



A TRICKLE, NOT A FLOOD: IMPROVING ENVIRONMENTAL WATERING IN THE MURRAY-DARLING BASIN

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KEY MESSAGE

Government action to reconnect rivers to their floodplains, promised since 2013, is essential to conserve wetlands, reduce uncertainty for water users, and implement the Basin Plan.

Our research demonstrates that the wetland ecosystems of the Murray-Darling Basin have not yet been restored to the extent intended under the Basin Plan. The New South Wales and Victorian governments agreed to make agreements with land holders along key rivers to allow water to spill over river banks and flood wetlands. The failure of the state governments to implement these “constraints relaxation” projects means that only around 7% per year of the wetland area in targeted river valleys received effective environmental flows between 2014-15 and 2018-19.

In 2018 state governments received Federal Government approval to reduce environmental water recovery by 605 billion litres, in large part in return for implementing “constraints relaxation” to conserve more wetlands with less water. If this is not achieved by the 2024 reconciliation date then the Federal Government have an obligation to acquire more water for the environment. Further, if the existing environmental water holdings, acquired at great cost since 2008, are not used to maximise the health of the wetland ecosystems, then further uncertainty can be expected when the Basin Plan is reviewed by 2026.

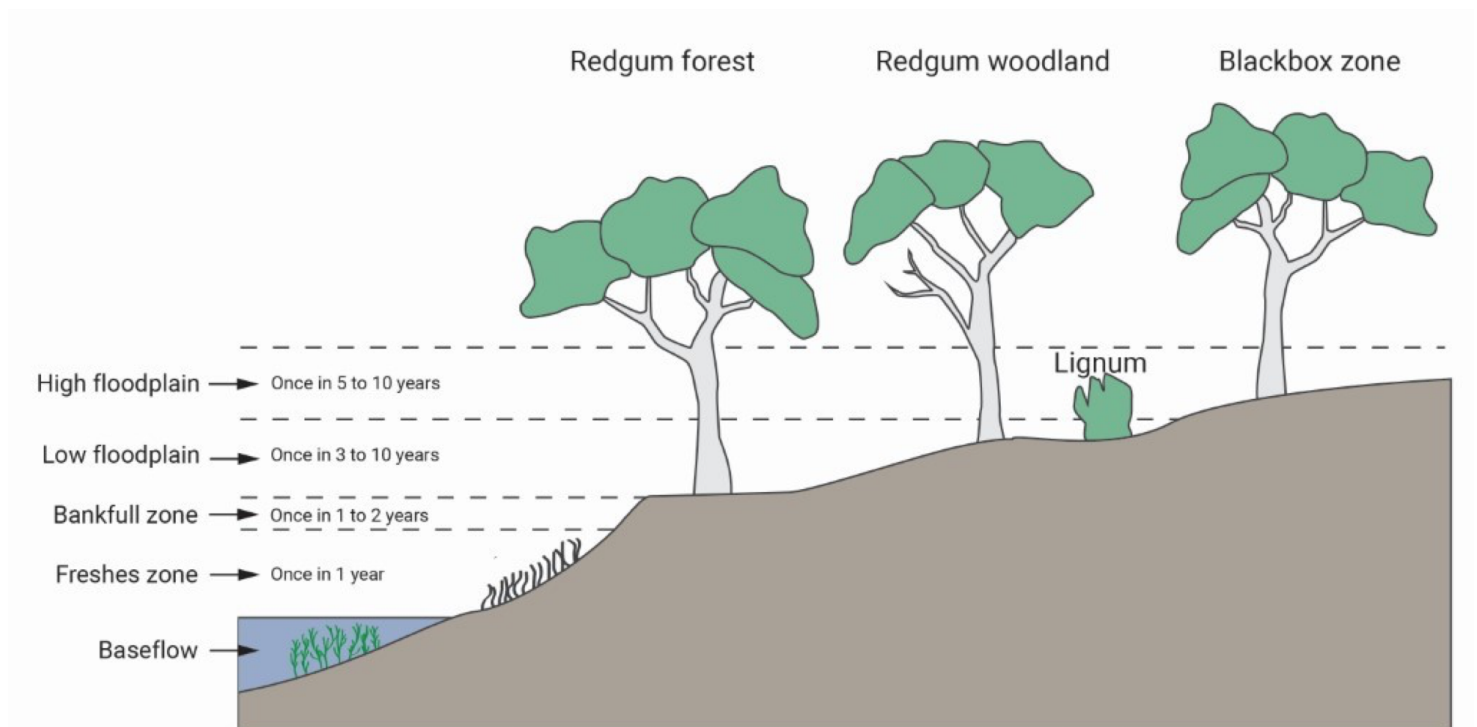


Figure 1. Frequency of watering needed to keep different floodplain ecosystems healthy in the Murray-Darling Basin.

CONTEXT

Rivers and wetlands of the Murray-Darling Basin were extensively modified from natural conditions during 19th and 20th centuries. In response to the over-allocation of water for irrigation and the poor condition of wetlands and rivers, the Australian Government began purchasing more water for the environment from 2008 and implemented the Basin Plan in 2012 to help restore the environment.

The Basin Plan sets the “sustainable diversion limit” for water for irrigation and proposed to reallocate 2,750 billion litres (GL) per year to the environment. However, from 2018 this volume was reduced to 2,075 GL/yr in return for

