

February 2024

The Hon. Rose Jackson, MLC
Minister for Water

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Dear Minister Jackson,

Science is conclusive on the role environmental water plays in the proliferation of carp and the risk carp proliferation imposes on meeting Basin Plan objectives.

How are you advocating for measures to be put in place to control carp breeding during environmental watering events, and how will you support the implementation of the National Carp Control Program?

Over the past several years we have highlighted to state and federal Agriculture, Environment and Water Ministers the significant issue around carp control.

Current environmental watering programs are only aiding the proliferation of this invasive species, and without implementing the National Carp Control Program (NCCP), recovering further water for the environment will only increase the environmental and economic damage this pest is causing.

We are disappointed in previous Environment Ministers who believe this issue is not within their portfolio remit. However, with increasing evidence about the unintended consequences of environmental watering programs, this issue is completely within the responsibility of the environment portfolio to weigh in.

The attached briefing paper outlines –

- The impacts carp are having on the environment
- How carp biomass impacts ecosystems
- How carp are impacting wider species diversity
- What is accelerating carp proliferation
- The latest modelling and what needs to be done – that is implement the NCCP

Our briefing paper is supported by the organisations listed at the end of the paper in the appendix.

We call on you to voice your concern about the disregard for the advice provided by the Nation's fish experts and demand the Commonwealth prioritises implementation of the NCCP ahead of water buybacks.

We look forward to hearing from you directly about your actions on addressing this issue; we do not expect a reply stating this has been passed onto the water portfolio and relevant minister.

Yours sincerely,

Shelley Scoullar

Chair – Speak Up Campaign

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Briefing Paper

Putting Science Before Politics: Addressing the Carp Crisis

Background

Agriculture in the Murray Darling Basin contributes \$24 billion a year to the National economy¹, which is about 40% of the country's agricultural production. The gross value of irrigated agriculture in 2020 was \$6 billion, down 22% from 2011³; this should ring alarm bells in treasury.

Farmers, whether they are irrigators or non-irrigators, contribute to the nation's economy and are impacted by the changing ownership and unintended consequences of a focus on water recovery alone under the Murray Darling Basin Plan.

Irrigators are impacted by –

- Increases in permanent and temporary water market prices, changes to water allocations due to changes in how people manage their water and increases in water carryover

Riparian landholders are impacted by –

- Elevated flood risks associated with a more conservative approach to water usage, leading to more water held in storage
- Environmental flows impacting access to properties, loss of crops and stock due to higher and longer floods
- Loss of access to paddocks for sowing crops due to increased high and sustained flows
- Increase in erosion of banks and loss of riparian land and infrastructure in choke areas due to water delivery

Implementation of the Basin Plan is a vital issue to both the Environment and Agriculture portfolios. Currently, the Albanese Government is focused on water volume recovery and missing a critical element that poses a massive threat to both the environment and agriculture, and that is invasive species.

Threats

According to a recent study 'biological invasions are among the main threats to global biodiversity⁴' and until recently there have not been reliable methodologies for predicting the ecological impact of invasive species (in this case carp) biomass. Measuring invasive species biomass is required to make management decisions.

The impacts carp have on aquatic environments include biotic, where carp have a direct impact on our native species, like predation and competing for food sources. They also have an abiotic impact by altering the properties of a water source, for example, water quality by increasing turbidity⁴. In both cases, dramatic changes to freshwater ecosystems occur.

