

Aquatic ecological community in the natural drainage system of the lowland catchment of the Lachlan River

Threatened Species Unit

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Introduction

The aquatic ecosystem of the lower Lachlan River catchment has been greatly modified since European settlement, by river regulation, agricultural land uses and the introduction of non-native species. Species have declined in their numbers and distribution, some to the point where they are now listed as threatened.

The aquatic ecological community in the natural drainage system of the lower Lachlan River catchment is listed as an **endangered ecological community** in NSW. This means that it is likely to become extinct in nature in NSW unless the circumstances and factors threatening its survival or evolutionary development cease to operate. The listing of the lowland Lachlan River aquatic ecological community has several legal implications, including the establishment of heavy penalties for harming species that form part of the ecological community without appropriate authority. Impacts on the ecological community must be considered during development assessment processes, and the NSW Department of Primary Industries may prepare a recovery plan for the endangered ecological community.

Description

The aquatic ecological community of the lowland Lachlan River catchment includes all native fish and aquatic invertebrates within all natural rivers, creeks, streams and associated lagoons, billabongs, lakes, wetlands, paleo-channels, flood-runners, floodplains and effluent streams of the Lachlan River. The listing includes:



Photo: NSW Department of Natural Resources

- Lachlan River from Wyangala Dam to the confluence with the Murrumbidgee River;
- Boorowa River, Belubula River below Carcoar Dam, Mandagery Creek, Goobang Creek, and Crowie Creek;
- Lake Cowal, Bland Creek and its tributaries;
- Lake Brewster and Lake Cargelligo;
- Effluent waters of Willandra Creek, Moolbang Creek and Merrowie Creek;
- The Great Cumbung Swamp.

Barren Box Swamp and its catchment west of the township of Mirrool, including the Mirrool Creek, is excluded from the definition as the majority of water entering Barren Box Swamp is from the Murrumbidgee Irrigation Area. Artificial canals, water distribution and drainage works, farm dams and off-stream reservoirs are also excluded. Other watercourses above an altitude of 500 m above sea level that are not specified above are also excluded.

The community has a diverse assemblage of native species including 19 species of fish, 10 species of crustacean, 8 species of mollusc, 2 species of sponges, and many insects.



Habitat and ecology

- Most of the lower Lachlan River catchment is a lowland riverine environment characterised by meandering channels, wide floodplains, anabranches and effluent creeks.
- Although small flows are contributed to the Murrumbidgee River, the Lachlan River is considered to culminate in a broad expansive swamp known as the Great Cumbung Swamp.
- Many water bodies in the lowland Lachlan River catchment are characterised by variable and unpredictable patterns of high and low flows and water levels.
- The variability in environmental conditions has led to adaptations in the native aquatic flora and fauna. For example, many species rely on floods to trigger spawning and create suitable breeding habitats.
- The lowland Lachlan River provides a wide range of habitats for fish and invertebrates, including pools, runs or riffles, backwaters and billabongs, in-stream woody habitat, and aquatic plants.
- The Lachlan River floodplain also provides a mosaic of habitat types, including permanent and temporary wetlands, and terrestrial habitats.

Reasons why the aquatic ecological community is endangered

Modification of natural river flows resulting from river regulation (dams, weirs, etc), leading to reduced habitat quality, habitat fragmentation, loss of spawning cues, and reduced opportunities for dispersal and migration of aquatic species.

Reduced floodplain and wetland inundation, reducing the complexity and productivity of the ecosystem.

Thermal pollution associated with cold-water releases from Wyangala and Carcoar Dams, leading to spawning failures, inhibition of migration and loss of habitat for some fish species.

Water extraction for consumptive uses, decreasing flows to levels that may be detrimental to successful ecological function.

Predation, competition, and diseases associated with introduced fish species including carp, goldfish, redfin perch, mosquito fish, rainbow trout, and brown trout.

Degradation of the riparian zone resulting from clearing native vegetation and stock trampling, leading to loss of shade and shelter, increased erosion and sedimentation, deterioration in habitat quality and availability, and reduction in carbon inputs – the basis of food resources for in-stream invertebrates.

