

## Ramsar Information Sheet

Text copy-typed from the original document.

- 1. Date this sheet was completed:** 1 April 1998 (date August 1986 on RIS is designation date)
- 2. Country:** Australia
- 3. Name of wetland:** Macquarie Marshes Nature Reserve
- 4. Geographical co-ordinates:** Latitude: 30°45'S Longitude: 147°33'E
- 5. Altitude:** 135 to 145 metres above mean sea level
- 6. Area:** 17,143 hectares

### 7. Overview

The Macquarie Marshes Nature Reserve occupies approximately 10% of the larger Macquarie Marshes wetland. The Macquarie Marshes includes extensive areas of reed swamp, river red gum woodland, and water couch grasslands. The Macquarie Marshes provides habitat for many species of flora and fauna including large numbers of waterbirds and many species of migratory waterbirds.

- 8. Wetland type:** Xf, Ts and N
- 9. Ramsar Criteria:** 1a, 1c, 1d, 2b, 2c, 3a, 3b, dominant reasons are 1a, 1c, 2b and 2c
- 10. Map of site included:** The Ramsar site is outlined on the appended map.

### 11. Name and address of compiler:

NSW National Parks and Wildlife Service  
Conservation Assessment and Planning Division  
PO Box 1967  
Hurstville NSW 2220  
Australia  
Phone 02 9585 6477; Fax 02 9585 6495

### 12. Justification of criteria selected under point 9:

- 1a: The wetland is characteristic of lower floodplain wetlands of the Darling Riverine Plains.
- 1c: The wetland has an important role in maintaining water quality and populations of wetland species in the Murray-Darling Basin.
- 1d: The wetland is unusual in its size and diversity
- 2b: The wetland is the limit of range for several plant and animal species, and maintains water dependent ecosystems and populations of wetland dependent species in a semi-arid environment.
- 2c: The wetland is critical habitat for a number of species dependent on wetlands for breeding. It is one of the last remaining sites supporting large breeding colonies of Straw-necked Ibis (*Threskiornis spinicollis*) in Australia, and supports some of the largest breeding colonies of Intermediate Egret (*Ardea intermedia*), Rufous Night Heron (*Nycticorax caledonicus*) and Royal Spoonbill (*Platalea regia*) in southern Australia.
- 3a: The wetland regularly supports more than 20 000 waterfowl, and supports more than 500 000 waterfowl in large floods.
- 3b: It regularly supports substantial numbers of cormorants, herons, ibises, spoonbills, swans, geese, ducks, raptors and waders. It supports significant breeding events of these species.

### 13. General location:

Approximately 100 km north of Warren and 30 km west of Quambone in central northern New South Wales.

#### **14. Physical features:**

The Macquarie Marshes are located on early Tertiary alluvium in the Great Artesian Basin. The wetland comprises a complex of braided swamps, channels and gilgaied floodplain, inundated by flooding from the lower Macquarie River and its effluents and anabranches.

The Macquarie River is one of the most variable in the Murray-Darling Basin. Floods can occur at any time of year, and are highly variable in size and duration. The amount of water available, and variability of inflows to the Macquarie Marshes has been reduced by dam construction and upstream extractions for irrigated agriculture. A variable proportion of the inflows to the Marshes pass through and join the Barwon-Darling River.

The depth of the water in the wetland is variable, with a maximum of 1.5 m. Depth and extent of inundation are highly variable according to inflows. Some channels and streams are permanent since the construction of dams, and irrigation. Most of the wetland is semi-permanent or ephemeral, depending on the distance from the main streams and channels.

The climate of the area is semi-arid, however some flooding occurs in most years due to rainfall in the headwater catchments. Flooding may occur at an season and the extent of inundation varies considerably from year to year depending on the magnitude of regulated flows. The average rainfall at the wetland is 444 mm per year, with a slight summer dominance. Average maximum temperatures range from 16.5°C in July to 34.5°C in January. Average minimum temperatures range from 4°C in July to 20°C in January.

#### **15. Hydrological values:**

The wetland serves as the main sediment trap of the Macquarie River catchment. It assists the maintenance of water quality in the Murray-Darling basin by intercepting nutrients, chemical and saline contaminants from the agricultural and urban activity in the catchment.

#### **16. Ecological features:**

The wetland contains a wide range of vegetation types. The dominant types are River Redgum (*Eucalyptus camaldulensis*) forest and woodland, extensive beds of Common Reed (*Phragmites australis*). Also present are the Coolibah (*E. coolibah*), Black Box (*E. largiflorens*), Lignum (*Muehlenbeckia florulenta*), Water Couch (*Paspalum distinctum*) and River Cooba (*Acacia stenophylla*). There are various associations of these species found throughout the wetland. There are some changes occurring in the wetland as a result of extraction of water upstream for irrigation. The weed considered to pose the greatest threat to the wetland is Lippia (*Phyla nodiflora*).

