

Australian Government



# Northern Fish Flow - Update 4

The Northern Fish Flow has travelled 1,000 km of river in the last six weeks. The flow will reach Walgett on the Barwon River in the coming week. The flow is expected to reach at least the Macquarie – Barwon junction. Releases from Copeton Dam will wind down from today. The ninth community drop-in session was held this week at Walgett.

## OBJECTIVES OF THE NORTHERN FISH FLOW



Help native fish and animals survive the drought.



Improve water quality, connect the rivers, and improve habitat for native fish and animals. Improve social, cultural and economic outcomes for river communities.

## FLOWS APPROACHING WALGETT



The Barwon River at Walgett Weir (Dangar Bridge) – river flow direction from bottom to top.

The brown water at bottom is from a recent small inflow from the Namoi River, which raised the pool but did not flow over the top.

Downstream of the weir is a green scour pool, stagnant for around 330 days. At the top is the dry river bed – the yellow arrow indicates the usual direction of flow.

Water will flow over this weir for the first time since July 2018 once the Northern Fish Flow arrives in the coming week.



Goondiwindi

#### PROGRESS OF THE NORTHERN FISH FLOW

The combined distance travelled by the flow from the Border Rivers and the flow from the Gwydir system in the Northern Fish Flow is around 1,000 km so far. This is a little over the driving distance from Brisbane to Sydney, or from Sydney to Melbourne. The movement of the Northern Fish Flow over the last six weeks is shown below.

Both the flows from the Macintyre and Mehi rivers are now well into the Barwon River. The flow from the Border Rivers is gradually increasing the water level in Mogil Mogil Weir after passing Mungindi and Presbury weirs. This flow has reinstated and topped up waterholes in the Dumaresq, Macintyre and Barwon rivers. The seepage into the river bed in the approximately 500 km from Glenlyon Dam has been unusually high.



The flow from the Mehi has also reached the parched Barwon. The flow from the Mehi River has passed Calmundi and Tara weirs on route to Walgett and beyond. The flow at Tara today has reached 400 ML/day.

Some weirs along the Barwon

Culgoa Rive Glenly Babine R 3 May Mungindi Lightning Gwydir River Moree Ridge Collarenebri • Mehi River Copeton Dam Brewarrina Walgett Geera Barwon River Ian Rit Namoi River Narrabri Nachilyre Di Culgoa Rive oondiwind Glenlyoi Dam 24 May Mungindi Lightning Gwydir River Moree Ridge Collarenebri Mehi River opeton Brewarrina Walgett Barwon River Where the Geera flow has been Goondiwindi Where the Glenlvon flow was on Dam 7 June lungind 7 June Gwydir Rive Severn River Ridge CoNarene Brewarrina Walgett Barwon River Geera gan Ri Vamoi Rives Narrabri

36 GL of NSW and Commonwealth water will be used in the Northern Fish Flow. contributed equally by NSW and the Commonwealth. Release rates from Copeton Dam will be reduced from today as the deliveries are nearly complete.

The NSW Natural Resource Access Regulator has closely monitored the Northern Fish Flow, and has conducted nearly 50 inspections so far along the rivers. The Murray-Darling Basin Authority has also been following the flow using satellites.

Further downstream, many are watching the gauge at Wilcannia as a flow is expected to arrive there any day. The recent flows from the Culgoa River and Nebine Creek have provided some welcome inflow into the Bourke weir pool. These flows are separate to the Northern Fish Flow, but important for communities, and the ecology of the river.



## FLOWS AT COLLARENEBRI

Prior to the flow arriving in late May, the Collarenebri weir pool has been at a low level, stagnant since late 2018, and with poor water quality.

The flow moved down the bed of the Mehi River during May. Here it is shown approaching Collarenebri. Then, the Mehi flow connected with the Collarenebri weir pool (below).



23 May, no flow downstream of Collarenebri Weir 28 May, flow downstream of Collarenebri Weir



Flow over Collarenebri Weir was a welcome sight.



Ahead of the flow, the Barwon River awaits, with dry bed interspersed with stagnant pools.

#### **BENEFITS TO FISH**

The Northern Fish Flow will increase the chances of fish survival by replenishing water in refuges, improving water quality, habitat, food sources, and providing some opportunity to escape from smaller isolated waterholes. Populations of endangered fish will benefit, as well as some popular angling species such as golden perch.

There were fish deaths in the Barwon River near Calmundi Weir in March, probably as a result of low dissolved oxygen. The Calmundi Weir before and after the arrival of the flow this week is shown below. The flow is aerated as it passes over the weir.



The Northern Fish Flow has been carefully timed, waiting until cooler autumn months. Monitoring of dissolved oxygen in the Collarenebri weir pool in summer (February) suggested the fish present might be at risk from low oxygen. This risk came from potential mixing of deoxygenated water at the bottom of waterholes with the water in the top when air temperatures are hot. This could have done more harm than good for native fish.

