

# Information Sheet on Ramsar Wetlands

Categories approved by Recommendation 4.7 of the Conference of the Contracting Parties.

## 1. Date this sheet was completed/updated:

1998

FOR OFFICE USE ONLY.

DD	MM	YY

Designation date

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Site Reference Number

## 2. Country:

Australia

## 3. Name of wetland:

Lakes Argyle and Kununurra, Western Australia

## 4. Geographical coordinates:

Latitude: (approx.) 15° 48'S to 16° 50'S; Longitude: (approx.) 128° 28'E to 129° 00'E

## 5. Altitude:

## 6. Area:

Approximately 150 000 ha.

## 7. Overview:

A large system of man-made reservoirs and associated wetlands that are used extensively by waterbirds, especially during the dry season when up to 200 000 waterbirds have been counted.

## 8. Wetland Type:

marine-coastal: A B C D E F G H I J K

inland: L (M) N (O) P Q R Sp Ss Tp Ts

U Va Vt W Xf Xp Y Zg Zk

man-made: 1 2 3 4 5 (6) 7 8 9

## 9. Ramsar Criteria:

1a 1b 1c 1d | (2a) 2b 2c 2d | (3a) 3b 3c | 4a 4b

Please specify the most significant criterion applicable to the site:

10. Map of site included? Please tick *yes*  -or- *no*.

## 11. Name and address of the compiler of this form:

Department of Conservation and Land Management

Locked Bag 104

Bentley Delivery Centre WA 6983

12. Justification of the criteria selected under point 9, on previous page.

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### 13. General location:

Kununurra, Kimberley, Western Australia.

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### 14. Physical features:

The lakes were formed by the damming of the Ord River. Many of the associated wetlands, which are connected to the lakes and are permanent, were seasonal prior to damming. Water levels in Lake Argyle have an annual fluctuation of about 3 metres but those in Lake Kununurra and associated wetlands are kept constant except for about two weeks once or twice a year when they are drained to control weed growth. In some years there is no drawdown but, nevertheless, the regular drying out results in the wetlands being highly productive. Water is fresh throughout the system.

The lakes are quite deep and there are large areas of open water devoid of aquatic plants. The large fluctuation in water levels has prevented the establishment of much vegetation on most of the shore of Lake Argyle, although in some sections dense belts of trees have grown. However, many aquatic plants grow in shallow water at the edge of the lake. There are dead trees throughout the wetland system as a result of trees which previously grew in seasonally-inundated or dry areas now being permanently flooded. Because water levels are stable in Lake Kununurra and the wetlands associated with it, they have well developed fringing vegetation consisting of grassland, *Typha* and other "rushes", or woodland. Savannah woodland grows around the wetland complex.

The aquatic vegetation consists of *Nymphoides indica*, *Nymphaea gigantea*, *Najas graminea*, *Hydrilla verticillata*, *Potamogeton tricarinatus*, *Myriophyllum verrucosum*, *Valisneria spiralis* and *Chara* sp. The main "rushes" are *Typha domingensis* and *Eleocharis* spp. Tree species growing on the shores of the lakes and wetlands are *Melaleuca viridiflora*, *Eucalyptus microtheca*, *E. camaldulensis*, *Nauclea orientalis*, *Sesbania formosa* and *Lophostemon grandiflorus*. The main species in the fringing grassland are *Eriachne sulcata*, *Echinochloa kimberleyensis*, *Oryza australiensis* and a large number of ephemeral herbs. The savannah woodland is dominated by *Eucalyptus* spp. and *Lysiphyllum cunninghamii*.

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### 15. Hydrological values:

The nomination consists of dammed waterbodies and, therefore, has no natural hydrological values.

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### 16. Ecological features:

Lakes Argyle and Kununurra are most important as dry-season refuges although 18 species have been recorded breeding in the Lake Kununurra wetlands. Very large numbers of waterbirds occur in the system, which regularly supports more than 20 000 waterbirds. Lake Kununurra and surrounding wetlands contained about 12 000 waterbirds in September 1978 and October 1979 and about 7 000 in November 1980. Lake Argyle contains some of the largest aggregation of waterbirds in northern Australia; 181 400 were counted in August 1986. Records for abundant species include:

