



## River Lakes and Coorong Action Group Inc

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Winner 2009 Jill Hudson Environmental Award

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The Director  
Ecological Communities section  
Protected Species and Communities Branch  
Department of Climate Change, Energy, the Environment and Water

I write on behalf of the River, Lakes and Coorong Action Group Inc. regarding the River Murray downstream of the Darling River and associated aquatic and floodplain systems.

The RLCAG Inc was formed in 2006 as a direct response to the threats to a healthy ecosystem posed by the Millenium drought, overallocation, and insufficient flow in the Murray Darling system. Since that time we have continuously advocated for a healthy whole of system, from source to sea.

The objects and purposes of our association are:

- To protect, conserve and enhance the biodiversity of the River Murray, Lakes and Coorong
- To liaise with appropriate bodies over the management of the River Murray, Lakes Alexandrina and Albert and the Coorong and their immediate surrounds.
- To educate the community in River Ecology

We are critically concerned with the health of the river system as a whole, with a fair allocation of water for all users, including the environment. Everything is connected.

We have engaged with Murray Darling matters through submissions, symposia, meetings and campaigns. Members of the organisation, in particular the late Henry Jones, were closely involved in the development of the Murray Darling Basin Plan.

We acknowledge the aid to the ecosystem since 2012 with the instigation of the Basin Plan and the provision of environmental water. Without this E water, Lake Alexandrina would have been below sea level in 2016 and there would not have been enough flow for fishways to function.

We also recognise there is not enough environmental water in the system, and that water cannot currently be delivered in a timely fashion to enhance fish breeding and watering of flood-plains due to persisting constraints.

The glaring omission from Basin Plan 1 is not considering the impact climate change is having on the Murray Darling system. The impact of much lower inflows (up to 30 -40% less), higher temperatures and increased evaporation must be taken into account when assessing an already threatened ecosystem. The need to prevent worsening of the already in-train climate change must be an integral part of preserving the ecosystem.

We wholeheartedly support the science-based biodiversity threat assessment now underway to determine whether the River Murray-Darling to sea ecological community is threatened with extinction and eligible for protection under the EPBC Act.

Science confirms the reality that rivers die from the mouth up. It is happening in major river systems worldwide, e.g. The Colorado River in the US and the Mekong River in S.E. Asia.

We are in the unique position, being at the end of the Murray Darling system, to have experienced the devastating consequences of cease to flow events during the Millennium drought. River Murray flows reached historically low levels, Lake Alexandrina and Lake Albert were no longer connected and previously submerged aquatic habitat was colonised by terrestrial species. Sulphate soils became toxically acidic and aquatic species in the estuarine habitats were unable to complete their life cycle. The millennium drought has had a long lasting impact, and there is evidence that some species have still not recovered from that event.

In particular we have been concerned about the lack of recovery of the fresh water mussels (Lokeri). Pre drought these mussels were in abundance, providing a valuable food source and cultural significance for the Ngarrindjeri Traditional Owners. The Lokeri also have a vital role in the ecosystem as filter feeders and are excellent indicators of the environmental health of river systems.

The effect of prolonged drought, however, diminishes populations which can take more than a decade to recover. This appears to be the case for freshwater mussel populations in downstream Lakes Alexandrina and Albert, with little recovery since the Millennium Drought.

Where mussels were once in abundance, only few can be found in a couple of locations around the Lakes. This needs to be investigated thoroughly and scientifically.

RLCAG has partnered, as volunteer citizen scientists, with Dr Scotte Wedderburn (University of Adelaide), the Goyder Institute and other CLLMM Research Centre partners, to do a baseline survey of mussels. The objectives of this research are to:

- a.) conduct a quantitative assessment of their abundance and distribution.
- b.) Measure the size and volume of each mussel, and the shell lines, to determine their health status and age.
- c.) Measure aspects of habitat (e.g. salinity), and
- d.) Measure the abundance of the various fish hosts, which are a vital in the life cycle of the Lokeri.

If the mussels can be reliably aged, climate growth modelling will provide insight into the implications of future climates for Lokeri across the region, which is of strong cultural and management importance. The information generated by this project, will help instigate further

research to improve management and decision making. For example, the role of the key host fishes in the life cycle of the Lokeri will provide an important link to other research and water management through the whole Murray Darling Basin. This project will provide a platform to include community and First Nations in planning for future changes in the region.

The entire area (approx. 580 sq Kms) of Lake Alexandrina and the Goolwa channel was affected by a toxic blue-green algal outbreak lasting 4 months this year, likely a precursor of many more low flow, climate change related algal events. Who knows what effect this has had on the mussels, native fish, turtles, frogs, birds and terrestrial animals exposed to this water?