Native plant communities on wetland areas outside the Ramsar site are similar to those within, with a greater proportion of ephemeral wetland. Beyond the boundaries of the wetland the vegetation is typical of the region, with Bimble Box (*E. populnea*), Wilga (*Geijera parviflora*), Leopardwood (*Flindersia maculosa*), and a wide range of Chenopods including Saltbush (*Atriplex* spp.) and Roly Poly (*Sclerolaena* spp.).

#### **17. Noteworthy flora:**

The wetland is particularly important for the extent of its River Redgum forests and woodlands, the northerly occurrence of Black Box, the southerly occurrence of Coolibah, the extensive area of Common Reed, and the associations of these types.

#### **18. Noteworthy fauna:**

The wetland supports permanent populations of several endangered species including Australasian Bittern (*Botaurus poiciloptilus*) and Brolga (*Grus rubicundus*). The endangered Magpie Goose (*Anseranas semipalmata*) breeds in the wetland. The wetland supports the largest breeding colonies of Intermediate Egret (*Egretta intermedia*) in southern Australia. The wetlands is used by birds included on the JAMBA and CAMBA.

#### **19. Social and cultural values:**

The marshes were a favourable location for Aboriginal occupation and a range of significant sites have been recorded. The Marshes also have some historic significance of the area for waterbirds make the marshes a valuable location for scientific research and teaching.

**20. Land tenure/ownership of:**

Lands of the State dedicated as a Nature Reserve under the New South Wales *National Parks and Wildlife Act 1974*. Surrounding lands within the wetland are privately owned.

**21. Current land use/principal human activities:**

The lands within the Ramsar area are permanently dedicated as a Nature Reserve and have limited public access. Surrounding private lands are used for cattle and sheep grazing and some areas are irrigated for cropping.

**22. Factors adversely affecting the site's ecological character, including changes in land use and development projects:**

*Water supply:* Existing external factor. Extraction of water for irrigation upstream of the wetland has caused a reduction in the water supply to the wetland and a decline in the area and vigour of some areas. The volume of water available for extraction from the river for irrigation was reduced by the State Government in 1995, and this adverse factor has been stabilised.

*Water quality:* Existing external factor. The water quality of the Macquarie River is poor, contaminated with sediments, nutrients from urban runoff and effluent, agricultural runoff, pesticide residue, and rising salinity.

*Surrounding land use:* Existing external factor. An irrigated cotton development upstream and adjacent to the northern section of the wetland is a major concern. It impedes flows into the wetland during large floods, and has the potential to cause major pesticide contamination.

*Introduced plants:* Existing internal factor. The main plant species in this category is *Lippia*. It is unclear how this plant was introduced, although it is widespread in the area.

*Introduced animals:* Existing internal factor. Feral pigs are widespread in the area and have been present for many years. Pigs are subject to an ongoing control program.

**23. Conservation measures taken:**

The MMNR is found on the Macquarie River which is a regulated system. To maintain the health of the Macquarie Marshes an adequate and appropriate water regime is required. To this end, in 1986 a Water Management Plan was developed by the National Parks and Wildlife Service (NPWS) and Department of Water Resources. The primary objective of this Plan was to ensure a water regime in the Macquarie Marshes capable of maintaining the maximum possible extent, diversity and productivity of wetland habitat, and specifically, suitable conditions for waterbird breeding. The secondary objective was to control erosion and sedimentation in the Marshes in so far as is necessary to achieve the primary objective of the Plan.

In 1996 the NPWS and Department of Land and Water Conservation (formerly Department of Water Resources) revised the 1986 Water Management Plan for the Macquarie Marshes. The revised plan increases the annual water allocation to the Macquarie Marshes. The plan also addressed water quality and works issues and developed research and monitoring strategies. Also arising from the plan was the establishment of an audit and advisory committee. This committee would consist of relevant government departments and community representatives. The role of the committee is to audit the implementation of the plan and to advise the NPWS and DLWC on any issues arising from the implementation of the plan.

In 1983 the NPWS adopted a Plan of Management for the MMNR. This plan addresses numerous conservation and management initiatives to preserve and enhance the area for nature conservation. Areas covered within the Plan of Management include water management, aboriginal sites, historical sites and public access and use.

The MMNR has a permanent management officer at the site who undertakes activities outlined within the Plan of Management together with law enforcement duties.