As early as 2000, Koehn et al. reported the significant economic and environmental impacts on waterways of the Murray Darling Basin, and a conservative estimate by FRDC in 2022 highlighted that carp were costing the country \$200 million a year.⁴

Aiding Carp Breeding

Research completed by the Arthur Rylah Institute for Environmental Research (ARI) ‘Managing Flows and carp - Technical Report Series No. 255’ provides evidence of why increased environmental flows that re-inundate wetlands (including the Lower Lakes) will result in significant breeding of carp, and allow for movement of now trapped populations back into the main river system. Todd et al 2024, also support that environmental water can significantly increase the abundance of carp – “Artificial inundations generated by floodplain infrastructure, however, caused significant carp recruitment compared to baseline scenarios”.⁵

Figure S1 clearly shows that carp populations increase substantially if adjacent wetlands are inundated in consecutive years. To deliver the volumes of water that intend to be recovered through the current focus on Held Environmental Water (HEW) Entitlements, floodplain inundation will become a regular event, aiding the breeding and spread of carp populations.

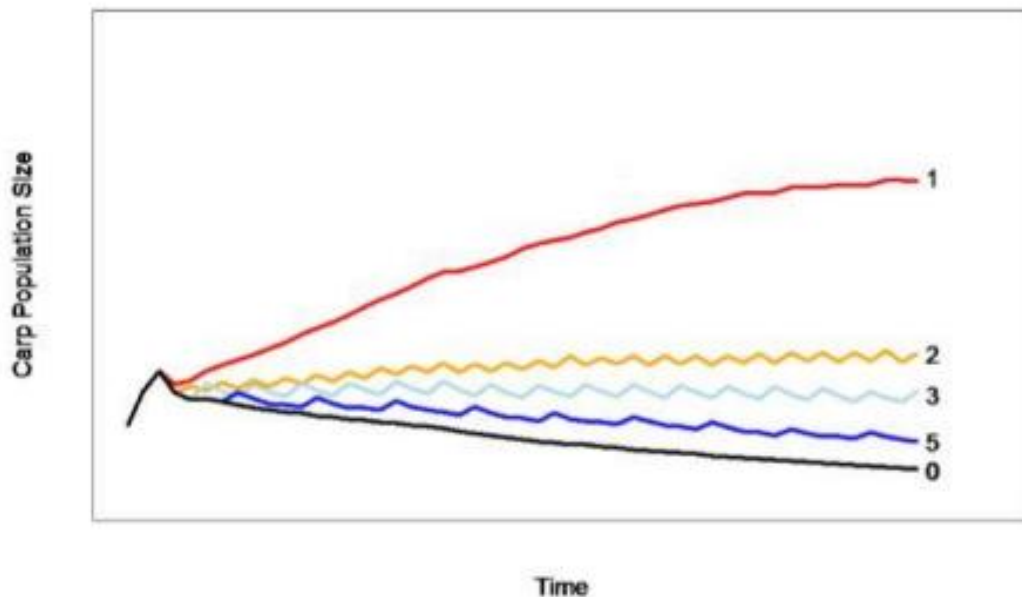


Figure S1. The likely relative changes in Carp populations over time with different flow sequences Within-channel flows covering instream benches (0) and irrigation flows providing limited annual access to adjacent wetland habitats every fifth year (5), every third year (3), every second year (2) or every year (1).

Research conducted by ARI clearly states that environmental watering, which results in floodplain inundation, can have the unintended consequences of providing the ideal conditions for carp breeding and proliferation throughout successive years. There is a whole body of research that demonstrates that native fish numbers are lower than carp numbers, and that carp take up to 90% of the biomass in many areas. The ARI report also states that the carp population in the Lower Lakes is estimated to be 846,000 adult carp but can hold a carrying capacity of 4,195,000.

Impacts of carp

Fanson et al. highlight in their report just this year that the destructive capacity of carp on native fish populations has well been acknowledged, so much so that in 2016 the Commonwealth announced a AUD\$15 M investment to develop the National Carp Control Program, as a long-term biological control plan for the invasive species.⁴ However, the program has become stagnant due to the lack of information about the biomass-impacts relationship. The model developed by Fanson et al. is the first of its kind to quantify and accurately predict the impacts of invasive species on the environment and therefore native fish populations.