actions intended to conserve more wetland flora and fauna with less water. Different kinds of wetlands present at different elevations on the floodplain need to be inundated at different frequencies (Figure 1).

Dams catch the small and medium floods that would otherwise water wetlands, and a lot of water is diverted for irrigated agriculture. Consequently, the best way to conserve wetlands with the very limited environmental water held in dams is to let it out in pulses, to fill up the river channel and water wetlands as the flow passes downstream. Of 6.3 million hectares of wetlands in the Murray-Darling Basin,

nearly 3 million hectares are on the “managed floodplain” that could be deliberately watered (Figure 4). Environmental water releases are intended to achieve ecological outcomes detailed in the Basin Environmental Watering Strategy and the objectives of the Basin Plan.

WHY THIS IS IMPORTANT

The Australian Government is spending in the order of \$13 billion (from 2008) to reform water management in the Murray-Darling Basin; in particular, to improve environmental health. It is important to monitor whether these reforms are working in order to improve Implementation. Reporting of environmental watering involves multiple agencies and is currently fragmented, with duplication of locations, events, water sources and volumes, as well as inconsistencies in data and reporting regions. This research is the first independent and scientifically peer-reviewed analysis at Basin-scale that collates government data on the extent and efficacy of wetland watering in the Basin compared with the planned outcomes.

KEY FINDINGS

Our assessment of environmental watering by state and Federal governments in the Murray-Darling Basin from 2012-13 and 2018-19 found:

- Most Commonwealth environmental water was delivered as in-river flows (79%). Only 21% of water releases provided for watering of floodplain wetlands;
- Over 80% of Commonwealth environmental water was delivered to just three river valleys in the southern Basin, which accords with the large environmental water holdings in these valleys;
- Most wetland watering events involved small volumes of water delivered to small wetlands along the South Australian Murray (Figure 2).
- The annual average total volume released between 2012-13 and 2018-19 was only 1,905 GL per year.

