

of south-western Queensland

Semi-permanent saline lakes



Lake Wyara
(R. Jaensch, *Wetlands International*)

Landform and water regime

Semi-permanent saline lakes occur in basins that typically are internal (closed) drainage basins. These basins may be many kilometres wide. Wave action may form beaches and spits, some of which may become islands when the lake is full.

Water supply mainly is from the creeks of local catchments. Infrequent (episodic), major rain events provide most of the water.

Inundation is semi-permanent in the sense that these lakes contain some water in, for example, five of every six years. They may be full (several metres deep) once every 10 years. Occasionally they may over-fill and spread into surrounding areas.

Despite inflow water being fresh, water in these lakes is saline. Initially, hyposaline (low salinity) conditions prevail. Some lakes may become hypersaline and dry out to a salt crust.

Typical vegetation

Low open shrubland of succulents such as samphire *Halosarcia* spp. typically occurs in the lake margins. Samphire that encroaches on to lake beds in drier years may die due to flooding in wetter years.

Associated wetland types

- Temporary saline lakes.

Distribution in south-western Queensland

This wetland type is relatively rare in south-western Queensland. It occurs only in the Mulga Lands and Desert Uplands biogeographic regions.

Prominent examples of this type

- Lake Wyara (north-west of Hungerford: saline).
- Parts of Lake Bindegolly (east of Thargomindah: saline).
- Lake Galilee (north of Aramac: slightly saline): one of the largest such lakes in Queensland.

Occurrence in protected areas

This wetland type is well represented in protected areas because two of the prominent examples are in National Parks (Lake Wyara in Currawinya National Park; Lake Bindegolly in Lake Bindegolly National Park).

Principal conservation values

- Regularly support the largest populations of waterbirds in inland Queensland. Aggregations of in the order of 100 000 (mostly ducks such as pink-eared duck *Malacorhynchus membranaceus*) occur when aquatic invertebrates proliferate under hyposaline conditions.
- At times support breeding colonies (probably the largest in inland Queensland) of many thousands of pelicans, cormorants and terns on islands in the lakes.
- Vital components of the network of large wetlands used by mobile waterbirds in inland Australia and by international migratory shorebirds.
- Highly productive ecosystems in terms of invertebrates and submerged plants.

Characteristic plant species

Trees and shrubs:

saltbushes *Atriplex* spp.

Grasses, sedges and forbs:

mulka *Eragrostis dielsii*

spiny flat sedge *Cyperus gymnocaulos*

samphire *Halosarcia pergranulata*

brown-head samphire *Halosarcia indica*

burr/poverty-bush *Sclerolaena* spp.

sea heath *Frankenia* spp.

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Semi-permanent saline lakes *cont...*

Submerged plants:

green alga *Ulothrix* spp.
red water-milfoil *Myriophyllum verrucosum*
water mat *Lepilaena bilocularis*
Nitella spp.
Chara australis
Lamprothamnium papulosum
sea tassel *Ruppia maritima*

Other species that occur:

blue-billed duck *Oxyura australis*
great crested grebe *Podiceps cristatus*

Other fauna

Bony bream *Nematolosa erebi* occur at low salinities and frogs occur when the lakes are over-full. Invertebrates occur in low diversity, but in high abundance at middle salinities. They vary with salinity and include ostracods (eg. *Mytilocypris splendida*), copepods (eg. *Boeckella triarticulata*), cladocerans (eg. *Daphniopsis queenslandensis*), some insects (eg. *Tanytarsus barbitarsus*) and the mollusc *Coxiella* sp.

Threats to conservation values

- Siltation of the lakes due to erosion in catchments.
- Predation of ground-nesting waterbirds (colonies) by foxes and feral cats.

Management responses required

- Protection of catchments through maintenance of appropriate grazing regimes.
- Breeding colonies inside National Parks should be protected through control of feral animals.

Gaps in knowledge

This is one of the best known wetland types in south-western Queensland, due largely to the semi-permanent inundation and inclusion in protected areas.

Further reading

Kingsford, RT. and Porter, JL. 1994. Waterbirds on an adjacent freshwater lake and salt lake in arid Australia. *Biological Conservation* 69, 219-228.

Timms, BV. 1998. A study of Lake Wyara, an episodically filled saline lake in southwest Queensland, Australia. *International Journal of Salt Lake Research* 7: 113-132.

Blackman, JG. et al. 1996. Queensland. In, ANCA. A *Directory of Important Wetlands in Australia*, 2nd edition. Australian Nature Conservation Agency, Canberra. Site accounts for Lake Wyara (p. 353), Lake Bindigolly (p. 354) and Lake Galilee (p. 298).

For further information, contact:

Environmental Protection Agency, 160 Ann Street, Brisbane (Tel: 07-3227-8186), or regional offices of the Queensland Parks and Wildlife Service in Toowoomba and Rockhampton.



Pink-eared duck
(Environmental Protection Agency)

Characteristic waterbird species

Occurrence of fauna species depends on water depth and salinity.

Abundant:

grey teal *Anas gracilis*
pink-eared duck *Malacorhynchus membranaceus*
hardhead *Aythya australis*
hoary-headed grebe *Poliocephalus poliocephalus*
Eurasian coot *Fulica atra*

Rare species under Queensland legislation (RQ):

freckled duck *Stictonetta naevosa* (RQ)

Breeding colonies:

piebald cormorant *Phalacrocorax varius*
Australian pelican *Pelecanus conspicillatus*
black swan *Cygnus atratus*
silver gull *Larus novaehollandiae*
gull-billed tern *Sterna nilotica*
Caspian tern *Sterna caspia*

Migratory shorebirds:

sharp-tailed sandpiper *Calidris acuminata*
curlew sandpiper *Calidris ferruginea*
red-necked stint *Calidris ruficollis*

Non-migratory shorebirds:

red-capped plover *Charadrius ruficapillus*
red-necked avocet *Recurvirostra novaehollandiae*