It is clear from this study carp have a significant impact on all ecological metrics that were studied, including –

- Increasing carp biomass increased
 - turbidity
 - suspended solids
 - phytoplankton
 - phosphorus
 - and nitrogen
- Increasing carp biomass decreased
 - Macrophytes (aquatic plants)
 - Macroinvertebrates (aquatic insects, snails and some crayfish)

The model predicted that –

- at ~250 kg/ha, a waterbody will have lost ~50 % of its macrophytes and macroinvertebrates.
- macrophytes have decreased by – 41 % in rivers and – 32 % in waterbodies
- turbidity has increased by 74 % and 53 % for rivers and waterbodies, respectively
- in some areas up to ~90 % of the macrophyte standing biomass has been lost and turbidity increased up to ~500 % due to carp.

Furthermore, it is important to recognise that invasive species not only decrease native species populations but also have negative impacts on the broader ecological community, resulting in a decline in species diversity.

Fanson et al., report that the results “highlight major ecological changes to aquatic ecosystems across a large geographic scale spanning most of eastern Australia, resulting from carp invasion. These results provide a tool to guide decision-making processes for carp control programs (e.g. NCCP in Australia)”.⁴

Summary

While this study is based on average hydrological conditions for the country, it is worth noting that the authors highlight – “Australia's aquatic environments are highly variable, shaped by extreme hydrological conditions with frequent droughts and extreme flooding. Carp populations crash during drought periods (e.g. 2000–2009 millennium drought) and explode during wet periods.”⁴

The Nation’s leading fish experts report the favourable conditions for increasing carp abundance which have been created by the current model for implementing the Basin Plan. The ARI has provided evidence that ongoing floodplain inundation increases carp breeding, while Fanson et al. have provided quantifiable parameters for measuring the impacts of carp on the environment.

The Basin Plan has a direction to '**Do no Harm**' yet the current focus on only recovering water, especially in the Southern Basin is doing just that, it is

- harming river and water body quality
- providing the ideal conditions for carp breeding
- providing ongoing opportunities for connectivity of carp breeding events to spread to other water bodies
- threatening native fish and other aquatic life forms

Action

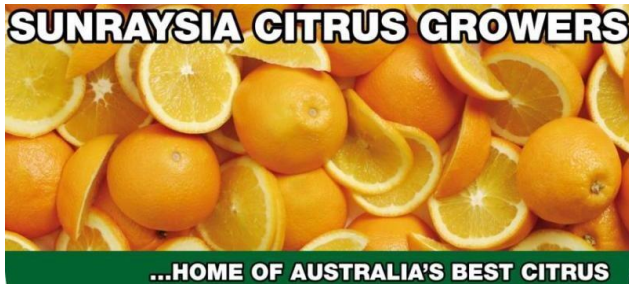
The Commonwealth now has the most advanced methods for predicting the impacts of invasive species, as a nation we cannot accept the ongoing threat buybacks and a focus on water recovery are having not only on our ecological diversity, our river health, but also our economy and social welfare.

We have the tools, and the experts living amongst us; it is time for all portfolios, states and peak bodies to demand more from our State and Federal Water and Agriculture Ministers on environmental water delivery and invasive species control. The evidence is there to demand that the National Carp Control Plan is implemented.

References

1. <https://www.dcceew.gov.au/water/policy/mdb>
2. <https://www.mdba.gov.au/basin>
3. <https://www.mdba.gov.au/sites/default/files/publications/murray-darling-basin-social-and-economic-conditions-report-2022.pdf>
4. Fanson et al 2024. Assessing impacts of a notorious invader (common carp *Cyprinus carpio*) on Australia's aquatic ecosystems: Coupling abundance-impact relationships with a spatial biomass model
5. Todd et al 2024. Modelling the response of common carp (*Cyprinus carpio*) to natural and managed flows using a stochastic population model

Supporting Organisations



**Eagle Creek
Pumping Syndicate**

**GMID Water
Leadership Forum**

**Upper Goulburn
River Catchment
Association**