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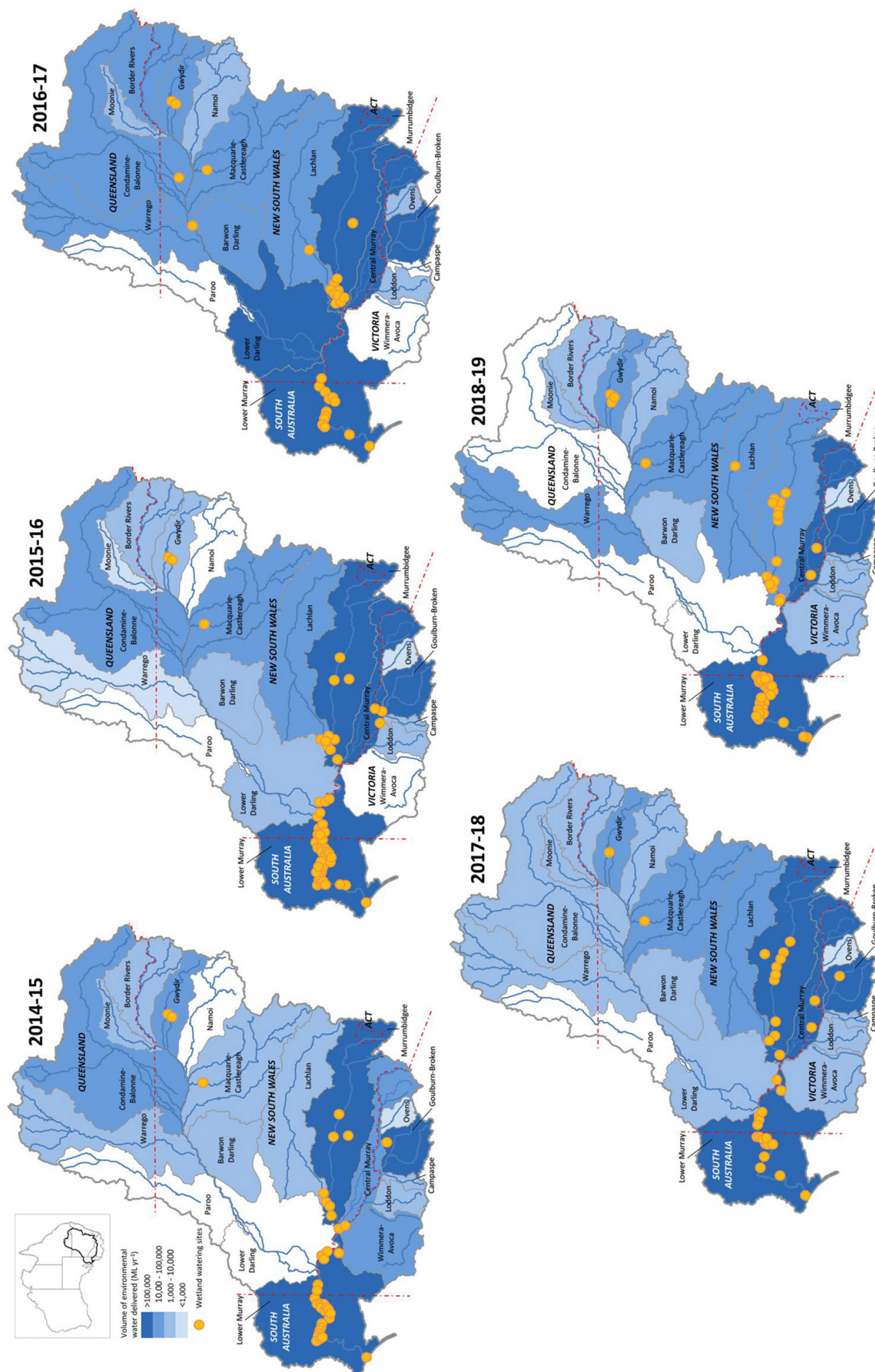


Figure 2. Basin-wide distribution of Commonwealth environmental watering events delivered between 2014-15 and 2018-19. River valleys in white received no water along their rivers (the Paroo does not receive managed environmental flows). Dots indicate wetlands that received environmental water.