Declines in water quality associated with thermal pollution, pesticides, increased salinity, nutrient and turbidity levels, and increased incidences of blue-green algal blooms.

Loss of aquatic plants, contributing to the overall degradation and destabilisation of the aquatic ecosystem, and associated reduction in biodiversity.

Removal of in-stream large woody debris, reducing the amount and quality of aquatic habitat and sites available for reproduction of fishes and invertebrates.

Agricultural practices such as irrigation, clearing, grazing and the use of fertilisers and pesticides, which have affected water quality and river flow.

Over-fishing, which has probably contributed to past declines in populations of some species. Illegal fishing activities, targeted or incidental collection, and recreational catch of species listed as endangered or vulnerable, still pose a threat.

Four of the native finfish species of the lower Lachlan ecological community are listed on the NSW threatened species schedules: olive perchlet, silver perch, southern pygmy perch, and purple spotted gudgeon. The river snail is endangered, and serious declines of at least two other fish species native to the aquatic ecological community of the lowland Lachlan River catchment have been documented (eel tail catfish and river blackfish).

Recovery actions that are underway

Allocating and managing environmental water flows in regulated rivers through the water sharing plan processes, and reducing the impact of cold water originating from large dams.

Riparian vegetation management and restoration projects being conducted by landholders, community groups and Catchment Management Authorities.

Providing fish passage by removing barriers or installing fishways in consultation with affected stakeholders.

Identifying and prioritising threats in the endangered ecological community.

Conserving and, where possible, restoring habitats through the protection of aquatic and riparian vegetation and encouraging the use of effective erosion control measures.

Developing and implementing control programs for introduced species.

Reinstating large woody habitat in waterways where appropriate.

Sustainably managing fishing activities.

Legal implications

The listing of the lowland Lachlan River aquatic ecological community has given all native fish and other aquatic animal life within its boundaries the protected status of endangered species.

Harming a member of an endangered ecological community is an offence. Penalties can include fines of up to \$220,000 and up to 2 years imprisonment.

Harming, buying, selling or possessing a threatened species is also an offence. Penalties can include fines of up to \$220,000 and up to 2 years imprisonment.

Severe penalties can also apply for damaging the habitat of an endangered ecological community without approval. Damage includes actions such as dredging riverbeds and constructing in-stream or floodplain barriers that block the free passage of fish.

Clearing activities authorised by a property vegetation plan approved under the *Native Vegetation Act 2003* are permitted, provided the native vegetation reform package had the benefit of biodiversity certification at the time the property vegetation plan was approved.

Clearing that constitutes a routine agricultural management activity and certain routine farming practice activities (other than clearing) are permitted, provided the activities are to the minimum extent reasonably necessary and all other relevant statutory approvals or authorities have been obtained.

The impact of developments or activities that require consent or approval (in accordance with the *Environmental Planning and Assessment Act 1979*) must be assessed and considered by consent or determining authorities. Where such actions are likely to result in a significant impact on a threatened species or its habitat, a detailed species impact statement must be prepared.

Strategies to be adopted for promoting the recovery of the endangered ecological community to a position of viability in nature will be set out in a Priorities Action Statement.

A recovery plan may be prepared for the endangered ecological community in accordance with the provisions of the *Fisheries Management Act 1994* to promote the recovery of the ecological community to a position of viability in nature.

Arrangements are in place to allow continued recreational fishing for some of the popular native species including:

- Murray cod (*Maccullochella peelii peelii*)
- Golden perch (*Macquaria ambigua*)
- Yabbies (*Cherax destructor*)
- Freshwater shrimps (*Paratya australiensis* and *Caridina mccullochi*)
- Freshwater prawns (*Macrobrachium australiense*).

Licensed inland commercial fishers with an appropriate endorsement may also continue to take yabbies and carp.

All existing bag, size and possession limits, closures and other fishing restrictions continue to apply.

For more information on fishing rules, check with your local fisheries office or on the Department of Primary Industries website at www.dpi.nsw.gov.au

Further reading

MDBC (2004). *Fish theme pilot audit technical report*, Sustainable Rivers Audit, Murray Darling Basin Commission, Canberra.

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Further information

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Photo: NSW Department of Natural Resources