Glossy Ibis	<i>Plegadis falcinellus</i>	6 000 Aug 1979
Magpie Geese	<i>Anseranas semipalmata</i>	10 500 Aug 1986
Wandering Whistling Duck	<i>Dendrocygna arcuata</i>	11 000 Aug 1986
Plumed Whistling Duck	<i>D. eytoni</i>	4 300 Jul 1981
Radjah Shelduck	<i>Tadorna radjah</i>	900 May 1980
Pacific Black Duck	<i>Anas superciliosa</i>	16 000 Nov 1979
Grey Teal	<i>A. gibberifrons</i>	17 200 Aug 1986
Pink-eared Duck	<i>Malacorhynchus membranaceus</i>	1 800 Sep 1980
Hardhead	<i>Aythya australis</i>	51 400 Aug 1986
Green Pygmy Goose	<i>Nettapus pulchellus</i>	1 524 Aug 1986
Eurasian Coot	<i>Fulica atra</i>	50 756 Aug 1986

The two lakes are the stronghold of the Combcrested Jacana *Irediparra gallinacea* in Western Australia; 120 were counted along a small section of the shore of Lake Kununurra in May 1986 and large numbers of birds with young were recorded in March 1988.

Some of the wetlands associated with the lakes support lush growth of aquatic plants and several endemic species of herbs have been found on their periphery, particularly in the case of the seasonal wetlands.

Besides containing a diverse array of waterbirds the area supports a large number of terrestrial species; a total of 202 terrestrial and aquatic bird species have been recorded in the Ord River Irrigation Area (i.e. Lakes Argyle, Kununurra and environs). The area supports several species of insectivorous bat, flying foxes (both *Pteropus scapulatus* and *P. alecto*), Water Rats *Hydromys chrysogaster* and large numbers of Freshwater Crocodiles *Crocodylus johnstoni*.

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**17. Noteworthy flora:**

See ECOLOGICAL FEATURES.

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**18. Noteworthy fauna:**

See ECOLOGICAL FEATURES.

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**19. Social and cultural values:**

The principle social values are water supply for irrigation and domestic water use and fishing, both commercial and recreational. Tourism is a growing use. All values are consistent with maintenance of current ecological values.

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**20. Land tenure/ownership:**

Lake Argyle, Lake Kununurra and wetlands directly connected to them have been proposed as reserves for the purpose of water management, except in the case of the Packsaddle Swamps (and the seasonal wetlands south of them) which will be reserved for nature conservation as well. All reserves except that containing Packsaddle Swamps and seasonal wetlands to the south will be vested in the Water Authority of Western Australia; the latter reserve will be vested in the Water Authority and the National Parks and Nature Conservation Authority of Western Australia. The reserves will be managed by either the Water Authority or the Water Authority and Department of Conservation and Land Management, according to vesting.

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**21. Current land use:**

The lakes provide water for the Ord River Irrigation Scheme and their levels are managed for this purpose, which means Lake Kununurra and associated wetlands have a constant level while that in Lake Argyle (the primary water source) fluctuates according to the balance between catchment, evaporation and requirements for irrigation.

There is recreational boating and a professional and amateur fishery in the lakes, which are increasingly being used for tourism. A float 'plane is based on Lake Kununurra and there are boat tours of both lakes.

Diamond mining currently occurs within the wetland boundary (Bow River Project) and there are other tenements around the southern part of Lake Argyle and between the dam wall of Lake Argyle and Kununurra. Argyle Diamond Mine draws water from the lake near Smoke Creek.

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**22. Factors (past, present or potential) adversely affecting the site's ecological character, including changes in land use and development projects:**

The existing type of management of water levels has proved highly beneficial to waterbirds and should continue. However, it creates a eutrophic system in the wetlands which will probably result in continuing changes in floral composition, some of which may be undesirable. Some active management of the vegetation may be necessary.

Exploration and mining for diamonds will continue, subject to appropriate environmental constraints that are consistent with maintenance of the ecological character of the wetland area.

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**23. Conservation measures taken:**

No specific measures have been taken.

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

Declaration of Packsaddle Swamp as a Nature Reserve.

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

None.

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**26. Current conservation education:**

None.

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**27. Current recreation and tourism:**

The lakes are used for recreational fishing and scenic tours (see CURRENT LAND USE).

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**28. Jurisdiction:**

Government of Western Australia

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**29. Management authority:**

Water Authority of Western Australia, PO Box 100, Leaderville WA 6007.

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**30. Bibliographical references:**

Gowland, P.N. (1983). A guide to the ecology and management of bird pests of commercial agriculture in the Ord River Irrigation Area, No. 2. Waterbirds. Royal Australasian Ornithologists Union Microfiche Series M35.

Jaensch, R.P. and Vervest, R.M. (1990). Waterbirds at remote wetlands in Western Australia, 1986-88. Part One: Lake Argyle and Lake Gregory. Royal Australasian Ornithologists Union Report 32, 1-25.

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