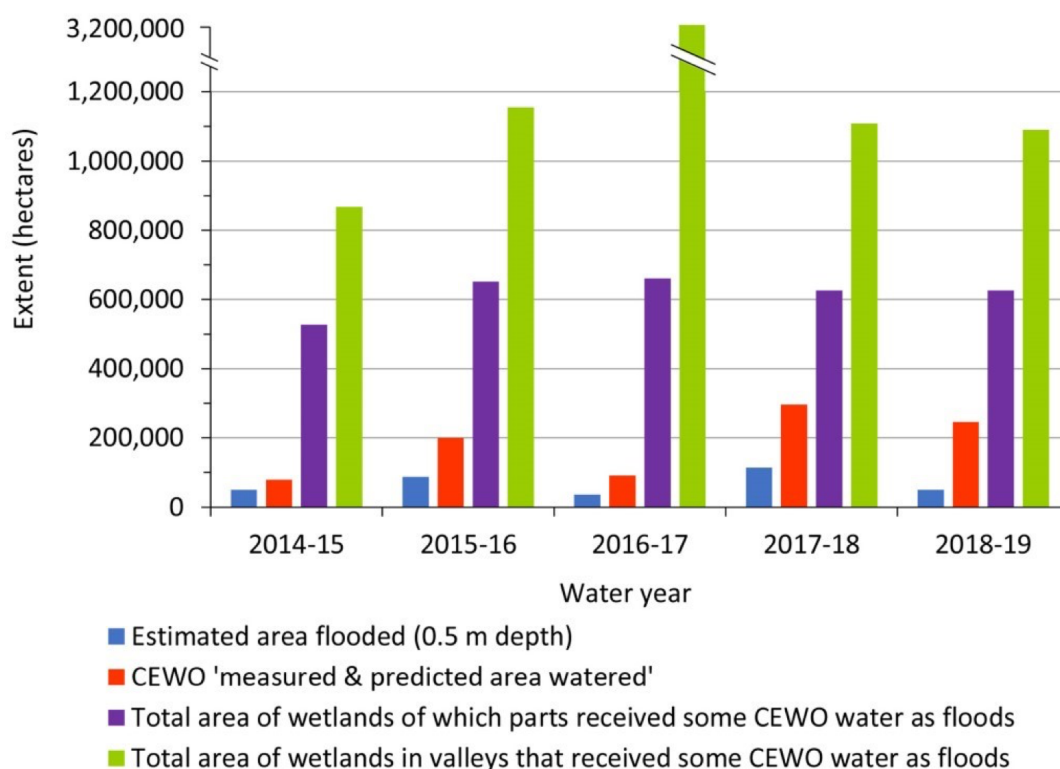


Figure 3. Total area flooded in the Murray-Darling Basin (based on area covered by an ecologically effective flood of 0.5 m minimum depth) by Commonwealth environmental water, delivered as overbank and wetland flows, 2014-15 to 2018-19

KEY FINDINGS CONT'D

- The extent of flooding of wetland woody vegetation communities is likely to be inadequate to meet their ecological requirements for maintenance as proposed in the Basin Environmental Watering Strategy. Only 12% of red gum floodplain forests and smaller portions of other wetland ecosystems were watered.
- Operational constraints of river regulation, competition with other water users in delivering environmental flows and flooding of private property limited the delivery of large environmental flows.
- Limited outcomes for environmental water delivery to achieve wetland conservation across the Basin. 21% of CEWO water was delivered as flood events, to 9 out of 19 river valleys, inundating 7% of wetland area in those valleys annually and 0.8% of major Basin wetlands.
- There are major shortfalls in the extent of flooding achieved to date. The estimated maximum area flooded (based on a ecologically effective flood of 0.5 m min. depth) was 41,691 ha per year on average, which is 23% of the 'measured and predicted area watered' by CEWO (182,500 ha annual average) (Figure 3).

