

Northern Basin Review

Learning more about fish – environmental science program

Why are we doing this work?

The Murray–Darling Basin Authority (MDBA) has been researching native fish, floodplain vegetation and waterbirds reliant on the rivers of the northern Basin. This information will be used to review their environmental water needs as part of the Northern Basin Review.

Native fish populations have been in decline for the past couple of decades. Drivers for this include changes to the natural flow of the river systems, water quality issues and the introduction of pest species.

Native fish play an important role in freshwater ecosystems and are good indicators of healthy and resilient rivers. Native fish are also a vital part of the food web. Some species are predators and eat smaller fish, while others consume algae, plants and insects. Fish are also an important source of food for other fish, birds and turtles.

Native fish are also highly valued by people. Fish have cultural significance for Aboriginal communities and are also valued for recreation.

Healthy fish in the northern Basin rely on particular water flows for their development. The volume, duration and frequency of flows are important to flow dependent species, such as golden perch. Variability of flows also improves habitat quality and access, and boosts reproduction.

What are the fish projects?

The Northern Basin Review includes two projects focused on the needs of fish:

- » fish and flows in the northern Basin
- » water refuge mapping and persistence analysis.

Fish and flows in the Northern Basin

This project brought together 20 fish ecology experts and water managers from both state governments and universities. They assessed more than 150 fish studies conducted over the past 48 years up until 2015. This enabled experts to use the most up to date research to work out the types of flows that can support fish spawning, recruitment, movement and condition. The experts helped group fish with similar behaviours and flow needs.

The project also mapped fish habitats along more than 1,100 kilometres of the Barwon–Darling rivers between Walgett and Wilcannia. This has given experts a better understanding of the flows needed for healthy fish in the Barwon–Darling system. For example, the project found that to help fish migrate upstream and downstream, flows in the order of 10,000-megalitres per day are required at Bourke for a two-week period. This way, fish can get over the weirs along the stretch of river between Walgett and Wilcannia. If this type of flow occurs, on average, six to eight years in every 10, then fish will have opportunities to access new habitat and migrate through the river system. This is expected to result in healthier fish populations

Waterhole refuge project

Waterholes provide important habitats for native fish and other species to ‘ride out’ dry spells before flows re-connect rivers – often referred to as “drought refugia”.

Twenty-seven years of satellite imagery was used to map the location and persistence of waterholes. Detailed field work and modelling of 35 key waterholes was undertaken to assess how long they last and the role of sediments and groundwater. Experts now know that key waterholes in the Lower Balonne need to be topped up every 12 to 18 months. This will now be considered in the assessment of the environmental water needs of fish.

The MDBA has been talking with Aboriginal community members to compare the new waterhole mapping with traditional knowledge, and learn about the cultural significance of waterholes and rivers. Community members have told us waterholes are important for food recreation and other cultural needs

The Northern Basin Review

The MDBA is expanding and updating the knowledge about the northern Basin, which takes in parts of south-west Queensland and north-west New South Wales.

The review covers environmental science, updated and refined hydrological modelling, and socio-economic assessment to better understand the impacts of different water recovery scenarios to rebalance water use.

Why is the review being done?

The Basin Plan currently sets 3,468 GL as the limit of water that can be extracted across the northern Basin on average per year. This is 390 GL or around 10% less than the amount that was taken before the Basin Plan.

The current water recovery target of 390 GL for the north is made up of 247 GL for local catchments plus a further 143 GL to be found across the catchments for downstream needs.

In finalising the Basin Plan, the MDBA agreed to do further research and investigations on the settings of the northern Basin to see if there is a case for changing them. While the science was the best available at the time, the MDBA felt a review provided a chance to fill some of the gaps in our information.

The review encompasses the northern Basin region as a whole, with a focus on the Condamine–Balonne and Barwon–Darling catchments for the environmental science projects. Once we have a better understanding of environmental water needs, we can then look at different Basin Plan settings to see how often these water needs can be met without creating undue social and economic affects.

Further information

Contact us via email

You can also ask questions and express opinions by emailing engagement@mdba.gov.au

Contact us via post

Please send us a letter to GPO Box 1801, Canberra City, ACT 2601.

Call us

Please phone our main office or 1800 number to have your say.

Staff are keen to hear from you.

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