**24. Conservation measures proposed but not yet implemented:**

Erosion control works are proposed for areas within the southern part of the Reserve.

**25. Current scientific and research facilities:**

There are currently two research projects underway at the Macquarie Marshes which cover waterbirds and redgums. There are some proposed projects on water quality that may be undertaken in the near future.

There are no research facilities in the area.

**26. Current conservation education:**

The Macquarie Marshes and the MMNR are utilised for educational visits by schools and universities. The NPWS holds two Open Days a year at the MMNR. During these guided walks and talks are given by NPWS rangers.

**27. Current recreation and tourism:**

Tourism and visitation is closely managed due to the sensitivity of the area, difficulties of access, remoteness, and the dangers from snakes and mosquitoes. It takes the form of educational groups and special interest tours. Provision for higher visitation is being developed. The number of visitors varies, but is approximately 1000 visitor days per year.

**28. Jurisdiction:**

Territorial: Government of New South Wales

Functional: NSW National Parks and Wildlife Service

**29. Management authority:**

New South Wales National Parks and Wildlife Service (Western Region and Zone, Coonabarabran District)

PO Box 39, Coonabarabran NSW 2357, Australia

Phone 02 6842 1311; Fax 02 6842 2124

**30. Bibliographical references:**

Australian Nature Conservation Agency, Undated. *Directory of Important Wetlands in Australia*. Commonwealth of Australia, Canberra.

Bacon, P.E. 1994. Vegetation responses to variation in water availability in the Macquarie Marshes. Report to Macquarie Marshes Catchment Committee.

Briggs, S.V. and Thornton, S.A. 1995a. Relationships between duration of flooding and waterbird breeding in red gum wetlands. Report to Murray Darling Basin Commission, unpublished.

Cooper, B. 1994. *Central and North West Regions Water Quality Program Report on Pesticide Monitoring*. DLWC, Sydney.

Davis, T.J. 1994. *The Ramsar Convention Manual: A Guide to the Convention on Wetlands of International Importance especially as Waterfowl Habitat*. Ramsar Convention Bureau, Gland, Switzerland.

Department of Water Resources and National Parks and Wildlife Service. 1986. *Water Management Plan for the Macquarie Marshes*. DWR and NPWS, Sydney.

Expert Group on Asset Valuation Methods and Cost Recovery Definitions for the Australian Water Industry. 1995. Report to Council of Australian Governments.

Gehrke, P.C., Brown, P., Schiller, C.B., Moffat, D.B. and Bruce, A.M., In Press. River regulation and fish communities in the Murray-Darling River system, Australia. *Regulated Rivers: Research and Management*.

Harris, J.H. 1995. Carp: The prospects for control?. *Water* 22(2): 25-28.

Johnson, W.J., 1995. Breeding of colonially nesting waterbirds in the Macquarie Marshes. Report to Macquarie Marshes Catchment Committee.

Kingsford, R.T. and Thomas, R.F. 1995. The Macquarie Marshes in arid Australia and its waterbirds: a 50 year history of decline. *Environmental Management* 19.

Land Management Task Force. 1995. *Managing for the future*. Commonwealth of Australia, Canberra.

Maddock, M. In press. The status of herons in Australasia and Oceania. In: *Status and Conservation of herons*. eds. J.A. Kushlan and H. Haffner, Academic Press.

Mitchell, D.S. 1995. The ecology of the Macquarie Marshes: an evaluation of the main factors affecting their current condition. Report to the Macquarie Valley Irrigators' Association. Unpublished.

Marchant, S. and Higgins, P. 1990. *Handbook of Australian, New Zealand and Antarctic Birds Volume 1 Ratites to Ducks*. Oxford University Press, Melbourne.

Nannestad, C. (ed.) 1994. *Proceedings of the Forum on European Carp*. Wagga Wagga NSW, 20 June 1994, Murrumbidgee Catchment Management Committee, Wagga Wagga, NSW.

National Parks and Wildlife Service 1993. *Macquarie Marshes Nature Reserve Plan of Management*. NPWS, Sydney.

National Parks and Wildlife Service and Department of Land and Water Conservation 1995. *Draft Water Management Plan for the Macquarie Marshes*. NPWS and DLWC, Sydney.

O'Brien, J.M. 1995. *1994/95 Macquarie Cotton Industry Benchmarking*. DLWC, Sydney.

Swales, S. and Curran, S.J. 1995. A survey of the fish resources of the Macquarie Marshes. NSW Fisheries Report to NSW Department of Water Resources, unpublished.

## **Appendices**

Appendix 1: Animal species recorded within the Macquarie Marshes Nature Reserve.