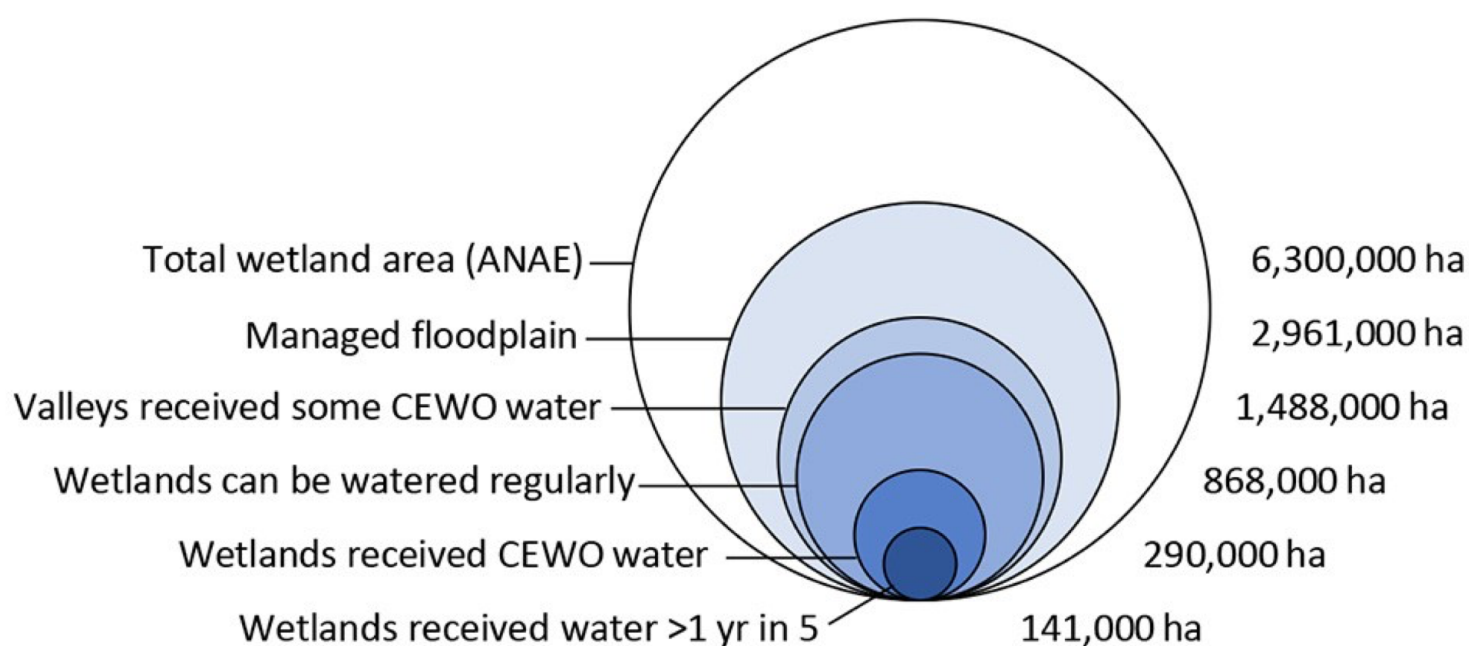


Figure 4. Consequences of operational limits on Commonwealth environmental watering of wetlands with flood events, illustrating the proportional areas in each category of wetlands.

KEY FINDINGS CONT'D

- Only 141,000 hectares of wetlands received water at least once in five years of the 2.96 million hectares of the 'actively managed floodplain' (the area potentially in-scope for environmental watering) (Figure 4);
- Only 10% of the managed floodplain received any water during the five years.

1. Accelerate "constraints relaxation" to enable optimal use of limited environmental water to inundate floodplain wetlands;
2. Enhance, simplify and consolidate monitoring and reporting of environmental watering by state and Commonwealth agencies to inform management; and
3. Re-think of what objectives are practical and achievable under climate change.

KEY LESSONS

The limited area of wetlands that have so far received environmental water under the Murray-Darling Basin Plan, with only four years to go until full implementation, means that governments need to consider significant changes, namely:



Figure 5: Sunset on the Murray River. Photograph courtesy of Susan Ward, 2019.

MORE INFORMATION

Chen, Y., M. J. Colloff, A. Lukasiewicz, and J. Pittock. in press.
'A trickle, not a flood:
Environmental watering in the
Murray-Darling Basin, Australia',
Marine and Freshwater Research.

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