Abbott's booby (*Papasula abbotti*). Other noteworthy bird species at the site include the vulnerable Christmas Island frigate bird and the migratory redfooted booby (*Sula sula*) and brown booby (*Sula leucogaster*).

The Dales also supports all twenty land crab species found on Christmas Island including the endemic blue crab (*Discoplax hirtipes*), the robber crab (*Birgus latro*) and the iconic red crab (*Gecarcoidea natalis*).

The site is used for conservation and recreation activities, including sightseeing, walking and camping.



The Dales Ramsar site on Christmas Island (© Copyright, Parks Australia)



The Dales Ramsar site is located on the western coastline of Christmas Island (© Copyright, Department of the Environment)

Piccaninnie Ponds Karst Wetlands

Ramsar Site, South Australia

Exceptional karsts and coastal fen wetlands characterise Australia's most recently designated Ramsar site.

The karst wetlands at Piccaninnie Ponds have been created by limestone rocks being dissolved over thousands of years. The water is discharged from a groundwater aquifer and is fresh, clear and cool – almost always between 14 and 15°C. The pools are renowned for their water clarity and support aquatic vegetation up to 15 metres below the surface. It is one of the few remaining permanent freshwater wetlands in the lower south-east of South Australia.

Ramsar designation: 2012

Location: South-east of Mount Gambier in South Australia

Size: 862 hectares

The wetlands support a number of nationally threatened species, including the orange-bellied parrot (*Neophema chrysogaster*) and the Australasian bittern

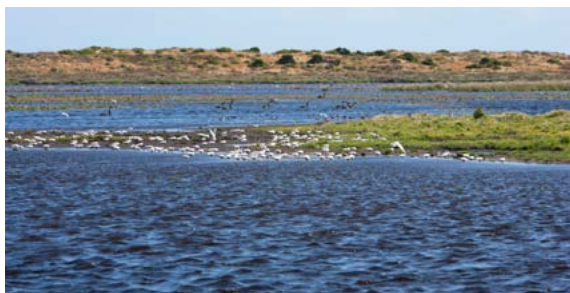


Spectacular underwater view of cave divers in the Main Ponds area of the Piccaninnie Ponds Karst Wetlands Ramsar site (© Copyright, Richard Harris)

(*Botaurus poeciloptilus*). They also provide breeding and spawning habitat for native fish species such as the Yarra pygmy perch (*Nannoperca obscura*) and dwarf galaxias (*Galaxiella pusilla*).

Each year around 20 000 people visit Piccaninnie Ponds Karst Wetlands. One of the main attractions is cave diving in the crystal clear deep water. Visitors can snorkel or dive down into the underwater caverns to explore the majestic white walls of sculptured limestone.

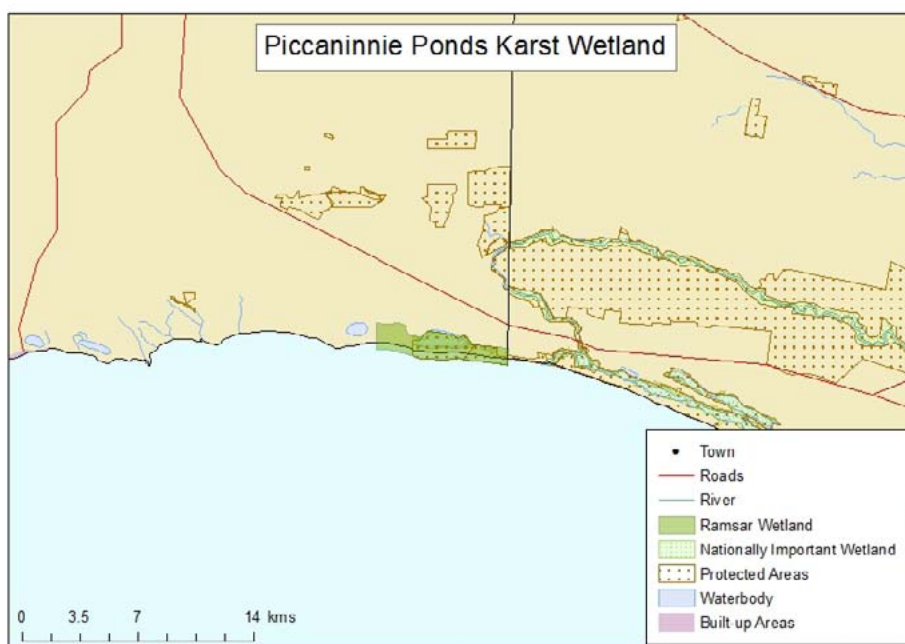
A video of the Piccaninnie Ponds Karst Wetlands Ramsar site is available on the Department of the Environment's YouTube channel: <http://www.youtube.com/watch?v=0QIEuVwDotU>



Birdlife at Pick Swamp in the Piccaninnie Ponds Karst Wetlands Ramsar site (© Copyright, Dragi Markovic)



*Piccaninnie Ponds Karst Wetlands Ramsar site supports the critically endangered orange-bellied parrot (*Neophema chrysogaster*)* (© Copyright, Graeme Chapman)



The Piccaninnie Ponds Karst Wetland Ramsar is located in the far south-east of South Australia, bordering Victoria
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