As part of the monitoring of the Northern Fish Flow, dissolved oxygen was measured in Collarenebri weir pool last week. Water quality was good in general, with dissolved oxygen in the range of 6 - 8 milligrams per litre, well above 4 mg/l at which fish become stressed. Spot sampling in May suggested there was good mixing of the water in the weir pool. Longer term logger data from Collarenebri weir pool suggest there is still a little water at the bottom of the weir pool with very low dissolved oxygen. This has not affected the majority of the weir pool or the river downstream, and does not present a risk to the fish.





This targeted monitoring of dissolved oxygen along the Barwon will be wrapped up soon.

In addition to the monitoring of dissolved oxygen in the Barwon River and at Bronte along the Mehi River, there has been several years of monitoring of fish populations and health by NSW DPI Fisheries as part of the implementation of the Basin Plan. Importantly, fish in the Border Rivers and Gwydir systems have benefited from the Northern Fish Flow.

Based on recent monitoring and field observations it appears as though the Border Rivers currently has one of the healthiest populations of Murray cod in the Northern Basin, a stronghold. There is a high abundance of Murray cod at all sites, and relatively high numbers of young of year fish. Such populations are



important to replenish other populations when wetter conditions return. Further analysis of sampling data from various programs will be undertaken over the coming months to help improve our knowledge of native fish populations in the Northern Basin and the management actions that are needed to protect and enhance them. The Northern Fish Flow also supported aquatic vegetation in the Dumaresq/Macintyre. This is critical habitat for native fish, especially small bodied fish such as the threatened olive perchlet and purple spotted gudgeon, and other aquatic organisms like shrimp, which are important parts of the food chain.

In the Mehi River, freshwater catfish were detected during annual monitoring activities in early April, including different age classes near Moree (shown below).



The Murray-Darling Basin population of freshwater catfish is listed as threatened in NSW. In the Gwydir and Mehi rivers downstream of Moree a number of these freshwater catfish, as well as Murray cod, have had acoustic tags inserted. There are receivers along the river that allow detection of significant upstream or downstream movement. Early results from this work has shown that both species moved within the array, predominantly in response to flows. Freshwater catfish moved 33 km on average, and Murray cod moved 38 km on average.

Future downloads of this movement data will be undertaken soon and we will be able to examine the movement response of species during the Northern Fish Flow as it moved through the Gwydir and Mehi systems.



# PROSPECTS FOR NATIVE FISH IN THE MONTHS AHEAD

It is unusual for the Barwon River not to be flowing. The Barwon River between Collarenebri and Walgett flowed on over 97% of days in autumn and winter between 1980 and 2018, which included the Millennium Drought.

Current conditions are very dry, and the forecast is for less than median rain over the coming months. Earlier this month, the Bureau of Meteorology reported there is an increasing chance that a climate driver (called the Indian Ocean Dipole) could become positive in winter and into mid spring. This would unfortunately increase the chance of ongoing dry conditions.



As a result of the Northern Fish Flow the water in the waterholes in the Macintyre, Mehi and the Barwon rivers is expected to provide good conditions for fish and native animals for several months prior to the heat of summer. This is because of lower evaporation rates over winter than summer and good dissolved oxygen. If there is a flow in the river following rainfall, it will push further down the river system as the waterholes will be starting near full.

#### WALGETT COMMUNITY DROP IN SESSION

The ninth community drop-in session during the Northern Fish Flow was held in Walgett on Thursday 6 June. This follows eight community drop-in sessions held so far in Texas, Boggabilla, Goondiwindi, Mungindi, Moree, Boomi, Collarenebri, and Toomelah station. Roselyn Macgregor said 'the Colly community is very happy, Walgett will be next'.



The final community drop-in session in the Northern Fish Flow will be held in Brewarrina on the coming Wednesday (13 June) from 10 am to 12 pm at Weir Park. We hope that many people from the community can join us.



#### 7 June 2019 update

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Jason and Jane

#### FURTHER INFORMATION

#### **NSW OEH website**

http://www.environment.nsw.gov.au/topics/water/water-for-the-environment/about-water-for-the-environment

#### **CEWO** website

https://www.environment.gov.au/water/cewo, Follow us on Twitter @thecewh

http://www.environment.gov.au/water/cewo/catchment/northern-fish-flow-2019

#### MDBA website on remote sensing

https://www.mdba.gov.au/basin-plan-roll-out/monitoring-evaluation/remote-sensing-our-usesatellite-imagery

#### Bureau of Meteorology story about the positive Indian Ocean Dipole

https://www.abc.net.au/news/2019-05-16/positive-indian-ocean-dipole-bad-news-fordrought-crippled-areas/11120566

#### Information on investigations undertaken by the NSW Natural Resource Access Regulator

https://www.industry.nsw.gov.au/\_\_data/assets/pdf\_file/0005/156893/NRAR-Investigatingalleged-breaches-FAQs.pdf

Credits for images: Department of the Environment and Energy – 1, 3, 4, 5; Commonwealth Environmental Water Office – 2, 7, 8, 9, 14, 15; Murray-Darling Basin Authority – 6; Eco Logical Australia – 10; NSW DPI Fisheries – 11, 12; Bureau of Meteorology – 13.