Native freshwater fish: Pygmy Perch, Yarra Pygmy Perch, Murray Hardy-head, Shortheaded Lamprey and Congoli were severely impacted during the millennium drought.

The local extinction of Yarra Pygmy Perch was only prevented by rescuing fish and placing them in surrogate breeding ponds and dams on private properties. After many years, there has been successful re-introduction of the Yarra Pygmy Perch to a wetland site near Lake Alexandrina. Sustainability is reliant on the lake levels. If lake water levels are kept over 0.6m AHD during summer and autumn then there will be better recruitment and abundance outcome for Southern Pygmy Perch. The species is an ecological specialist so provides an indication of the health and diversity of the fringing wetlands.

Congoli are a fascinating freshwater fish that move out to the ocean to breed; then newly spawned juveniles return upstream to freshwater. During the Millennium drought this movement was not possible with the construction of several “bunds” across the Lower Murray at Clayton Bay, the Finnis River and Currency Creek. Researchers at the time documented schools of Congoli desperately moving, trapped in the freshwater, trying to find an exit to the sea. Monitoring confirmed a catastrophic drop in numbers and local extinction was a very real possibility. The introduction of fish ladders and water for the environment to keep the fish ways open and allow flow through the barrages has dramatically helped the survival of native fish.

Challenges to their continued survival are imminent with the likely effects of climate change. It is predicted that there will be a significant reduction in inflow into the Murray- Darling. The effect of sea level rise on the existing barrages and the “leaking” of sea water back into the freshwater needs to be addressed with infrastructure upgrades to the 7 kilometres of barrages, with gate automation of the 500 gates. This is imperative to allow environmental fresh water releases into the Coorong in a timely and controlled fashion to sustain and improve the already damaged ecosystem.

The recent fish kills in the Southern Lagoon of the Coorong, where an estimate of between 200,000 and 500,000 fish died is testament to the fact that the ecosystem is under existential threat and deserves any protection available.

Likewise the numbers of iconic river Murray turtles was heavily impacted during the drought with terrible tube worm infestation. Turtles died in the thousands. The local Milang primary school students set up a rescue facility, scrubbing the tube worms off the shells and keeping the rescued turtles in fresh water tanks. This was a really depressing time for all and one that has had a lasting emotional impact on all of us who witnessed this disaster. Turtles are no longer seen in the landscape as previously.

Yabbies were once prevalent in the river, so many in fact that Yabby City, was a destination restaurant at Clayton Bay. Yabbies are no longer a feature of the area.

Birdlife has also drastically reduced in numbers and species in the local area. Sixty years ago large flocks of budgerigars inhabited the area, now there are none. Likewise swans and pelican numbers have reduced.

The Nationally Vulnerable ( EPBC Act) Southern Bell frog populations disappeared from many areas of the Coorong and Lakes region during the Millenium drought. There is currently a captive breeding project at Clayton Bay with project partners Landscapes Hills and Fleurieu, Murraylands and Riverland Landscape Board, Nature Glenelg Trust , University of Newcastle, University of Canberra, Clayton Bay Nursery and Environment Group, Clayton Bay Community Association and Zoos SA. This project is undertaking activities to facilitate re-introductions to the wild. Assisted Reproductive Technology ( ART) techniques are also being developed to enhance genetic diversity of future captive bred individuals.

It is imperative that we do all we can to protect what is left of a previously healthy ecosystem before it is too late.

Listing of the Murray-Darling river to sea ecological community hopefully will provide important protections under national environmental laws.

This is long overdue. The Humane Society International Australia first nominated

1. "The Wetlands and inner floodplains of the Macquarie Marshes" and
2. "River Murray downstream of the Darling River and associated aquatic and floodplain systems" for Federal listing as Critically Endangered in 2008.

The ecological communities were recognised as threatened in 2013, but a change of Federal Government saw this overturned. Too much time has already been wasted. We must do all that we can to ensure environmental protection is as robust as possible before we experience the next drought. It is plainly evident that the ecosystem in the Lower Murray, Lakes Alexandrina and Albert and the Coorong has not recovered from the Millenium drought. The climate has changed. The next drought is likely to be even more devastating. Environmental resilience can only be achieved by ensuring a healthy ecosystem in times of adequate available water. The inclusion of a description of habitat critical to species survival and a recognition of cumulative impacts are necessary inclusions in the Conservation Advice.

The threats to the already degraded ecosystem posed by climate change with increasing temperatures and likely marked reduction in inflows to the Murray Darling and all the follow-on effects of this, including the increased likelihood of toxic algal outbreaks, means this listing must be supported.

Yours sincerely

Janette Brooks

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